Any analysis of the syntax of time is based on a paradox: it must include a syntax-based theory of both tense construal and event construal. Yet while time is undimensional, events have a complex spatiotemporal structure that reflects their human participants. How can an event be flattened to fit into the linear time axis? Chomsky's The Minimalist Program, published in 1995, offers a way to address this problem. The studies collected in *The Syntax of Time* investigate whether problems concerning the construal of tense and aspect can be reduced to syntactic problems for which the basic mechanism and principles of generative grammar already provide solutions.

These studies, recent work by leading international scholars in the field, offer varied perspectives on the syntax of tense and the temporal construal of events: models of tense interpretation, construal of verbal forms, temporal aspect versus lexical aspect, the relation between the event and its argument structure, and the interaction of case with aktionsart or tense construal. Advances in the theory of temporal interpretation in the sentence are also applied to the temporal interpretation of nominals.

**Contributors**

The Syntax of Time
Current Studies in Linguistics
Samuel Jay Keyser, general editor

1. *A Reader on the Sanskrit Grammarians*, J. F. Staal, editor
2. *Semantic Interpretation in Generative Grammar*, Ray Jackendoff
4. *Speech Sounds and Features*, Gunnar Fant
7. *Pāṇini as a Variationist*, Paul Kiparsky, S. D. Joshi, editor
8. *Semantics and Cognition*, Ray Jackendoff
10. *Phonology and Syntax: The Relation between Sound and Structure*, Elisabeth O. Selkirk
12. *Introduction to the Theory of Grammar*, Henk van Riemsdijk and Edwin Williams
15. *An Essay on Stress*, Morris Halle and Jean-Roger Vergnaud
17. *A Course in GB Syntax: Lectures on Binding and Empty Categories*, Howard Lasnik and Juan Uriagereka
18. *Semantic Structures*, Ray Jackendoff
23. *Plurals and Events*, Barry Schein
25. *Grounded Phonology*, Diana Archangeli and Douglas Pulleyblank
27. *Zero Syntax: Experiencers and Cascades*, David Pesetsky
30. *Acoustic Phonetics*, Kenneth N. Stevens
32. *Working Minimalism*, Samuel David Epstein and Norbert Hornstein, editors
33. *Syntactic Structures Revisited: Contemporary Lectures on Classic Transformational Theory*, Howard Lasnik with Marcela Depiante and Arthur Stepanov
34. *Verbal Complexes*, Hilda Koopman and Anna Szabolcsi
35. *Parasitic Gaps*, Peter W. Culicover and Paul M. Postal
37. *The Syntax of Time*, Jacqueline Guéron and Jacqueline Lecarme, editors
Contents

Contributors ix
Preface xi

Introduction 1 Jacqueline Guéron and Jacqueline Lecarme

Chapter 1
On the Temporal Composition of Infinitives 27 Dorit Abusch

Chapter 2
Specification of Tense and Clause Linking: The Syntax of French and English Direct Quotations 55 Mario Barra-Jover

Chapter 3
On Aspect and Case: Investigating Romanian Nominalizations 75 Alexandra Cornilescu

Chapter 4
On the Logical Form of Imperfective Aspect 115 Denis Delfitto

Chapter 5
The Syntax of Time Adverbs 143 Hamida Demirdache and Myriam Uribe-Etxebarria

Chapter 6
French and Italian Conditionals: From Etymology to Representation 181 Yves D’hulst
<table>
<thead>
<tr>
<th>Chapter 7</th>
<th>Rethinking Past Tense</th>
<th>203</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mürvet Enc¸</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 8</th>
<th>Bare Aspect: A Theory of Syntactic Projection</th>
<th>217</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nomi Erteshik-Shir and Tova Rapoport</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 9</th>
<th>Temporal/Aspectual Interaction and Variation across Arabic Heights</th>
<th>235</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abdelkader Fassi Fehri</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 10</th>
<th>On the Speaker's and the Subject's Temporal Representation: The Case of the Italian Imperfect</th>
<th>259</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alessandra Giorgi and Fabio Pianesi</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 11</th>
<th>Tense Construal and the Argument Structure of Auxiliaries</th>
<th>299</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jacqueline Guéron</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 12</th>
<th>The English Progressive</th>
<th>329</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>James Higginbotham</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 13</th>
<th>Imperfect Modality</th>
<th>359</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Michela Ippolito</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 14</th>
<th>Telicity and the Meaning of Objective Case</th>
<th>389</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Angelika Kratzer</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 15</th>
<th>Romance “Aspectual” Periphrases: Eventuality Modification versus “Syntactic” Aspect</th>
<th>425</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brenda Laca</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 16</th>
<th>Tense in Nominals</th>
<th>441</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jacqueline Lecarme</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 17</th>
<th>The Semantic Determinants of Argument Expression: A View from the English Resultative Construction</th>
<th>477</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beth Levin and Malka Rappaport Hovav</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 18
Tense, Case, and the Nature of Syntactic Categories 495
David Pesetsky and Esther Torrego

Chapter 19
Derived Accomplishments and Lexical Aspect 539
Susan Rothstein

Chapter 20
Sequence Phenomena and Double Access Readings Generalized: Two Remarks on Tense, Person, and Mood 555
Philippe Schlenker

Chapter 21
The Domain of Tense 597
Carlota S. Smith

Chapter 22
Tense and Modals 621
Tim Stowell

Chapter 23
Tense Construal in Complement Clauses: Verbs of Communication and the Double Access Reading 637
Karen Zagona

Index 655
Contributors

Dorit Abusch  Department of Linguistics, Cornell University
Mario Barra-Jover  Département de Linguistique, Université de Poitiers
Alexandra Cornilescu  English Department, University of Bucharest
Denis Delfitto  Dipartimento di Linguistica, Letterature e Scienze della Comunicazione, Università di Verona
Hamida Demirdache  Département de Lettres Modernes, Université de Nantes
Yves D’hulst  Department of Linguistics, Leiden University
Mürvet Enc¸  Department of Linguistics, University of Wisconsin-Madison
Nomi Erteschik-Shir  Department of Foreign Literatures and Linguistics, Ben-Gurion University of the Negev
Abdelkader Fassi Fehri  Institut d’Études et de Recherches pour l’Arabisation (IERA), Mohamed V University
Alessandra Giorgi  Department of Linguistics, University of Venice
Jacqueline Guéron  Département d’Anglais, Université Paris 3
James Higginbotham  Department of Linguistics, University of Southern California
Michela Ippolito  Seminar für Sprachwissenschaft, Universität Tübingen
Angelika Kratzer  Department of Linguistics, University of Massachusetts, Amherst
Brenda Laca  Département de Linguistique, Université Paris 8
Jacqueline Lecarme  Laboratoire de Linguistique Formelle, Centre National de la Recherche Scientifique (CNRS) and Université Paris 7
Beth Levin  Department of Linguistics, Stanford University
David Pesetsky  Department of Linguistics and Philosophy, Massachusetts Institute of Technology
Fabio Pianesi  Istituto Trentino di Cultura - Centro per la Ricerca Scientifica e Tecnologica, Trento

Tova Rapoport  Department of Foreign Literatures and Linguistics, Ben Gurion University of the Negev

Malka Rappaport Hovav  Department of English, The Hebrew University of Jerusalem

Susan Rothstein  Department of English, Bar-Ilan University

Philippe Schlenker  Department of Linguistics, University of California at Los Angeles and Institut Jean Nicod, Paris

Carlota S. Smith  Department of Linguistics, University of Texas

Tim Stowell  Department of Linguistics, University of California at Los Angeles

Esther Torrego  Linguistics Program, Department of Hispanic Studies, University of Massachusetts, Boston

Myriam Uribe-Etxebarria  Basque Center of Language Research, University of the Basque Country

Karen Zagona  Department of Linguistics, University of Washington
Preface

The chapters in this volume are updated versions of talks first presented at the International Round Table on the Syntax of Tense and Aspect in November 2000 at the Université Paris 7, organized by the Jeune Equipe “Syntaxe anglaise et syntaxe comparative” (Université Paris 3–Sorbonne Nouvelle) and by the Laboratoire de Linguistique Formelle (Centre National de la Recherche Scientifique (CNRS) and Université Paris 7).

We wish to thank the institutions that provided financial support for the Round Table: the CNRS, the Ministère des Affaires Etrangères, the Laboratoire de Linguistique Formelle, the Conseil Scientifique (Université Paris 3), and the Bureau des Relations Internationales (Université Paris 3).

We also wish to thank Maurice Guéron and Olivier Lecarme for timely technical support and Anne Mark for a brilliant job of editing.
How can we know the dancer from the dance?
W. B. Yeats, “Among School Children”

An analysis of the syntax of time must include a syntax-based theory of tense construal and of event construal, and an algorithm for inserting events in time. The task is based on a paradox. Events have a complex spatiotemporal structure reflecting the “complexities of mire and blood” of their human participants, while time is unidimensional. How can we “flatten” an event to fit it into the linear time axis?

We can try to simply ignore the paradox and adopt normal compositional procedures of construal of the syntactic structures underlying tense interpretation, adding the semantic values of tense-related lexical items to the semantic values of the structures that contain them. We know that eventualities, events and states, are defined in the Verb Phrase (VP) while tense is a morpheme in the Tense (T) node. So just as we predicate the property “brilliant” of Mary in Mary is brilliant, we can predicate the event “John write a letter yesterday” of past tense without worrying too much about how our mental image of John bending over his desk writing fits in with the linear march of time. Yet even this simplified task has turned out to be well-nigh intractable.

For one thing, we never really see a tense morpheme in isolation. The present tense morpheme is consistently phonologically null. Future tense usually takes the form of a modal or mood morpheme such as will in English or er/re in Romance. And in many languages, past tense is merged with aspect so that it is not possible to distinguish one from the other, as in Romance imperfective tenses.

For another thing, predicating an event of a time does not simply involve mapping a VP denotation onto a T denotation. The mapping operation exists, but it is mediated both by aktionsart, or lexical aspect, and by viewpoint or syntactic aspect. Lexical aspect refers to the internal temporal structure of an event. Syntactic aspect relates events to times. In principle, viewpoint aspect is based on verbal morphology while lexical aspect is construed on the basis of the lexical content of a verbal root.
and that of its complements. But in fact, aktionsart predicates, such as particles or prepositions, adjoin to a verbal base in languages like English, German, and Russian, in such a way that it is not possible to know immediately whether the particle is contributing aktionsart or aspect to tense construal (a syntactic particle may even be ambiguous between a pronoun and an aspect, like se/si in Romance or copula ha in Hebrew). The lexicon also includes aktionsart operators that modify the internal temporal structure calculated on the basis of the lexical items in VP. The aktionsart operator may take the form of a PP or small clause complement inside VP as in John walked Mary to school or of a particle disjoint from the verb as in John ate the pie up. It may take the form of an operator governing VP such as the verbal periphrase in John began to write or the progressive -ing operator in English that divides an event into its constituent subevents, transforming it into a state for temporal construal. It has been proposed that aspect focuses on a part of the event, either its boundaries (perfective aspect) or its internal structure (imperfective aspect) (see Smith 1991). But focusing on the event is precisely what an aktionsart operator does, as Laca clearly shows here in her discussion of the different properties of aspectual and aktionsart adverbial periphrases.

Aspect may indeed focus on the event, but it is located “too high” in the sentence structure to influence its internal structure. Rather, aspect places an event on a point of time either inside a temporal interval (imperfectivity) or at the boundary of a temporal interval (perfectivity). An event placed within an interval spontaneously subdivides into component subevents without the intervention of a progressive operator, as in the French sentence Je parle au téléphone en cet instant ‘I am speaking on the phone right now’. When an event is located on a boundary, the background reference or speech time provides the interval bounded by the event (Il a parlé au téléphone hier ‘He spoke on the phone yesterday’).

Because the role of aktionsart operators has been overlooked, the English progressive operator -ing is often identified as the English equivalent of Romance imperfective aspect. This identification is understandable: imperfective aspect and the progressive form have properties in common, in particular a progressive interpretation of the event and even, in some cases, modal import. But there are also crucial differences between them that have less to do with their morphological form than with their distinct syntactic scopes. The progressive form is never habitual, while imperfective aspect can be; and the progressive operates on events, not states, while imperfective aspect is indifferent to the situation type predicated of the tense it shapes.

Syntax supports the distinction between aktionsart and aspect. Higginbotham cites the ordering of constituents in John has been crossing the street as reflecting a syntactic hierarchy: the progressive is structurally lower than the perfect, itself lower than the imperfective. More precisely, in the cited sentence, have merged with tense
defines an imperfective temporal interval; -ing is an aktionsart operator that divides the eventive VP into its constituent subevents, en is a higher aktionsart operator that picks out the final subevent of the series, and be is an aspectual operator that predicates a final subevent of a point of the temporal interval defined by have + T.

Another sign of confusion between lexical aspect (“inner aspect” or aktionsart) and temporal aspect is manifested by recent proposals to add an Aspect projection to the functional skeleton of the sentence. From a minimalist perspective, functional nodes are motivated by grammatical features of lexical items that are checked outside VP, such as tense, agreement, negation, and [wh] features. How is a node for lexical aspect situated right above VP motivated in the absence of any matching morphological feature of the verb?

There is no problem motivating a functional node for perfective or imperfective syntactic aspect, generally realized by an affix on the verbal root. However, aspect, which merges with tense, often cannot be distinguished from tense, as in the French imperfective or, famously, in the Arabic perfective and imperfective forms discussed here by Fassi Fehri. In such cases, it is not clear that two functional nodes are needed, one for tense and one for viewpoint aspect. Thus, a functional node for lexical aspect is unmotivated, while a functional node for viewpoint aspect is motivated but may be unnecessary.

The chapters in this volume contribute varied perspectives on the syntax of tense and the temporal construal of events: models of tense interpretation, construal of verbal forms, temporal aspect versus lexical aspect, the relation between the event and its argument structure, and the interaction of case with aktionsart or tense construal. Advances in the theory of tense interpretation in the sentence are also applied to the temporal interpretation of nominals. This too is paradoxical, since in principle the DP does not contain a Tense projection. However, in some languages, such as Somali, analyzed here by Lecarme, the DP contains the same tense morphemes as the sentence. And Cornilescu shows that nominalizing affixes in infinitival and supine forms in Romanian determine both the aktionsart and the argument structure of a derived DP.

1 On the Nature of Tense

1.1 Models of Tense Construal

1.1.1 The Reichenbachian Model  Reichenbach (1947) proposed that each tense involves a relation linking three times: the reference time (R), the speech time (S), and the event time (E). In simple tenses (past, present, future), R and S are identical, but they differ in complex sentences.
Giorgi and Pianesi (1997) developed an elegant syntactic version of Reichenbach’s theory. They argued, following Comrie (1976) and Hornstein (1990), that the relationship linking S, R, and E is not a ternary but a double binary relation. The sentence contains two Tense projections: T₁, which realizes the relation between S and R, and T₂, which realizes that between R and E. Possible relations are coincidence, anteriority (past), and posteriority (future).

D’hulst adopts Giorgi and Pianesi’s model to account for the different evolution of Classical Latin and Vulgar Latin conditional forms in Modern French and in Modern Italian. Starting from the Vulgar Latin periphrastic future cantare habeo ‘I will sing’ and conditional cantare habebam, Modern French developed a synthetic conditional, reviendrait ‘he/she would come back’, while Modern Italian still uses a periphrastic expression, sarebbe tornata.

D’hulst accounts for the evolution of the conditional in French and Italian by means of syntactic operations defined on the T₁ and T₂ nodes postulated by Giorgi and Pianesi. Following, in part, Roberts (1993), such operations include the raising of a tense relation located in an embedded sentence to T₂ of the auxiliary sentence, the raising of a tense relation from T₂ to T₁ in the matrix, and anaphorization of a temporal anchor in T₁. French and Italian differ with respect to the timing of the anaphorization process and its spread from one to both of the temporal points in T₁ in Italian but not in French.

Fassi Fehri adopts the neo-Reichenbachian model of Giorgi and Pianesi as a framework for analyzing the Arabic aspectuotemporal system within a crosslinguistic perspective. Arabic is characterized by the ambiguous use of the same inflected verbal forms for past/perfect and for present/imperfective to express anteriority or non-anteriority of R with respect to either S or E. The sentence includes T₁ for deictic or absolute time and T₂ for relative time.

Arabic has both a suffixed verbal form (ST) and a prefixed verbal form (PT) (considering the person feature alone). ST, located in either T₁ or T₂, expresses temporal anteriority in both cases, while PT expresses temporal coincidence in both T₁ and T₂. Contrary to most other authors, Fassi Fehri concludes that Arabic is a tense language oriented top to bottom, rather than an aspectual language oriented bottom to top. For while perfectivity or imperfectivity may be a property of any tense, in the simple tense forms, present is necessarily imperfective while past is necessarily perfective.

1.1.2 Tense as a Binary Predicate  Zagona (1990) proposed that tenses are predicates taking times as arguments. Adopting this framework, Stowell (1993) defined argument positions in syntax for times.

Here, Higginbotham proposes a version of this model in which both events and times are primitives of tense interpretation. He makes this explicit in representations
in which tenses are predicates bearing numerals standing for the event time $E$ and the reference time $R$ (where $S$ is a special case of $R$). VP contains an event argument identified with the event time numeral of $T$. (1b) shows the annotated syntactic structure of *John is happy*. The event argument 3 is identified with the event time 1 of $T$, while argument 2 of $T$ is set to the reference or speech time. The example reads ‘John is happy is true if and only if there is a state of happiness accruing to John that surrounds the time of the utterance context’.

(1) a. John is happy.
   b. $[\text{T} \, [\text{–past}] \, (1, 2) \, [\text{VP} \, \text{John is happy} \, (3)]]$

Extending the proposals of Zagona and Stowell, Demirdache and Uribe-Etxebarria (1997) proposed an analysis of Tense and Aspect as spatiotemporal predicates projecting their temporal argument structure in syntax and defined in terms of the basic semantic opposition $+$ / $-$ central coincidence in the location of an entity, the figure, with respect to a place, the ground (Hale 1984). Here, Demirdache and Uribe-Etxebarria propose that time adverbs are Prepositional Phrases headed by a dyadic predicate of spatiotemporal ordering that establish a topological relation of inclusion, subsequence, or precedence between its arguments.

1.1.3 Logical Approaches to Tense In logical approaches, tenses introduce time and world variables in Logical Form (LF).

Schlenker proposes analogies among the semantics of pronouns, tenses, and moods (Partee 1973; Stone 1997). If pronouns are analyzed as introducing free or bound variables in syntactic (LF) representations, tense and mood may be considered as introducing time and world variables.

For Abusch, temporal meaning is represented explicitly at LF: tenses denote time intervals. $\lambda$-operators in C bind occurrences of time variables.

Enc proposes that T nodes carry a pair of indices: $i$ for evaluation time and $j$ for event time. These time variables are bound not by $\lambda$-abstraction but by other times, subject to Anchoring Conditions on tense construal.

1.2 Tense Construal

1.2.1 Tense in Context Smith proposes that a syntactically based theory of tense can and must take contextual discourse factors into consideration. She shows how the dependency of tense on context can be handled in the Discourse Representation Theory of Kamp and Reyle (1993).

Smith posits five “discourse modes” for the interpretation of tense: Narrative, Report, Description, Information, and Argument. These modes can be characterized by two interpretable features relating to temporality. One feature concerns the type of
entity introduced into the universe of discourse: eventualities, which have a temporal location in the world, and abstract entities, which lack a temporal location. The second feature is the Advancement Principle relativized to modes of discourse. Text advancement in temporal modes depends on temporal notions, while text advancement in atemporal modes depends on (metaphorical) spatial notions.

1.2.2 Tense and Modals Stowell examines the hierarchical relationship between tenses and modal verbs. Taking as his starting point the tendency noted by Cinque (1999) and others for tenses to occur above root modals but below epistemic modals, he considers whether this hierarchical relationship is imposed by a syntactic mechanism of the sort proposed by Cinque in terms of extrinsically ordered functional projections or whether it has a semantic source. In seeking to disentangle syntactic and semantic factors, he focuses on cases involving scope reversals, where the logical scope differs from what one would expect given the morphosyntactic relation between modals and tenses, ultimately concluding that semantic factors are primarily responsible for the ordering effects, though in a more complex way than an initial consideration suggests.

1.2.3 Tense Construal in Complement Clauses The behavior of tense seems straightforward in simple sentences. What is not straightforward is to extend the analysis to tense in embedded clauses. Problems of tense interpretation in complement clauses center on sequence of tense (SOT) and on double access readings (DAR) of the past tense in embedded stative sentences.

1.2.3.1 Sequence of Tense The two construals available for (2) present a challenge for classical theories of tense construal.

(2) John said Mary was pregnant.

Under one construal, John said at a certain time in the past that Mary was pregnant at a time previous to the saying event. Under a second construal, the pregnancy holds at the same past time as the saying event. As Enç (1987) argued, neither the approach of Prior, for whom Tense is a sentential operator, nor the tripartite approach of Reichenbach can account for the simultaneous readings of the past of stative predicates in embedded clauses, for both these approaches treat the past tense as an expression that shifts an event or state back in time.

It has been proposed that the embedded past tense is not always a real past tense: the lower clause starts out with a present tense, and an SOT rule copies the higher past onto the complement. Alternatively, the complement starts out with past tense, which gets deleted at LF by the SOT rule (Ogihara 1989, 1996).

Enç (1987) constructed a theory in which every occurrence of past tense denotes past time. She proposed Anchoring Conditions that link tenses via binding. The
shifted reading is obtained when the lower past tense is independent of the higher one; the simultaneous reading is obtained when the c-commanding higher past tense binds the lower one.

Here, Enc¸ revises the Anchoring Conditions so as to account for Abusch’s (1988) and Ogihara’s (1989, 1996) counterexamples to the earlier hypothesis that every past tense denotes a past time, such as (3).

(3) We decided to tell the prosecutor tomorrow that we were talking to him reluctantly.

Enc¸’s present analysis is still based on binding, and past tense still denotes a past time. However, past does not always shift the time of the event back. The Anchoring Conditions are extended to all Inflection (I) nodes: tense, modals, tensed modals, and infinitives. The I node in the infinitive carries a pair of indices, just like the finite nodes dominating tense and modals. Thus, decide selects a nonfinite \(i, j\), where \(i\) (evaluation time) < \(j\) (event time). Enc¸ shows that the Anchoring Conditions are more general than the ad hoc SOT rules, since they also apply to infinitival inflections.

Barra-Jover analyzes the syntax of quotations in French and English, starting from the observation that the introductory statement (The policeman said ...) shows radically different behavior in initial and in noninitial position (... said the policeman). Barra-Jover argues that the syntax of the introductory statement depends on the syntax of the T-feature in the T head. His analysis links the syntax of quotations to that of subordination in general, subject to Enc¸’s Anchoring Conditions.

In their study of the Italian imperfect, Giorgi and Pianesi link SOT phenomena to the presence or absence of temporal anchoring. Fictional predicates, contrary to attitude verbs, create contexts in which temporal anchoring is not enforced: the event of the embedded clause need not be temporally connected to that of the main one. Temporal anchoring can be suspended only with the imperfect tense.

Giorgi and Pianesi propose that the LF representation of a clause that expresses the content of the propositional attitude of a subject has one of its nodes annotated with a value corresponding to the attitude’s eventuality. Dream is not a verb of propositional attitude; hence, temporal anchoring is not enforced. There is a temporal phrase in a time topic position, but the time topic is not explicitly related to a temporal coordinate. As a consequence, the past form can appear without differentiating between stative and eventive predicates and with no past interpretation.

Abusch investigates the logical form of infinitival intensional to-complements in English. She identifies three interpretations: simultaneous (believe-type verbs), strictly futurate (promise-type verbs), and combined simultaneous/futurate (predict-type verbs). She shows that futurate infinitives interact with embedded tenses in the same way as the future auxiliary. This motivates an analysis (expanded from Abusch 1998) where the semantic representation of futurate infinitives includes a temporal
substitution operator. The *to*-complement of *predict* contains a discrete element FUT whose compositional role is similar to that of *will*. An argument based on scope shows that the substitution operator and accompanying binding operators are overt in LF. A related issue is whether *to*-infinitive complements have a propositional structure similar to that of tensed complements. The analysis Abusch proposes here is consistent with the clausal complement hypothesis she proposed in Abusch 1998: all clausal complements have, overtly or covertly, a full CP/IP/VP structure.

Schlenker proposes that the SOT rules postulated to account for tense agreement in indirect discourse can be extended to person and mood morphemes. Contrary to Enc¸, for whom temporal features are always semantically interpreted, Schlenker proposes that a T₂ embedded under an attitude verb merged with T₁ may inherit the morphological T-feature of T₁ with no semantic consequences.

Heim (1994) already formulated purely morphological rules of agreement between PRO and the matrix subject to account for the *de se* reading of the PRO subject of an infinitive. A simultaneous reading determines temporal *de se*.

The process by which an embedded tense morphology inherits the feature of the matrix tense would have a counterpart in sequence-of-person and sequence-of-mood rules. In such cases, semantic identity is derived from morphosyntactic agreement.

**1.2.3.2 The Double Access Reading** When a state in the present tense is embedded under a past tense verb of communication, as in (4), the sentence has a peculiar “double access” construal under which the state holds both at the time of the speaker’s utterance and at the time of the subject’s communicative act.

(4) John said that Mary is pregnant.

Giorgi and Pianesi (to appear) provide strong evidence of a correlation in Italian between the morphosyntactic properties of complement clauses and the presence or absence of the DAR: complementizer deletion (CD) and the DAR are in complementary distribution. The possibility of CD is determined by the selection of either the standard C, overtly realized as *che*, or a lower Mood C. Selection of the upper C enforces the DAR. Giorgi and Pianesi assume that the tense of an embedded clause is normally evaluated relative to the matrix event time ET, not relative to the utterance time UT. However, after movement of T to the higher C, the temporal value of the embedded event/state is computed as if the raised tense were anchored to UT. If the upper C is absent, there is no trigger for T-to-C movement and the embedded tense is evaluated relative to the local anchor, the matrix event.

Zagona argues here that the T-to-C raising postulated by Giorgi and Pianesi (2000) locally anchors the embedded tense to the matrix ET, not to UT. The trigger for this movement is an aspectual feature of the matrix predicate. Aspectual licensing of the matrix verb underlies the disparate behavior of verbs of communication like *say*, which manifest the DAR, and attitude verbs like *believe*, which do not.
Verbs of communicative behavior denote processes, while verbs of pure attitude denote states. Zagona shows that in Spanish, the same lexical verb behaves like Italian verbs of belief/attitude when it is construed as stative, but like Italian verbs of communication when it denotes a process or change of state. In the latter case, strict sequence of tense is suspended.

The DAR occurs with nonstative verbs and is absent with purely stative verbs and adjectives. Zagona suggests that a matrix Aspect head merged with v selects, in a manner to be detailed below, the embedded C, thus determining whether T-to-C movement is triggered or not.

2 The Syntax of Aspect

The aim of this section is to discover how syntactic structure interacts with lexical and temporal aspect.

We proposed above that lexical aspect or aktionsart describes the temporal structure internal to an event while syntactic aspect relates events to times. Aktionsart is calculated entirely in VP/vP. Temporal aspect has a morphological reflex in the finite verb construable only when V merges with T in syntax or LF. We should thus conceive of temporal aspect as mediating between lexical aspect and tense construal. This is the approach taken by Klein (1994), who described perfectivity as a relation between a time interval and an event in which the time interval includes the event, and imperfectivity as the relation in which the event includes the time interval. However, this appealing semantic image cannot easily be translated into syntactic terms.

The same conceptual notions underlie aspect and aktionsart. We refer to the telicity of an event and to a perfective time interval. In both cases, we are describing an event that is bounded, either inherently or by compositional interpretation of VP (telicity) or else by being predicated of a temporal boundary (perfectivity).

States like know John and activities like swim are homogeneous (propositions reporting states or activities must hold over any subinterval of an interval over which they hold), while accomplishments like cross the street are nonhomogeneous (propositions reporting such an event are not true of any subinterval of an interval of which they are true). Time intervals are also homogeneous when they are unbounded (imperfective) and nonhomogeneous when they are bounded (perfectivity).

Although aspect fits the shape of an event onto the shape of a time, the relation between aspectual morphology and construal is not straightforward. We expect to associate homogeneous imperfective morphology with a homogeneous progressive interpretation of an event, yet the progressive construal is only one possible construal of imperfective aspect, as shown here in detail by Delfitto and by Ippolito.

There is, moreover, an asymmetric relation between events and tenses: events do not influence tense forms, but a specific tense form can filter out certain types of events. The boundary of an event cannot be placed in the deictic present (*Je trouve
une pièce maintenant/*I find a coin now—see Smith 1991; Giorgi and Pianesi, to appear). But an unbounded event can be placed freely in an imperfective present or past or a perfective past interval. Aspect determines whether the event is construed as unbounded (Jean construit un château de sable ‘John builds-imperf a sandcastle’) or bounded (Le roi a construit/construisit un château (‘The king built a castle’).

In English, no event at all can be placed in the deictic present (Je parle avec maman maintenant/*I speak with Mother now). Only states can appear in the present. But this is peculiar to English, which has a defective aspectual system. Thus, in English, but not in other languages, the progressive operator is necessary to turn an eventive predicate into a state, which alone is legitimate in the deictic present. 

Smith and Demirdache and Uribe-Etxebarria include both spatial and temporal notions in their models of tense construal. Guéron proposes that spatial configurations in VP become events only under merger of V and T. But it is not clear how three-dimensional spatial notions fit into the linear succession of points in the Reichenbachian representation of time.

A syntactic perspective on aspect requires determining exactly what notions are necessary for construal in addition to purely temporal notions and such nontemporal notions as boundedness/telicity, what morphological features or syntactic positions give support to the introduction of such notions, and what theoretical advantages accrue. Is there, in addition to a Tense projection, an Aspect projection or a functional node for telicity or boundedness? Kratzer, Guéron, and Zagona specifically address this question.

2.1 Distinguishing Viewpoint Aspect from Situation Type

Smith’s (1991) theory requires lexical-aspectual notions of situation type, which include eventuality, state, and event, and notions relating to aspectual viewpoint: perfective, imperfective, and progressive. Situation type, which includes the entire contents of VP, classifies a sentence as expressing an eventuality, state, or event. Aspectual viewpoint, realized morphologically, focuses all or part of the eventuality. Sentences with the perfective viewpoint have the simple verb form and focus events with endpoints. Imperfective (progressive) sentences have auxiliary be + -ing and focus an internal view of an event, without endpoints. Telicity refers to lexical aspect, culmination to viewpoint aspect.

Laca shows that aspectual periphrases in Romance are not functional verbs, as proposed by Cinque (1999); rather, they correspond to Smith’s distinction between situation type and viewpoint aspect.

Close examination of the ordering and co-occurrence possibilities of aspectual periphrases such as habitual, prospective, and retrospective shows (i) that they are mutually exclusive, and (ii) that they can be followed but never preceded by the progressive periphrasis. Such observations motivate two syntactic layers of aspectual
periphrases rather than the single hierarchical functional structure proposed by Cinque. Laca distinguishes lexical aspect or aktionsart periphrases with the properties of event modification, free order, and semantic selection, from viewpoint aspec
tual periphrases characterized by rigid order, nondeictic temporal relations, and generic quantification. She compares this distinction to that between derivational and inflectional morphology.

Laca adopts Demirdache and Uribe-Etxebarria’s ordered conception of syntactic aspect: aspectual heads are conceived of as two-place predicates expressing topological relations between two intervals: ET (the eventuality interval) and AstT (the interval to which the assertion is confined). Prospective, retrospective, and progressive periphrases express the before, after, and inside relations, respectively.

### 2.2 The Perfective/Imperfective Viewpoint: Three Studies of the Imperfective in Romance

For Giorgi and Pianesi, (im)perfectivity distinguishes between verbal forms that enforce terminativity (perfective) and verbal forms that do not (imperfective). The distinction is a privative one and recognizes the compatibility of imperfective verbal forms with both terminative and nonterminative construals.

Giorgi and Pianesi’s study of the Italian imperfect is based on two intuitions: (i) the imperfect is a dependent tense, relying on the availability of a suitable temporal anchor, and (ii) the imperfect behaves like a present in the past.

The imperfect always needs to be predicated of a local topic: a temporal reference, an epistemic background, or a fictional location. In contexts created by attitude predicates, which require anchoring, the imperfect is interpreted as a past that locates the event and provides epistemic modality. Property (ii) above can give rise to a reading in which this past is simultaneous with a higher past. Fictional and dream contexts are special in that although they have a temporal phrase in topic position, they do not enforce temporal anchoring. The time topic is not explicitly related to any temporal coordinate.

Delfitto proposes that imperfectively marked predicates are uniformly mapped into subject-predicate logical formats. The basic insight is that the imperfective does not map telic predicates into durative predicates; rather, it adds a modal dimension to the semantics of the past tense. Delfitto argues (i) that a predicational analysis of imperfective aspect permits an elegant unification of the logical form assigned to progressives and habituals; (ii) that, at least in the Romance and Germanic languages, grammatical aspect is the locus where the distinction between categorical sentences, consisting in the ascription of a property to a subject, and thetic sentences, consisting in the presentation of an eventuality, is grammatically encoded; and (iii) that the predicational analysis of imperfective tenses provides an elegant solution to what Delfitto dubs the “present tense paradox”—a still poorly understood set of
phenomena concerning the licensing of the existential interpretation of argument
bare nouns with the present tense in English.

Delfitto proposes (technically) that when a verb is marked as imperfective, a des-
ignated functional projection PredP is syntactically realized and one of the verb’s
arguments must be displaced to Spec,PredP. Delfitto assumes, moreover, that the
Pred head performs an intentional type shift on the constituents in its syntactic do-
main, the VP complement and the displaced argument in Spec,PredP that counts as a
subject of the predication.

What the two most salient readings of the imperfect, the progressive reading and
the habitual reading, have in common is a predicational logical format and its con-
comitant modal import. Imperfective morphology expresses default semantic instruc-
tions concerning culmination and predication that do not discriminate between
progressivity and habituality.

Ippolito explores the modal uses of the Italian imperfect. Progressive uses of the
imperfective form show that it has both an imperfective and a past component. But
tense is not always interpreted as locating events in time. It can alternatively be
interpreted as dislocational, that is, as shifting the evaluation time to some con-
textually salient time. Modality can thus be expressed by an aspectual head. Ippolito
argues that the modal and aspectual readings of an imperfect tense are in comple-
mentary distribution. She isolates three properties of imperfect tense: (i) potential
mismatch between the past component of the imperfect and the nonpast meaning of
adverbial phrases; (ii) modality: the imperfect is evaluated with respect to possible
worlds compatible with the utterance world; and (iii) evidentiality: the speaker has
indirect evidence for the proposition.

The imperfect introduces an epistemic/evidential accessibility relation: the propo-
sition expressed by the tenseless sentence is evaluated in worlds that are compatible
with the evidence available to the speaker at some past time salient in the context. A
sentence like Domani andavo in biblioteca ‘Tomorrow he was going to the library’ is
true if and only if in all those worlds w compatible with the subject’s plans in the
actual world at some past time, the proposition expressed by the tenseless sentence is
true in w.

The imperfective component of the imperfect is modal and contributes an epistemic/
evidential modal base. The past component contributes a relation of anteriority re-
stricting the modal base to evidence available to the speaker at some past time.

Ippolito extends this analysis to imperfect conditionals.

2.3 The Progressive
Building on work by Dowty, Parsons, Landman, Bonomi, and Zucchi (see references
in chapter 12), Higginbotham’s major themes are the event structure underlying the
progressive and the contextuality of the progressive construal.
Dowty (1977, 1979) described the progressive as an intentional operator and the truth of the progressive sentence as a function of pairs \((W, i)\) of possible worlds and intervals of time. Higginbotham adds the condition that the progressive implies an ongoing process. He recasts Dowty’s counterfactual theory with events as primitives. Temporal intervals are associated with the subevents of a predicate.

In Parsons’s (1989) extensional view, the progressive does not contain the culmination of the event. Higginbotham, on the contrary, places the telos of the accomplishment directly in the representation. The Progressive head \(-ing\) expresses a relation between events and properties of events as being of one sort or another. For an accomplishment predicate, the progressive expresses the relation between the process \(e\) and the telos \(e'\) of the event, which form an ordered pair within the representation.

Kratzer views the progressive as an atelicity operator. One must distinguish the lexical atelicity expressed in conative alternations in German and Finnish (‘knit a mitten’ vs. ‘knit at a mitten’) from atelicity produced by operators expressing viewpoint aspect. She asks why it is that English speakers have to use a progressive when they want to talk about ongoing activities such as schlepping your suitcase. Kratzer proposes that the verb has the feature [telic], equivalent to [+interpretable accusative] or that it selects a (possibly nonovert) degree/measure phrase as a modifier. The progressive is obligatory in English, because by imposing a culmination requirement, the feature [telic] makes it impossible to describe ongoing events unless a higher imperfective operator comes to the rescue.

2.4 Telicity
Telicity may be considered to characterize both lexical aspect and viewpoint aspect. For viewpoint aspect, verbal morphology distinguishes perfective (telic) from imperfective (atelic) events. Lower in the syntactic structure, the direct object may introduce telicity as a function of its determiner or its case, but so may a result clause, a Prepositional Phrase, or a particle. In German or Russian, a prepositional particle adjoined to a verb functions as a telic operator that was “type-lifted” or grammaticalized when raised from the VP domain of lexical aspect to higher domains of grammatical aktionsart operators and viewpoint aspect.

For Higginbotham, telicity is built into the event structure of accomplishments. An accomplishment contains an ordered pair of implicit arguments for events: John crossed the street has the event structure \(e_1, e_2\) \((e_1\) a process, \(e_2\) its telos). Other event types, such as activities and achievements, obtain telicity through addition of syntactic elements such as particles or result clauses.

Kratzer’s analysis incorporates the strong empirical claim that only the direct object argument introduces a culmination condition on the predicate. This is one way of representing Tenny’s (1987) insight according to which the referent of the verb’s direct object measures out the event it describes.
In Kratzer’s analysis, telicity is represented in syntax. Kratzer postulates an inflec-
tional head [telic] right above VP with which the accusative DP enters into relation. The feature [telic] adds to the construal of an event based on a verb like climb or shoot the requirement that culmination occurs. If a verb is modified by a degree or measure phrase, that phrase provides the culmination condition: I schlepped your suitcase for two hours is a telic construction in which the delimiter phrase, rather than the direct object, expresses the culmination requirement.

Culmination is not a mere property of events. Rather, it is a logical-conceptual two-place predicate relativized to the direct object argument.

In Erteschik-Shir and Rapoport’s model, syntactic structure is projected from a limited inventory of lexical-semantic meaning components. The lexical entry for the meaning of a verb consists solely of meaning components. The combination of meaning components and the projected structure determines both thematic and aspectual interpretation.

The model offers a revised, simplified classification of events distinct from that of Vendler and Dowty. Erteschik-Shir and Rapoport argue that whether a structure is telic or atelic, stative or eventive is due not to a particular type of verb, but to a shift in aspectual focus. The complex accomplishment structure allows focus on either the upper “cause” or the lower “change” parts of the event representation. With atelic change, as in Jane painted a picture for an hour, and then..., aspectual focus is on the upper, “cause” part of the structure. With telic change, as in Jane painted a picture in an hour, aspectual focus is on the lower part of the structure, which depicts a change to the end result.

Guéron (2000) proposed that a functional vP projection above VP checks the feature [+/−extended], a spatially interpreted abstract number feature, of the lexical items in VP. [+Ext(ended)] ([+pl(ural)]) is construed as denoting more than one point in space. [+Ext] is checked by verbs defining activities or accomplishments (run, draw), certain prepositions (to), and all nominals; [−ext] ([−pl]), which refers to a single point in space, is associated with light verbs (do), light prepositions (at), and achievement verbs (go, hit).

The same morphosyntactic feature [+/−ext] ([+/−pl]) underlies “spatial imperfectivity” in vP and temporal imperfectivity in TP. Imperfective aspect is construed on the [+ext] aktionsart feature of a grammatical morpheme lacking lexical content and merged with T. Extension in space, calculated in VP, is distinct from extension in time, calculated in TP. And extension in time or space is distinct from the notion of boundedness that defines a spatially bounded event in VP and a telic event in TP.

Zagona explores the relationship between the Aspect Phrase, the stative reading of events, and complementizer selection. Building on the proposals by Guéron (2000), Zagona assumes that verbal states are [−ext] and that they become [+ext] through
the [\text{+ext}] feature of their complements. Nonstative predicates must also be evaluated for telicity. Zagona proposes a node, AspP, with an interpretable feature for telicity [\text{+b(ounded)}] that must be licensed (see Jackendo\text{ô}f 1996). The ambiguous sentence \textit{the cart rolled through the grass} may be construed as [\text{+/−b}] on the level of lexical or inner aspect. At the level of outer aspect, a temporal modifier \textit{in\textbackslash for an hour} can disambiguate the sentence. Inner aspect (aktionsart) and outer aspect (aspect proper) have independent sources of boundedness, and these features bound different objects: inner aspect bounds an event, outer aspect bounds a time interval.

Zagona continues Giorgi and Pianesi’s (to appear) discussion of the different behavior of process verbs of communicative behavior like \textit{dicere/say} and verbs that express mental states like \textit{credere/believe} with respect to the simultaneous interpretation of past tense in embedded states (SOT). She adopts the hypothesis that two C nodes are available for a sentential complement and proposes that complementizer selection of the upper or lower C is determined by aspectual features of the selecting predicate. The upper C is compatible with verbs of communicative behavior and other nonstates, because it attracts T, which expresses [\text{+b}]. T-to-C movement makes the [\text{+b}] feature of T accessible to temporal checking in the matrix clause. An embedded T raised to the higher C takes the matrix C rather than the embedded C as its temporal anchor.

Only the lower C is compatible with belief verbs because it contains nominal features that satisfy checking of the [\text{+ext}] feature of the higher verb. A stative verb does not itself satisfy the [\text{+ext}] requirement of the matrix VP. So T does not raise to the higher C and consequently denotes a shifted past in the embedded sentence.

The raising of T [\text{+b}] creates a construal of telicity in the TP-CP domain. Like the feature [\text{+/−ext}], the feature [\text{+/−b}] functions as inner aspect in vP but as outer aspect in the TP domain.

\subsection{2.5 Lexical Aspect}

Lexical aspect is a classification of verbal expressions (VPs) according to the internal temporal properties of the events in their denotations. In her chapter, part of a larger ongoing project on the semantics of lexical aspect, \textbf{Rothstein} argues that the very existence of derived accomplishments (i.e., progressive achievements, resultative predication with activity verbs) means that lexical aspect cannot consist of generalizations about lexical items. An architectural theory of lexical aspect is needed that postulates what the logical structure of events is and explains how this structure constrains aspectual expressions in the language. Constraints on possible verb meanings and classifications are derived from the logicosemantic system. This model contains templates that allow new complex and abstract verbs to be derived. Lexical aspect must thus be construed as a set of constraints on verb meanings derived from the logical structure of a theory of events.
3 Events and Argument Structure

3.1 Arguments

In Chomsky 1981, argument structure was dictated by the θ-role features of lexical predicates and the Projection Principle, which requires each θ-role feature of a predicate to be matched with a syntactic argument. Hale and Keyser (1991, 1993, 1998) and Marantz (1997) derived argument structure from the syntactic decomposition of lexical items in the lexicon or in syntax proper. For Jackendoff (1990) and for Levin and Rappaport Hovav (1995), an independent lexical-semantic component of the grammar determines argument structure in syntax.

Tenny (1987) and Van Hout (1998) introduced the idea that lexical aspect determines both event structure and argument structure in syntax. This is a step forward, since lexical-aspectual distinctions are independently necessary in the grammar if only to match VPs with adverbial modifiers at the interface. Borer (1994) made the proposal concrete by incorporating into the sentence skeleton the (lexical) aspectual nodes Measure Phrase and Origin Phrase, which simultaneously determine the aspectual and syntactic role of the internal and external arguments of the verb.

For Levin and Rappaport Hovav, argument expression is determined by the lexical-aspectual properties of events, such as telicity and boundedness, and by NP-related notions such as incremental theme (Dowty 1991), measure (Tenny 1987), delimiter (Borer 1994), and so on. Levin and Rappaport Hovav propose to include the notion “event complexity” among the factors that determine argument expression. Event complexity should not be confused with the event type accomplishment or the aspectual notion of a telic event.

Complex events consist of two subevents that do not necessarily coincide in time. As Levin and Rappaport Hovav proposed earlier (1999), there must be at least one argument XP in syntax per subevent in the event structure. Argument realization patterns reflect event complexity. Reflexive resultative structures (walk themselves tired) have a complex event structure based on lack of temporal dependence between the two subevents: they need not unfold together. It follows that such resultatives must include an object, the so-called fake reflexive pronoun, to meet the “one argument–one subevent” condition.

In contrast, bare XP resultatives (The kettle boiled dry) have subevents that are necessarily temporally dependent: they must unfold together. These take no second argument.

Since causative events are necessarily complex events, accomplishments too are usually taken to be complex events. Yet from the perspective of argument realization, accomplishments, the set of predicates characterized temporally by having duration and a fixed endpoint, do not pattern homogeneously with respect to number of arguments, suggesting that the notion of accomplishment is not in fact relevant to argument realization.
Levin and Rappaport Hovav raise the intriguing question, Why are case alternations (discussed here by Kratzer) sensitive to telicity while grammatical functions are sensitive to event complexity?

For Guéron, the arguments of the verb are predictable from the [+/-ext] aktionsart feature of the verb and conceptual requirements on spatial configurations. Unlike θ-roles, aktionsart functions are not in one-to-one relation with arguments. In the sentence John swam, the subject bears both a spatial aktionsart role in Spec,vP and a temporal aspectual role in Spec,TP.

If the verb is [−ext], or if it is [+ext] but does not define a ground, then it must take a direct object in order that VP may denote a figure/ground configuration. A verb with a [+ext] aktionsart feature s-selects a spatial subject in Spec,vP, whose physical contours delimit the spatial extension of the configuration VP denotes. On the TP level, a spatially extended configuration like read a book is construed as a temporally extended event, as the gestures implied by the act of reading are linearized under inclusion in a T-chain (C, T, v, V).

Checking of its person feature with the tense morpheme in T identifies the subject in Spec,TP as an individual with internal temporality and properties of intention and will. These properties enable the subject to function as an autonomous T(ense)-controller, which triggers the event and maintains it in time. In the simplest case, the T-controller is a [+human] subject. Thus, both the presence and the intentional properties of an agentive subject derive from the aspectual construal of the event VP denotes as extending in time.

Guéron argues that auxiliaries have arguments, just as lexical verbs do. Although originally motivated by lexical content, [+/-ext] is a formal feature that a lexical item may keep even when it has lost its lexical content under grammaticalization. Lacking lexical content, auxiliary verbs define no spatial configuration. Their [+/-ext] aktionsart feature is construed in the temporal domain, where they take two temporal arguments each of which denotes a point of time.

3.2 Licensing Arguments

3.2.1 Tense and Case Pesetsky and Torrego (2001) argued that case theory is part of the syntax of tense. They showed that several distinct syntactic phenomena, such as the that-trace effect, result from the interaction between tense-motivated movement in the C system and nominative case on the subject. Nominative case is an uninterpretable tense feature on the subject: Nom is uT on D. Here, Pesetsky and Torrego argue that all structural cases are instances of uT on D. If so, there must be an occurrence of T in a transitive clause that is responsible for licensing accusative case. Pesetsky and Torrego propose that uT on a complement of V enters into an Agree relation with an instance of T, T_o, that is structurally lower than the main tense.
Focusing on properties often taken to follow from case theory, Pesetsky and Torrego propose an explanation for the complement patterns of verbs, nouns, and adjectives. The morphological status of V, N, or A predicates is determined contextually: T_o may be present or absent, and it may seek uT or iT. The way in which these choices affect complement patterns is explained by their interaction with independently motivated analyses of CP, PP, and DP. The first bifurcation concerns the presence or absence of T_o: structures of adjectival predication lack T_o entirely. For structures that contain T_o, there is a second bifurcation: verbal predication seeks a complement that bears uT, while nominal predication seeks a complement whose tense is interpretable. The relation between the syntactic categories V, N, and A and their complement properties turns out to be biunique at an abstract level.

Pesetsky and Torrego’s results suggest a unification of tense theory and case theory with recent work on the nature of syntactic categories. What is new in their approach is the identification of case with T: facts about case may turn out to be facts about tense and tense interpretation. The general theory that explains such facts as the That-Trace Filter—if extended in a natural way to explain comparable facts about PPs, about nominal and clausal complementation—leads to a new view of the very nature of syntactic categories. At the center of this web of connections is the syntax of time.

3.2.2 Lexical Aspect and Case   Pesetsky and Torrego and Kratzer develop similar ideas concerning the interaction of temporal semantics and syntactic structure with case. For Pesetsky and Torrego, the semantic function of T_o concerns telicity. For them, as for Higginbotham, the meaning of a telic verb like read involves two subevents. The first subevent is a process, a predicate with an agent argument, while the second subevent is the completion of the process, a predicate with an additional argument representing the thing read. Following Hale and Keyser (1993) and Chomsky (1995), Pesetsky and Torrego propose that the predicate of each subevent defines a distinct syntactic projection, v for the predicate that assigns the agent role, and V for the one that selects the object. T_o, located below v and above VP, relates the times of the two subevents.

Kratzer examines the link between telicity and objective case that is morphologically manifested in languages like Finnish, Russian, and German. In Finnish, telic verbs take accusative objects while atelic verbs take partitive objects (‘I shot a bear/at a bear’ vs. ‘I shot the bear’; see Kiparsky 1998). Kratzer proposes that the connection between case and telicity is expressible in terms of the minimalist distinction between interpretable and uninterpretable features: verbal inflectional features would be the interpretable counterparts of uninterpretable case features (see Chomsky 1995; Pesetsky and Torrego 2001). The uninterpretable accusative feature on DP would agree with its interpretable counterpart, a verbal inflectional feature linked to a Telic head (= T_o for Pesetsky and Torrego).
Kratzer distinguishes a culmination condition and a culmination requirement. Telicity is a semantic component of certain predicates; the feature [telic] would add the requirement that culmination occurs. Kratzer’s proposal accounts for conative alternations in Finnish, German, and English and also for the fact that uninflected accomplishment verbs in German behave like activity or process verbs, whereas their inflected forms score positive in standard telicity tests.

4 The DP Domain

It is generally assumed that only sentences have a T node, whose tense morpheme saturates an event position in V. Yet the existence in languages like Somali of the same tense morphemes in nominals as in the sentence, as documented here by Lecarme, must give us pause. Perhaps the difference between sentences and nominals lies elsewhere than in the presence versus absence of a T node.

Certainly, no principled distinction exists in the logical form of predicates of various categories. As Chomsky (1970) noted, the fact that both adjectives and verbs can be subcategorized as stative or active does not imply that only verbs and adjectives are predicators. In fact, nouns can be subdivided in the same way: He’s being a hero/ *a person. The categories V, N, and A reflect a more abstract structure, each category being a combination of abstract features.

Although verbal and nominal features do differ (e.g., only Ns are associated with interpretable φ-features), there is no reason to expect a fundamental difference in the internal temporal structure of clauses and nominals. On the level of the sentence, the T-chain is an interpretive process that brings together (C, T, V) internal to CP and (D, T, N) internal to DP to form propositional categories representing entities like events or things at the interface with semantics. Evidence for this view is provided by languages that have a productive use of nominal tense features. Lecarme proposes an explanation for the tense patterns of nominals in Somali, an Afroasiatic language. The results, building on proposals in previous work, show that the tense structure of nominals (DPs) strongly parallels that of clauses (CPs). Lecarme argues that the Somali DP has T-to-D movement in Pesetsky and Torrego’s terms and is a self-sufficient category with regard to its case properties, a fact that correlates with the distributional properties of DPs in this language.

Lecarme formulates a proposal about structural genitive case that parallels Pesetsky and Torrego’s proposals for nominative and accusative case: structural case is an uninterpretable tense feature on D. What is unique about the syntax of nominals is not the absence of a T node but the absence of a v node, which defines the verbalness of the predicate and licenses the external argument that interacts with verbal aspect and receives structural case in TP.

Lecarme makes a new proposal about the nature of the functional head that introduces the external role of possessor in DP. She argues that the possessor argument is
introduced by an Applicative head within a complex predicate construction, like the dative argument in English double object constructions (Larson 1988). This proposal is motivated by language-internal and crosslinguistic morphological evidence for the parallelism between genitive structures in DP and double object structures in CP.

This proposal implies that the notion “subject” is distinct from the notion “nominative case.” Structural nominative identifies the point in the sentential TP domain at which the TP subject is realized. Structural accusative identifies the point in that domain at which the TP object is realized. And structural genitive marks the point in DP at which the nominal “subject” is realized.

Cornilescu points out that given the uniqueness of N’s syntactic environment where there is no direct relation to sentential T, temporal distinctions in DP necessarily refer to situation type or lexical aspectual notions such as telicity rather than to point-of-view aspectual distinctions such as perfectivity.

Cornilescu confirms the well-established relation between lexical aspect and case proposed by Borer (1994), on the basis of the relevance of aspect to the syntax of Romanian nominalizations and the close relation between aspect and case in the DP domain. She shows that the different syntactic properties of two types of Romanian verb-based nouns, the infinitive and the supine, derive from their distinct aspectual properties.

For both types of nominalization, the noun+object (NO) structure allows the event interpretation. Since the overt presence of the object signals the event reading, the unique structural case position in DP is allotted to the object.

For noun+subject (NS) structures, however, the supine and the infinitive contrast sharply. While the infinitive NS structure always expresses a result, the supine NS structure shows all the properties of event nominals. This observation falsifies Alexiadou’s (1999) generalization that event nominals are based on an unaccusative structure (see also, e.g., Kupferman 1991; Grimshaw 1990).

Cornilescu argues that the supine NS structure is an example of a nominalization based on an unergative VP structure with an incorporated internal argument (cf. Hale and Keyser 1993).

NS supine structures are derived from transitive verbs that allow null prototypical objects. By incorporating its syntactically inactive object, the supine derives an unergative configuration. Only the supine may appear in the NS structure. Since the incorporated object does not need case, the unique case position of the supine is assigned to the subject. The incorporated object suffices to license the event reading. In contrast with NO structures, the supine NS structure always denotes an activity/process and is always atelic. An incorporated object cannot define an endpoint.

Cornilescu proposes that nominalizing affixes may be aspectually marked as [+/-telic]. The Romanian infinitival -re affix is [+telic] and requires the overt
presence of the object to identify telicity. Checking the [+telic] feature amounts to case-licensing the object. The morphology of the supine nominalizer allows the incorporation of the object. It is thus telic in NO structures and atelic in NS structures.

Viewed as an operator on lexical aspect, the telic infinitive nominal focalizes the culmination phase II and the resulting state phase III of the event, while the supine suffix focalizes the activity phase I.

5 Conclusion

Affinities in the theoretical and empirical proposals presented here become clear once the terminology is ironed out. Perfectivity, which involves the relation between events and times, is part of viewpoint aspect, while telicity, which involves the relation between events and properties of events, belongs to lexical aspect.

Aspectual construal in the sentence depends on the merger of tense and aspect in T. Since nominals in languages like Somali have tense morphemes that reveal the existence of a structural T node, we must ask why nominals lack “viewpoint aspect” and are limited to lexical aspect or aktionsart.

The answer proposed here is that nominals lack the “little v” head that defines a verbal constituent and introduces the external argument responsible for viewpoint aspect. We have not clearly distinguished the aktionsart function of boundedness or telicity from the aspectual function of the direct object, but we may assume that the object has an aspectual function triggered by nominalizing affixes in DP. Nouns, like verbs, also manifest lexical aktionsart that distinguishes, for example, house from water.

Viewpoint aspect, associated with the external argument of vP, belongs only to verbal categories. However, the lack of viewpoint aspect in nominals does not imply the absence of a T node in DP or of temporal case morphology on D. For the entities that nominals denote are situated in time under construal, even in languages that lack temporal morphology in nominals. Simply, the T-chain in DP is shorter than that in CP since it lacks the v node responsible for subjective or viewpoint aspect and ultimately, under merger with T, for nominative case.

Viewpoint aspect is “subjective” in the sense that it is calculated in a domain, TP, in which it interacts with the intentional properties of the subject. Imperfective aspect can be construed as modal, denoting the time related to the subject’s intentions with respect to the realization of the event rather than to the time of the event itself.

Surprisingly, English progressive -ing, which we described as an aktionsart operator, can also have a modal value. In Higginbotham’s example But I am singing in New York tomorrow!, the progressive form is construed just like the modal imperfective in Romance discussed by Delfitto and Ippolito: Pavarotti cantava domani! ‘Pavarotti was singing tomorrow!’
Rather than blur the distinction between aktionsart and aspect, which are calculated in distinct syntactic phases, such phenomena indicate that the interpretations of separate phases of the sentence come together in tense construal at the interface. If a subject can introduce a modal intension both in the TP domain of the imperfect and in the vP domain of the progressive, and if a nominal can bear tense morphology identical to that found in TP, then the process of tense construal must involve linking the (C, T, v, V) T-chain of CP to the (D, T, N) T-chain of DP, so that all parts of the sentence are placed in time.

The unification of tense construal involves the interaction of syntactic structure, morphological case, and semantic aktionsart/aspectual functions like telicity and perfectivity within a syntactically defined T-chain. Case functions as the visible exponent of the T-chain in its syntactic and semantic prolongations. Kratzer argues that accusative case realizes a culmination requirement lexically motivated by accomplishments. Pesetsky and Torrego propose that structural case is $uT$ on D. Lexical aspect in VP, completed by case assignment in TP, defines the argument structure of the sentence. Viewpoint aspect, construed in TP after introduction of the subject in vP, provides the crucial link between events and times and distinguishes DPs from sentences.

The interpretation of past tense is subject to debate. Does past tense always denote a past time? Encê maintains that a past tense denotes a past time anchored on either the matrix event time or the matrix reference time. Schlenker argues that sentences proposed by Abusch, such as John decided yesterday that tomorrow he would tell his mother that they were having their last meal together, are counterexamples to any theory that claims that the past tense must express anteriority with respect to some other moment represented in the sentence. Ippolito solves the problem by showing that the imperfect past used modally shifts the evaluation time rather than the event time to the past, thus contributing a restriction on the accessibility conditions determining tense construal. Past tense is real, but it may be related to the intentional time of the subject rather than to the time of the event.

Grammatical agreement conspires to spread tense construal throughout syntactic structure. The event the VP denotes is placed in time by means of the verb raising to T in syntax or LF to check its uninterpretable T-feature or verbal feature with a matching feature in T. The subject’s aspecral or modal role is activated by its checking a (+D, case, or person) formal feature with the tense morpheme in T. Lecarme shows that in the Somali nominal, T-features are morphological features entering into agreement relations with modifiers in DP and dictating morphological deletion of dependent T-features, just as was proposed for SOT readings of an embedded past tense in the sentence domain.
Case, an uninterpretable tense feature according to Pesetsky and Torrego, situates an argument in the T-chain at the precise point at which its aspectual role, agentivity for a nominative subject or telicity for an accusative object, is determined.

Aspect is a formal feature on T that determines the bounded or unbounded shape of time. Aktionsart is not a verbal feature (except when incorporated in V and grammaticalized as an aspectual particle, as for example in Russian), but it defines the shape of the event that is fitted into the shape of time defined by aspect.

Aktionsart and aspect interact when the arguments of the sentence, tense-marked by case, take their positions on the spatiotemporal stage and when the tense morpheme is construed as denoting a time. Then, all the elements of the sentence whose formal features are tense-related, either directly (like T nodes or structural case features of Nouns) or indirectly (like Prepositional Phrases or small clauses), enter the temporal ballet, where they assume the unique role assigned to them by morphology and syntax within the tense interpretation of the sentence. For the time the event or state lasts, it is not necessary, perhaps not possible, to distinguish the arguments of the sentence from the temporal roles they play.

A syntactic sentential structure whose functional nodes are motivated by the necessity of checking the formal features of lexical items and constructed bottom to top is transformed by tense construal into a structure in which time spreads top to bottom to all parts of the event from the highest VP to the lowest P, N, or A. It is then that the DP *a hero*, which lacks temporal value in isolation, becomes a stage-level, temporally affected predicate in the time-infused structure *John is being a hero*, but not in the tenseless *Being a hero, John is revered by all*.

References


Chapter 1

On the Temporal Composition of Infinitives

Dorit Abusch

1.1 Introduction

Nontensed intensional complements in English often have a future interpretation. (1a–g) illustrate this, respectively, for a control to-infinitive, raising-to-object to-infinitive, raising-to-passive-subject to-infinitive, passive participle small clause, intensional NP, raising to-infinitive, and accusative-ing argument of a predicative noun phrase.

(1) a. Solange hopes to be in Stockholm next week.
   b. Guido expects Solange to be in Stockholm next week.
   c. Barak is predicted to win.
   d. I want this dispute resolved.
   e. Guido needs a bike.
   f. Guido is likely to flunk out of college.
   g. Guido flunking out of college is a certainty.

This chapter investigates the logical form (compositional structure) of to-complements. Much of what I say, though, seems to apply to the other types of futurate complements too. One issue I will address is the interaction between futurate verbs and embedded tenses. In (2), the verb intends affects not only the temporal location of the answering events corresponding to the untensed head answer of its complement, but also the location of the sending events corresponding to the present tense verb sends in the relative clause.

(2) Solange intends to answer every e-mail Guido sends.

A related issue I will address is whether to-infinitive complements have a propositional structure similar to that of tensed complements. Does the complement in (1b) have the same denotation as the complement in (3)? If so, is the compositional structure of the two complements isomorphic, so that (1b) includes an element semantically similar to will?
(3) Guido expects that Solange will be in Stockholm next week.

The chapter is organized as follows. Section 1.2 considers the interpretations available for *to*-complements. Section 1.3 reviews a semantic-interpretive framework and an analysis of the English future auxiliary *will* developed in Abusch 1998, which involves temporal substitution. Section 1.4 shows that arguments that motivate temporal substitution with *will* also apply to future-oriented infinitives. Section 1.5 gives an argument that meaning elements identified in section 1.4 are syntactically overt.

1.2 Possible Readings of *To*-Complements

1.2.1 Diagnostics for B-Verbs
In this section, I consider the interpretation of *to*-infinitive complements in one syntactic class, with the aim of characterizing the available readings and establishing diagnostics for them. In (4), sixteen verbs taking a raising-to-passive-subject complement structure are listed in their past participle forms. The examples in (5) illustrate the raising-to-passive-subject complement structure.

(4) I II
asserted anticipated
believed expected
claimed forecast
confessed intended
known meant
reported planned
said predicted
thought projected

(5) a. Barak is believed to be in the lead.
   b. Barak is forecast to win by about 8 percentage points.

Criteria such as the possibility of an expletive subject indicate that these are raising structures, with the subject filling no argument position of the higher verb (e.g., *believed* or *predicted*). (6) gives examples with an expletive *there* subject.

(6) a. There is believed to be a linguistics department in Geneva.
   b. There is predicted to be a volcanic eruption in Oregon next year.

This and other syntactic diagnostics for raising structures are discussed in Postal 1974. Turning to semantics, the verbs in column I of (4) allow only for simultaneous readings of the complement infinitive. This is reflected in three properties:

1. incompatibility with past and future frame adverbs modifying the top-level predicate in the complement,
2. incompatibility with nonstative complements, and
3. equivalence with present tense or sequence-of-tense past tense tensed complements.

Property 1 is illustrated in (7).

(7) a. *Guido is believed to be at Monique’s place last night.
   b. */OK Guido is believed to be at Monique’s place tomorrow night.
   c. Guido is believed to be at Monique’s place (now).

As used in (7a), last night is a past-denoting temporal frame adverb in the sense that last night precedes the attitude time, which in our example is the believing time. In a similar sense, tomorrow night in (7b) is future denoting. Last night in (7a) modifies the top-level predicate be at Monique’s place in the complement, and so the star in (7a) illustrates property 1. Notice that (7a) contrasts with the tensed complement (8a) and with the version with an infinitival temporal have in (8b).

(8) a. It is believed that Guido was at Monique’s place last night.
    b. Guido is believed to have been at Monique’s place last night.

In (8b), last night does not modify the top-level predicate have, but instead the embedded predicate be at Monique’s place. Therefore, (8b) does not violate property 1.

In (7b) with the future adverb, there is a twist: the example is good on a scheduling interpretation of the complement. This interpretation also shows up with present tense nonstative verbs.

(9) Guido is at Monique’s place tomorrow night.

In (9), it is understood that Guido has a schedule, perhaps a regular one, for where he is to stay. The scheduling interpretation can be controlled for by adjusting the content. While (10a) is fine as a description of the scheduled start of a party, (10b) is a bit odd as break up suggests an unscheduled end. The same distinction carries over to the to-infinitives in (10c,d). This supports the claim that (10c) involves a distinct scheduling interpretation.

(10) a. The party starts at 10 p.m.
    b. ?#The party breaks up at 4 a.m.
    c. The party is thought to start at 10 p.m.
    d. ?#The party is thought to break up around 4 a.m.

The examples in (11) and (12) make the same point. Many electronic components have a fixed probability of failing over any year starting at a time when the component has not failed yet. Such components will fail sooner or later, but one does not know when it will happen. (11a) is a good description of this situation, but (11b) is odd, presumably because of an incompatibility between the scheduling modality and
the indeterminateness of the time of failure. Keeping the scenario the same, (12c) is odd in the same way as (11b), because the scenario makes the scheduling interpretation implausible.

(11) a. The component will sooner or later fail.
    b. #The component sooner or later fails.

(12) a. It is believed that the component will sooner or later fail.
    b. #It is believed that the component sooner or later fails.
    c. #The component is believed to sooner or later fail.

With the scheduling interpretation eliminated, the hash marks in (10d) and (12c) illustrate the part of property 1 having to do with future adverbs: column I verbs with future time adverbs modifying the to-infinitive do not have an ordinary, non-scheduling interpretation.\(^1\) Column I verbs like *believe* and *thought* and column II verbs like *forecast* and *predict* will be referred to as *B-verbs* and *F-verbs*, respectively.

In contrast with the B-verbs in (4), the F-verbs are compatible with future adverbs in the complement.\(^2\)

(13) a. Bibi is predicted to be in the lead next week.
    b. A solar eclipse is forecast to occur in Württemberg in August 1999.
    c. The meeting is meant to end at 3 p.m.

(The utterance time for example (13b) is in 1999, before August.)

Property 2 refers to the following paradigm:

(14) a. */gen Guido is believed to visit Stockholm.
    b. */gen Guido is claimed to visit Stockholm.
    c. */gen Guido is reported to visit Stockholm.
    d. */gen Guido is said to visit Stockholm.

(15) a. Guido is expected to visit Stockholm.
    b. Guido is meant to visit Stockholm.
    c. Guido is predicted to visit Stockholm.
    d. Guido is projected to visit Stockholm.

(16) a. Guido is believed to be in Stockholm.
    b. Guido is claimed to be in Stockholm.
    c. Guido is reported to be in Stockholm.
    d. Guido is said to be in Stockholm.

(17) a. Guido is expected to be in Stockholm.
    b. Guido is meant to be in Stockholm.
    c. Guido is predicted to be in Stockholm.
    d. Guido is projected to be in Stockholm.
The predicate *visit Stockholm* is nonstative, while the predicate *be in Stockholm* is stative. This is evidenced by the fact that (18) has no episodic interpretation—it has only the generic/habitual interpretation ‘Guido has the habit or practice of visiting Stockholm’. (19) does have an episodic interpretation, which describes a simple fact about location.

(18) */gen Guido visits Stockholm.
(19) Guido is in Stockholm.

In (14) and (16), the contrast between (18) and (19) is duplicated in the complement infinitive of B-verbs. In the sentences in (14), the complements have only generic interpretations. We can attribute this to B-verbs allowing only stative complements. We can attribute this to B-verbs allowing only stative complements.

I assume the generic reading involves a top-level covert generic operator, which makes the complement stative (as evidenced by the possibility of the generic reading of (18)). It is easy to control for the generic interpretation by considering meaning. When we put this reading aside, the stars in (14) illustrate the stativity restriction 2.

The examples in (15) of F-verbs with nonstative complements have episodic future interpretations, generic simultaneous interpretations, and also generic future interpretations. They have no episodic simultaneous interpretations. The stativity restriction is in fact a general restriction on simultaneous readings, which is also observed with tensed complements.

(20) a. */gen It is thought that Solange sleeps.
   b. It is thought that Solange is sleeping.

Because *sleep* is nonstative, (20a) has no episodic interpretation approximately equivalent to (20b). Since all simultaneous readings are stative, we can attribute the stativity restriction on B-verbs (i.e., the restriction that B-verbs’ complements are always stative) to B-verbs having only simultaneous readings.

Property 3 refers to the equivalence of pairs such as these:

(21) a. Guido was thought to be in Stockholm.
   b. It was thought that Guido was in Stockholm.
(22) a. Guido is claimed to be in Stockholm.
   b. It is claimed that Guido is in Stockholm.

This diagnostic can be seen to derive from the fact (or assumption) that the present tense complement (22b) and the sequence-of-tense past tense complement (21b) have simultaneous interpretations. The test cannot be applied totally mechanically, because the tensed complement may have other interpretations. When an antecedent is set up for the embedded past tense verb as in (23), a reading is possible where eventualities corresponding to the embedded clause (in this case the finishing) precede the attitude time.
As demonstrated in the present study, Nabokov was in Flims when he finished *Laughter in the Dark*. In a talk given last year, Prof. Schmetterling incorrectly claimed that he was in Montreux.

Also, with a small set of verbs, a present tense complement has a future interpretation.

(24) a. Guido hopes Monique wins.
    b. I pray that the snow stops soon.
    c. ?I predict Barak wins by at least 10 percentage points.

So actually, there is something circular about diagnostic 3, on a weakened understanding that allows the exceptions above. It in effect says that the infinitival complements of B-verbs are equivalent to tensed complements with simultaneous interpretations.

Summing up, properties 1–3 distinguish B-verbs from F-verbs. Especially in the case of property 1, the connection with simultaneous interpretations should be clear.

### 1.2.2 Past Readings

We have seen that F-verbs with *to*-infinitive complements are compatible with future frame adverbs. As illustrated in (25), such F-verbs are incompatible with past adverbs.

(25) *Guido is predicted (by almost everyone) to spend the night of last Friday’s party at Monique’s place.

Curiously, the intended reading can be expressed by F-verbs with past tense complements.

(26) a. I predict that Guido spent the night of last Friday’s party at Monique’s place.
    b. It is predicted (by almost everyone) that Guido spent the night of last Friday’s party at Monique’s place.

Note that there is a special pragmatics for these examples: it is suggested that it is not known at the predicting time where Guido spent that night.

The same data are observed with other F-verbs: *anticipated, forecast, planned,* and *projected*.4

(27) a. It is anticipated that a meteor impact took place yesterday afternoon in a remote part of Quebec. Scientists have not arrived at the scene yet.
    b. *A meteor impact is anticipated to take place yesterday afternoon in a remote part of Quebec.

Past readings are also impossible for B-verbs with *to*-infinitive complements.

(28) *Guido is thought to be at Monique’s place last night.
This perhaps suggests that the compositional semantics of infinitives should exclude past readings.

The examples in (26) and (27a) indicate that the obvious element of futurity in predict has nothing immediately to do with the temporal location of the event described by the main verb in the complement. Note that (26a) is roughly paraphrasable as follows:

(29) I say that the proposition that Guido spent the night of last Friday’s party at Monique’s place will turn out true.

This goes along with the implicature that at the predicting time, it is not known whether this proposition is true or not. The curious possibility such examples suggest is that in (30), futurity is represented twice: once by will in the complement, and once internal to the lexical meaning of predict. This results in the paraphrase (31), with two occurrences of will.

(30) It is predicted that Barak will win.

(31) I say that the proposition that Barak will win will turn out true.

It is conceivable that predict with an infinitival complement has a similar compositional structure. This would be the case if the to-complement contained a discrete element FUT whose compositional role is similar to that of will. A past reading for to-infinitive complements of predict would be impossible for the same reason that (30) has no past reading.

1.2.3 Simultaneous Readings of F-Verbs

We have seen that infinitival complements of F-verbs have no past interpretations. However, contrary to the impression that the infinitival complements of these verbs are uniformly futurate, simultaneous readings are possible.

Consider the following scenario. A petition for a ballot initiative is being circulated. A lot of signatures have been collected, but not yet summed up. In (32), what is at issue is how many signatures have already been obtained, and in this sense the complement has a simultaneous interpretation. In view of the pragmatics mentioned in the previous subsection and the fact that the present number of signatures is unknown, the use of projected in this context should make perfect sense. As indeed it does.

(32) The petition is projected to have over 20,000 signatures now.

Now consider (33).

(33) Monique is predicted to already be pregnant.

This is another example of an F-verb with a simultaneous reading. Monique is trying to get pregnant with the new technology. Her doctor is confident of the efficacy of his
treatments and is pretty sure she is pregnant now. They will not find out definitely until tests are possible in a few days. Again, what is at issue is her being pregnant now, and because of the epistemic situation, a use of predicted with a simultaneous complement is pragmatically licensed.

Raising adjectives such as likely and certain are also compatible with both simultaneous and future scenarios.

(34) a. Monique is likely/certain to be in Stockholm now.
    b. Monique is likely/certain to be in Stockholm next weekend.
    c. Monique is likely/certain to win.

Note that with the event verb win in (34c), the aspectual restriction on simultaneous readings is observed, and only a future interpretation is possible.

A comprehensive analysis of verb classes is beyond the scope of this chapter. However, it is relevant to ask whether there are any exclusively future-oriented infinitive-embedding verbs—in other words, ones that exclude a simultaneous interpretation. This is the case with a control use of promise. While promised with a tensed complement in (35a) has a simultaneous reading, the version with a to-infinitive in (35b) does not.⁵

(35) a. In her phone call to Guido, Monique promised that she was in the office, not at Paul’s place.
    b. In her phone call to Guido, Monique promised to be in the office, not at Paul’s place.

It is relevant to ask whether promise in (35a) and ordinary examples of promise with an infinitival complement like (36) involve the same root word sense.

(36) Monique promised to be home before midnight.

If they do, then there has to be something structural about (35b) (such as an additional futurity morpheme being present in the complement) that excludes the simultaneous reading. Notice that future-oriented to-complements can be conjoined with simultaneous that-complements.

(37) In her phone call to Guido, Monique promised to be home before midnight, and that she was in her office.

This supports the hypothesis of a single word sense for promise in (35a) and (36). However, promise with a to-complement seems to have a narrower range of meaning than with the corresponding that-complement.

(38) a. Monique promised that she would eventually fall asleep tonight.
    b. Monique promised to eventually fall asleep tonight.

There is a way of reading (38a) that does not imply the same kind of lasting commitment that (38b) implies. Assume Monique realizes she is tired and, knowing
herself well, is sure she will fall asleep tonight. (38a) can describe her making an emphatic statement, whose truth she is committed to when she makes the statement, without making a promise in the ordinary sense. Suppose that after all, Monique does not fall asleep. If she made a promise, she would have to do something to fall asleep, such as take a sleeping pill. If she merely made a statement, she need not be committed in the same way to making it turn out true. The interesting point now is that (38b) with the to-infinitive can only describe a speech act of making a promise. So, promise with a to-infinitive has a narrower range of meaning. This might suggest a lexical ambiguity in the tensed version of promise between a commitment reading and a statement reading.

The argument can be clarified by substituting make a promise, which seems not to be ambiguous in the same way. Intuitively, (39a) is not ambiguous in its force, and (39a) is equivalent to (39b).

(39) a. Monique made a promise that she would fall asleep tonight.
    b. Monique made a promise to fall asleep tonight.

The crucial contrast is the one in (40). Example (40a) with a tensed complement has a simultaneous reading, while example (40b) with a to-complement does not.

(40) a. In her phone call to Guido, Monique made a promise that she was in the office, not at Paul’s place.
    b. In her phone call to Guido, Monique made a promise to be in the office, not at Paul’s place.

It is perhaps puzzling what kind of promise (40a) on a simultaneous reading describes. It is clear, though, that (40b) with the to-infinitive cannot be read as equivalent to (40a).

The conclusion is that with some verbs, to-infinitives have strictly future interpretations. Another verb with this property is decide, where contrasts similar to the one in (35) are observed.

(41) a. Sitting on the train and looking at the landscape, Monique decided that she was in France.
    b. #Sitting on the train and looking at the landscape, Monique decided to be in France.

(42) a. Monique decided that she would not see Paul again.
    b. Monique decided not to see Paul again.

(41a) with the tensed complement has a simultaneous reading that (41b) lacks, even if an adverb like now or already is inserted. As with promise, correlated with or in addition to the temporal difference there is a difference in the kind of act that can be described. (41a) describes a mental act of drawing a conclusion: observing the landscape, Monique concludes that she is in France. Example (42a), where decide embeds would, can describe an act either of drawing a conclusion or of entering a state of
intention. In the first interpretation, Monique might want to see Paul and try to see him, but know that it is not going to happen. If the second interpretation entailing intention is true, then Monique would not try to see Paul. Example (42b) with the to-infinitive can describe only a mental act of entering a state of intention.

Returning to F-predicates that are consistent with both simultaneous and future scenarios, we may ask whether this is a matter of nonspecificity or ambiguity. The following example mixes simultaneous and future interpretations:

(43) Monique is likely to be in Stockholm both now and next Saturday.

This suggests that likely to has a single representation that is compatible with both simultaneous and future scenarios. This will be my working hypothesis. A possible problem is that it is hard or impossible to read the following example as being non-committal about whether Monique is in Stockholm now or will be in Stockholm in the future:

(44) Monique is likely to be in Stockholm.

But the reading becomes possible if one makes it explicit, by inserting either now or later.

1.2.4 Summary

Three classes of interpretations for verbs taking to-infinitive complements have been identified:

1. B-verbs such as believed that permit only simultaneous interpretations of their to-infinitive complements,
2. futurate verbs like predicted where the to-infinitive complement is interpreted in a manner consistent with both simultaneous and future scenarios, and
3. futurate verbs like promised where the to-infinitive has only a future interpretation.

Representations for these readings will be discussed later. We first turn to an independent line of evidence on the logical form of infinitives having to do with interpretive interactions with embedded tenses.

1.3 Temporal Substitution

1.3.1 Interpretive Framework

This section and the next use a grammatical framework with the following properties:

- Meaning is represented explicitly at LF, and semantic composition is limited to function application, variable binding, and type raising.
- Temporal aspects of meaning are modeled with semantic objects built using a distinct type $i$ of time intervals. Tenses denote time intervals or type-raised versions of them, rather than being propositional operators.
Applying this framework to (45), we arrive at representation (46), which is an LF tree annotated with terms naming the denotations of phrases.

(45) John believes Monique loves Solange.

(46) \[ \text{IP:} \text{believe}(n, j, \lambda n \text{love}(n, m, s)) \]

\[ \begin{array}{c}
\text{Pres:} n \\
\text{VP:} \lambda t \text{believe}(t, j, \lambda n \text{love}(n, m, s)) \\
\text{NP:} j \\
\text{V'} \\
\text{John} \\
\text{V} \\
\text{CP:} \lambda n \text{love}(n, m, s) \\
\text{believes} \\
\text{C:} \lambda n \\
\text{IP:} \text{love}(n, m, s) \\
\text{Pres:} n \\
\text{VP:} \lambda t \text{love}(t, m, s) \\
\text{NP} \\
\text{V'} \\
\text{Monique} \\
\text{V} \\
\text{NP} \\
\text{loves} \\
\text{Solange} \end{array} \]

The verb \textit{loves} in (46) denotes a function that maps two individuals (type \( e \)) and a time interval (type \( i \)) to a proposition. I assume a possible-worlds construction, and I take propositions to be characteristic functions of sets of worlds, with type label \( wt \). Under these circumstances, the type label for the verb \textit{loves} is \( eeiwt \). I use Link’s (1979) notation for type labels, with right association. The type \( eeiwt \) written with commas and brackets is \( \langle e, \langle e, \langle i, \langle w, t \rangle \rangle \rangle \rangle \).

In this system, a VP including its subject is a tenseless clause and has type \( iwt \). A tense fills the interval argument, giving an IP with the proposition type \( wt \). A complement CP has a \( \lambda \)-binder in C or Spec,CP of the interval variable and therefore denotes a property of times (type \( iwt \)). In general, the type of a CP depends on the operator in C; for instance, a relative clause might have type \( ewt \). The type and category labels are summarized here.\(^6\)

- VP \( iwt \) tenseless clause
- IP \( wt \) tensed clause
- CP \( iwt \) complement clause

In order to achieve simpler types, interpretations, and syntactic structures, I am assuming that the subject is in VP at LF.\(^7\)
The interpretation of the term \( n \) is straightforward—in the logic, it is a variable. Its particular role comes from being used in particular ways at the syntax-semantics interface in the grammars of particular languages, in the general theory of natural language (Universal Grammar), and in the theory of language use (pragmatics). The most relevant points for the purposes of this chapter are that an intensional clausal complement starts with a \( \lambda \)-binder of \( n \) that creates a property of times, and that the lexical entries for tenses have free occurrences of \( n \). This allows for the characterization of interactions between tense and intensionality.

1.3.2 Semantics of the Future Auxiliary

In Abusch 1998, I proposed an account where the logical form for the future auxiliary \textit{will/would} expresses a substitution for \( n \). The analysis is exemplified in (47) and (48), with adjustments in notation relative to the earlier paper.\(^8\)

(47) Mary will answer every e-mail Bill sends next year.

(48) \[
\text{IP}_6 \quad \text{VP} \\
\quad \text{Pres}:n \quad \text{VP} \\
\quad \text{V:}\lambda.\text{P}_\lambda.\text{P}((t, \infty)) \quad \text{CP} \\
\quad \text{will} \quad \lambda n \quad \text{IP}_5 \\
\quad \text{I}:n \quad \text{VP}_4 \\
\quad \text{NP}_3 \quad \text{VP} \\
\quad \text{Det} \quad \text{N'} \quad \text{Mary answer e}_3 \\
\quad \text{every} \quad \text{N} \quad \text{CP} \\
\quad \text{e-mail} \quad \text{wh}_2 \quad \text{VP}_3 \\
\quad \text{Pres}:n \quad \text{VP}_2 \\
\quad \text{VP}_1 \quad \text{Tadv} \\
\quad \text{Bill sends e}_2 \quad \text{next year}
\]
The surface form \textit{will} corresponds to the four heads \textit{Pres}: \( n, [\lambda P \lambda t P((t, \infty))] \), \( \lambda n, n \). The subject \textit{Mary} is represented as reconstructed into the VP headed by \textit{answer}, which corresponds to the overt base form VP. The top \( n \) is the present tense on \textit{will}. \([\lambda P \lambda t P((t, \infty))]\) is a temporal substitution operator that is the core meaning of \textit{will}. In the substitution operator, \( t \) is a bound variable that corresponds to the tense argument of \textit{will}. For a top-level occurrence of \textit{will}, the effect is to substitute \((n, \infty)\) for \( n \). One consequence of this is that eventualities corresponding to the main verb complement of \textit{will} are located in the interval \((n, \infty)\).

Notice that the complement structure in (48) is the same as in the tensed complement in (46); the CP/IP layer between the two VP nodes is syntactically covert, since \textit{will} has a base form complement. The extra structure has semantic motivation in the interaction between futurity and tense: the \( \lambda n \) on the complement of \textit{will} binds two occurrences of \( n \). One corresponds to the present tense on \textit{ sends}. The other is the temporal argument of the base form verb \textit{answer}; this temporal argument is treated as a covert \( I \) heading IP. The property of times denoted by CP, together with the top-level present tense, are arguments of a core meaning \( \lambda P \lambda t P((t, \infty)) \) for \textit{will}. \((t, \infty)\) is an interval stretching from the bound time variable \( t \) to positive infinity. In the given configuration, the denotation for \textit{will} substitutes a future interval \((t, \infty)\) for both occurrences of \( n \) in the complement.

\textit{Shifted present tenses}. The event time for an overt present tense verb in the argument of \textit{will}/\textit{would} falls in the future, rather than at the utterance time. This accounts for the interpretation of \textit{ sends} in (47), where the possible sending events follow the utterance time.

\textit{Shifted past tenses}. Past tenses in the scope of \textit{will}/\textit{would} measure back from a time within the future interval \((u, \infty)\), rather than from the utterance time.\(^9\) On February 1, at the beginning of the spring semester, I say (49). The contemplated turning-in events are understood as ordered before May 21, rather than February 1. (Though if some student had turned in a term paper satisfying the required length before the start of the semester on February 1, he should also get an A according to what I said.)

\begin{itemize}
  \item (49) On May 21, I will give an automatic A to the first student who turned in a term paper at least fifteen pages long.
\end{itemize}

\textit{Noncomplementarity}. Fixing the location of described events, past and present tense under the scope of \textit{will}/\textit{would} are not in complementary distribution. Consider the following scenario. In November 1999, the members of a program committee discuss procedures for reviewing abstracts that are to be submitted in the first two months of the year 2000. The abstract deadline is February 21, 2000. In this scenario, the committee members can use either (50a) or (50b).
On March 1, we will discuss the abstracts which are submitted by e-mail.

On March 1, we will discuss the abstracts which were submitted by e-mail.

The above-listed three consequences follow from logical forms along the lines of (48), with \( \lambda \)-binding of \( n \) and a node introducing the interval \((t, \infty)\), and from specific denotations for tenses. In the case of present tense, the analysis is simple: present tense denotes \( n \). (51) is a semantic derivation corresponding to the LF (48). The important thing about the result is that the sending events are ordered inside the interval \((n, \infty) \cap \text{year}(1, u)\), which, given that next year falls in the future interval \((n, \infty)\), amounts to just next year. This is a result of the substitution for \( n \) performed by the material corresponding to \textit{will}.

Note that at the node VP\(_4\), a generalized quantifier is quantified into a property of times, producing a property of times.

Tree (52) is the LF for the past example (50b). As before, the important point is that the \( \lambda \)-operator on the complement of the substitution operator associated with \textit{will} binds a variable associated with the relative clause tense, which in this case is the past tense on \textit{submitted}. Semantically, this has the effect of shifting the time that the past tense measures back from to March 1. See Abusch 1998 for details about the semantics of past tense and how it interacts via indexing with other elements of an LF.
Summing up, an LF for \textit{will} involving a temporal substitution operator and \(\lambda\)-binding of \(n\) results in shifted present and past tenses, and the noncomplementarity of present and past tenses in future contexts. These properties will be used as diagnostics for an LF with a substitution operator.

1.4 Tense Interactions in \textit{To}-Complements

1.4.1 Data
Future-oriented infinitives interact with tense in the same way as the future auxiliary \textit{will}/\textit{would}.

\textit{Shifted present tenses}. In (53), the possible submission times follow the utterance time.
Mary intends to give an automatic A to every student who submits a term paper at least fifteen pages long.

*Shifted past tenses.* In (54), the past tense can be understood as measuring back from a time following the utterance time (June 1), rather than measuring back from the utterance time.

(54) On June 1, Mary intends to give an automatic A to every student who submitted a term paper at least fifteen pages long.

*Noncomplementarity.* (55) and (56) uttered on New Year’s Eve quantify possible sending, receiving, and answering events that are distributed throughout the year following the utterance time in an interleaved fashion. In (56), the present tense *receive* and the past tense *received* correspond to the very same eventualities.

(55) This coming year, I intend to immediately answer every e-mail I receive which was sent by a friend.

(56) I intend to immediately answer every e-mail I receive which was received from a friend.

Other future-oriented infinitives behave in the same way. This is illustrated for present tenses in (57) and for past tenses in (58).

(57) a. Solange is predicted to win most of the races she enters.
    b. Monique hopes to live in a house her parents buy her.

(58) a. Solange is predicted to win all of the matches she enters which she had adequate time to prepare for.
    b. Monique hopes to tell Paul about something outrageous she did on the trip.

1.4.2 Analysis

These data suggest that the compositional representations of future-oriented infinitives include operators that make a substitution for *n* by means of binding and function application. As a starting point, it is useful to compare future-oriented infinitives with tensed complements headed by *will*. The tensed and infinitival versions in (59) and (60) are equivalent.\(^{10}\)

(59) a. Solange hopes to visit Björn next week.
    b. Solange hopes that she will visit Björn next week.

(60) a. Barak is predicted to win.
    b. It is predicted that Barak will win.

(61) is the representation of the tensed complement in (60b) on the theory reviewed in section 1.3.
The clausal nodes are numbered from the top; temporal substitution is performed by the head of VP 3, which is the root of *will*. The idea is to use this tree as a starting point for the representation of (60a). Given the mechanics of temporal substitution, something that must be included in the LF of (60a) is the $\lambda$-operator heading CP 4, which binds occurrences of $n$ in the complement, in particular ones coming from tenses. Above this level, there are some choices to make regarding what structure is to be maintained. First, notice that the CP 1/IP 2 layer in (61) is semantically redundant, because of the identity

$$\lambda n \phi(n) = \phi \quad \text{if} \quad \phi \text{ contains no free occurrences of } n.$$  

In (61), and in fact in all the representations for tensed complements with *will* considered above, VP 3 has no free occurrences of $n$. This suggests the possibility of dropping the CP 1/IP 2 layer in the LF for the *to*-infinitive.

Second, for some embedding predicates, the temporal substitution operator should be changed. We saw in section 1.3 that *predict* and *be likely* allow simultaneous scenarios for the eventualities corresponding to their infinitival complements, in addition to future ones. A direct way of dealing with this is to use the interval $[t, \infty)$ in the substitution operator in place of the interval $(t, \infty)$. The interval $[t, \infty)$ is an interval that includes the left boundary $t$. We will see below that this gives the right results for simultaneous scenarios.

Third, there is the question of what layers of structure are overt in the LF of (60a). In particular, is the substitution operator $\lambda P \lambda t P([t, \infty))$ a part of the complement, perhaps as the semantics of the morpheme *to*? Is it “part” of the model-theoretic interpretation of the embedding verb? Or is it part of a compositionally interpreted
structured lexical entry for the verb? It is not easy to answer such questions definitively, because they tie in with general questions of how lexical decomposition is represented. But in section 1.5, I will mention an argument (based on rather intricate assumptions) that even the highest levels of structure in (61) are overt in the LF of (60a), in that they are visible to scope interactions.

1.4.3 LFs for Futurate Infinitives

As a working hypothesis, I will leave out the redundant CP₁/IP₂ layer in the LF of futurate infinitives, but include an overt substitution operator. This results in the LF (62) for (60a). (The substitution operator is written as the head of VP. Its actual syntactic position might be different, though (e.g., in I).)

(62)

Assuming an overt substitution operator has the advantage that the predicate predict in (62) can be treated as being the very same predicate as the predict that embeds the tensed complement in (61). This works because VP₃ in (62) and CP₁ in (61) denote the same property of times.

If the structure with a temporal substitution operator is postulated, the interaction of tense with future-oriented infinitives is accounted for in the same way as the parallel data with will. For instance, in example (63) the answering and receiving events can fall in the future, because the n relative to which the present tense on receive and the past tense on sent are interpreted is an expanded interval [t, ∞).

(63) Solange is likely to answer every memo she receives this year which was sent by the dean.
This works because in the LF in (64), both tenses are under the scope of the substitution operator.

(64)  
\[
\text{IP} \\
\text{Pres}:n \quad \text{VP} \\
\text{V} \quad \text{AP} \\
\text{is} \quad \text{A} \quad \text{VP} \\
\text{likely} \quad \lambda P \lambda t P([t, \infty)) \quad \text{CP} \\
\lambda n \quad \text{IP} \\
\lambda n \quad \text{VP} \\
\text{I}:n \quad \text{VP} \\
\text{NP}_3 \quad \text{VP} \\
\text{Det} \quad \text{N}' \quad \text{Solang answer } e_3 \\
\text{every} \quad \text{N}' \quad \text{CP} \\
\text{N} \quad \text{CP} \quad \text{wh}_4 \quad \text{IP} \\
\text{memo} \quad \text{wh}_2 \quad \text{IP} \quad \text{Past}_n \quad \text{VP} \\
\text{Pres}:n \quad \text{VP} \quad e_4 \text{ was sent by the dean} \\
\text{VP} \quad \text{Tadv} \\
\text{she receives } e_2 \quad \text{next year}
\]

The following simpler example illustrates the recursive semantics of the complement:

(65) Barak is predicted to win.
Simultaneous readings. The tree in (68) illustrates a simultaneous reading.

(67) Barak is predicted to be in the lead now.

(68) $\text{XP_3: } \lambda \ell \exists e[e \subseteq [t, \infty) \land \text{win}(e, \text{Barak})]$

$\lambda P \lambda t P([t, \infty))$

$\text{CP_4: } \lambda n \exists e[n \subseteq e \land \text{win}(e, \text{Barak})]$

$\lambda n$

$\text{IP_5}$

$n$

$\text{VP_6: } \lambda t \exists e[e \subseteq t \land \text{win}(e, \text{Barak})]$

Barak win

The compositional semantics is such that the interval denoted by $\text{now}$ gets intersected with the interval contributed by the substitution operator. I assume that $\text{now}$ denotes the utterance time $u$. The LF (68) is in fact semantically unsatisfactory, since quite generally, deictic elements must be assumed to be interpreted $\text{de re}$. An LF scheme for $\text{de re}$ interpretation is presented in Cresswell and von Stechow 1982 and is applied to temporal data in Abusch 1997. The mechanics of $\text{de re}$ interpretation goes beyond the scope of this chapter, but the bottom line in this example is straightforward. Employing an acquaintance relation of temporal identity $\lambda x \lambda t \lambda t'[t = t']$ has the result that $t$ (with the interpretation of the internal now of the attitude) is substituted for $u$. Since $t \cap [t, \infty) = t$, this results in the denotation $\lambda \text{in-lead}(t, \text{Barak})$ for the complement. This is a simultaneous reading.

This approach to simultaneous readings in which a substitution operator is present is supported by the fact that simultaneous readings can be mixed in various ways with future ones. Example (69) is similar to (43).
(69) Solange is likely to be in Paris now and in Stockholm next Friday.

(70) Solange is likely to already know all of the men she dates next year.

In the gapping sentence (69), the time for the locative predication in the right conjunct is in the future. According to the analysis developed here, this means that it must be under the scope of a temporal substitution operator. A standard analysis of gapping copies the predicate for the right conjunct from the left conjunct. This would require that the substitution operator be present in the left conjunct also. (70) makes the same point. On one reading, the dating times are in the future, while the knowing time is simultaneous.

The frame adverb now is essential in obtaining the simultaneous reading of (67), because the reading results when the extended future interval is intersected with the interval contributed by now. However, the sentence also has a simultaneous reading when now is dropped. In this case, I assume there is a null frame adverb having the same function as now. This is an innocuous assumption, since such null frame adverbs are quite freely available (Abusch 1997, sec. 8). In (70), either know is modified by a null frame adverb, or already serves the same function as now in (67).

1.4.4 LFs for Strictly Futurate Readings

In section 1.3, we saw that the to-complement of promise has a strictly future interpretation. If this is to be directly stated in the representation, a substitution operator with the interval \((t, \infty)\) rather than the interval \([t, \infty)\) should be used in the LF of promise. I will assume for now that promise has an LF just like that of predict in (64), except for the change in the interval involved in the substitution operator, and except for differences having to do with control versus raising.

Obviously, the different substitution operators are lexically conditioned. I am inclined to assume that the presence of one operator rather than another follows from the structured lexical representation of the embedding verb. This can be realized strictly in the lexicon, or more syntactically by allowing lexical entries to stipulate local parts of LF trees.

1.5 Overtness of LF Structure for Infinitives

The argument having to do with tense interactions motivates substitution for the \(n\) parameter in the representation of future-oriented infinitives. This does not give us much information about the LF representation, though. All we can definitely conclude is that the \(\lambda\)-binder of \(n\) that is the head of node CP\(_4\) in (62) is present. It might be that the substitution itself is built into the lexical semantics of the verb. However, I will present evidence that the substitution operator is syntactically overt, as are
higher levels of structure. The argument suggests that what I call the *contemporary now* of the attitude is represented in the LF of future-oriented infinitives.

In section 1.3, I presented a logical form for the complement of *believe* where the contemporary now is the temporal argument of the property of times denoted by the complement. In (71), by virtue of \( \lambda \)-binding of \( n \), the complement CP denotes a property of times (type \( iwt \)). In the lexical semantics of the embedding attitude predicate, the time argument functions as a counterpart of the attitude time.\(^{11}\)

(71) Guido believes \[ CP \lambda n [TP he is lying down] \].

In cases where the tensed complement of a verb such as *believe* is headed by *will*, the contemporary now is represented in the same way as in (71). The complement in (72) has the structure (73), where \( SUB \) is the substitution operator that is the core meaning of *will*.

(72) Paul believes he will have dinner with Monique today.

(73) \[ CP \lambda n [TP n [VP SUB [CP \lambda n [TP n [VP have dinner with Monique today]]]]]]\]

This follows from the requirement for a systematic syntax and compositional semantics. For instance, given that the higher \( \lambda n \) of (73) is present in (71), an analysis that maintained that it was absent in (73) would involve complications in syntax and in the syntax-semantics map. There is also semantic evidence that the higher levels of structure in (73) are present. If an NP takes scope inside the higher \( \lambda n \) in (73) but outside the lower one, we would expect a free \( n \) in that NP to pick up a contemporary now. Examples where this is so can indeed be constructed. In Abusch 1997, I suggested that the representation of the modal *might* includes a free \( n \). This is designed to account for the fact that in a top-level context such as (74), the temporal perspective for *might* is the utterance time, while in an attitude context such as (75), the perspective is the internal now of the attitude.

(74) Paul married a girl who might become rich.

(75) Paul believed his bride might become rich.

Examples (76a–c) show that *might* in a relative clause that is syntactically below *will* can take scope outside *will* and pick up the internal contemporary now. Some time ago, Paul misidentified a coworker of Guido’s as Guido’s sister. This dictates an LF for (76a) in which *a sister* has narrow scope.

(76) a. Paul\(_1\) believed that Guido had a sister\(_2\), and that she\(_2\) might have a crush on him\(_1\).
   b. He believed that eventually he would have a long frank conversation with the woman who might have a crush on him.
   c. But he believed that at that point she would not have a crush on him any more.
In (76b), the definite description *the woman who might have a crush on him* must also have narrow scope, because its presuppositional antecedent (which is the indefinite description *a sister* in 76a) has scope inside the attitude. If the definite description in (76b) had scope outside *believed*, that would imply that there was an actual woman who might have a crush on Paul, which is not the way we understand the sentence. In the understood meaning of (76b), the time parameter for *might* is the contemporary now; this is made clear by the continuation (76c), which indicates that the time of the woman having a crush is not the future conversation time, but an earlier time. Assuming that all of this is to be represented structurally, the LF must be as in (77), where the definite description takes scope right inside *believed*, and above SUB. It has to be above SUB so that the *n* parameter on *might* picks up the contemporary now, rather than a time following it.

(77) believed [CP λn [NP the woman who might(n) have a crush on him]] [n [SUB [CP λn [TP n [VP he eventually have a long conversation with e1]]]]]

The *n* on *might* is bound by the *λn* that represents the contemporary now, and so the reading under discussion is obtained. None of this is surprising: it is what we would expect given independently motivated denotations and the independently motivated scope mechanism. The point of the example is to show how to use *might* as a diagnostic for the presence of a contemporary now in LF. In future-oriented infinitives, the same kind of reading for *might* shows up as is observed with *believe*.

(78) Paul hopes to eventually have a conversation with the woman who might have a crush on him.

(79) Paul decided to eventually have dinner with the woman who might have a crush on him.

(80) Paul promised to eventually have dinner with the woman who might have a crush on him.

Examples (79) and (80) are the significant ones. Because *promise* excludes a simultaneous reading for its complement, I postulated the same substitution operator in the LF of *promise* as is used in the LF of *will*. (The same reasoning applies to *decide*.)

If this reading is to be represented with *promise* in the same way as with *believe* (and why should the story be any different?), then the *λn* outside the substitution operator in (77) has to be present in the LF for (80), as in (81). Here the *n* parameter in *might(n)* is captured by a *λn* that creates a property with a simultaneous representation.

(81) Paul promised/decided [CP λn [the woman who might(n) have a crush on him] λe3 [n [SUB λn [PRO have dinner with e3]]]]
Crucially, for this to work, there must be a $\lambda n$ corresponding to the contemporary now in the representation. Suppose there were no such binder: suppose the LF had the form in (82), which corresponds to the structure (62) discussed in section 1.4.

(82) Paul promised/decided [SUB $\lambda n$ [PRO have dinner with e$_3$]]

Wherever the noun phrase containing might(n) takes scope, the $n$ gets the wrong interpretation. If it takes scope under the $\lambda n$ inside SUB, then the $n$ in might(n) gets a future interpretation. If it takes scope outside this $\lambda$-binder, then the $n$ in might(n) remains free and is interpreted as the utterance time. Neither of these gives the desired interpretation, where the $n$ parameter in might is the internal now of the attitude.$^{12}$

If this argument is sustainable (and it should be remembered that the argument depends on specific assumptions), then it shows that the highest levels of structure that are present in tensed complements with will are present in futurate to-complements (at least the ones in the promise/decide class). If so, the lower levels, and in particular the SUB operator, must also be syntactically overt at the level where scope is represented.

1.6 Conclusion

This chapter has motivated logical forms for futurate to-complements that contain operators that make a substitution for the parameter $n$. This indicates that the representation of such predicates is decomposed into a core meaning and an operator that introduces futurity. In addition to capturing data having to do with the interaction between tense and futurity, this allows us to assume a single core meaning for verbs such as promise that take both tensed and infinitival complements.

In the course of the discussion, two classes of futurate complement infinitives were identified: ones that are purely futurate (e.g., promise) and ones that are also consistent with simultaneous scenarios (e.g., predict and be likely). The methodology of decompositional approaches to predicate meaning would suggest trying to explain this difference in terms of a motivated account of structured lexical semantics. Conceivably, what makes promise and decide purely futurate has to do with their representation in the calculus of causation and change: they describe acts of entering states of commitment and intention.

The argument for a substitution operator being syntactically present does not tell us anything about the specific syntactic location of the operator. But locating the substitution operator higher than to would agree with the fact that there are three different semantic classes of to-complements (simultaneous, purely future, and non-specific future-simultaneous). (83) gives the LFs proposed for promise, predict, and believe with to-complements. $\text{SUB}_1$ is the substitution operator using ($t, \infty$), and
SUB$_2$ is the substitution operator using $[t, \infty)$. In the LF of believe, there is no substitution operator.

(83) a. promise $[CP \lambda n [IP n [SUB_1 [CP \lambda n [IP n VP]]]]]$
   
   b. predict $[CP \lambda n [IP n [SUB_2 [CP \lambda n [IP n VP]]]]]$
   
   c. believe $[CP \lambda n [IP n VP]]$

A simple way of matching these representations up with syntax is to identify to with the most embedded $n$ in I. The different structures above the most embedded CP could then be treated as lexically stipulated syntactic structures, as implemented for example via incorporation (Baker 1988).

The analysis proposed here is consistent with the Clausal Complement Hypothesis suggested in Abusch 1998: all clausal complements have (either overtly or covertly) a full CP/IP/VP structure. In the to-infinitive LFs of (83), the complements of promise, predict, believe, SUB$_1$, and SUB$_2$ all have this structure.

Other examples of this complementation structure are tensed complements (where the CP and IP are overt) and the LF of will as in (48), which is like the LF (83a) with a SUB$_1$ operator and a CP/IP layer embedded under it.

Notes

The research for this chapter was supported by Sonderforschungsbereich 340, funded by the Deutsche Forschungsgemeinschaft. I would like to thank Mats Rooth for exciting discussions of the material. The chapter was circulated in 1999 and was presented at Cornell University in February 2000, at the University of Edinburgh in May 2000, at the University of Paris 7 in November 2000, and at Rutgers University in April 2002. I would like to thank the audiences at these presentations for their comments and suggestions. I am solely responsible for any mistakes or inadequacy.

1. Under plausible assumptions, a representation of the scheduling interpretation also agrees with property 1. Suppose we analyze this interpretation by means of a modal operator according to schedule with top-level scope in the complement. Then in (10c), the future-denoting adverb at 10 p.m. modifies the embedded predicate start rather than the top-level covert modal operator. Since the modal is stative, this representation is compatible with property 1.

2. There is a curious point about how property 1 applies to the sentences in (13). It might be that the LF of (13a) contains a future operator.

(i) predicted [FUT [VP [Bibi be in the lead][next week]]]

We want to apply property 1 to (13a) as evidence that predicted is an F-verb. For this to work, we would have to treat be in the lead rather than FUT in (i) as the top-level predicate in the complement. Otherwise, structure (i) would not be relevant for my diagnostic, as next week would not modify the top-level predicate.

3. This is because simultaneous readings involve stative complements. Performatives are an exception, assuming that in (i), the complement predicate headed by promise is nonstative.

(i) I affirm that I promise to clean up.
4. With expect, where the data in (i)–(ii) are parallel to those with predict in (26), there is some feeling of a distinct elevated register, and perhaps a distinct word sense. I do not know what to make of this, since the experienced meaning seems parallel to what is found with predict and its synonyms, where there is no feeling of an elevated register.

(i) I expect that Guido spent the night of last Friday’s party at Monique’s place.
(ii) *I expect Guido to spend the night of last Friday’s party at Monique’s place.

5. A simultaneous interpretation is possible in (i).

(i) The treatment went so well that Monique promises to be pregnant.

Example (i) does not describe a speech act, since Monique is not making a promise to be pregnant, but showing promise of being pregnant. In this example, promises does not have the standard control sense; rather, this is the raising sense noted in Postal 1974.

6. In Abusch 1998, I used the syntactic label S where I now use VP and IP.

7. The system can easily be extended to accommodate a structure with an I’ node and a subject raised into IP.

(i) [IP NP [I’ I [VP e V’]]]

Rooth (1999) modifies the system in this way in order to theorize about VP-ellipsis.

8. One might want to compare this analysis with the proposal made by Dowty (1982) and Nerbonne (1986), where a future operator makes a substitution for a tense-logical parameter known as pseudo-speech time.

9. Technically, in this example the future interval comes out as \((n, \infty)\), where \(n\) is contributed by the matrix tense on will. A free \(n\) is pragmatically interpreted as the utterance time.

10. Apart from the fact that (59a) has only a de se reading for the PRO complement subject (see Chierchia 1989).

11. This discussion is simplified, because it ignores de re and de se interpretation. In actuality, I follow Lewis (1979) and take the argument of believe to have an argument position for an individual (corresponding to the self), so that the type is e\(iwt\) rather than \(iwt\). In the LF of (71), the individual argument is introduced by de re interpretation of he, using an acquaintance relation of identity.

12. There is a further possibility of de re interpretation. This also gives the wrong reading, since the position of the res would be occupied by a counterpart of the utterance time, rather than a counterpart of the attitude time.

13. It is necessary to assume that in LF, operators and verbs are in the right-branching configurations of (83). An incorporation structure such as the following would be uninterpretable:

(i) \([\lambda n [\text{SUB}_1 [\lambda n \text{predict}]] [\text{CP} e [\text{IP} e [\text{VP} e [\text{IP} e [\text{IP} n \text{VP}]]]]]])\]

Since \(\lambda\) is a binding operator, no compositional interpretation can be given for the traces of \(\lambda n\).

References


2.1 Introduction

The syntax of quotations and, in particular, the inversion phenomena found in the statements introducing a quotation have long been excluded from generative literature. However, recent studies (Collins and Branigan 1997; Collins 1997; Suñer 2000) have introduced the idea that the properties of these constructions are derivable from general principles of Universal Grammar. Collins and Branigan (1997) rightly point out that the peculiar syntax of quotations should reflect properties of our innate knowledge of grammar, rather than ad hoc acquired knowledge. I assume the same premise, although the hypothesis I propose here differs significantly from the solutions suggested in the works mentioned above. The differences are of two orders.

First, the three following utterances are not treated in the same way:

(1) a. The policeman said, “Children can’t go in there.”
    b. “Children can’t go in there,” said the policeman.
    c. “Children,” said the policeman, “can’t go in there.”

Superficially, the same two components can be distinguished in each example: the quotation and the introductory statement (henceforth, IS). As we shall see in section 2.3, the introductory statement in initial position (henceforth, IIS) in (1a) behaves quite differently from the introductory statements in noninitial position (NIIS) in (1b,c). It is therefore necessary to attribute to them a different syntax (which Collins and Branigan (1997), Collins (1997), and Suñer (2000) do not).

Second, in their analyses these authors postulate the existence of an ad hoc feature [quoted] that triggers the operations leading to subject inversion in the IS. Only the constraints on inversion derive from other general characteristics of the syntax. My approach has no need of a special feature whose existence cannot be independently proven. I take as a starting point the idea that the syntactic operations at work in ISs (as well as the constraints bearing on them) are triggered by the syntax of the T-feature, as is the case in other constructions that link two clauses.
In section 2.2, I examine the data that make it possible to establish differences between an IIS and an NIIS as well as differences between French and English. In section 2.3, I review previous analyses. In section 2.4, I propose an analysis of subordination founded on the specification of the T-feature, which can be extended without too much difficulty to the syntax of quotations.

### 2.2 The Data

As mentioned in section 2.1, my starting point is the idea that there are two different constructions: one that begins with an IIS and one where an NIIS appears either in the middle of the quotation (wraparound position) or at the end. The French and English data will enable me to justify this point of view and to set the problem out clearly: on the one hand, there is a crucial point at which the two languages converge; and on the other hand, there are points where one of the languages can mark a difference between an IIS and an NIIS, whereas the other can neutralize it.

1. In English, as well as in French (see Blanche-Benveniste 1989; Cappeau 1999), the IIS can be an interrogative or negative sentence, whereas the NIIS seems to be “blocked” with respect to modality. For example:

   (2) a. Qui dit, “Les enfants ne peuvent pas entrer ici”?
   b. *“Les enfants ne peuvent pas entrer ici,” qui dit?

   (3) a. Who said, “Children can’t go in there”?
   b. *“Children can’t go in there,” who said?

   (4) a. Le policier ne dit pas, “Les enfants ne peuvent pas entrer ici.”
   b. *“Les enfants ne peuvent pas entrer ici,” ne dit pas le policier.

   (5) a. The policeman didn’t say, “Children can’t go in there.”
   b. *“Children can’t go in there,” didn’t say the policeman.

However, things are not so simple. As Cappeau (1999) has pointed out, a negative in the NIIS is possible in French when the negation is lexically associated with an aspectual auxiliary. In this case, the negation is not the negation of a correlated assertion, given that the latter is not interpretable. For example:

   (6) a. “Les enfants ne peuvent pas entrer ici,” n’a pas manqué de dire le policier.
   b. *“Children can’t go in there,” hasn’t failed to say the policeman.

   b. *“Les enfants ne peuvent pas entrer ici,” a manqué de dire le policier.
   b. *“Children can’t go in there,” has failed to say the policeman.

This comes down to saying that the restrictions on negatives and interrogatives cannot be explained in strictly configurational terms whereby the position of the verb prevents its raising to a Neg head.
2. In French, the nature of the construction rigidly determines the position of the verb. In an IIS, the verb cannot be preposed, whereas it must be preposed in an NIIS.²

(7) a. *“Les enfants ne peuvent pas entrer ici,” le policier dit.
   b. ??Dit le policier, *“Les enfants ne peuvent pas entrer ici.”

On the contrary, it seems that the position of the verb in English can vary in both cases. For example (Collins and Branigan 1997):

(8) Reported the Evening Telegram, “Fish stocks are still declining.”

(9) “Who the hell,” Joe demanded, “is supposed to be coaching the base runner?”

Inversion is not possible in the NIIS when it is a double object construction.

(10) a. “What’s on?” John asked Mary.
   b. *“What’s on?” asked John Mary.

3. In English, there are constraints on tense and aspect in the NIIS that do not affect the IIS. These constraints do not exist in French.

(11) a. *“Children,” had said the policeman three days before, “can’t go in there.”

(12) a. *“Children,” started to say the policeman, “can’t go in there.”
   b. “Les enfants,” commença a dire le policier, “ne peuvent pas entrer ici.”

However, these constraints disappear in English when there is no inversion in the NIIS.

(13) “Children,” the policeman had said three days before, “can’t go in there.”

(14) “Children,” the policeman started to say, “can’t go in there.”

4. The same kind of contrast shows up with respect to the verb the IS selects. French allows a wide choice of verbs both in the IIS and in the NIIS. It is possible to use a verb that does not accept a complement clause in object position and that does not belong to the class of “saying” or “thinking” verbs (see Le Cornulier 1973).³ In English, on the other hand, the choice is limited to verbs with subordinates.

(15) a. *“Children,” reacted the policeman, “can’t go in there.”

But, as we saw for tense and aspect, the constraint disappears when there is no inversion in the NIIS.

(16) “Children,” the policeman reacted, “can’t go in there.”
A correct analysis of the syntax of quotations should in my opinion explain the following:

(17) a. the nature of the link between quotation and IS, so as to account for inversion in the NIIS as well as for the other characteristics shared by French and English,

b. why inversion (especially in NIISs) seems to be optional in English whereas it is obligatory in French (and in Spanish), and

c. why inversion in NIISs triggers a series of constraints in English that do not exist in French.

2.3 Remarks on Previous Analyses

2.3.1 Collins and Branigan 1997 and Collins 1997

Collins and Branigan (1997) are mainly concerned with the internal configuration of the IS with inversion. They give it the following representation (their (24a)):

(18) “When on earth will the fishing begin again?” [CP O₁ [AgrP asked [VP Harry t₁(tquotation)]]]

The verb (i) selects a complement (the quotation), whose trace forms a chain with the operator in C, and (ii) raises to Agr₀ to check the feature [+quoted]. Collins (1997) adopts the same analysis using a notation in accordance with Chomsky’s (1995) formulation of the Minimalist Program. The verb’s [+quoted] feature is checked in T, which in turn is dominated by the [+quoted] feature in C. We thus have the following representation:

(19) [C [+quoted [T asked [VP Harry [V t₁(tquotation)]]]]]

The only link between the quotation and the IS is established by the [+quoted] operator, but the selection of the IS is motivated by nothing whatsoever. For these authors it has the status of a parenthetical expression whose only role is to identify the speaker. This comes down to saying that the analysis of the set [quotation + IS] is always the same, as the following examples from Collins and Branigan (1997) show (their (24a–c)):

(20) a. “When on earth will the fishing begin again?” [CP O₁ [AgrP asked Harry t₁]].

b. “When on earth,” [CP O₁ [AgrP asked Harry t₁]], “will the fishing begin again?”

c. [CP O₁ [AgrP asked Harry t₁]], “When on earth will the fishing begin again?”

What one retains from this analysis is the hypothesis that the verb raises to T, that there is an operator in C with a feature that attracts the verb, and that there is an empty category in V corresponding to the quotation (the idea that it could be a
trace is doubtful, for there is no movement). However, there are numerous conceptual and empirical problems. Conceptually, one ought to be able to know why the IS is selected (especially the NIIS), given that it can always be omitted, leaving the context to handle the job of identifying the speaker. Moreover, the [+quoted] feature cannot be justified on independent grounds.

Empirically, Collins and Branigan’s analysis does not account either for the differences between IISs and NIISs, or for the differences between an NIIS with inversion and one without. I believe it is possible to solve the two conceptual problems by doing away with the feature [+quoted] and, simultaneously, to solve the empirical problems.

2.3.2 Suñer 2000
Suñer (2000) adopts Collins and Branigan’s analysis of the external structure of the IS, but she also tries to make its links with the quotation explicit, a move that would make it possible to solve one of the conceptual problems mentioned above. For a Spanish example such as (21), she proposes the representation in (22).

(21) “Claro,” comprendió el viejo, “les ha dicho el médico que me queda poco.”
   “Of course,” understood the old man, “the doctor has told them that I have little time left . . .”

(22) \[
  \text{[VP QOp claro [F +quoted [+Foc] [TP pro expl [T comprendió [vP el viejo [V tv [DP tQOp les ha dicho el médico . . . ]]]]]]}
\]

As was observed for English, the verb in the IS raises to T, attracted by the feature [+quoted] in F, and the subject remains in vP (a possibility envisaged in Suñer 1994 and Ordoñez 1999 with respect to other problems in Spanish). But, unlike Collins and Branigan, Suñer postulates a DP that is selected by the IS verb and that contains the quotation. The quotation can totally or partially raise to Spec,F, once again attracted by the feature [+quoted]. There are problems with this analysis, however. First, the idea that there is a DP for the entire range of intransitive verbs that appear in a Spanish IS is highly problematic. Thus, the transitive verb comprender ‘understand’ can be replaced by the intransitive suspirar ‘sigh’.

(23) “Claro,” suspiró el viejo, “les ha dicho el médico que me queda poco.”
   “Of course,” sighed the old man, “the doctor has told them that I have little time left . . .”

Second, the different positions of the quotation in wraparound position make it theoretically impossible to move a configurationally heterogeneous component to Spec,F. In other words, the following example cannot be explained in terms of pied-piping:
Third, it would be necessary to have different representations, given that quotations without an IS cannot be described using (22). It therefore seems necessary to adopt a different approach.

2.4 Suggested Analysis

As mentioned in section 2.1, it seems possible to establish a link between the syntax of quotations and that of subordination. To do this, one need only postulate that the syntax of this whole class of complex utterances stems from tense properties. I begin by setting out the theoretical presuppositions concerning tense and the functional categories I will bring into play. Then I show how these presuppositions make it possible to derive processes of complement and adverbial subordination. Finally, I show how quotations as well as ISs can be handled quite naturally by this line of reasoning.

2.4.1 Assumptions

The approach I adopt presumes a theoretical framework based on the following three assumptions:

1. A Reichenbachian (1947) division of tense into speech time (S), reference time (R), and event time (E). Following Hornstein (1990) and Thompson (1999), I will assume that S, R, and E are semantic features of time that can be associated with the heads C, T, and V. Evidence for this comes from both the position and the interpretation of temporal adverbs that modify S, R, or E time (see Thompson 1999 for further details).

2. The Anchoring Conditions for tense established by Encó (1987, 643):
   a. Tense is anchored if it is bound in its governing category, or if its local Comp is anchored. Otherwise, it is unanchored.
   b. If Comp has a governing category, it is anchored if and only if it is bound within its governing category.
   c. If Comp does not have a governing category, it is anchored if and only if it denotes the speech time.

   It will suffice to weaken Anchoring Condition (c) to incorporate quotations and IS.

3. The Extended Projection Theory (Grimshaw 1991), according to which the functional categories D and T are not heads that respectively select a complement N or V. N-D and V-T form extended projections of the same syntactic category and
have the same features. It follows that C can be interpreted as the third part of an extended projection V-T-C. We can then assume that a feature of V can be checked in T or C and that Enc’s Anchoring Conditions can be interpreted in terms of lexical features that need to be checked.

2.4.2 Specification of Tense and Clause Linking

We need only concentrate on S and E to achieve our aims. I will adopt a binary notation where S can be [+/−S] and E can be [+/−E], making it possible to specify tense as follows:

(25) Condition on specification of tense
   a. Given a simplex sentence, T is specified when it is [+E] and [+S].
   b. T is [+E] when it is possible to attribute a value to [+/−past].
   c. T is [+S] when it corresponds to the speech time.

In principle, this condition is fulfilled in an utterance as simple as (26).

(26) Pierre est rentré.
   Pierre is gone/come.home
   ‘Pierre has gone/come home.’

Given this, it is possible to describe two situations where T is underspecified.

1. T is [−E] if it is not possible to situate the event in time and give it a truth value.
   It must also, necessarily, be [−S], given that it seems impossible that an event unspeci-ified for [+/−past] could directly refer to speech situation time. This is why a subjunctive cannot constitute an independent utterance.

   The specification of T must then proceed via C, on condition that C is governed by a [+E, +S] head. This is what happens in French in clauses where the infinitive and the subjunctive alternate with the presence/absence of subject.4

(27) a. Pierrei veut [PROi rentrer].
   Pierrei wants [PROi go.home-INF]
   ‘Pierre wants to go home.’
   b. Pierrei veut [qu’ilj rentre].
   Pierrei wants [that hej go.home-SUBJ]
   ‘Pierre wants himj to go home.’

(28) a. Pierrei doit finir avant de [PROi rentrer].
   Pierrei must finish before [PROi go.home-INF]
   ‘Pierre must finish before going home.’
   b. Pierrei doit finir avant [qu’ilj rentre].
   Pierrei must finish before [that hej go.home-SUBJ]
   ‘Pierre must finish before hej goes home.’
Example (28) shows that the [+E, +S] head is not necessarily a verb, because certain temporal adverbs have the same predicational properties (see Demirdache and Uribe-Etxebarria, this volume). We can also do without the notion “conjunction” because we only have lexical heads (V or P) that select a predicate. The que in (27b) and (28b) must be analyzed as an operator that belongs to the V-T-C extended projection and enables the derivation to converge once all the features of V have been checked. (See Barra-Jover 2002 for a description of subordination in Spanish in these terms.)

2. T is [+E, −S] when, although [+−past] can be determined, the speech situation of the sentence cannot be identified with that of the speaker. In this case, French will always have a verb in the indicative, but a que operator in C must be governed by a [+E, +S] head. See (29) and (30).

(29) a. Pierre, nous a dit [qu’il/i_j est rentré tard].
   Pierre, us has said [that he/i_j is came.home late]
   ‘Pierre, told us that he/i_j came home late.’
   b. Pierre, se souvient [qu’il/i_j est rentré tard].
   Pierre, remembers [that he/i_j is came.home late]
   ‘Pierre, remembers that he/i_j came home late.’

(30) a. Jean est parti alors [que Pierre est rentré].
   Jean is left then [that Pierre is came.home]
   ‘Jean left whereas Pierre came home.’
   b. Cela fait trois jours [que Jean est rentré].
   that makes three days [that Jean is came.home]
   ‘It’s three days since Jean came home.’

The most significant insight this approach offers is that any subordination process can be explained simply in terms of T-feature checking, which concurs with Stowell’s (1981) Case Resistance Principle. And (29a) shows that reported speech can also be handled in this way.

2.4.3 Direct and Indirect Quotations

If we apply all the above suggestions to direct quotations, it is clear that they are cases of underspecification of tense. All direct quotations are, in principle, [−S] because they can never directly correspond to the speech situation imposed by the speaker. In other words, if we imagine quotation (31) produced by a given speaker, we are forced to admit that it is an uninterpretable utterance.

(31) *“Pierre est rentré.”

Given the different types of tense specification examined above, we can state that, for (31) to be interpretable, it is necessary to postulate an operator (OpT) in C having
an accessible antecedent. Thus, the difference between a “standard” utterance such as (26) and the quoting of that utterance in (31) could be formalized as follows:

(32) a. \[ C \emptyset [Pierre est rentré]\]
    b. “\[C OpT_i [Pierre est rentré]\]”

Example (32b) is not interpretable unless there is an accessible antecedent for OpT. This is why I suggested that Enç’s Anchoring Condition (c) would have to be weakened. It could be reformulated as follows:

(33) *Anchoring Condition (c) revisited*

If C does not have a governing category, it is anchored if it denotes the speech time or if there exists an accessible antecedent that denotes the speech time.

Two kinds of antecedent for OpT in C can be envisaged. One is a lexical antecedent (in other words, an IIS), in the case of a predicate selecting a C. The fact that V can attribute a θ-role to the selected element or that it is transitive is irrelevant in this kind of construction. This can be seen in examples (34)–(37): the verb in (34) is transitive and can select a nominal object, the verb in (35) assigns a θ-role but cannot assign case (with a nominal object, a preposition is needed, as in *Jean se souvint de sa visite* ‘lit.’ ‘Jean remembered of his visit’) and the verbs in (36) and (37) cannot assign θ-roles.

(34) Jean confirma, “\[C OpT_i [Pierre est rentré]\].” confirmed
(35) Jean se souvint, “\[C OpT_i [Pierre est rentré]\].” remembered
(36) Jean approuva, “\[C OpT_i [Pierre est rentré]\].” approved
(37) Jean acquiesça, “\[C OpT_i [Pierre est rentré]\].” acquiesced

I emphasize the fact that examples (34)–(37) all have the same configuration since the merger between the IIS and the quotation comes about because the verbs select a C and because the OpT of the quotation must have a [+E, +S] antecedent to be interpretable. The proof that only one C is selected shows up in the (hitherto unexplained) possibility of replacing the quotation by a simple interjection.

(38) Jean confirma/se souvint/approuva/acquiesça, “Hum.”

If the verb of the IIS can assign a θ-role, it is possible to go from antecedent specification to government specification, which implies that the verb in the quotation must agree with the verb in the IIS, as in (39)–(40). This is impossible when there is no θ-role, as in (41)–(42).
(39) Jean confirma que Pierre était rentré.
   Jean confirmed that Pierre was came.home
   ‘Jean confirmed that Pierre had come home.’

(40) Jean se souvint que Pierre était rentré.

(41) *Jean approuva que Pierre était rentré.

(42) *Jean acquiesça que Pierre était rentré.

A nonlexical antecedent can be envisaged for OpT in C when there is no IIS because the quotation is part of a narrative. In this case, it seems plausible to suppose that the antecedent of OpT is the time of the series of narrative events, or “the extension of T’” that ter Meulen (1995) introduces into her definition of event frame. Here is a representative micronarrative:

(43) Un policier surveillait la maison. Ils arrivèrent à la porte.
   ‘A policeman was.watching the house. They arrived at the door.’
   \[T_i - [C \text{ Op}_i [\text{les enfants ne peuvent pas entrer ici}] \]
   \[T_i - [C \text{ Op}_i [\text{children can’t go in there}] \]

Having attained a better understanding of the licensing conditions for quotations and the syntactic operation that enables an IIS and a quotation to merge, we can now look at NIISs.

2.4.4 Noninitial Introductory Statements
The quotation in (43) allows an NIIS.

(44) Un policier surveillait la maison. Ils arrivèrent à la porte.
   “Les enfants,” dit le policier, “ne peuvent pas entrer ici.”

What is the NIIS’s function in this type of context? It is obvious that it is not a question of identifying the speaker, as the following facts prove:

• It is more natural to use a pronominal subject (45).
• The pronoun can be the nonspecific on (more or less equivalent to English one) (46).
• There are situations where the narrative introduces a nonspecific speaker and where the NIIS cannot identify him or her (47).

(45) Un policier surveillait la maison. Ils arrivèrent à la porte.
   “Les enfants,” dit-il, “ne peuvent pas entrer ici.”
   said-he

(46) Un policier surveillait la maison. Ils arrivèrent à la porte.
   “Les enfants,” leur dit-on, “ne peuvent pas entrer ici.”
   to.them said-one
(47) *Ils arrivèrent à la porte et quelqu'un s'adressa à eux:

someone refl addressed to them

“Les enfants,” hurla le policier, “ne peuvent pas entrer ici.”
screamed

I will claim that the principal function of an NIIS concerns tense and that the rest of the information it may convey is secondary as far as selection is concerned. More precisely, an NIIS is selected to lexically specify the antecedent of the quotation when the extension of T (i.e., a nonlexical antecedent) is the only accessible antecedent. Of course, if the quotation depends on an IIS (i.e., a lexical antecedent), an NIIS is impossible.

(48) *Jean confirma: “Pierre est rentré,” dit-il.

But if the verb confirmer does not select a C because it selects another argument, the OpT of the quotation no longer has an accessible lexical antecedent and an NIIS can appear.

(49) Jean confirma la nouvelle: “Pierre est rentré,” dit-il.

the news

Seen from this angle, the syntax of NIIS is accounted for naturally with no need for ad hoc rules because it converges with the syntax of certain temporal adverbs that can be described as “bound” and whose role is to organize the discourse temporally (Thompson 1999) or to make the temporal sequences concerned explicit (ter Meulen 1995). If we compare the behavior of an NIIS with that of an adverb such as alors ‘then’, we can imagine a single representation for both. Within a given narrative, there is a T that nonlexically specifies the OpT of a sentence. Alors or the NIIS (on two different levels, of course) play the role of lexical specifier.

(50) T₁ – [C Op₃ [les enfants [dit le policier] ne peuvent pas entrer ici]]

(51) T₁ – [C Op₃ [les enfants [alors] ne pouvaient pas parler à table]]

‘Children, then, couldn’t talk at the table.’

The adverb and the NIIS have a certain freedom of movement but not complete freedom. They tend to adjoin to T or C because, as (52c) and (53c) show, positions inside vP are not accessible (this position being reserved for adverbs that modify the event time).


c. ??‘Les enfants ne peuvent pas entrer,” dit le policier, “ici.”

d. “Les enfants ne peuvent pas entrer ici,” dit le policier.
This syntactic parallelism also shows up in the double possibility of appearing either as specification of a T (54)–(55) or as an element governing a C (56)–(57).

Once this parallelism has been established, it remains to determine the nature of the internal configuration of the French NIIS. It seems reasonable to assume that the verb in the NIIS moves from T to C. Recall Collins’s (1997) analysis for English given in (19), repeated as (58).

Let us consider that there is a C position but that it is occupied not by a [+quoted] feature but by a T operator that must form a chain with the OpT of the quotation. In this case, the French NIIS verb can be attracted toward the C position since this is a movement that is available in other situations. This enables us to maintain a representation that corresponds to other cases of inversion in French (see Rizzi and Roberts 1990). The set [quotation [NIIS]] will thus be represented as follows:

We can now answer question (17a): the link between the quotation and the IS is produced by tense specification. All quotations involve a C occupied by an OpT that must be specified. When it is not lexically specified, an NIIS can be selected exclusively for this task. This explains two properties of NIISs: (i) inversion (the two Cs form a chain, and the verb in the NIIS is attracted toward this position) and (ii) the fact that negatives and interrogatives are impossible. The role of the NIIS only concerns T and the C position is only available for OpT (one could consider it to be a defective C that does not allow extension). Of course, this restriction does not concernaspectual negation, which explains example (6a).
2.4.5 Evidence from Russian

The results adduced so far could be judged to be too speculative. Fortunately, Russian offers morphological proof of their validity. Russian has examples that correspond to what is observed in French—namely, quotations with an NIIS containing a tensed verb.

(60) “Vy s barinom,” govorit, “moshenniki, i barin tvoj—plut.”

“You with master said rascals and master your scoundrel.

“‘You, with your master,’” said he, “are rascals, and your master is a scoundrel.”

Govorit is inflected for tense (past) and person (3sg). Govorit can be replaced by a weaker form (grıt), which is only inflected for tense and which cannot take arguments—in other words, an adverbial form. This kind of pair exists with other verbs: mol < molvıl ‘he said’, déskat < dejati+skazat ‘had say’, dé < dejati ‘said he’ (lit. ‘made he’). Here are two examples:

(61) “Vy s barinom,” grıt, “moshenniki, i barin tvoj—plut.”

(62) “Mne to.me soobshchili, chto ja,” mol, “nikuda ne edu.”

“to.me (they) let.know that I nowhere not go

This supports two of the hypotheses suggested so far: that the NIIS is a C exclusively selected to specify tense, and that the inflected verb occupies the C position. The verb maintains tense morphology, is incapable of assigning nominative case, and cannot select any other arguments, which means that it has lost the properties it has in T and V and retains only those it has in C.

Russian has another particularity: one of the adverbial forms, dé, has a clitic correlate, de, that can appear at the beginning of a quotation with or without an NIIS. For example:

(63) “Vy-de s barinom,” (govorit), “moshenniki, i barin tvoj—plut.”

In other words, the suggested OpT position of the quotation has access to morphology that correlates with the morphology occupying C in the NIIS. As in other cases, when a language has a given morphology for a given C, a constituent (and only one constituent) can raise to C, attracted by the clitic. (64) would be the representation of (63).

(64) [c Vyı-dej [tı s barinom ([c govoritı]) . . .]]

This is comparable to Latin interrogatives, which also display a clitic (-ne) that attracts another constituent.
(65) \[ C \text{Tui-}ne \ [t_i \text{latinam linguam loqueris}]]? \\
[C \text{you-int} [t_i \text{Latin language speak}]]

‘Do you speak Latin?’

This proves that quotations are dominated by a C containing an OpT (-de merely indicates the fact that there is a quotation) and that the operator forms a chain with the NIIS, which is selected to lexically specify it. This would seem to justify the present analysis, and all that remains is to see if it can account for the differences between French (and Spanish) and English.

2.4.6 The Contrast between French and English

We must now answer questions (17b,c) and explain why inversion is optional in English and why it is subject to constraints that do not exist in French. Let us begin with the second point.

We have seen that an NIIS with inversion in English allows neither the pluperfect, nor aspectual auxiliaries, nor intransitive verbs (see (11a), (12a), (15a)). I will claim that all these phenomena can be explained by an independent constraint on English verbs—namely that, in general, they cannot raise to C. As a consequence, NIIS verbs cannot cross T as in Collins and Branigan’s analysis. This difference with respect to French makes it possible to explain the constraints on English NIIS constructions in configurational terms. As (66a) and (66b) show, the languages exhibit two different structural relations (C₁ represents the quotation and C₂ the NIIS, and the verbs dit and said indicate the position of the verb within the NIIS).

(66) a. French

```
       C
       \__________/
      C₁       C₂
     /\         /\  
OpTᵢ  T   ditᵢ  T
```

b. English

```
       C
       \__________/
      C₁       C₂
     /\         /\  
OpTᵢ  T   OpTᵢ  T
         \   \    
       saidᵢ
```
In French (66a), unlike in English (66b), the verb in C₂ position c-commands the OpT of the quotation. This could explain two phenomena.

First, in French the verb in the NIIS can impose its tense and aspect features on OpT in the quotation and thus interfere with T. In a micronarrative such as (67), NIIS time alters the temporal sequence imposed by T.

(67) Un policier surveillait la maison. Ils arrivèrent à la porte.
   "Les enfants," avait dit le policier trois jours avant, "ne peuvent pas entrer ici."
   "‘Children,’” had said the policeman three days before, ““cannot go in there.””

In English, however, given its structural position, the NIIS verb can only inherit the temporal features of T via OpT.

Second, in French any verb that selects a C (dire, douter, réagir, etc.) can appear in C₂. Once again, this can be explained by the fact that once in C₂, the verb has the same structural relationship with C₁ as in an IIS. It is as if the NIIS verb is able to “recognize” the C selected because it is within its scope. Now, in English the NIIS verb bears a different structural relation to C₁. We are now in a position to understand why only transitive verbs can appear with inversion: they are verbs that occupy a structural position accessible to a complement clause. Instead of the trace proposed by Collins and Branigan, one could suggest the existence of a category similar to pro⁸ (see Rizzi 1997 for a similar category in other English constructions) that would be bound in accordance with Principle B. We would thus have a different representation for each language.

(68) T₁ – [C Op₁ [les enfants [C dit; [T le policier; t₁ [V t₁ t₁]]] ne peuvent pas entrer ici]]

(69) T₁ – [C Op₁ [children [C Op₁ [T said [vP the policeman [V t₁ pro]]]] can’t go in there]]

We can now tackle two other questions: (i) why is inversion not optional in French? and (ii) why does absence of inversion free English NIISs from the constraints otherwise imposed on them? As for the first question, the reply seems simple enough: inversion is not optional in French because it establishes a chain between the OpT of C₁ and that of C₂, and this chain leads to structural relations similar in their effects to those existing between an IIS and the quotation it selects. Inversion is the only (or, if one prefers, the best) way of managing this. Inversion (for the verbs that allow it) is optional in English because, although it establishes OpT’s chains, it also produces structural relations that give rise to numerous restrictions.

The second question is more difficult to answer. It is clear that, when the quotation verb does not move, the English NIIS maintains many of the properties of the IIS. Tense and aspect can affect the OpT of the quotation, and intransitive verbs can
“recognize” a C. We must now bring out the nature of the link between the quotation and the NIIS. Intuitively, a solution would be to say that, whereas the link between quotation and NIIS in the inversion case comes close to subordination, it comes close to juxtaposition in the no-inversion case because the OpT of the NIIS does not trigger any syntactic operation resulting in merger with the quotation. Looked at in this way, it would be closer to simple parenthesis, and the relations between the two parts would reduce to mere coreferentiality, which would afford a certain degree of autonomy to the NIIS. Two details make this solution acceptable (at least for the time being). First, there are parentheses in French (and Spanish) that, although closely resembling NIISs, have decidedly different properties and do not trigger fusion with the quotation. Either the verb already has a complement (70), or it does not select a C (71). In these cases, inversion is impossible and the only relation between the quotation and the parenthesis is one of coreferentiality.

(70) a. “On s’est ruiné?” Jean hurla la question.
   “‘We’re ruined?’ Jean screamed the question.’
 b. *“On s’est ruiné?” hurla Jean la question.
   “‘We’re ruined?’ screamed Jean the question.’

(71) a. “On s’est ruiné?” Jean regarda son père avec mépris.
   “‘We’re ruined?’ Jean looked at his father with scorn.’
 b. *“On s’est ruiné?” regarda Jean son père avec mépris.
   “‘We’re ruined?’ looked at Jean his father with scorn.’

The unacceptability of (70b) and (71b) is easily predicted by (66a): if either a transitive verb that has already selected a complement or an intransitive verb incapable of selecting a C occupies C₂, thereby c-commanding C₁, the θ-Criterion is violated.

Moreover, (at least in British English) an English NIIS without inversion seems capable of occupying positions not open to inverted constructions, suggesting that it is not in relation with a head in the quotation. For example (where can’t bears emphatic stress):

(72) a. “Children can’t,” the policeman said, “eat sweets here.”
 b. ??“Children can’t,” said the policeman, “eat sweets here.”

2.5 Conclusion

The main objective of this chapter was to see whether a T-feature can be considered a motor for syntax. On the standard assumption that a derivation is not complete until all formal features have been checked, it can be concluded that two clauses are linked when the T-feature is not duly specified in one of them. As we have seen, this accounts not only for complement and adverbial subordination, but also for the connection between direct and indirect speech.
As far as the question of NIISs is concerned, I suggest an analysis that makes no appeal to the increasingly ad hoc features at play in syntax. The general characteristics of NIISs, as well as their peculiarities in French and in English, are explained on the basis of properties that have been shown to be operative elsewhere. There is, however, one point that remains to be explained: the link between an NIIS without inversion and the quotation in English. I have tentatively suggested that an NIIS with inversion is a case of hypotaxis, whereas an NIIS without inversion is a case of parataxis. But this issue demands greater knowledge of parentheticals in general and awaits further research.

Notes
Special thanks to Paul Wass for his help in preparing this chapter and to Jackie Wass for typing the English version. I would also like to thank the participants at the International Round Table on the Syntax of Tense and Aspect (Paris, November 2000), as well as the members of the Centre de Recherches en Linguistique Interlangues et Traitement des Textes de Poitiers, Université de Poitiers, for their helpful remarks and criticisms.

1. Suñer (2000) claims that NIISs in Spanish accept negation. She gives the following example (her (47b), with her translations):

(i) "Comamos," no dijo Juan una sola vez.
   "eat+1st pl.," not said Juan one sole time
   "Let’s eat,” didn’t Juan say just once.’

Yet, for any native Spanish speaker (including myself), (i) is unquestionably unacceptable. I shall make no further remarks about Spanish, as it is not distinct from French in any relevant way.

2. French examples such as (i)

(i) "Ne viens pas,” il dit.
   “Don’t come,” he says.’

do not constitute counterexamples, as *il can be considered a mere person morpheme (see Zribi-Hertz 1994). Lexical subjects are excluded in this context.

(ii) *"Ne viens pas,” Pierre dit.

There do exist phenomena such as (iii).

(iii) "Ne viens pas,” qu’il dit.
   "Don’t come,” that he says.

I will not discuss this aspect of the question further here (see Barra-Jover, to appear).

3. The same is true of Spanish, as Suñer (2000) shows with a copious list of examples.

4. The infinitive/subjunctive alternation seems to be a question of person inflection. In Modern Greek, the infinitive and subjunctive are not distinguished morphologically, so that all subjects are obviated (see Tsoulas 1995, where these constructions are described using a feature [+definite] that more or less corresponds to my [+/-E]). The opposite is the case in Portuguese, since the infinitive can inflect and it appears in obviated subject contexts (see Raposo 1987).
5. Plann (1986) considers that Spanish examples with subordinate clauses introduced by prepositions go against the Case Resistance Principle. For example:
   (i) Me acuerdo de que me lo dijo.
       (I remember of that me it (he) told
       ‘I remember him telling me.’

In Barra-Jover 2002, I give an explanation based on the assumption that the verb in Spanish can activate nominal features (whose existence can be independently motivated) and project them into C. In such cases, subordination is a question of case assignment. But subordination for tense specification remains an option—compare (ii) with (i).

(ii) Me acuerdo que me lo dijo.

6. Adverbs that acquire clausal content when interpreted are bound. Thus, English then is interpretable only if such a propositional argument is saturated (see Thompson 1999), whereas an aspectual adverb such as often does not have this property. Moreover, the different types of adverb occupy different positions within the sentence.

7. The fact that auxiliaries can raise to C in interrogatives is not discussed here, because, as we have seen, the C in an NIIS is defective and is selected only for tense.

8. According to Authier (1992), English, in contrast with French, does not allow a pro category in object position, as shown by the following sentences:
   (i) J’aime pro quand les enfants ne pleurent pas.
   (ii) a. *I like pro when children don’t cry.
       b. I like it when children don’t cry.

However, as Rizzi (1997) points out, empty object positions (as in, for example, the answer Yes, I like) behave like a pro object in French.

References


3.1 Background and Main Claims

3.1.1 Significant Previous Results
The analysis proposed in this chapter is based on the theory of e(vent) versus r(esult) nominalizations presented by Grimshaw (1990) and Alexiadou (1999). Grimshaw first proved that only e-nominals have argument structure (a-structure); only for them is it legitimate to ask whether their a-structure is completely or partly inherited from the corresponding verbs. R-nominals, as well as underived nominals, lack a-structure and project on the basis of their lexical conceptual structure. Grimshaw makes two important claims regarding e-nominals.

First, nominalization is an operation on a-structure that suppresses the external argument of the corresponding verb. Suppressed positions are not satisfied by arguments, but may license argument adjuncts, such as the by-phrase or a possessor (genitive) phrase. The genitive subject of an e-/r-nominal, if present, is always a modifier, and this explains why it is always optional, unlike the subject of a finite clause.

Second, since in Romance languages like French or Italian (see Valois 1991; Giorgi and Longobardi 1991) there may be only one lexical DP in the genitive case and since in e-nominals the object must be expressed, it follows that the subjective genitive will appear only in r-nominals. This generalization has been proposed for the Romance domain by Kupferman (1991, 145).

(1) Kupferman’s generalization

Le génitif subjectif, s’il est assigné par la structure lexicale du nominal, marque ce dernier comme non-événementiel. (‘The subjective genitive, if it is assigned by the lexical structure of the nominal, marks the latter as noneventive.’)

Developing Grimshaw’s ideas in a minimalist framework, Alexiadou (1999) proposes a derivational account of the asymmetry between the always obligatory object and the always optional subject, relating it to the particular lexical and functional structure of e-nominals. In Alexiadou’s approach, the problem of a-structure
inheritance does not arise since, in agreement with recent research on projection (e.g., Hale and Keyser 1993; Harley 1995; Harley and Noyer 1998; Marantz 1999), the lexical roots that are projected bear no categorial feature. The categorial feature becomes a contextual property, eventually determined as a consequence of the particular functional structure in which the lexical root $R$ occurs. A small $v$ signals a lexical verb, a small $n$ signals a noun, and so on.

The following proposals made by Alexiadou (1999) regarding e-nominals are particularly relevant for the present analysis:

1. The verbal properties of the nominalization follow from the presence of verbal functional categories: $v$ and Aspect.
2. The absence of the agent follows from the defective nature of $v$ in nominals, a light verb associated with ergative structures that lacks the ability to introduce the external argument. E-nominals presuppose the internalization of the agent, which becomes a *causative adjunct*.
3. Aspect is mainly responsible for licensing adverbial modifiers. Following Borer (1994), Aspect is also the projection where case is checked.
4. E-nominals are aspectually marked.

Alexiadou’s analysis makes two empirical predictions: (i) e-nominals are intransitive, in the sense that the complement of the nominalizing affix is a verb phrase that lacks a subject; (ii) e-nominals are never based on unergative verbs.

### 3.1.2 Aim and Outline of the Chapter

The aim of this chapter is to suggest certain revisions and refinements to the theory proposed by Grimshaw (1990) and Alexiadou (1999) on the basis of data from Romanian. Specifically, the following generalizations are defended:

1. Aspect is the essential parameter in the syntax of e-nominals, determining the selection and projection of arguments.
2. The subject in e-nominals is not a modifier, but a syntactic argument, a conclusion also reached by Szabolcsi (1994) and Siloni (1997).
3. Nominalizing affixes may be aspectually marked as $[+/-\text{telic}]$. $[\text{+Telic}]$ affixes select ergative VP complements since the telicity of the predicate is identifiable by the object. $[\text{-Telic}]$ affixes select unergative/transitive VP configurations, and the subject is or may be involved in licensing the atelic aspectual interpretation.
4. In e-nominals, aspectual features are checked together with case features: the AspectP of the DP is a CaseP; e-nominals have available one syncretic Aspect/Case position. The e-reading with its particular aspectual interpretation is licensed through checking the structural case of the aspectually relevant participant: the object if the suffix is $[+\text{telic}]$, the subject if the suffix is $[-\text{telic}]$. 
In the following sections, two types of Romanian verb-based nouns that present a significant contrast, namely, infinitive and supine nouns, are examined in detail.

The infinitive is the most productive Romanian nominalization, regularly formed by attaching the suffix -re to the base form of the verb, the latter being composed of the lexical root + a stem vowel (e.g., *cit+i+re* ‘read+inf; reading’). The supine is productively formed with the suffixes -Vt, -Vs, where V is a stem vowel (e.g., from *cit- ‘read’, *cit+i+t+ul* ‘read+sup+the; the reading’, as in *Cititul este o bucurie* ‘Reading is a joy’). Both nominals are traditionally described as expressing “the name of the action”; therefore, both are action nominals.

The case of Romanian is revealing, since in Romanian, not only event DPs but also result DPs allow only one lexical Gen; consequently, only the argument that is obligatory for some particular interpretation is lexicalized. Since only one argument may be overtly expressed, in nominalizations based on transitive verbs either the object or the subject will be overt, producing the noun+object (= NO) or the noun+subject (= NS) structure, respectively.

Sections 3.2 and 3.3 outline the properties of NO and NS structures, with respect to the contrast between e-readings and r-readings. The behavior of infinitive e-nominals fully confirms the views of Grimshaw and Alexiadou. Supine e-nominals do so only in part.

Sections 3.4 to 3.7 analyze the contrast between infinitive and supine e-nominals, deriving it from the different aspectual properties of the two nominalizations. A minimal derivational account of the two nominals is also proposed. The conclusions in section 3.8 point to the relevance of aspect in the syntax of DPs and to the tight relation between aspect and case in the DP domain.

3.2 The Noun Object Structure

3.2.1 Properties of E-Nominals

Expectedly, both infinitive and supine nominals may have e-meaning in the NO structure. The presence of the object is as obligatory as it is for the corresponding verb. Its absence leads to ungrammaticality, as (2b) and (3b) prove.

(2) a. Cumpărarea casei a fost inutilă.
    buy.INF.THE house.THE GEN was useless
    ‘The buying of the house was useless.’

b. *Cumpărarea a fost inutilă.
    buy.INF.THE was useless
    ‘The buying was useless.’
(3) a. Cumpărătul casa i a fost inutil.
    buy.SUP.THE house.THE GEN was useless
    ‘The buying of the house was useless.’

b. *Cumpărătul a fost inutil.
    buy.SUP.THE was useless
    ‘The buying was useless.’

The agent is internalized and becomes a causative adjunct (see Alexiadou 1999), realized as a de către ‘by’-phrase, never by a Gen, since there is only one nominal genitive case in the Romanian DP, which goes to the object. The agentive de către ‘by’-phrase requires the presence of the object, as shown by the impossibility of leaving out the Gen in the infinitive example (4b) or the supine example (5b).

(4) a. Cumpărarea acestei case de către Ion a fost inutilă.
    buy.INF.THE this.GEN house by Ion was useless
    ‘The buying of the house by Ion was useless.’

b. *Cumpărarea de către Ion a fost inutilă.
    buy.INF.THE by Ion was useless
    ‘The buying by Ion was useless.’

(5) a. Dărămatul acestei biserici de către stat a fost o eroare.
    demolish.SUP.THE this.GEN church by state was a mistake
    ‘The demolition of this church by the state was a mistake.’

b. *Dărămatul de către stat a fost o eroare.
    demolish.SUP.THE by the state was a mistake
    ‘The demolition by the state was a mistake.’

The subject (agent) cannot occur alone in the genitive case without causing severe ungrammaticality (see (6a) and (7a)). Since there is only one Gen position, the subject and the object cannot both be lexicalized in either the infinitive or the supine nominal (see (6b) and (7b)). These are the kinds of data that prompted Grimshaw to claim that the agent is suppressed in e-nominals and Alexiadou to claim that e-nominals are based on ergative configurations. For complete understanding of (6a,b) and (7a,b), a note is necessary on the genitive in Romanian. In this language, the assigner of genitive case is the definite article. A noun bearing the definite article may assign genitive case to a DP on condition that the latter is adjacent to it. The genitive morphology appears on the determiner of the genitive DP. If there is any constituent between the genitive-assigning noun and the genitive DP, the presence of the genitive article al is necessary. Al is an expletive, which includes the definite article and whose only role is to assign genitive case to a DP adjacent to it. Al agrees with the genitive-assigning noun in gender, number, and case, acting like a copy of this noun. In the glosses below, I will always give the masculine singular form of this

(6) a. *Cumpărarea lui Ion a fost inutilă.
   buy-INF.THE the.GEN Ion was: useless
   ‘Ion’s buying was useless.’

   b. *Cumpărarea lui Ion a casei a fost inutilă.
   buy-INF.THE the.GEN Ion AL house.THE.GEN was: useless
   ‘Ion’s buying of the house was useless.’

(7) a. *Dărămatul statului a fost o eroare.
   demolish.SUP.THE state.THE.GEN was: a mistake
   ‘The state’s demolishing was an error.’

   b. *Dărămatul statului al bisericii a fost o eroare.
   demolish.SUP.THE state.THE.GEN AL church.THE.GEN was: a mistake
   ‘The state’s demolishing of the church was a mistake.’

Aspectual modifiers like *constant* ‘constant’ and *frecvent* ‘frequent’, which are characteristic of e-nominals, are duly licensed in both nominalizations.

(8) Studierea *constantă a documentelor este o necesitate.
   study.INF.THE constant AL document.THE.GEN.PL is: a necessity
   ‘The constant study of the documents is a necessity.’

(9) Fumatul *constant al trabucurilor i-a ruinat sănătatea.
   smoke.SUP.THE constant AL cigar.THE.GEN.PL to.him-has ruined the.health
   ‘The constant smoking of cigars has ruined his health.’

In Romanian, e-nominals and r-nominals also differ regarding the form of the adjuncts they allow. When they modify underived nouns, Romanian place and time adjuncts (PPs or AdvPs) acquire an extra preposition *de*: for example, *Cartea este aici* ‘The book is here’, but *cartea de aici* ‘the book here’. The preposition *de* could be interpreted as a mark of adjectivization. (See Coene 1999 for a proposal along these lines.)

E-nominals exclude these adjectival space-time adjuncts. R-nominals and underived nominals allow them. Thus, (10a) and (11a) are e-nominals, as indicated by the aspectual modifiers *frecvent* ‘frequent’ and *repetat* ‘repeated’. De-modifiers are excluded, as shown in (10b) and (11b).

(10) a. semnarea frecventă a unor documente la București
   sign.INF.THE frequent AL some.GEN documents AL Bucharest
   ‘the frequent signing of certain documents in Bucharest’

   b. *semnarea frecventă a unor documente de la București
   sign.INF.THE frequent AL some.GEN documents DE at Bucharest
The facts given above summarize the typical syntactic behavior of infinitive and supine NO e-nominals in Romanian.

### 3.2.2 The Representation of the Nonover Agent

The agent cannot be lexicalized in e-nominals, for lack of a second Case position. In Cornilescu 2001, I have argued, in agreement with most analysts of e-nominals, that (i) the agent is semantically active in e-nominals; (ii) the agent (subject) is not projected as a syntactic argument.

The conclusion that the agent need not be projected as an argument in e-nominals can be reached on the basis of arguments internal to Romanian. That the agent is projected as a PRO has often been suggested for nominalizations on the basis of control and binding data; however, the evidence is not conclusive.

Thus, as Williams (1985) has shown for English, if projected in nominals, PRO would not obey the same control principles as in verbal counterparts. Control in Romanian DPs differs in several ways from control in Romanian infinitive or subjunctive clauses, the latter being introduced by the invariable subjunctive particle șă. The main problem is that with e-nominals, it is difficult to find examples of anaphoric PRO, that is, instances of obligatory control. Even with verbs that show obligatory control in subjunctives and infinitives, such as începe ‘begin’ and cere ‘ask’, control is not obligatory in e-nominals. Even in these contexts, the assumed PRO subject of the e-nominal does not behave like an anaphor.

   worker.THE.PL have demanded raise.SUBJ wage.THE.PL
   ‘The workers demanded to raise the wages.’

b. Muncitorii au cerut mărirea salariilor.
   worker.THE.PL have demanded raise.INF.THE wage.THE.GEN.PL
   ‘The workers demanded the raising of the wages.’

(13) a. Muncitorii au decis să înceteze lucrul.
   worker.THE.PL have decided stop.SUBJ work.THE
   ‘The workers decided to stop working.’

b. Muncitorii au decis încetarea lucrului.
   worker.THE.PL have decided stop.INF.THE work.THE.GEN
   ‘The workers decided the ceasing of work.’
The subjunctive clause allows only the controlled reading; so if control is factually unlikely, as in (12a), the sentence is uninterpretable. In contrast, the e-nominal allows both controlled and uncontrolled readings, as seen in (12b) and (13b). This is a serious difficulty for the hypothesis that PRO projects, as stressed by Ackema and Schoorlemmer (1995), and as already noticed by Koster (1987). The different behavior of the agent in verbal/nominal complements accords better with the hypothesis that the agent is not syntactically projected, but is merely an implicit argument, an implicit agent. As argued in the typology of control proposed by Landau (1999), obligatory control is limited to situations where the controller is an overt argument and the infinitive clause is an argument of the same verb; in contrast, control by an implicit argument is a variety of optional control.

Binding arguments for the projection of a PRO subject of e-nominals have proved to be equally inconclusive. Given the absence of true anaphors in DPs, Reinhart and Reuland (1993) conclude that NPs do not need syntactic subjects, a conclusion supported by Romanian evidence as well (see Cornilescu 2001).

On the other hand, even if the agent is not a syntactic argument, it is semantically active in e-nominals. Of the several properties of the implicit agent in e-nominals, the most significant for the present discussion are the following two. First, the implicit agent has control properties. It may control the subject of a rationale clause. Here are relevant infinitive and supine examples:

\[(14) \text{înfrângerea rapidă a Germaniei pentru a pune capăt războiului} \]
\[\text{defeat-INF rapid AL Germany-GEN for to put end to the war} \]
\[\text{‘the rapid defeat of Germany to put an end to the war’} \]

\[(15) \text{cititul poeziei cu glas tare pentru a memora mai repede} \]
\[\text{reading-SUP poem-GEN with voice loud for to memorize more fast} \]
\[\text{‘the reading of the poem in a loud voice to memorize it faster’} \]

Second, the implicit agent may license an adjectival predicative adjunct (see Safir 1987). The \(\phi\)-features of the predicative adjective are those of the implicit agent.

\[(16) \text{Pe Maria o exasperează corectarea/corecutal, tezelor,} \]
\[\text{PE Maria-FEM-ACC her-exasperates grading-INF/SUP THE paper-GEN-PL} \]
\[\text{[PRO așa încordată].} \]
\[\text{so tense-FEM-GEN} \]
\[\text{‘Grading the papers, so tense, exasperates Maria.’} \]

These two properties may be unified under control theory, assuming that predicative adjuncts are adjunct small clauses with PRO subjects. The implicit agent is the
controller of the small clause PRO subject, while the adjectival predicate agrees with its subject.

Jaeggli (1986) had suggested a difference between syntactic argument control, which is obligatory control, and thematic control, defined as control by a thematic argument. The latter was assumed to be possible in adjunct clauses, therefore in purpose clauses or in adjunct small clauses—that is, in the environments illustrated in (14)–(16). Control by the implicit agent is thus nonsyntactic, thematic control.

Summing up, in Romanian NO e-nominals, the agent is an implicit, thematic argument, semantically active but syntactically missing.

We may make the following conclusions about infinitive and supine NO structure in Romanian:

1. For both nominalizations, the NO structure allows the event interpretation. Since there is only one Case position, and the overt presence of the object signals the event reading, the unique structural Case position is allotted to the object.
2. The a-structure of the e-nominal is complete. The agent is not a syntactic argument, but it is semantically active and is interpreted like a PRO subject.

3.3 The Noun+Subject Structure

While the Romanian infinitive and supine are closely parallel in the NO structure, they contrast sharply in the NS structure. This is unexpected under the current theory of nominalization. For one and the same (basically transitive) verb, the infinitive NS structure behaves as predicted (it always expresses result, showing no event properties), but the supine NS structure shows all the properties of e-nominals and no result properties. Here are the facts.

First, with the infinitive NS nominal control is lost, even though the agent is overtly present (see (17)). In contrast, control is allowed in supine NS nominals (see (18)).

(17) *descrierea minunată a lui Bălcescu pentru a stârni sentimente patriotice
   describe.INF.THE wonderful AL the.GEN Bălcescu for to stir feelings patriotic
   ‘Bălcescu’s wonderful description to stir patriotic feelings’

(18) cititul lui Ion la micul dejun pentru a-și enerva soacra
   read.SUP.THE the.GEN Ion at breakfast for to irritate his mother-in-law
   ‘Ion’s reading at breakfast to irritate his mother-in-law’

Second, aspectual modifiers like constant ‘constant’ and frequent ‘frequent’ are not acceptable in the infinitive NS structure (19b), but are licensed in the supine one (20).
The introduction of this critic contains interesting data.

The frequent introduction of the critic pleased (everybody) a lot.

His daily reading in a loud voice has improved his pronunciation.

The performance of the opera Oedipus in Paris was disappointing.

‘The introduction of this critic contains interesting data.’

‘The frequent introduction of the critic pleased (everybody) a lot.’

‘His daily reading in a loud voice has improved his pronunciation.’

‘The performance of the opera Oedipus in Paris was disappointing.’

The significance of the supine NS structure for the analysis of nominalizations is considerable.

First, for the more limited Romance domain, Kupferman’s generalization is disproved. The supine NS structure clearly disproves the generalization that the subjective genitive of a transitive deverbal noun always marks a noneventive reading in Romance.

Second, Grimshaw’s generalization that the agent is uniformly suppressed in e-nominals is also disproved, since under her theory the agent is always a modifier—an “argument adjunct”—and it should behave uniformly. Alexiadou’s proposal that
the agent is uniformly internalized as a causative adjunct is also disconfirmed. The examples just surveyed show a clear difference between the agentive modifier of the infinitive NS r-nominal and the argumental agent of the supine NS e-nominal.

Third, it is not clear at this point whether these data also counterexemplify Alexiadou’s generalization that e-nominals are based on ergative structure, since I have not described the syntax of these DPs. This is the goal of the next section.

3.4 On the Structure of the Noun+Subject Supine Nominal: Verbs That Yield the Noun+Subject Supine Nominal

In this section I argue, contra Alexiadou (1999), that the supine NS structure is a genuine example of a nominalization based on an unergative structure. Like Alexiadou and most current researchers studying nominalization (see, e.g., Arad 1996; Engelhardt 1998; Borer 2000; Fu, Roeper, and Borer 2001), I adopt Hale and Keyser’s (1993) view regarding the projection of verbs and their arguments. In this model, the lexical V always projects an internal argument. In unergative configurations, the internal argument is incorporated (e.g., [e]vNP ⇒ [laugh]v), while in ergative and transitive configurations, the internal argument retains an independent syntactic status throughout the derivation. The external argument is introduced by a functional category, the small v of transitive verbs. Under these assumptions, the claim that e-nominals are always ergative amounts to saying that the internal argument is always overtly present in e-nominals, either as the object of a transitive configuration or as the subject of an intransitive configuration. It will appear below, however, that this is not the case in the supine NS nominal. The object of the supine NS construction based on transitive verbs must be projected to satisfy the morphosyntactic requirements of the Romanian supine, but the supine, unlike the infinitive, allows the incorporation of a particular type of internal argument, derivationally producing an unergative VP configuration. This analysis is directly confirmed by the fact that the supine suffix, unlike the infinitive one, derives e-nominals not only from transitive verbs, but also from basic unergative verbs, as will be seen in what follows.

I first review some relevant morphosyntactic properties of the supine, which indicate that the supine always projects an internal argument in syntax. I then review the range of transitive verbs that allow the NS supine e-nominal, specifying which types of objects can be incorporated.

3.4.1 On the Verbal Supine

In Romanian, the supine has one nominal form, always with the definite article (illustrated so far), as well as a more verbal form, morphologically differing from the nominal one only in the absence of the article. The verbal supine is always preceded
by a preposition, and it may assign inherent accusative case, unlike the nominal supine, which assigns genitive case to its object. One reason why this accusative case is described as inherent is that it cannot be assigned to personal pronouns (see (23c)), but only to DPs; moreover, it cannot be realized by a pronominal clitic (see (23d); compare the nominal supine in (23a) with the verbal supine in (23b)).

(23) a. întîmpinatul musafirilor la gară
   welcome.SUP.THE guest.THE.GEN.PL at station
   ‘the welcoming of the guests at the station’

b. (Maria are) de întîmpinat musafirii la gară.
   (Maria has) DE(pre) welcome.SUP guests.THE at station
   ‘Maria has to meet the guests at the station.’

c. *(Maria are) de întîmpinat pe ei la gară.
   (Maria has) DE(pre) welcome PE they.ACC at station
   ‘Maria has to meet them at the station.’

d. *(Maria are) de îi întîmpinat [e] la gară.
   (Maria has) DE(pre) them welcome.SUP at station

One property of the verbal supine, in contrast to the verbal infinitive and to finite verbs, is that it can license a null internal argument in contexts where the other forms require an overt argument. Thus, with the verbal supine the direct object may be null in double object constructions; in contrast, with verbal infinitives and finite verbs the dative indirect object requires an overt direct object.

(24) a. Au adus hainele astea pentru împărțit [e]
   (they) have brought clothes.THE these for distribute.SUP
   săracilor.
   poor.THE.DAT.PL
   ‘They have brought these clothes to distribute them to the poor.’

b. Au adus hainele astea pentru a *(le) împărți [e]
   (they) have brought clothes.THE these for a(inf) them distribute.INF
   săracilor.
   poor.THE.DAT.PL
   ‘They have brought these clothes to distribute them to the poor.’

c. Au adus hainele astea pe care să *(le) împartă [e]
   (they) have brought clothes.THE these which SA them distribute.SUBJ
   săracilor.
   poor.THE.DAT.PL
   ‘They have brought these clothes to distribute them to the poor.’

The absence of the clitic in the supine clause is expected since its functional structure is too reduced to license an accusative clitic (the T head is missing). But the fact
remains that the other forms cannot countenance a null argument, while the verbal supine does. This contrast is observable with other verb subcategories as well, such as transitive locative constructions, with verbs like *pute* 'put'. Again the object of the supine in the purpose clause may be null; the object of the infinitive must be overt.

   (they) have brought flower.THE.PL these for put.SUP on table
   ‘They brought these flowers to put them on the table.’

   b. Au adus florile astea pentru a le pune [e] pe
      (they) have brought flower.THE.PL these for a(Inf) them put.INF on
      masă.
      table
      ‘They brought these flowers to put them on the table.’

One property of the null direct object of the supine is that it may be syntactically identified through control; it is not an existentially closed variable in the lexicon. Thus, the null argument in (24a) and (25a) has the same interpretation as the clitic in (24b) and (25b), and it is understood as coreferential with the main clause direct object.

The supine’s ability to license a null argument by assigning it inherent accusative case should be related to its morphology, as recently stressed by Soare (2002). The supine is homonymous with the past participle (active and passive) in Romanian. The characteristic distributional property of this morphological form, according to Soare, is precisely the obligatory projection of an internal argument. I will adopt Soare’s view that because of its morphology, the supine (verbal and nominal) projects its internal argument in syntax.

The nominal supine, however, differs from the verbal one in that it cannot license a null object by assigning it inherent case. As amply shown above, for most transitive verbs, in the e-nominal the overt presence of the object is as obligatory as it is for the infinitive e-nominal. The null object of the nominal supine cannot be interpreted under control either, as shown by the ungrammaticality of (27), which corresponds to the verbal supine in (25).

(26) a. Dărămatul acestei biserici de către stat a fost o eroare.
       demolish.SUP.THE this.GEN church by state was a mistake
       ‘The demolition of this church by the state was a mistake.’

   b. *Dărămatul de către stat a fost o eroare.
       demolish.SUP.THE by state was a mistake
       ‘The demolition by the state itself was a mistake.’

(27) *Au adus florile astea pentru pusul [e] pe masă.
    (they) have brought flower.THE.PL these for put.SUP.THE on table
    ‘They brought these flowers to put them on the table.’
The fact that the supine NS nominal is possible shows, however, that the supine nominalization *may* license null arguments, under specified circumstances. The existence of supine NS structures based on a subset of the class of transitive verbs suggests that the null internal argument is licensed through “incorporation” in situations where the object is “recoverable.” Such a hypothesis is supported by the behavior of the verbs that allow the supine NS structure. They fall into two groups: (i) prototypical object verbs; (ii) reflexive and reciprocal verbs. I consider them in turn.

### 3.4.2 Prototypical Object Verbs

The first group of transitives allowing NS e-nominals includes verbs of the type listed in (28).

(28)  

The examples in (29) show that the verbs that yield the NS supine structure have both transitive and intransitive uses. In other words, they are transitive verbs that allow null prototypical objects.

(29)  
\[\text{a. Ion cânta˘ (cântece).}\]
\[\text{‘Ion sings (songs).’}\]
\[\text{a’. cântatul lui Ion in baie}\]
\[\text{sing.SUP.THE the.GEN Ion in bathroom}\]
\[\text{‘Ion’s singing in (the) bathroom’}\]
\[\text{b. Ion fotografiază (monumentele Parisului).}\]
\[\text{‘Ion photographs (the monuments of Paris).’}\]
\[\text{b’. Fotografiatul lui Ion la Paris costa o avere.}\]
\[\text{photograph.SUP.THE the.GEN Ion at Paris costs a fortune}\]
\[\text{‘Ion’s photographing in Paris costs a fortune.’}\]
\[\text{c. Mama tricotează/gâtește minunat.}\]
\[\text{‘Mother knits/cooks (something) wonderfully.’}\]
\[\text{c’. tricotatul/gătitul minunat al mamei}\]
\[\text{knit.SUP.THE/cook.SUP.THE wonderful al mother.THE.GEN}\]
\[\text{‘Mother’s wonderful knitting/cooking’}\]

Since these verbs have intransitive counterparts, the supine nominal might be constructed on the intransitive/unergative form. Therefore, whatever solution is adopted for the analysis of the intransitive use of the verb should also be adopted for the
supine NS e-nominals. The characteristic property of prototypical objects is that they are entirely predictable from the s-selection properties of the verb; this amounts to saying that the intransitive use of these verbs is the effect of object incorporation. The incorporated object is syntactically inactive, as can be shown by using the tests proposed by Rizzi (1986).

Rizzi (1986) proposes several tests distinguishing between saturation of an argument in the lexicon (an operation on a-structure) and the projection of a null argument in syntax. A projected null argument pro is syntactically active, differing in this respect from a lexically saturated implicit argument. Null object pro is licensed through being governed and case-marked by the verb.

Rizzi contrasts English and Italian with respect to their (in)ability to license a syntactically active object pro. Italian verbs, unlike English verbs, have the ability to license an active null object. As shown by the data in (30), Romanian does not pattern like Italian, apparently disallowing a null pro in accusative case position. In each pair of Romanian examples in (30), the first sentence, where the direct object is pro, is ungrammatical, while the second sentence, where the direct object is overtly expressed, is grammatical. Here are the facts:

(30) a. Control
   Questo conduce pro [a PRO concludere che . . . ] (I)
   *This leads pro [PRO to conclude that . . . ] (E)
   i. *Aceste fapte fac pro [a trage pro concluzia . . . ] (R)
   ii. Aceste fapte fac pe unii [a trage pro concluzia că . . . ]
       ‘These facts make pro/some [PRO conclude that . . . ]’

b. Adjunct small clauses
   Di solito, Giovanni fotografa pro seduti. m.pl. (I)
   Usually, Giovanni photographs pro seated. (E)
   i. *De obicei, Ion fotografiaza pro asezate. f.pl. (R)
   ii. De obicei, Ion fotografiază clientele așezate.
       ‘Usually, Ion photographs the customers. f.pl. seated. f.pl.’

c. Argument small clauses
   Questa musica rende [pro allegri]. (I)
   *This music makes [pro happy]. (E)
   i. ?Această muzică face [pro fericit]. (R)
   ii. Această muzică face [omul fericit].
       ‘This music makes [pro/man happy]’

d. Binding
   La buona musica riconcilia pro a se stessi. (I)
   *Good music reconciles with oneself. (E)
   i. ?Muzica bună împacă pro cu sîne. (R)
ii. Muzica bună te împăcă cu tine (însuți).
‘Good music you-reconciles with yourself.’

In Hale and Keyser’s (1993) framework assumed here, one might say that Rizzi’s tests distinguish between a null argument that is syntactically active, therefore involved in processes of agreement and control, and an object that is projected for morphosyntactic reasons (subcategorization, etc.) and incorporated. On this basis, it may well be concluded that Romanian null objects are incorporated arguments. In contrast, Italian allows pro as a syntactically active direct object, which means that the object is syntactically present at LF. Incorporation is allowed precisely because of the content of the prototypical object, which is entirely predictable from the s-selectional properties of the verb.

Some evidence for the projection + incorporation analysis is supplied by situations where the projected object is not incorporated, because its presence at LF is required by some principle of the grammar. Such a case arises with finite idiomatic constructions of some transitive verbs containing a possessor dative clitic, for which there is no overtly expressed “possessed object.” As is well known, the possessor dative clitic must bind a direct object. Thus, in (31b) the possessor clitic își binds the overtly expressed direct object tema ‘the homework’, which designates the possessed object; however, in (31a) there is no accusative DP. Such cases can be handled by assuming that the missing direct object is pro; notice that the overt PP in (31a) is a modifier of pro, in a structure of type [DP pro [PP la matematică]]. The LF presence of pro is required for a syntactic reason, namely, to satisfy the binding requirement of the possessive dative clitic.

(31) a. Ion își face pro la matematică.
   ‘Ion is doing his math.’

b. Ion își face tema la matematică.
   ‘Ion is doing his math homework.’

In conclusion, the supine NS nominal, like the corresponding verb, projects its internal prototypical argument but may incorporate it, because a prototypical object is recoverable from the semantics of the verb. There is a significant difference between infinitive and supine e-nominals. Both the infinitive and the supine e-nominal must project their objects. The infinitive nominal may never incorporate the object, so it will always appear in the NO structure. The supine, however, may incorporate an object that is recoverable. Such is the case of a prototypical object. By incorporating its object, like the corresponding transitive verb, the supine nominal derivationally produces an unergative configuration. Since the incorporated object does not need case, the unique Case position of the supine nominalization goes to the subject, so
that only the supine may appear in the NS structure. The NS structure is thus based on a derived unergative configuration.

This account is compatible with the behavior of the second group of verbs that allow the NS structure, transitive reflexive verbs.

### 3.4.3 Transitive Reflexive Verbs

Transitive reflexive verbs, illustrated in (32), also allow the NS supine construction.

\(32\) a (se) spăla ‘wash (oneself)’, a (se) îmbrăca ‘dress (oneself)’, a (se) bărbieri ‘shave (oneself)’, a (se) dichisi ‘spruce (oneself) up’, a (se) pieptăna ‘comb (oneself)’, a (se) încălța ‘“shoe” (oneself)’, put on shoes’, a (se) aranja ‘arrange (oneself)’, a (se) pregăti ‘prepare (oneself)’, a (se) farda ‘make (oneself) up’, a (se) machia ‘make (oneself) up’, a (se) privi ‘look at (oneself)’, a (se) peria ‘brush (oneself)’, a (se) căsători cu/a se ma˘rita cu/a se ı ˆnsura cu ’marry (oneself) to’, etc.

Consider the examples in (33), where the reflexive reading is either the only reading or the strongly preferred one.

\(33\) a. Ion se spală pe mâinì în fiecare seară.
   ‘Ion washes his hands every evening.’

b. spałatul lui Ion pe măini in fiecare seară
   ‘Ion’s washing his hands every evening’

c. Bărăbiețului lui Ion la miezul nopții îi deranjează pe băieți.
   ‘Ion’s shaving himself at midnight disturbs the boys.’

For the NS reading, uppermost in (33b,c), the only interpretation is the one where the object is understood as coreferential with the subject. A prototypical reading of the null object is excluded. For reflexive verbs, the object is projected and bound by the reflexive clitic SE. As shown by Dobrovie-Sorin (1994, 1998), the Romanian clitic SE is always an accusative clitic, binding a DP in object position, while getting φ-features through agreement with the subject DP; its functioning always presupposes chains like (34).

\(34\) NP\(_i\) se\(_j\) e\(_i\)

Since the reflexive verb must project its object, it is desirable and in line with the morphology of the supine to project the object in the e-nominal as well, observing the principle of sameness of a-structure between e-nominals and corresponding verbs. The NS nominal will have the same structure, except for the presence of the reflexive clitic. The presence of the clitic has syntactic consequences: generally, in reflexive
verbal constructions, the clitic forces the presence of an object that is syntactically active. For instance, this object may be passivized in unergative constructions (see Dobrovie-Sorin 1994, 1998), in examples like (35) (from Dobrovie-Sorin 1998, 407).

(35) Se ș i doar me 3sg pro 1 ei bine aici.

ș ’i sleep.3sg pro 1 ei well here
(lit.) It is slept well here.
‘One sleeps well here.’

The absence of the clitic in the supine nominalization allows the DP to be incorporated. The object is again recoverable, under referential identity with the subject in this case. The possibility of incorporating a reflexive object is also apparent in English, where, however, given the limited idiosyncratic properties of the construction it is better viewed as an operation on lexical entries, as proposed by Zubizarreta (1987). Since with the supine e-nominal incorporation is constrained by the semantic properties of the internal argument, it could have been described as a lexical operation as well (see Coene 1999; Cornilescu 2001). However, the view that the object is projected has some desirable consequences. First, the syntax of the (verbal and nominal) supine is unified. Second, Grimshaw’s view that a verb’s a-structure is activated through (the projection of) the internal argument is vindicated, as also stressed by Soare (2002).

3.4.4 Conclusions
The analysis above has led to the following results:

1. Given its morphosyntactic properties, the supine e-nominal may license null objects and incorporate them.
2. Since the object is incorporated, the unique genitive case of Romanian e-nominals may be assigned to the subject, so that the NS structure is possible.
3. The incorporated object is sufficient to license the e-reading, in agreement with Grimshaw’s views.
4. The configuration resulting from incorporation is however an unergative one. The supine NS structure is a counterexample to the view that e-nominals are based on ergative configurations. Other arguments in favor of this conclusion will be given below.

3.5 Aspect and Nominalizations

In sections 3.5–3.7, it is shown that the syntactic difference between the infinitive and the supine nominalizations corresponds to an aspectual contrast between them, a contrast derivable from the different aspectual properties of the two nominalizing affixes.
In the literature on aspect, a clear distinction is drawn between situation type or aspectual class (telicity) and point of view (perfectivity) (see de Swart 1998). Aspectual distinctions in the DP domain refer to *aspectual classes* (telicity) rather than perfectivity.

Aspectual class is determined at the level of the *eventuality description*. A verb that has all its argument positions filled by constants or variables is an *atomic eventuality description*. As has been argued repeatedly since Vendler 1957, eventuality descriptions come in different aspectual types: states, processes (activities), and events (achievements and accomplishments) (see, e.g., Mourelatos 1978; Dowty 1979; Verkuyl 1993). States and processes (activities) correspond to eventualities that do not have an inherent endpoint. Event predications (achievements and accomplishments) involve an inherent culmination point.

Many authors studying aspectual classes (see, e.g., Krifka 1992; Verkuyl 1993; Ramchand 1997) have developed compositional analyses in which the aspectual class of the sentence as a whole is determined by the semantic nature of the verb, but also by the *characterization of the NP arguments* and by the *manner* (gradual, incremental, total, etc.) in which the verb is related to its arguments. Nonstative verbs that do not affect their direct object in a gradual incremental manner describe processes or activities, as in (36).

(36) The man pushed the cart for an hour.

Nonstative verbs that do affect their direct object in a gradual incremental manner may refer to a process when they combine with a homogeneous DP, such as a bare plural or singular, as in (37a). They describe an event when they combine with a quantized DP, as in (37b).

(37) a. John wrote letters for an hour.
   b. John wrote a letter in an hour.

Thus, only quantized internal arguments may, rather than must, impose a homomorphism from object to event, inducing an endpoint. Events may be isomorphic with their objects; processes are not.

Eventualities differ in terms of their degree of complexity. A (complete) event consists of an activity phase, when the event *holds*, followed by a *culmination* point (see Parsons 1990), when the *change of state* takes place, leading to a *resulting state*, as shown in (38) (see Kamp and Reyle 1993). The *in*-phrase, characteristic of accomplishments, measures the distance between the beginning of the activity and the culmination point.

(38) I II III
    activity culmination resulting state
Predications pertaining to different aspectual classes, as well as aspectual operators, focalize particular zones of this aspect template. The crucial distinction between events (transitions, telic predications) and activities (atelic predications) is that the former include, while the latter exclude, the culmination point (see Parsons 1990).

Each eventuality in a complete event is associated with a particular argument: the agent is associated with the activity subevent; the theme “measures out the event” (see Tenny 1987) and identifies the change of state. It is the theme (object) that identifies the culmination of the event, guaranteeing its telicity and expressing the specific difference between events and activities.

3.5.1 Aspectual Interpretation of the Noun+Object Structure

Let us examine NO and NS e-nominals from the point of view of the aspectual class they express. The NO structure is obviously based on transitive/ergative verbs. A function of the types of object selected, the interpretation of the NO structure is either that of an event (accomplishment, achievement) or that of an activity. With appropriate quantized objects, the NO structure passes all of Dowty’s (1979) event (accomplishment) tests.

First, the NO structure accepts în ‘in’ modifiers.

(39) a. construirea podului în două luni
   build.INF.THE bridge.THE.GEN in two months
   ‘the building of the bridge in two months’

b. cititul ziarelor de dimineață într-o oră
   read.SUP.THE newspaper.THE.GEN.PL of morning in one hour
   ‘the reading of the morning newspapers in an hour’

Second, the NO structure appears in the phrase a trebui X-timp pentru Y (where X is a time expression) ‘take X much time for’.

(40) a. I-au trebuit numai două luni pentru scrierea romanului.
   to.him-have needed only two months for write.INF.THE novel.THE.GEN
   ‘He took only two months for the writing of the novel.’

b. Le-au trebuit două luni pentru tăiatul lemnelor.
   to.them-have needed two months for cut.THE.SUP wood.THE.GEN.PL
   ‘They took two months for the cutting of the wood.’

Third, the NO phrase may occur as the complement of the verbs a termina/a isprăvi ‘finish’.

(41) a. Au terminat deja construirea podului.
   (they) have finished already build.INF.THE bridge.THE.GEN
   ‘They have already finished the building of the bridge.’
b. El a terminat deja cititul presei de dimineață.

‘He has already finished the reading of the morning newspapers.’

As expected, the choice of appropriate types of objects (homogeneous DPs, such as the bare objects of (42b)) and of durative adjuncts forces a process or activity interpretation.

(42) a. construirea catedralei vreme de secole

‘the building of the cathedral for centuries’

b. cititul de ziare/ziarelor ore întregi pe zi

‘the reading of newspapers/of the newspapers for hours daily’

3.5.2 Aspectual Interpretation of the Supine Noun+Subject Structure

There is a clear aspectual contrast between the NO and NS supine e-nominals. While the NO supine structure allows both an event (accomplishment) and an activity reading, being compatible with both types of modifiers, the NS supine structure is interpretable only as an activity, being compatible with activity modifiers (for-phrases), but incompatible with accomplishment modifiers (in-phrases). Compare:

(43) a. pescuitul lui Ion în ape tulburi ani în șir

‘Ion’s fishing in troubled waters for years on end’

b. *pescuitul lui Ion în ape tulburi în doi ani

‘Ion’s fishing in troubled waters in two years’

(44) a. cântatul lui în baie ore în șir

‘his singing in the bathroom hours on end’

b. *cântatul lui în baie în zece minute

‘his singing in the bathroom in ten minutes’

At the same time, the NS structure is not felicitous in the a trebui X-timp pentru ‘take X much time for’ construction. Compare the NS (45a) and NO (45b) supine structures again.

(45) a. *Au trebuit ani în șir pentru pescuitul lui Ion în ape

‘Ion’s fishing in troubled waters took years.’
b. I-au trebuit ani în şir pentru cumpărăturul maşinii.
   'It took him years on end to buy the car.'

Therefore, in contrast with the NO supine structure, the NS supine structure is always an activity/process. Even if it is sufficient to license the verb’s a-structure, the incorporated object, characteristic of the NS structure, may not induce endpoints. The aspectual class is that of an activity. Hence, the object need not be lexicalized, while the agent may be activated through case assignment.

Since activities are typically ascribed to subjects/agents, in the activity NS structure the agent is visible through case assignment. There is, however, an important asymmetry between the aspectual roles played by the subject and object arguments: the subject (agent), even if present, does not determine or change the aspectual class of the predication (as can be seen by comparing (37a) and (37b)). As Ramchand (1997, 177–178) shows:

While the internal role involves a mapping between the individual moments in the temporal trace of the event and some property of the object, the external argument relation is one between an individual and a path as a whole, as constructed from the predicate. This asymmetry reflects the syntactic idea that while the verb directly assigns the θ-role to the object, it is the VP as a whole that assigns the subject θ-role. The external role is constructional rather than lexical.

Consequently, the aspectual class of the NS e-nominal is always that of an activity, as determined by the incorporated object, which may not induce endpoints. This subject/object asymmetry also has the syntactic consequence that the subject is optional even in the NS structure (see below).

3.5.3 Conclusion
The above discussion points to these conclusions:

- The NO structure is interpreted as a telic or atelic function of the semantic properties of the overt object and of the aspectual adjuncts. The object licenses the e-reading and determines the aspectual class.
- The NS structure is always atelic, having only an activity interpretation; this follows from the properties of incorporated objects, which cannot define endpoints.

3.6 Aspectual Features of the Two Nominalizing Affixes: The Syntactic Structure of the Two E-Nominals

Since infinitive and supine e-nominals of the same verbs have been considered so far, the different aspectual properties noticed above must be due to the semantic contribution of the nominalizing affixes. The data in section 3.5 clearly indicate that
nominalizing affixes have aspectual features; they are aspect sensitive, selecting complements that have appropriate syntactic and therefore aspectual properties. The aspectual features of the nominalizing affixes constrain the syntax of the nominals. In this section, I sketch the derivation of the two nominalizations, relating their internal structure to their aspectual properties, ultimately given by the aspectual properties of their respective nominalizing affix.

The assumption underlying the derivational account of e-nominals is that e-nominals undergo V-to-N incorporation in the syntax. Abstracting away from the possibility of intermediate functional projections, the structure of e-nominals is roughly as shown in (46), where the nominal head is the nominalizing affix.

\[(46) \text{[NP N} + \text{V [VP tV DP]]}\]

In what follows, I assume a more or less standard analysis of the Romanian DP, as presented for instance in Cornilescu 1993 and 1995 or Coene 1999 for Romanian, or in Longobardi 1994, Giusti and Vulchanova 1999, or Siloni 1997 for other languages. The unique genitive case is assigned by the definite article in a low projection of the DP, a projection that is postnominal, assuming that Romanian has NØ-movement to D0. This description is not an established fact (see Dobrovie-Sorin 2000 for other views), but nothing in the analysis of nominalization hinges on any particular assumptions regarding genitive case assignment.

3.6.1 The Infinitive Suffix

Two important properties characterize the infinitive e-nominal and the infinitive nominalizing suffix. First, the infinitive suffix *requières* the overt presence of the object of the e-nominal. Second, it does not appear in the NS structure, which is aspectually marked as *atelic*.

Let us hypothesize that the infinitive suffix *-re* is [+telic]. The intuition is that the telic suffix requires the overt presence of the object, because only the object can serve as telicity identifier. Hence, as proposed by Alexiadou (1999), the telic nominalizer selects an ergative complement vP; furthermore, a DP can be overt only if it has case. I propose that checking the [+telic] feature amounts to case-licensing the object. In other words, Aspect is not necessarily an independent functional category of the DP; the aspectual features of the e-nominal are checked at the same time as the case features of the obligatory arguments.

As proposed, the infinitive suffix *-re* selects an ergative configuration, as shown in (47b), where R designates a lexical root, categorized as verbal by the functional small v. The lexical root successively adjoins to the small v and then to the nominalizer. Movement of the lexical root to NØ allows the object DP to raise to the Spec,Gen position.
Notice that in (47b), if the subject were projected in Spec,vP, it would be the subject, not the object, that would reach the Spec,Gen position, so that the object would be caseless and nonovert. Thus, if a transitive configuration were projected, the object would be prevented from checking case and the telic reading could not be licensed.

In the proposed interpretation, the aspectual feature of the affix determines the syntax of its complement, that is, what type of configuration is selected. The telic affix -re requires that the ergative complement project. On the other hand, the aspectual interpretation of the whole DP will be a global DP property, depending not only on the derived head noun, but also on the semantic properties of the object and the aspectual adverbial modifiers present in the DP.

This analysis also explains why the subject is necessarily absent. The subject is internalized as a causative adjunct, introduced by the same preposition as the agent in the passive construction. The properties of the agent/causative adjunct in telic nominalizations are similar to those of the agent in passive constructions—hence Grimshaw's idea that both passives and nominalizations involve operations on a structure, eliminating the agent, an analysis also adopted for the infinitive nominalization by Coene (1999), following many Romanian analysts (see, e.g., Vincenz 1972).
The similarity with the passive is expressed in the present analysis as well: both the passive clause and the e-nominal represent ergative configurations.

The analogy with the passive is limited, however, since there are structures that can be nominalized, but not passivized. For example, nominalizations license an adjectival predicative adjunct on the implicit agent, but passives do not.

(48) a. conducerea mașinii beat
drive-INF.THE car.THE GEN drunk
‘the driving of the car while drunk’
b. *Mașina a fost condusă beat.
car.THE has been driven drunk
‘The car was driven drunk.’

Moreover, as stressed by Alexiadou (1999), the aspectual properties of true passive nominals, those based on the movement of the object to the subject position in DPs (as in (49)), are different from the aspectual properties of ordinary nominalizations of transitive verbs. True passive nominals are telic and reject for-phrases in English. In contrast, the Romanian infinitive nominalization is compatible with both in- and for-phrases.

(49) a. *the city’s rebuilding for centuries
b. the city’s rebuilding in twenty years

(50) a. modernizarea orașului de o sută de ani încoace
modernize-INF.THE city.THE GEN for one hundred of years up.to.now
‘the modernization of the city for the past hundred years’
b. modernizarea orașului in doi ani
modernize-INF.THE city.THE GEN in two years
‘the modernization of the city in two years’

The syntax of the infinitive nominal shows a particularly tight relation between aspect and syntax. Only a particular type of complement vP—namely, an ergative structure—may license the aspectual feature of the nominalizer. Also, there is a particularly tight relation between aspect and case, both being checked by case-licensing the object DP.

3.6.2 The Supine Suffix
In discussing the supine nominalizing suffix, let us start from the following two properties of the supine nominalization. First, only the supine suffix appears in the NS structure. Second, like the infinitive, the supine suffix appears in the NO structure, which allows [+telic] readings. Given its distribution, let us assume that the supine nominalizer is [+/−telic]. When it is telic, it has the same requirements as the infinitive.
When it is atelic, however, it selects a different complement, one that may include the subject DP. This assumption is required to account for all the properties of the supine NS. The aspectual class (activity) of the NS e-nominal, as well as the possibility of the e-reading, is determined by the incorporated object; the agent alone is not sufficient for that. Indeed, the difference between the infinitive NS structure, which is always a result nominal, and the supine NS, which is an e-nominal, follows from the fact that the infinitive cannot license a null object in any fashion—it can only license its object through case checking.

In contrast, in the NS nominal, both arguments play a part. The object licenses a-structure and determines the aspectual interpretation, but it is the subject that checks the aspectual feature of the nominalizer. This analysis agrees with Ramchand’s (1997) proposal that only nominals that get structural (rather than inherent) case may check aspect in aspectual/case projections. We will therefore assume that the supine nominalizer may embed a full transitive vP as in (51). The lexical root adjoins to v and then to the supine affix, creating the supine form, a form that is in principle allowed to incorporate a prototypical object. At this point, the null object may move to Spec,NP and incorporate. When the derived supine head noun moves to the Gen head, the subject is equidistant from Spec,N and Spec,Gen and may raise to check case, without violating Minimality.

(51) a. GenP

```
     Gen'
   /    \
Gen⁰  NP
    /   \
N'   
  /   \
N⁰  vP
   /   \
(V)T  DP_{subj} v'
      /   \
  v⁰  VP
   /   \
V⁰  (DP_{obj})
```
Notice that the object could not be case-licensed in Spec,Gen without violating Minimality. Thus, only the subject can raise to acquire structural case, thereby licensing the atelic reading. It is the presence of a syntactic subject that secures the atelic reading, and it is the morphology of the supine, unlike the morphology of the infinitive, that allows the incorporation of the object. This amounts to a process of detransitivization. It is not necessary, however, to assume an operation on a-structure in the lexicon, if we assume that supine morphology may incorporate the object.

The NS structure is quite unlike the English SNO structure the enemy’s destruction of the city. As shown by Grimshaw (1990) and Alexiadou (1999), in English the overt presence of the object is obligatory for the e-reading to obtain; the complement of the nominalizer must be ergative. Moreover, in English, as proposed by Alexiadou, the second genitive phrase, the agent, is made possible because in some languages, Spec,D is an argument/case-assigning position. The agent merges above the nominalizing affix, unlike in Romanian (see (52)).
As the reader will have observed, the facts and the analysis I have presented are perfectly compatible with a lexicalist view of nominalizations. It will still be the case that infinitive nominals must project a lexical object, while supine nominals may project an object or a subject, as a consequence of their aspeuctual properties and their morphology. Other factors, mostly having to do with the possibility and distribution of manner adverbs in nominalizations (see, e.g., Arad 1996; Engelhardt 1998; Borer 2000; Fu, Roeper, and Borer 2001), may favor a derivational analysis, of the type adopted here, over a lexicalist view. However, the derivational account has desirable consequences, some of them apparent below.

3.6.3 More Evidence Favoring the Analysis

3.6.3.1 R-Nominals The characterization of the infinitive as a telic suffix may explain one other important property of the infinitive nominalization: its ability to develop r-readings. Viewed as an aspeuctual operator, the telic infinitive nominal may be said to focalize the culmination (phase II) and the resulting state (phase III) in the event template (38). This explains the ease with which the infinitive has developed a variety of result readings by metonymic shift. Dictionaries register an impressive amount of polysemy for infinitive nominals, ranging from the event reading, to abstract result and/or concrete result meanings.

The atelicity of the supine nominalizer correlates with a limited number of r-readings. Viewed as an aspeuctual operator, the supine suffix focalizes the activity phase (I) of the event template in (38); the resulting state does not have to be part of
the lexicalized meaning. This explains why the supine fails to generate concrete result nouns based on the NO structure. Since its activity meaning is predictable, the supine nominal is seldom listed in dictionaries, and when it is listed, it is not polysemous. However, there are result nominals, usually designating concomitants of the activity: characteristic noises, and so on. An example would be *Auzeam cântatul copilului* ‘I could hear the singing of the child’.

To sum up the aspectual features of the nominalizing affixes, we will say that the infinitive -re suffix is [+telic], selects an ergative complement, and has aspect checked by the object, while the supine is [+−telic], selects an ergative or a transitive complement, and has its aspectual features respectively checked by the object or the subject.

### 3.6.3.2 Basic Intransitive Verbs

This result regarding the aspectual features of the two affixes, obtained by analyzing nominals based on transitive verbs, is further confirmed by examining nominals derived from basic intransitive (ergative and unergative) verbs.

The choice between the two affixes largely depends on the semantics of the base verb, the aspectual class playing an important part. A second discriminating factor is stylistic: the supine nominal is informal, familiar, or popular and less productive in contemporary Romanian (i.e., less applicable to neological verbs); the infinitive is neological, educated, more formal, and highly productive.

Consider ergative verbs first. Like transitives, ergative verbs designate events (transitions); therefore, like transitives, they should be compatible with both suffixes. The examples in (53) show that this prediction is borne out: both nominalizations are possible in principle, though both of them are not always stylistically felicitous.

(53) **Ergative verbs**

<table>
<thead>
<tr>
<th>Infinitives</th>
<th>Supines</th>
</tr>
</thead>
<tbody>
<tr>
<td>a veni ‘come’</td>
<td>venirea</td>
</tr>
<tr>
<td>a pleca ‘leave’</td>
<td>plecarea</td>
</tr>
<tr>
<td>a ateriza ‘land’</td>
<td>aterizarea</td>
</tr>
<tr>
<td>a debarca ‘debark’</td>
<td>debarcarea</td>
</tr>
<tr>
<td>a ezita ‘hesitate’</td>
<td>ezitarea</td>
</tr>
<tr>
<td>a învia ‘resurrect’</td>
<td>învierea</td>
</tr>
<tr>
<td>a întineri ‘grow young’</td>
<td>întinerirea</td>
</tr>
<tr>
<td>a sosi ‘arrive’</td>
<td>sosirea</td>
</tr>
<tr>
<td>a urca ‘ascend’</td>
<td>urcare</td>
</tr>
<tr>
<td>a cabori ‘descend’</td>
<td>caborâre</td>
</tr>
</tbody>
</table>

The behavior of unergative verbs contrasts sharply with that of ergative ones and is clearly in line with the proposed account. The great majority of unergative verbs have only the supine form. Since the infinitive nominalizer -er is [+telic], it is expected
to be incompatible with unergative verbs, which are [−telic], designating activities. With most unergatives verbs, the infinitive is not even used as a result nominal. Some verbs allow a result reading of the infinitive nominal, but must use the supine in the e-nominal. Few verbs exhibit parallel forms. Unergative verbs thus behave like transitive verbs with prototypical objects, confirming the hypothesis that the latter should be analyzed syntactically like the former.

(54) **Unergative verbs**

<table>
<thead>
<tr>
<th>English</th>
<th>Infinitives</th>
<th>Supines</th>
</tr>
</thead>
<tbody>
<tr>
<td>a râde ‘laugh’</td>
<td>*râderea</td>
<td>râsul</td>
</tr>
<tr>
<td>a plânge ‘cry’</td>
<td>*plângerea lui</td>
<td>plânsul lui</td>
</tr>
<tr>
<td>a respira ‘breathe’</td>
<td>*respirarea lui</td>
<td>respiratul lui</td>
</tr>
<tr>
<td>a dormi ‘sleep’</td>
<td>*dormirea lui</td>
<td>dormitul lui</td>
</tr>
<tr>
<td>a munci ‘work’</td>
<td>*muncirea</td>
<td>muncitul</td>
</tr>
<tr>
<td>a lucra ‘work’</td>
<td>*lucrarea lui (r)</td>
<td>lucratul lui</td>
</tr>
<tr>
<td>a călători ‘travel’</td>
<td>*călătorirea</td>
<td>călătoritul</td>
</tr>
<tr>
<td>a sforăi ‘snore’</td>
<td>*sforăire</td>
<td>sforăitul</td>
</tr>
<tr>
<td>a lătra ‘bark’</td>
<td>*lătrare</td>
<td>lătratul</td>
</tr>
<tr>
<td>a mieuna ‘mew’</td>
<td>*mieunare</td>
<td>mieunatul</td>
</tr>
<tr>
<td>a trăi ‘live’</td>
<td>trăire (*e/r)</td>
<td>trăitul</td>
</tr>
<tr>
<td>a locui ‘live’</td>
<td>*locuirea</td>
<td>locuitul</td>
</tr>
<tr>
<td>a sta ‘stand, sit’</td>
<td>stare (*e/r)</td>
<td>statul</td>
</tr>
<tr>
<td>a zace ‘lie’</td>
<td>*zacere</td>
<td>zăcutul</td>
</tr>
<tr>
<td>a ciripi ‘chirp’</td>
<td>*ciripire</td>
<td>ciripitul</td>
</tr>
<tr>
<td>a vorbi ‘speak’</td>
<td>vorbire (*e/r)</td>
<td>vorbitul</td>
</tr>
<tr>
<td>a ofta ‘sigh’</td>
<td>oftare (*e/r)</td>
<td>oftat</td>
</tr>
<tr>
<td>a ploua ‘rain’</td>
<td>*plouare</td>
<td>plouatul</td>
</tr>
<tr>
<td>a ninge ‘snow’</td>
<td>*ningere</td>
<td>ninsul</td>
</tr>
<tr>
<td>a săltă ‘jump’</td>
<td>*sâltare</td>
<td>săltatul</td>
</tr>
<tr>
<td>a urla ‘roar’</td>
<td>*urlare</td>
<td>urlatul</td>
</tr>
</tbody>
</table>

Thus, both suffixes ultimately operate on intransitive configurations, which may however be ergative or unergative, depending on the aspectual properties of the respective affix.

### 3.7 More on Aspect and Case

#### 3.7.1 A-Structure and Event Identification

The above analysis confirms the well-established relation between aspect and case, first proposed by Borer (1994). She assumes that in the IP domain, it is aspect that determines the projection and selection of arguments and that structural case is checked in aspectual projections. In the same line of thought, Van Hout (1994) and
Grimshaw and Vikner (1993) speak about identifying an event by identifying an aspectually relevant event participant, establishing the following generalization:

(55) If an event is identified, all the participants count as identified as well.

Different types of eventualities require or allow different identifiers. Specifically:

(56) a. A telic predication is identified if its object is identified.
   b. An activity is sufficiently identified if its subject (agent) or some adjunct identifies it.

The analysis of Romanian e-nominals is compatible with these generalizations. Only an object may check the [+telic] feature of the affix, while the subject may check the [−telic] feature of an e-nominal. The data examined above reveal, however, that the generalizations in (56) are insufficient. Not just any type of object may check telicity. In fact, only a nominal object (DP/NP), as opposed to a sentential one, may do so. Furthermore, not even just any nominal object may check telicity, either. In line with the above analysis, checking telicity means checking the telic feature of the nominalizer through structural case.

The contrast between null objects that license [−telic] readings and overt objects that (may) license [+telic] readings suggests that the type of DP/NP that may check a [+telic] feature may be given a morphosemantic characterization, proposed by Reinhart and Reuland (1993). A nominal object that may serve as a telicity identifier is one having the referential property [+R] (initially discussed in Chomsky 1981).

(57) Condition [+R]
   a. A DP is [+R] iff it carries a full specification for $\phi$-features and structural case.
   b. A DP may be a telicity licenser only if it meets the condition in (57a).

In order to express the relation between the telic nature of the suffix and the obligatory overt lexical object, one might hypothesize that affixes that have [+telic] interpretation bear uninterpretable $\phi$-features, which must be checked by moving a DP/NP, bearing interpretable $\phi$-features, into the appropriate specifier.

Thus, in (47b), when the derived nominal, bearing the affixal head with uninterpretable $\phi$-features, adjoins to the Gen head, the DP argument that checks its case features simultaneously checks the $\phi$-features on the affix. If this proposal is adopted, telic nominalizing affixes force the presence of a DP/NP capable of checking their uninterpretable $\phi$-features. The checking of a [+telic] aspect feature amounts to the projection of a nominal object, capable of checking $\phi$-features and structural case.

Several empirical facts noted above follow from the generalizations in (55) and (56), in conjunction with this characterization of telic suffixes and event identifiers.

First, the absence of null prototypical objects in [+telic] nominalizations is explained. Null prototypical objects, even if projected and case-licensed, cannot serve
as telic aspect licensers since they lack $\phi$-features and thus fail to have the $[+R]$ property.

In contrast, all lexical objects meet Condition $[+R]$ and may license the $+[\text{telic}]$ feature of the infinitive nominalizer. As long as the DP has property $[+R]$, that is, $\phi$-features and genitive case, telicity is checked irrespective of the semantic type of the lexical DP (homogeneous or quantized). Example (58a) with a bare plural object is as good as example (58b) with a definite object. Both DPs may check the telic feature of the infinitive nominalizer, while the difference between them is relevant only in determining the aspectual class of the DP as a whole. With a null (prototypical) argument, the derivation crashes, as in (58c).

(58) a. încheierea de tratate importante de către cele două puteri
   concluding-INF.THE of treaties important by the two powers
   ‘the concluding of important treaties by the two powers’

b. încheierea acestui tratat important de către cele două puteri
   concluding-INF.THE this-GEN treaty important by the two powers
   ‘the concluding of this important treaty by the two powers’

c. *încheierea pro de către cele două puteri
   concluding-INF.THE by the two powers
   ‘the concluding by the two powers’

Second, when the object is lexical (even when it is a bare plural) and satisfies Condition $[+R]$, the event is sufficiently identified to allow the argumental function of the implicit agent. While bare plural objects may activate an agent, implicit objects cannot do so. In the following examples, the bare plural object activates an implicit agent capable of control (59a) and of licensing an adjectival adjunct small clause (59c). An implicit object can do neither of these, as shown by the ungrammaticality of (59b,d).

(59) a. construirea de noi apartamente pentru a satisface cererile
   build-INF.THE of new apartments for to satisfy need-GEN.PL
   locuitorilor
   inhabitant-GEN.PL
   ‘the building of new apartments to satisfy the population’s demands’

b. *construirea pentru a satisface cererile locuitorilor
   build-INF.THE for to satisfy need-GEN.PL inhabitant-GEN.PL
   ‘the building to satisfy the population’s demands’

c. adoptarea de hotărâri importante obosit
   adopt-INF.THE of decisions important tired
   ‘the making of important decisions tired’

d. *adoptarea pro obosit
   adopt-INF.THE tired
   ‘the making tired’
Consider now the atelic reading of the supine suffix. In accordance with generalization (56), the subject (agent) may license the [−telic] feature of the supine NS nominal when it is overtly expressed. However, even though it has full argumental status in activity nominalizations, the subject remains optional. This is likely to be the consequence of the more modest role that the subject plays in determining aspectual class (recall the earlier quotation from Ramchand 1997). It is important that supine activity nominals may appear without any overt argument, as in (60b).

(60) a. Cântatul lui Ion la pian zilnic mă enervează.
   play.sup.the the.gen Ion at piano daily me-irritates
   ‘Ion’s playing the piano daily irritates me.’

b. Cântatul la pian zilnic mă enervează.
   play.sup.the at piano daily me-irritates
   ‘Playing the piano daily irritates me.’

The question is whether the (implicit) subject is a syntactic argument in (60b) or not. I suggest that it is not. In section 3.2.2, I argued that there is little syntactic motivation for the syntactic projection of an implicit agent. At the same time, as just mentioned, if the event is somehow licensed aspectually, all participants, including the implicit agent, count as identified and may be semantically active. There is then no semantic reason for projecting the agent either. However, given the relation between aspect and case (only structural case licenses aspect), the structural case feature of the DP must be checked.

I will assume that it is the prototypical object DP that checks case in activity nominals like (60b). As shown for Italian by Rizzi (1986), prototypical objects may receive structural case and be syntactically active (see the evidence in section 3.4.2). It follows that in the Romanian supine structure with null subjects and objects, prototypical objects incorporate only when they cannot be case-licensed, because the case position goes to an overt subject; examples of type (60b) are NO nominals syntactically, except that the null object can only check a [−telic] feature.

In conclusion, null objects may check case and license an e-reading. However, since prototypical null objects have default ϕ-features or lack ϕ-features, they cannot check the ϕ-features of the affixal head, so the interpretation of the e-nominal remains [−telic]. The syntax of the DP thus illustrates a configurational interpretation of aspect: aspectual features correlate with syntactic properties of the DP, and the nominal cannot activate its a-structure unless an aspectually relevant DP argument checks case.

3.7.2 More on the Relevance of ϕ-Features and Case
In this section, I would like to stress the importance of structural case in licensing aspect in the DP domain, by pointing to certain differences between aspect in DPs and aspect in IPs.
More than in the IP domain, aspect in the DP domain essentially requires checking a case feature. There is considerable evidence that checking of an aspectual [+telic] feature requires the presence of an overt nominal object, capable of checking case. In contrast, in verbal domains other types of constituents may induce telic interpretations as well. Here are a few relevant situations:

First, with nominalizations of transitive verbs, telicity may be checked only by the projection and case licensing of a nominal object, while this is not true for verbal projections, even if one ignores grammaticalized aspect (perfectivity). Thus, adverbials of amount, as well as directional PPs, may act as delimiters and lead to a telic interpretation of a VP, even when there is no object event measure. This does not happen in (infinitive) e-nominals.

(61) a. A citit mult pentru a răspunde la întrebări.
   has read much for to answer at questions
   ‘He read much in order to answer the questions.’
   b. *citirea mult pentru a răspunde la întrebări
      read.inf.the much for to answer at questions
      ‘the reading much in order to answer the questions’

(62) a. Au citit pînă la pagina zece în două ore pentru a răspunde
   have read up to page ten in two hours for to answer
   la întrebări.
   at questions
   ‘They read up to page ten in two hours in order to answer the questions.’
   b. ??citirea pînă la pagina zece pentru a putea răspunde la toate
      read.inf.the up to page ten for to be.able.to answer at all.the
      întrebările
      questions
      ‘the reading up to page ten in order to be able to answer all the questions’
   c. citirea capitolului pînă la pagina zece pentru a putea
      read.inf.the chapter.the.gen up to page ten for to be.able.to
      răspunde la întrebări
      answer at questions
      ‘the reading of the chapter up to page ten to be able to answer the
      questions’

In IPs, the feature [+telic] is thus less dependent on nominal objects and accusative case.

Second, an asymmetry between verbal and nominal projections is also apparent in the case of ditransitive verbs. The direct object is obligatory in nominals, but it is at least sometimes optional in IPs. Again, it is the presence of the case-assigned DP object that licenses the a-structure in e-nominals based on ditransitive verbs.
Third, an important argument in favor of the position that aspect and case go together in e-nominals is that in nominals where no case feature is checked, the e-nominal interpretation vanishes. This is proved by the fact that if the DP argument is replaced by a CP argument of the same verb, the infinitive [+telic] nominal is simply not possible any more. Cognate verbs and nominalizations exhibit a striking asymmetry regarding their ability to accept DPs versus CPs as objects. Here is a list of verbs that accept both CP and DP objects:


While the verb accepts both DP and CP complements, as (65a) and (66a) below demonstrate, the infinitive nominalization accepts only the DP, while the CP is completely excluded. In infinitive e-nominals, there is a sharp contrast between the acceptable examples, where the object is a DP (see (65b), (66b)), and the unaccept-able examples, where the object is a CP (see (65c), (66c)). Since, in the proposed analysis, the [+telic] infinitive e-nominal depends on a complete φ-matrix and on genitive case checking, the absence of the CP complement is predicted.

Depending on the analysis adopted for CPs, the infinitive facts suggest either that the CPs themselves cannot check the genitive case feature (Webelhuth 1992) and thus that the aspctual feature of the nominal fails to be checked, or that the placeholder empty category with which CPs are coindexed, some variety of pro (see Cardinaletti 1991; Rothstein 1995), cannot satisfy Condition [+R], presumably because it is φ-incomplete. (See Iatridou and Embick’s (1997) analysis of proclausal pro for a justification of the latter position.) The absence of the CP complement follows from the telicity of the suffix.
Examples become acceptable if a nominal is inserted to head the CP in a noun complement construction (see (65d), (66d)). The contrasts are systematic and clear-cut.

(65) a. Au afirmat adevărul/că primul ministru a demisionat. have asserted truth.THE/that the prime minister has resigned
   ‘They asserted the truth/that the prime minister had resigned.’

b. afirmarea adevărului
   assert.INF.THE truth.THE.GEN
   ‘the asserting of the truth’

c. *afirmarea că primul ministru a demisionat
   assert.INF.THE that the prime minister has resigned
   ‘the asserting that the prime minister had resigned’

d. afirmarea faptului că primul ministru a demisionat
   assert.INF.THE fact.THE.GEN that the prime minister had resigned
   ‘the asserting of the fact that the prime minister had resigned’

(66) a. Au explicat teorema/că primul ministru a demisionat.
   have explained theorem.THE/that the prime minister has resigned
   ‘They explained the theorem/that the prime minister had resigned.’

b. explicarea teoremei
   explain.INF.THE theorem.THE.GEN
   ‘the explaining (explanation) of the theorem’

c. *explicarea că primul ministru a demisionat.
   explain.INF.THE that the prime minister had resigned
   ‘explaining that the prime minister had resigned.’

d. explicarea faptului că primul ministru a demisionat
   explain.INF.THE fact.THE.GEN that the prime minister had resigned
   ‘explaining the fact that the prime minister had resigned’

In conclusion, the infinitive e-nominal is [+telic] and may check aspect, licensing the event reading only if the φ-features and case have been checked; a CP object cannot satisfy this condition and will not be acceptable in the infinitive e-nominal. The absence of the CP complement ultimately follows from the telicity of the suffix. In a different context, Stowell (1981) has remarked that a that-complement is not an argument in nominalizations, and Grimshaw (1990) that a that-complement appears in result rather than event nominals. The Romanian facts are congruent with these interpretations.

As expected, in contexts where an activity interpretation becomes possible, the supine does appear with CP objects, while the infinitive is still excluded. The assumption to make is that in such a case, a null subject argument is projected and checks case; that is, the projection of a subject is syntactically forced.
(67) a. Socotitul/*Socotirea cât va costa excursia i-a luat mult reckon.sup/*inf.the how much will cost to.him-has taken much timp.
time
‘Reckoning how much the trip would cost took him much time.’

b. Raportatul/*Raportarea că obiectivele au fost atinse devenise un report.sup/*inf.the that goals.the have been attained had become a obicei.
habit
‘Reporting that the goals had been attained had become a habit.’

c. Declaratul/*Declararea că totul e în regulă nu rezolvă declaring.sup/*inf.the that everything is in rule not solves problemele.
problems.the
‘Declaring that everything was all right did not solve the problems.’

The absence of CPs in telic infinitive nominalizations, as well as the occurrence of CPs in the supine NS structure, provides strong confirmation for the present analysis. Since CPs cannot check case (or other functional categories of the noun), the aspectual feature of the e-noun remains unchecked.

3.8 Conclusions

The investigation of Romanian infinitive and supine nominal constructions reveals an essential connection among aspect, case, and the syntax of nominalization, the main points of which are summarized here.

1. The analysis stresses the importance of aspect, understood as aspectual class, among the parameters of nominalization. With both verbs and nouns, projection is mediated by aspectual type.

2. E-nominals and the corresponding verbs share a-structure, a conclusion that is implicit in the derivational account of e-nominals. Nominalization does not involve the suppression of any argument position. In particular, the subject of a (derived) unergative construction may be the only lexical DP in the e-nominal and may have all argumental properties.

3. E-nominals may be [+telic] (transitions) or [−telic] (activities). This difference is due not only to the inherent properties of the lexical base and the choice of arguments/adjuncts, but also to the inherent semantic properties of the nominalizing suffixes. The aspectual properties of the nominalizing affix most constrain the syntax of the e-nominal, because the affix selects a particular vP complement in line with its aspectual properties.
4. A [+telic] suffix requires the projection of a DP object with a complete $\phi$-matrix. In other words, a [+telic] suffix selects an ergative vP as its complement. Telicity must be checked by the object. A [--telic] suffix accepts any type of vP complement (ergative, (derived) unergative); the [--telic] feature may be checked by the subject, as well as by the object.

5. Presumably for case-theoretic reasons, nominalizations are based on intransitive configurations, but these may be ergative or unergative.

6. The more constrained behavior of nominals in comparison with verbs regarding aspect follows from the fact that aspect and case are checked in the same (Case/Aspect) projection; the checking of the [+telic] feature of the nominal entails the checking of $\phi$-features and of objective genitive case. Clausal objects fail to check case and cannot survive if the nominalizing affix is [+telic].

7. The aspectual type of a suffix determines which arguments are event identifiers and must be lexicalized. Event identifiers must check structural case.

**Note**

I would like to express my gratitude to Carmen Dobrovie-Sorin for patiently reading earlier drafts of this chapter and providing detailed comments. It gives me great pleasure to thank the two editors of the volume, Jacqueline Guéron and in particular Jacqueline Lecarme, for their help in clarifying my ideas and for the many suggestions they offered, which I tried to put to use here. Remaining errors are all mine.

**References**


Marantz, A. 1999. Creating verbs above and below little v. Manuscript, MIT.


4.1 Introduction

In this chapter, I will lay out the foundations of a theory of imperfective tenses (including at least the present tense and the so-called imperfect in Romance languages) according to which present tense predicates (and, more generally, imperfectively marked predicates) are uniformly mapped into subject-predicate logical formats. The analysis of imperfective aspect in terms of predication will be argued to provide a uniform account of the two main readings of imperfective predicates (the so-called progressive reading, by means of which a sentence is interpreted as a report on the passing scene, and the so-called habitual reading, by means of which a sentence is given generic import).

On the negative side, I will argue that two rather widespread and influential analyses of the way in which imperfective sentences are assumed to yield progressive and habitual readings are empirically not tenable and conceptually ill founded. One of these analyses is the view of the imperfect as an aspectually sensitive tense, according to which the imperfect imposes a kind of aspeclual constraint on the eventuality description to which it applies, to the effect that the latter is interpreted as a state or as a process (the progressive reading is assumed to follow from this aspeclual constraint). I will not only take issue with this conception of the imperfect but also challenge the strictly related view that the model-theoretic notions underlying aktionsart and grammatical aspect are essentially the same. The second analysis that I intend to reject corresponds to the view of the imperfect as a polarity tense that triggers the presence of a generalized quantifier with modal force (the so-called Gen), quantifying over individuals and/or eventualities: the habitual reading is assumed to follow from this interpretation of Gen as a relation between two classes of eventualities. I will argue against this quantificational analysis (the so-called relational analysis of genericity) by arguing that there is no way to fix the properties of Gen
in a precise and noncontradictory way, endorsing a neo-Carlsonian view of generic sentences as subject-predicate structures.

On the positive side, I will argue that the predicational analysis of imperfective aspect permits an elegant unification of the logical form assigned to progressives and habitu als, leading to the important insight that the semantic instruction encoded by imperfective morphology is not ambiguous, contrary to what was implicitly held by traditional analyses. Moreover, I will take the position that (at least in Romance and Germanic) grammatical aspect is the locus where the distinction between “categorical” sentences (consisting in the ascription of a property to a subject) and “thetical” sentences (roughly consisting in the presentation of an eventuality) is grammatically encoded. In this way, the classical debate in philosophy of language over whether the subject-predicate format is an essential ingredient of the definition of sentence (opposing the logical/rationalistic tradition of linguistic analysis mostly identified with Port-Royal to philosophers like Brentano and linguists like Marty and Miklošich; see especially Gra‰ 2001) is shown to hinge less on an abstract philosophical choice and more on concrete empirical issues concerning the role of grammatical aspect (and in particular the imperfective/perfective opposition) as the morphosyntactic regulator of the choice between a subject-predicate format and an eventive format.

Last but not least, I will argue that the predicational analysis of imperfective tenses is able to provide a principled and elegant solution for a still poorly understood set of phenomena concerning the licensing of existential interpretations of argument bare nouns with the present tense in English. In a nutshell, the problem consists in the fact that neither Carlson’s (1980) theory (holding that existential bare nouns are licensed by stage-level predicates) nor Kratzer’s (1995) theory (holding that existential bare nouns depend on certain differences in argument structure between stage-level and individual-level predicates) provides a satisfactory solution for this set of facts (which I would like to dub the present tense paradox). I will show that this paradox can be solved under the hypothesis that existential interpretations are licensed only in structures where another of the predicate’s arguments may count as a subject of predication, thus providing a nontrivial empirical argument in favor of the predicational analysis of genericity.

The chapter is organized as follows. In section 4.2, I will review what I believe to be wrong conceptions of imperfective aspect, arguing against their empirical and conceptual feasibility. In section 4.3, I will present a unifying analysis of progressives and habitu als, under the basic insight that the logical form of imperfectivity is predication. In section 4.4, I will deal with the present tense paradox in English. Finally, I will draw some general conclusions concerning the proposed logical form of imperfective aspect and the underlying conception of grammatical aspect.
4.2 Two Wrong Conceptions of Imperfective Tenses

4.2.1 The Imperfect as a Tense of Aspectual Polarity

The first analysis I intend to take issue with conceives of the imperfect in terms of an aspectually sensitive tense. This means that the imperfect not only expresses the notional content of PAST but also crucially applies to eventuality descriptions that are either states or processes. Exemplifying with French (see de Swart 1998), the canonical usage of the imperfect manifests itself in sentences such as (1) (expressing a state), and not in sentences such as (2) (expressing a culminated event, a so-called accomplishment in the Vendlerian terminology), where a perfective tense should instead be used, as in (3).

(1) Anne était triste.
   ‘Anne was-IMP sad.’

(2) Anne écrivait une lettre.
   ‘Anne wrote-IMP a letter.’

(3) Anne écrivit une lettre.
   ‘Anne wrote-PERF a letter.’

The use of the imperfect in noncanonical cases such as (2), where it applies to verbs denoting culminated events, is explained by resorting to a mechanism of aspectual “coercion”: since the imperfect applies to the wrong lexical meaning (i.e., to a verb that does not refer to a state/process), this lexical meaning is suitably modified in order to yield an acceptable input to the compositional rule. In particular, the sentence in (2) will be understood either as a habitual (roughly, Anne had the habit of writing a letter) or as a progressive (Anne was in the process of writing a letter). In this way, the original interpretation of the predicate ‘write a letter’ as a culminated event is turned into the interpretation of a state/process. Moreover, interpreting the imperfect in terms of aspectual coercion has the apparent advantage of assuming the same model-theoretic notions for the analysis of aktionsart and grammatical aspect.

Aktionsart concerns the property of lexical meaning according to which predicates refer either to states/processes or to culminated eventualities of different types. Grammatical aspect (as exemplified by the aspectual marking proper to the imperfect) is simply a sort of aspectual operator (expressed by inflectional morphology) turning predicates of a certain class (e.g., those referring to culminated events) into predicates of another class (e.g., those referring to states/processes). In other words, the underlying insight is that assuming a certain event ontology (i.e., a certain partition of the domain of eventualities over which predicate variables are assumed to vary) will help in understanding both aktionsart distinctions at the level of lexical meaning and aspectual distinctions at the level of inflectional morphology. Arguing against the
analysis of the imperfect that I have just sketched thus entails arguing against the proposed conflation of the notional value of grammatical aspect with the notional value of aktionsart.

Let us turn thus to the announced criticism of the view of the imperfect as an aspectual operator mapping accomplishments into states/processes. In a nutshell, the point I wish to make is that coercion is simply not able to predict the actual interpretation of imperfective sentences. Consider first how aspectual coercion operates in languages such as English when there is a clash between the interpretation of the verbal predicate as a culminated event and the temporal interpretation of a location adverb. The standard situation is shown in (4)–(5).

(4) The pianist played the sonata for eight hours.
(5) For months, the train arrived late.

In both cases, the semantic clash is solved by turning the telic predicate into a predicate referring to iterative events: the reference is either to repeated executions of the sonata or to repeated late arrivals. The interpretation of (4)–(5) clearly shows that the iterative reading is a suitable way of turning telic predicates into durative predicates (i.e., predicates referring to states/processes). If the imperfect is essentially an operator mapping culminated events into states/processes, we clearly predict that the realization of (4)–(5) as imperfective sentences will give rise to the iterative reading. To put it in a stronger form, if the imperfect corresponds to a mechanism of grammatically encoded aspectual coercion, there is no reason to expect that grammatical encoding will be less effective than the kind of pragmatically encoded coercion instantiated in (4)–(5) in producing the iterative reading of the imperfective equivalents of (4)–(5). Unfortunately, what we find is that the iterative reading cannot be expressed by the imperfect in languages such as French and Italian. Using the latter for illustration, notice that (6) (the imperfective equivalent of (4) in Italian) and (7) (the imperfective equivalent of (5)) cannot be assigned an iterative reading, for which a perfective tense is required, as shown in (8) and (9). Analogous facts hold in French.

(6) Il pianista eseguiva la sonata per otto ore.
   (*iterative, OK habitual)
   ‘The pianist played-IMP the sonata for eight hours.’

(7) Per mesi, il treno arrivava in ritardo.
   (*iterative, OK habitual)
   ‘For months, the train arrived-IMP late.’

(8) Il pianista eseguì la sonata per otto ore.
   (OK iterative, *habitual)
   ‘The pianist played-PERF the sonata for eight hours.’
Per mesi, il treno *arrivò* in ritardo.

(OK iterative, *habitual)

‘For months, the train *arrived-PERF* late.’

Of course, one might try to say that the habitual reading (which is in fact the only legitimate reading of (6) and (7)) is simply a variant of the iterative reading and is actually preferred (admittedly for unclear reasons) to the iterative reading whenever grammatically induced aspectual coercion applies. However, the point is that the difference between the durative and the habitual readings has nothing to do with the conversion of culminated eventualities into states or processes. The difference concerns the modal force proper to the habitual reading, which is completely absent from the iterative reading. To see this, consider the following hypothetical situation. Suppose that in the 1940s the Teatro alla Scala had the sadistic habit of having a poor pianist playing one of Beethoven’s sonatas for eight hours at every yearly opening of the concert season. Suppose that this tradition was in fact subsumed under the official regulations of the theater but underwent a forced interruption during the war—say, in the period 1942–1945. In these circumstances, one might actually utter a sentence like (10) *salva veritate*, while its perfective counterpart in (11) would be open to the objection that the crazy performance at stake did not take place in certain years. The reason is that the imperfective sentence in (10) may be interpreted in the worlds of a deontic modal base in which everything happens according to the theater regulations and without the intervention of limiting external factors, whereas the perfective sentence in (11) is necessarily interpreted in the real world (hence the falsity flavor of (11)).

Negli anni quaranta, ad ogni inizio di stagione, il pianista *eseguiva* la sonata di Beethoven per otto ore.

‘In the forties, at every season opening, the pianist *played-IMP* Beethoven’s sonata for eight hours.’

Negli anni quaranta, ad ogni inizio di stagione, il pianista *esegui* la sonata di Beethoven per otto ore.

‘In the forties, at every season opening, the pianist *played-PERF* Beethoven’s sonata for eight hours.’

The conclusion I would like to draw from the discussion above is that the imperfect does not simply map telic predicates into durative predicates. Rather, it adds a modal dimension to the semantics of the past tense. In effect, one cannot even propose that mapping to durative predicates is an essential ingredient of the semantics of the imperfect, since the pure durative readings (like the iterative one) are not available as legitimate readings of imperfective sentences.

This casts serious doubts on the analysis of the imperfect as a polarity tense that applies only to states/processes. Even more significantly, it casts serious doubts on
the possibility of limiting the semantics of grammatical aspect to the same ontological domain that is relevant for aktionsart. These doubts are independently confirmed by the behavior of aspectually ambiguous verbs like *impugnare* (‘to hold something’ or ‘to get hold of something’) in Italian. Let us now turn to the analysis of this phenomenon, essentially following the argumentation developed in Bertinetto 2001. According to one of its two lexical meanings (‘to get hold of something’), *impugnare* refers to a culminated event; according to the other, it refers to a process (‘to hold something’). The view of the imperfect as a polarity tense selecting states/processes clearly predicts that the usage of *impugnare* in the imperfect should be unmarked with the meaning ‘to hold something’ and marked with the meaning ‘to get hold of something’. At first sight, the prediction is borne out, as shown by the following examples in Italian (drawn from Bertinetto 2001):

(12) Leo *impugnò* la pistola: tutt’intorno si fece subito silenzio.
   ‘Leo got hold-PERF of his gun: all around a sudden silence arose.’

(13) Quando Lia entrò, Leo *impugnava* la pistola.
   ‘When Lia came in, Leo held-IMP the gun.’

However, it is not difficult to find cases where a perfective form combines with the durative meaning (14) and cases where the imperfect combines with predicates referring to culminated events (15).

(14) Leo *impugnò* saldamente la pistola finché la sparatoria non finì.
   ‘Leo firmly held-PERF his gun until the shooting was over.’

(15) Quando Leo *impugnava* la pistola, Lia aveva paura.
   ‘When Leo got hold-IMP of his gun, Lia was afraid.’

The striking fact about (15) is that in habitual sentences of this sort, aspectual coercion does not apply, contrary to the expectations raised by the theory of the imperfect as an aspectually sensitive tense. There is indeed no shift from the telic meaning of *impugnare* to its durative counterpart, since *impugnare* retains the original meaning ‘to get hold of something’ in (15). Notice that one may try to rescue aspectual coercion by proposing that the habitual variant of ‘to get hold of something’ qualifies as durative, satisfying as such the selectional requirements on the eventualty to which the imperfect applies. In fact, we saw earlier that French sentences such as *Anne écrivait une lettre* ‘Anne wrote-IMP a letter’ are normally interpreted either as habituals or as progressives. Above I provided a substantial argument against the view of habituality as an instantiation of the durative reading, but let us assume here, for the sake of the argument, that my objections can be circumvented. In a nutshell, the hypothetical rescuing strategy would claim that shifting the lexical meaning of ‘to get hold of something’ into its durative counterpart would not be required, since both the progressive and the telic variant of the predicate would suffice for the mapping
into states/processes. The trouble with this strategy is that the actual interpretation of (13) would represent an unsolvable puzzle. Namely, notice that (13) is assigned the reading ‘Leo was holding the gun’ in Italian, while the progressive reading of the telic counterpart of impugnare is completely excluded (*‘Leo was getting hold of the gun’). If (15) is taken to show that the mapping into states/processes does not require a change of lexical meaning with predicates ambiguous between a telic and a durative reading, one would predict that there is no reason for the imperfect not to apply to the telic variant of impugnare and coerce it into its progressive reading (‘to be getting hold of something’). The exclusion of this reading thus remains completely unexplained.

I take these facts to corroborate the view that aspectual coercion (and the related interpretation of the imperfect as a tense of aspectual polarity) cannot be the key to a proper understanding of the logical form and semantics of the imperfect.

The general conclusion I would like to draw is that aktionsart and grammatical aspect are orthogonal notions that make reference to distinct ontological properties of the domain in which they are interpreted. Adopting and somewhat extending the analysis advocated in Higginbotham 2000, I take aktionsart to be a lexical category that encodes the aspect of the ontological constitution of events that has to do with the homogeneity of its subparts. In a Davidsonian framework, the difference between telic predicates and states/processes can thus be expressed by associating telic predicates with a lexical structure containing two distinct event variables, corresponding to the two nonhomogeneous subparts of the telic eventuality (the processual part and the telos).

(16) a. Telic: DIE $<e_1, e_2>$
   b. Atelic: WALK $<e_1>$

Grammatical aspect is (at least in Romance/Germanic) an inflectional category that encodes a rather different aspect of the ontological constitution of events: their having (or not having) a culmination. This property is shared both by nonhomogeneous (telic) predicates like die and by homogeneous (process-denoting) predicates like walk, as is confirmed by the full legitimacy of the perfective variant of walk in Italian (17a) and by the results of the discussion above concerning cases like (14) (see Delfitto 2002a for a detailed discussion of some of the comparative issues at stake here). Formally, I interpret perfective marking as an inflectional category that acts as a predicate modifier: $\lambda Q \lambda e [Q(e) \land \text{Culm}(e)]$. In this way, the interpretation of the perfective realization of, say, walk will be something along the lines of (17b).

(17) a. Leo camminò per tre ore.
   ‘Leo walked-PERF for three hours.’
   b. WALK$_{\text{PERF}} = \lambda Q \lambda e [Q(e) \land \text{Culm}(e)] \leftrightarrow \lambda e [\text{walk}(e) \land \text{Culm}(e)]$
In this perspective, imperfective aspect will be the default case: an imperfectively marked predicate will simply express neutral information about whether the predicate refers to a culminated or to a nonculminated eventuality. This seems empirically correct in at least two respects. First, in habitual sentences such as (15) the imperfect refers to culminated events. Second, and even more importantly, the mereological aspects of the progressive interpretation of the imperfect (the fact that it refers to ongoing events or subparts of a culminated event) can be derived as a matter of implicature, under a straightforward application of Grice’s Maxim of Quantity: the speaker who knows that the event he or she is referring to has culminated must use the perfective realization of the predicate (see especially Kearns 1991 for a detailed discussion of this issue).

Summarizing, we have seen that the view of the imperfect as a tense of aspectual polarity is fundamentally misguided. Empirically, it leads to a number of wrong predictions and to a vacuous dependence on aspectual coercion. Conceptually, it does not properly acknowledge that the imperfect (and grammatical aspect quite generally) encodes semantic instructions that cannot be reduced to a form of grammatically encoded aspectual coercion, consisting in the mapping of predicates referring to culminated events into predicates referring to durative events (states/processes). Moreover, we have seen that the imperfect, far from selecting predicates of states/processes, in fact expresses neutral semantic information regarding the choice between culminated and nonculminated events.

### 4.2.2 The Quantificational Analysis of the Imperfect

Another influential analysis of imperfective aspect takes the present tense and the imperfect of stage-level predicates to encode a polarity feature that triggers the presence of a phonetically empty adverb of quantification (Q-adverb) with modal import (see especially Chierchia 1995). In this way, the French sentence (2) (restated here as (18)) is assigned the logical form in (19) (where $C$ is a two-place predicative variable expressing a contextually determined relation between individuals and events in the past).

(18) Jean écrivait une lettre.

(19) \[ \text{Gen} [C(\text{Jean}, e)] \left[ \exists y (\text{lettre}(y) \land \text{Agent}(\text{Jean}, e) \land \text{Theme}(y, e)) \right] \]

The truth-conditions informally expressed by (19) are that in all worlds of the relevant modal base, the occasions that favored writing a letter (in some contextually defined way) were occasions in which Jean actually wrote a letter. This analysis of the imperfect thus combines naturally with the relational view of genericity that takes English present tense sentences such as (20) to correspond with logical forms like (21).
(20) Typhoons arise in this part of the Pacific.

(21) Gen(l) [this-part-of-the-Pacific(l)] [\(\exists x \ (\text{typhoon}(x) \land \text{arise-in}(x, l))\)]

Habitual sentences such as (18) are thus simply another instance of the relational interpretation of generic sentences (see especially Wilkinson 1991; Kratzer 1995).

In what follows, I will briefly present some empirical arguments against the view that the logical form of habituals is quantificational and that genericity involves the presence of a phonetically unrealized Q-adverb (see Delfitto 2002a for a more extensive discussion of the empirical shortcomings of the quantificational/relational view of genericity).

First argument. If the generic reading follows from the presence of an empty Q-adverb, we do not expect to find generic readings in sentences that contain overtly realized Q-adverbs. The reason is straightforward: if the overt Q-adverb binds the Davidsonian event variable associated with the predicate, the presence of Gen yields a violation of the constraint on vacuous quantification (i.e., there is no free variable for Gen to quantify over). To exemplify, a sentence like (22) would be assigned the logical form in (23).

(22) Gli italiani lavoravano spesso duramente.
   ‘Italians often worked-\text{IMP} hard.’

(23) For many \(e\) [\(C(I, e)\)] [\text{work-hard}(I, e)]

However, sentences containing extensional Q-adverbs instead of the implicit Gen exhibit the usual modal effects that should be yielded by Gen, as is shown by the observation that the subject in (22) naturally refers to ‘whoever may have turned out to be an Italian in the past’ and not to some specific groups or generations of Italians who lived in the past. On the other hand, one cannot assume that these modal effects follow from the semantics of the overt Q-adverb spesso ‘often’, since the perfective counterpart of (22) in (24) can be interpreted only with the subject referring to some specific groups or generations of Italians who lived in the past.

(24) Gli italiani lavorarono spesso duramente.
   ‘Italians often worked-\text{PERF} hard.’

This means that the imperfective marking proper to (22) must encode a modal reading without enforcing, however, the presence of the modalized Q-adverb Gen (whose combination with spesso would yield vacuous quantification). The solution I intend to submit consists in the hypothesis that imperfective morphology encodes a subject-predicate logical format. As a consequence, (22) is associated with the logical form in (25), roughly stating that ‘it is a property of Italians that they worked hard in many relevant situations in the past’.

(25) \([\lambda x \ \exists e \ [C(I, e)] \ [\text{work-hard}(I, e)]\] (Italians)
If the modal reading is assumed to follow from the subject-predicate format, Gen can be dispensed with and there is no danger of vacuous quantification.

Second argument. Dobrovie-Sorin and Laca (1996) emphasize that the presence of Gen is empirically well supported only in contexts involving singular indefinites (see Delfitto 2002a for a detailed comparative analysis of the behavior of singular and plural indefinites). In particular, the behavior of singular indefinites suggests that Gen is licensed only in analytic/taxonomic contexts. This would explain why (26) is acceptable as a generic sentence, whereas (27) is not (a madrigal must be polyphonic in order to be a madrigal, but there are of course many madrigals that are not popular).

(26) A madrigal is polyphonic.

(27) ??A madrigal is popular. (generic)

The most straightforward explanation for the grammaticality contrast between (26) and (27) is that singular indefinites are variables, triggering the realization of an unselective binder in the form of an empty Q-adverb. The hypothesis is thus that the content of Gen can be recovered only in analytic contexts: in (27), there is thus no obvious way to identify the empty Q-adverb as a quasi-universal quantifier with modal force. What is also worth noticing is that the contrast between (26) and (27) is completely obliterated when the subject indefinites are bare nouns (both (28) and (29) are perfectly acceptable as generic sentences).

(28) Madrigals are polyphonic.

(29) Madrigals are popular.

These facts naturally follow from the combination of the Carlsonian insight that bare nouns are names of kinds with the predicational analysis of generic sentences (i.e., the hypothesis that the generic reading of (28)–(29) represents the semantics of the subject-predicate format). The point is that only the singular indefinite in (26)–(27) introduces a free variable that must be (unselectively) bound by the empty Q-adverb Gen. Since Gen is licensed only in taxonomic contexts, (26) will turn out to be acceptable and (27) unacceptable. We conclude that although the (constrained) presence of Gen is relatively well supported in contexts containing individual free variables, the absence of any grammaticality contrast between (28) and (29) shows that the roots of genericity do not lie in adverbial quantification.

Third argument. If Gen is an empty Q-adverb, we expect it to give rise to the same scope ambiguities that can be detected with overtly realized Q-adverbs. Consider for instance the ambiguity that arises with other scopal elements such as negation: depending on the position of the Q-adverb, the sentences in (30) are ambiguous between the reading in (31) and the reading in (32).
(30) a. Michele non fuma spesso.
   ‘Michele does not smoke often.’
   b. Michele spesso non fuma.
   ‘Michele often does not smoke.’

(31) It is not the case that Michele often smokes.
(32) It is often the case that Michele does not smoke.

It is striking that this scopal ambiguity does not arise when the Q-adverb is—allegedly—the empty Gen: the sentence in (33) can be assigned only the reading corresponding to the logical construal in (32), with the negation in the scope of Gen.

(33) Michele non fuma.
   ‘Michele does not smoke.’

These overgeneration problems do not arise within the predicational analysis, since this analysis contends that there is no Gen in (33): the only admissible reading corresponds to the ascription of the property ‘λ.x (x does not smoke)’ to Michele, which is roughly equivalent, truth-conditionally, to the logical construal in (32).

On the basis of these empirical arguments, I conclude that the quantificational analysis of habituals is empirically unsatisfactory. It follows that the view of imperfective aspect as encoding a polarity feature that triggers the presence of Gen is also not supported and should therefore be abandoned. In the next section, I turn to the predicational analysis of imperfectively marked sentences, considering its empirical and conceptual advantages.

### 4.3 Imperfective Aspect as Encoding Predication

The hypothesis I would like to put forward here is that verbs that are aspectually marked as imperfective carry the semantic instruction that their maximal projection (VP) is to be interpreted as a one-place predicate (logical type <e, t>). Within the current model of syntax, virtually all the verb’s arguments have to vacate the VP as a result of the syntactic computation. One of the core questions that arise concerns the semantic nature of the relation between displaced arguments and their VP-internal traces. If we assume that syntactic movement uniformly reconstructs (in the sense that displaced arguments can be interpreted in their VP-internal launching site), traces of movement will not be related to their antecedents by means of predication: since the launching site potentially hosts the antecedent, there is simply no point in interpreting it as a predicational trace, that is, as a trace bound by a λ-operator. On the other hand, this is exactly what imperfective marking is supposed to do according to my hypothesis: it encodes the semantic instruction that one of the verb’s arguments has to be interpreted predicationally, that is, by means of a λ-operator binding a
variable in the original VP-internal position. The best way of technically implementing this basic insight is as follows. When a verb is marked as imperfective, a designated functional projection PredP is syntactically realized and one of the verb’s arguments must be displaced to Spec,PredP: the trace of this argument can be interpreted only predicationally, that is, in terms of a λ-operator binding a variable (see Delfitto 2002a, chap. 4, for independent morphosyntactic evidence in favor of the existence of Pred). Moreover, we can assume that the Pred head is endowed with specific semantic content, in the sense that it performs “intensional type shifting” on the constituents that are found in its syntactic domain (the VP complement and the displaced argument in Spec,PredP, counting as a subject of predication). In this way, an imperfectively marked sentence will be interpreted as the ascription of the property expressed by the VP to the individual expressed by the constituent in Spec,PredP. To exemplify, a present tense sentence such as (34) will give rise to the syntactic and semantic structures shown in (35).

(34) Firemen use special equipment.

(35)

\[
\text{PredP} \quad \lambda x \, [\text{use}(x, \text{se})] \quad (\text{firemen})
\]

As can be seen in (35), the rationale of my proposal is that imperfective marking induces a predicational interpretation of the VP (the VP is essentially a λ-abstract, since the argument displaced to the Pred level cannot be reconstructed VP-internally). The categorical versus thetical interpretation of a sentence depends on the predicational versus propositional interpretation of the VP, which constitutes, in the traditional syntactic terminology, the minimal functional complex associated with the verb: if the VP is inherently predicational, as is the case in (35), there is no way to achieve a propositional interpretation of the minimal functional complex of the verb, that is, a thetical interpretation of the sentence.

The notion of predication that is assumed to be relevant here has to be carefully distinguished from the syntactic notion of predication (see Williams 1980), as involving the “external” realization of one of the verb’s arguments. It must also be distinguished (as pointed out by Jacqueline Guéron (personal communication)) from
the notion of predication that appears to be relevant for all structures where an un-
saturated element (the predicate) combines (in various syntactic ways) with an argu-
ment expression (what we might call “Fregean predication”). These structures are
arguably exemplified by clitic left-dislocation in Romance and even by simple clitic-
constructions according to the analysis proposed in Delfitto 2002b, where pronomi-
nal clitics (including those that stand for predicates) are assumed to reopen the
argument position to which they are formally related. The point to be made here is
that in all these cases, functional abstraction appears to feed information structure
(the left-dislocated argument is interpreted as a topic) and applies to both perfective
and imperfective sentences. In fact, many of the sentences involving (left-)dislocated
topics are arguably interpreted as thetical sentences, consisting in the presentation
of an event rather than in the ascription of a property to an individual. Within the
framework proposed here, this fact is captured by assuming that there is an interface
level at which even topics undergo some kind of VP-internal “logical” reconstruction
(say, through λ-conversion), on a par with the arguments of V that are syntactically
displaced outside the VP. What imperfective morphology “encodes,” as emphasized
above, is the interface instruction that one of the arguments of V (location arguments
crucially included) is not allowed to reconstruct, either syntactically or “logically,”
with the result that there will be no interface representation expressing a “thetical”
interpretation of the relevant sentence. Analogously, I intend to propose that perfec-
tive marking does not prevent (parts of) a syntactic representation from expressing
functional abstraction, possibly feeding specific interpretive (sub)systems, among
them information structure; instead, what perfective marking establishes is the re-
quirement that there be an interface representation where the linguistic expression
corresponding to the VP is viewed as a fully saturated expression (this interface rep-
resentation being relevant for the thetical interpretation of the sentence).

On the basis of these theoretical preliminaries, let us now look briefly at one deci-
sive theoretical merit of the proposed interpretation of imperfective marking as
predication, that is, the possibility of identifying the common denominator of the
two most salient readings of imperfective sentences: the habitual and the progressive.

Let us start with the habitual reading. Under the most fashionable analysis, the
habitual reading corresponds to a relation between two classes of events, and this
relation is expressed by a (possibly implicit) Q-adverb. As already emphasized in
section 4.2, the trouble with this analysis is that the relational interpretation is found
both with imperfective and with perfective predicates. To exemplify, consider the fact
that the interpretation of (36) and (37) in Italian is virtually the same and can be
roughly expressed by the logical representation in (38).

(36) Nel 1922, il preside della Facoltà di Lettere indossò sempre la cravatta.
    ‘In 1922, the dean of the Faculty of Arts always wore-PERF a tie.’
Nel 1922, il preside della Facoltà di Lettere indossava sempre la cravatta.

‘In 1922, the dean of the Faculty of Arts always wore-IMP a tie.’

∀e [τ(e) ∈ 1922 ∧ C(the dean, e)] [wear-a-tie(the dean, e)]

where τ(e) denotes the time stretch of event e.

In informal terms, all the events in 1922 in which the dean had the opportunity of wearing a tie have been events in which the dean actually wore a tie. If what we are looking for is the difference between perfective marking in (36) and imperfective marking in (37), it is thus safe to conclude that the difference has nothing to do with the relational interpretation induced by Q-adverbs (including the implicit Gen, as discussed in section 4.2).

The truth-conditional difference between (36) and (37) consists in the modal dimension proper to (37) and absent from (36). To exemplify, let us suppose that, according to the university regulations of 1922, the dean was requested to wear a tie during any formal ceremony involving staff and students. It is now a fact that, according to native speakers of Italian, my utterance of (37) (which involves imperfective marking) gives rise to a true sentence in the situation just described (where no formal ceremony took place because of abnormal functioning), while (36) is clearly evaluated as false in the same circumstances. In other words, the truth of (37), contrary to the truth of (36), does not require events of the relevant kind to have taken place in the real world. Rather, for (37) to be true, it suffices that the relation “wear-a-tie(the dean, e)” holds in all possible situations that conform with the university regulations. More formally, we can say that (37) is true in the real world if and only if the relation “wear-a-tie(the dean, e)” holds in all the worlds of the deontic modal base that is relevant for this relation. Since I have already argued (see section 4.2) that the detected modal import cannot be encoded by Q-adverbs, it is quite reasonable to let it follow from the semantics of the predicational format. In full agreement with the discussion above, I propose, for (37), the logical representation in (39).

(39) [λx ∀e [τ(e) ∈ 1922 ∧ C(x, e)] [wear-a-tie(x, e)]] (the dean)

Informally, in 1922 wearing a tie on formal occasions was a property of the dean.

From this discussion, we can conclude that the habitual reading of imperfective sentences is not due to the presence of Q-adverbs (or of polarity features triggering the presence of Q-adverbs). Rather, the modal import proper to habitual sentences follows from their predicational format: if a Q-adverb is present, it will simply induce
a relational interpretation of the property that is ascribed to the subject of predication, as is the case in (39).

It is time now to turn to the progressive reading of imperfective sentences. At first sight, there seems to be no point in arguing that imperfectives interpreted as progressives are assigned predicational formats at the level of LF. Intuitively, sentences such as those in (40) instantiate typical thetical structures, since they arguably express the information that a certain event (viz., the crossing of the street) is developing (i.e., Holds) at a certain evaluation time (the time expressed in (40) by the adverb of temporal location).

(40) Alle cinque, Teo attraversava la strada.
   at five Teo crossed-imp the street
   ‘At five o’clock, Teo was crossing the street.’

Despite these appearances, I will actually argue that even progressives are assigned a categorical interpretation (i.e., they are interpreted predicationally) when they are realized as imperfectives.

Before I come to the main issue, some preliminary remarks are in order. As is well known, the semantics of progressive aspect includes not only event mereology (i.e., the possibility of referring to subparts of larger events) but also a set of contextual factors. In the formal semantics literature, these factors have been most commonly analyzed in terms of possible worlds/situations (Landman 1991) or in terms of concomitant facts and conversational backgrounds (Bonomi 1997). One of the most debated problems concerns Dowty’s (1979) notion of inertia worlds, according to which the worlds belonging to the modal base can be characterized by restricting one’s attention to the most natural development of the event holding at the evaluation time. Suppose one utters (41).

(41) Teo was crossing the street when a car hit him.

According to Dowty’s proposal, (41) is true if and only if its most natural development leads to its completion (not necessarily in the real world, where some accident might have prevented Teo from reaching the other side of the street). The trouble is that every speaker of English would agree, as a matter of world knowledge, that the most natural continuation of the event holding at \( t \) (the crossing) does not involve reaching the other side of the street in the situation described in (41), where a car hit poor Teo. Landman (1991) has proposed a solution to this problem that is informally based on the idea that the worlds of the modal base have to be those in which only the “internal” development of the event is considered (in this way, the fact that poor Teo was hit by the car in (41) is simply put out of the picture in establishing whether there is a “possible” culmination of the relevant event). The logical form corresponding to (41) will be something like (42) (adapted from Landman 1991).
(42) \( \exists e' \exists t \left[ \text{AT}(e', t) \land \text{PROG}(e', \lambda e \ (\text{crossing}(e) \land \text{Agent}(\text{Teo}, e) \land \text{Theme}(\text{the street}, e))) \right] \)

Inspection of (42) reveals that the progressive operator PROG is formally analyzed as a relation between events and predicates of events. The truth-conditions for this relation are as follows:

(43) \([\text{PROG}(e, P) \land \text{AT}(e, t)]\) is true at \(w\) if \(\exists \) in the continuation branch of \(e\) in \(w\) such that \(e \subseteq e'\) and \(P(e')\) and \(t \subseteq \tau(e')\) (where \(\tau\) is a function assigning a temporal extension to events)

What Landman’s formalization satisfactorily captures is the insight that an event \(e\) can be said to hold at \(t\) if and only if by inspecting the continuation of \(e\) that stems from the internal constitution of \(e\) (continuation branch), we arrive at a possible situation \(w'\) (that qualifies as reasonable with respect to the real world \(w\)) in which \(e\) culminates (this culminated event being in the extension of the predicate \(P\)). In this way, (41) is correctly predicted to be true if \(\text{Teo}\) was crossing the street without being able to reach the other side, because of the accident that happened to him. The point is that we have the intuition that there is a possible situation qualifying as a reasonable option for the event initiated in the real world, in which \(\text{Teo}\) actually reached the other side of the street. At the same time, we can also account for the clear contrast between (41) and sentences of the kind exemplified in (44).

(44) \(\text{Teo}\) is wiping out the Roman army.

In the case of (44), we want the sentence to be false in a situation in which \(\text{Teo}\) has already killed, say, three Roman soldiers and is still busy fighting. Landman’s truth-conditions correctly capture this intuition: at a given point, the continuation branch of \(e\) (on our way toward culmination) will be in a world \(w'\) that no longer qualifies as a reasonable option with respect to the original situation in the real world (e.g., the world \(w'\) in which \(\text{Teo}\) has already killed a thousand Roman soldiers; see also Zucchi 1999, 184). It is worth noting that nonmodal approaches to the semantics of the progressive (see especially Parsons 1990) cannot capture this difference between (41) and (44). There, developing events are in the extension of the predicate \(\text{Hold}\), while culminated events are in the extension of the predicate \(\text{Culminate}\). However, we do not know under which conditions the predicate \(\text{Hold}\) truly applies to \(e\) at \(t\). For instance, in both (41) and (44) the holding event qualifies as a proper subpart of its culminated counterpart. The trouble is that we want to say that the event of crossing the street holds at \(t\) (41), while the event of wiping out the Roman army does not hold at \(t\) (44). This crucial insight remains dangerously unexpressed in Parsons’s formalism.

However, despite its merits, Landman’s semantics for the progressive, as it stands, is unsuited to my purposes, in that it does not properly acknowledge that predicates
of events can refer, in their basic form, to *holding events*. This assumption is necessary in order to express the insight that aspectually unmarked forms convey neutral information about the culmination of the events they refer to: *as we have seen in the previous section, imperfective marking is compatible with reference to culminated events*. In order to see how this feature of Landman’s analysis manifests itself within the formalism he proposes, notice for instance that in (42) it is only the culminated event $e$, but not the developing event $e'$, that is said to be in the extension of the predicate *cross*. In order to repair this deficiency of Landman’s formalism, while preserving the crucial advantages of the modal analysis, I will basically adopt Zucchi’s (1999) proposal, which consists in embedding into a modal framework Parsons’s (1990) insight that basic forms can refer to developing events. For a sentence such as (41), Zucchi’s analysis would provide the logical form in (45) (adapted from Zucchi 1999).

$$(45) \exists e \exists t [\text{crossing}(e) \land \text{Agent}(e, \text{Teo}) \land \text{Theme}(e, \text{the street}) \land \text{AT}(e, t) \land \text{Hold}(e, t, \lambda e [\text{crossing}(e) \land \text{Theme}(e, \text{the street})])]$$

What (45) does is repair the reported absence of conditions on the predicate *Hold* by requiring that the relevant crossing event have its culminated counterpart on its continuation branch in order to hold at $t$ (Zucchi 1999, 194).

Now that I have sketched a formal analysis of progressive aspect that seems more promising in view of the requirements on imperfective marking that emerged in section 4.2, it is time to go back to the main issue: How do the truth-conditions proposed for the progressive relate to the semantic instructions encoded by the imperfective aspect? And what do progressivity and habituality have in common?

Let us start with the latter question. On the basis of the foregoing discussion, we can conclude that what progressives and habituals certainly have in common is the fact that the truth-conditions we have defined for both of them clearly require evaluation with respect to a well-established set of possible worlds (modal base). In other words, the point I wish to make is that the modal dimension that has been detected in the analysis of habituals is also clearly required for an adequate analysis of the truth-conditions of progressives. What remains to be shown is that the modal dimension of progressives follows, as is arguably the case with habituals, from the predicational format encoded by means of imperfective marking.

I would submit that this hypothesis is actually supported by a proper analysis of the role played, in progressive sentences, by adverbs of temporal location. For instance, in (40) (repeated here) the temporal adverbial provides the time at which the crossing event is said to hold.

$$(40) \text{Alle cinque, Teo attraversava la strada.} \at \five \text{Teo crossed-IMP the street}\text{.} ‘At five o’clock, Teo was crossing the street.’$$
Adopting the insightful suggestions made by Jespersen (1924) and Kearns (1991), we might express this fact by claiming that progressives express readings in which the time of the event is somehow “framed” by the event itself. This would be consistent with the event mereology involved in the semantics of progressive aspect, in full agreement with my claim that imperfective marking is neutral with respect to the culmination of the event(s). On the other hand, we have just seen that the conditions on the predicate \( \text{Hold at } t \) crucially involve reference to the possible continuation of the holding event, up to culmination. We can see the culminated event \( e' \) as framing the evaluation time \( t \) at which a subpart of \( e' \)—say, \( e \)—is said to hold.

My claim is that this “frame interpretation” is syntactically encoded by means of a predicational format involving a subject-predicate structure. The subject of predication is the evaluation time \( t \).

Let us consider this hypothesis in some detail. From the semantics of the progressive sketched above, we derive the important consequence that, in speaking about developing events, we are actually “framing” a certain time \( t \), which acquires a sort of conceptual prominence. The idea is that this intuitive prominence is formally expressed by a logical format in which the framed time counts as a subject of predication. In this way, we clearly shift from a thetical to a categorical interpretation of the progressive aspect. For a sentence like (46), the truth-conditions that most conveniently suit its logical form (a consequence of the predicational format in syntax) are those informally spelled out in (47), rather than those spelled out in (48).

(46) At five o’clock, Teo was eating an apple.

(47) The time five o’clock is such that an event of eating (by Teo) was developing at it.

(48) There has been an event of eating (by Teo) that was developing at five o’clock.

There is some additional empirical evidence, from Italian, that this hypothesis is on the right track. Bianchi, Squartini, and Bertinetto (1995) observe that punctual adverbials necessarily occur, with progressive sentences, in positions outside the “predicative nucleus” of the sentence, that is, either right- or left-dislocated. Occurrence in a nondislocated position (i.e., postverbally and with unmarked intonation) yields ungrammaticality. The relevant paradigm is given in (49), where the progressive reading is encoded by means of the imperfect.

(49) a. Alle cinque, Teo mangiava.
   ‘At five o’clock, Teo ate-IMP.’

   b. Teo mangiava, alle cinque.
      ‘Teo ate-IMP, at five.’

   c. #Teo mangiava alle cinque.
      ‘Teo ate-IMP at five.’
The most noticeable fact about (49) is that it is not the case that (49c) is simply ungrammatical under the imperfect. Rather, it is ungrammatical under the *progressive* reading of the imperfect. Under the habitual reading (‘In the relevant period, Teo used to eat at five o’clock’), (49c) is fully acceptable. Bianchi, Squartini, and Bertinetto (1995) explain (49) by assuming that the punctual temporal adverbs involved denote a perspective point \( P \) by means of which the speaker “introduces a particular perspective on the event” (p. 320). They also propose that “the syntactic prominence of \( P \) is related to its prominence in the informational structure of the text” (p. 320). Notice that the framework I have developed permits an elegant translation of all these insights. The punctual adverbs that undergo dislocation are exactly those adverbs that most readily allow a “frame interpretation.” The contextual prominence can be naturally understood in terms of the “framing effect” described above. Last but not least, syntactic prominence should be understood in terms of predication: whatever the final syntactic position of the punctual adverb may be, it is my claim that the movement path of the adverb crucially involves displacement to the PredP layer, as a result of the aspektual information encoded on the verb (i.e., the semantic instruction according to which the VP must be interpreted as a “predicative” category that ascribes a property to an object). Under the hypothesis that temporal adverbs expressing the event time occur VP-internally (see Larson 1988; Bertinetto and Delfitto 2000), the requirement that they be displaced to Spec,PredP yields a categorical structure in which they count as subject of predication. The result of this analysis is that the sentence in (40) is assigned the logical form in (50).

(50) \[ l t (\exists e [\text{crossing}(e) \land \text{Agent}(\text{Teo}, e) \land \text{Theme}(e, \text{the street}) \land \text{AT}(e, t) \land \text{Hold}(e, t, \overset{\lambda}{e} [\text{crossing}(e) \land \text{Theme}(e, \text{the street})])])(\text{five o’clock}) \]

Compare the logical form in (50) with the logical representation that I proposed for habitual sentences, as exemplified in (39). In both cases, we have a property ascribed to a subject (the \( \lambda \)-abstract corresponding to the VP is interpreted intensionally). In order to reach this result, I have simply capitalized on the two essential semantic ingredients of imperfective morphology:

1. the fact that it encodes a predicative interpretation of the VP and
2. the fact that it expresses neutral information with respect to the ontological constitution of the event.

We have seen that both habituals and progressives are based on a predicational format. As for claim 2, neutrality manifests itself in the fact that habituals typically involve culminated events, whereas progressives normally refer to holding events. Of course, I have not explained how a speaker, given a sentence with imperfective marking, can disambiguate between a progressive reading and a habitual one (by deciding, for instance, which of the arguments of the verb gets interpreted as the
subject of predication). In fact, as far as we know, this might be the product of a complex interplay of syntactic, semantic, and pragmatic factors that remain to be sorted out. However, notice that given an imperfective sentence like (51a) in a non-narrative context, there is full ambiguity, in Italian, between the progressive and the habitual readings.

(51) a. Teo *mangiava* una mela.
   ‘Teo ate an apple.’
   b. ‘Teo was eating an apple.’
   c. ‘Teo used to eat an apple.’

We can interpret this ambiguity as evidence that, as far as the semantics of the imperfect goes, the choice between the two readings is entirely free. This is so because the semantic constraints encoded by imperfective morphology are flexible enough to leave extra room for distinct interpretive choices. The point is that imperfective morphology expresses interpretive constraints (concerning the intensional interpretation of an abstract predicational format) that are compatible with both readings. The semantic instructions encoded in morphosyntax constrain interpretation by inducing an abstract subject-predicate format, without deciding, however, between the progressive and the habitual readings.

4.4 The Present Tense Paradox

In the 1970s, Gregory Carlson proposed an elegant analysis according to which bare subjects (i.e., determinerless noun phrases occurring as subjects) can be interpreted existentially only if they combine with stage-level predicates (essentially, predicates expressing reports on the passing scene) (Carlson 1980). Subsequent empirical research led to the conclusion that the data are in fact, from this theoretical perspective, quite paradoxical: existential readings are also found with individual-level predicates, as is the case in (52), while there are stage-level predicates that do not license the existential interpretation of their subjects, as can be seen in (53). Both sets of facts are quite puzzling in Carlson’s perspective.

(52) Typhoons arise in this part of the Pacific.
   ‘It is a property of this part of the Pacific that some typhoons arise in it.’

(53) Firemen are joyful/invisible/on holiday.
   *∃x (fireman(x) ∧ joyful/invisible/on holiday(x))

On the basis of the class of facts exemplified by (52), Kratzer (1995) proposed a substantial revision of Carlson’s theory, according to which bare nouns are interpreted as introducing a restricted variable that is quantified over by the variable-taking operators ∃ and Gen. Within Kratzer’s analysis, stage-level predicates are interpreted
as those predicates that express a temporary property of individuals and differ from
individual-level predicates (which refer to permanent properties of individuals) in
argument structure terms. More exactly, there are two relevant argument structure
properties. The first concerns the fact that, unlike individual-level predicates, stage-
level predicates are endowed, with a (possibly implicit) spatiotemporal argument
expressing spatial or temporal location. In this way, one can account for the inter-
pretation associated with (52) by simply assuming that the variable introduced by the
bare subject is quantified over by $\exists$, whereas Gen binds the variable introduced by
the overt locative. This leads to the logical representation in (53), which provides the
desired reading of (52).

(54) Gen($l$) [this-part-of-the-Pacific($l$)] $\exists x$ [typhoon($x$) $\land$ arise-in($x$, $l$)]

This hypothesis also provides an adequate logical representation of sentences such as
(55), where there is no overt locative, under the assumption that the abstract location
argument associated with stage-level predicates need not be phonetically realized in
order to be syntactically represented. The relevant logical form is given in (56).

(55) Firemen are available.

(56) Gen($l$) [here($l$)] $\exists x$ [fireman($x$) $\land$ available($x$, $l$)]

‘There are typically some firemen available around here.’

The second difference in argument structure proposed by Kratzer is that the subject
of individual-level predicates cannot be in the scope of the existential operator (this
result is achieved, technically, by stipulating that the syntactic domain of existential
quantification is the VP and that subjects of individual-level predicates are generated
outside the VP and cannot be reconstructed VP-internally). This second property is
needed in order to correctly exclude the existential reading of sentences like (57),
shown in (58). Namely, notice that nothing prevents $\exists$ from quantifying over the
variable introduced by the subject, unless it is explicitly assumed that this variable
falls outside the scope of $\exists$.

(57) Typhoons are dangerous.

(58) $\exists x$ [typhoon($x$) $\land$ dangerous($x$)]

Here, I would like to argue that Kratzer’s analysis, in spite of its attractive fea-
tures, is empirically untenable. In particular, there are no argument structure differ-
ences between stage-level predicates and individual-level predicates. The point is that
it is not difficult to find predicates that express temporary properties but do not
admit an existential interpretation of their subject. A sentence such as (59) should
license both interpretations in (60) according to Kratzer’s analysis: (60a) corresponds
to the reading in which the variable introduced by the subject, being reconstructed
VP-internally, is in the scope of ∃, while (60b) corresponds to the reading in which ∃ is in the scope of the quasi-universal quantifier on spatiotemporal variables.

(59) Typhoons arise suddenly.

(60) a. ∃x (typhoon(x) ∧ arise-suddenly(x))
    ‘There are typhoons that arise suddenly.’
   b. Gen(l) [here(l)] ∃x [typhoon(x) ∧ arise-suddenly(x)]
    ‘There are typically typhoons that arise suddenly around here.’

The unavailability of both readings in (60) is entirely unexpected, especially if we consider that the predicate arise-suddenly gives rise to the kind of semantic ambiguities that are proper, according to Kratzer, to stage-level predicates. Namely, a sentence like (61) can be interpreted, in the appropriate contexts, both as (62a) and as (62b).

(61) Almost all diseases arise suddenly in tropical countries.

(62) a. ‘Almost all diseases arise suddenly when they happen to arise in tropical countries.’
    b. ‘Almost all diseases in tropical countries arise suddenly.’

Another relevant case concerns the difference between transitive predicates and unergative predicates. In the literature, it is often emphasized that sentences such as (63), involving a stage-level transitive predicate, are easily interpreted, modulo some prosodic and contextual factors, as licensing an existential interpretation of the subject (‘It is a property of modern planes that there are some computers that route them’).

(63) Computers route modern planes.

Now, it is a fact that neither context nor prosody can rescue an existential reading of the subject in sentences involving the kind of unergative predicates instantiated in (64).

(64) a. Students work hard.
   b. Professors wear a tie.
   c. Italians drive fast.

In the case of (64a), for instance, both interpretations shown in (65) are completely excluded.

(65) a. ∃x (student(x) ∧ work-hard(x))
    ‘There are students who work hard.’
   b. Gen(l) [here(l)] ∃x [student(x) ∧ work-hard(x)]

The unavailability of the existential readings in (60a) and (65a) clearly suggests that VP-internal reconstruction does not really discriminate between stage-level and
individual-level predicates. If reconstruction were uniformly admissible for stage-level predicates, we should expect both (60a) and (65a) to be legitimate readings, contrary to the facts. One might argue that the existential reading of the subject is indeed possible (via VP-internal reconstruction) but triggers an illegitimate vacuous quantification configuration, owing to the absence of an appropriate bindee for the Gen operator present in the structure. However, if this is the case, one predicts that the prospects for the existential reading of the subject should improve if an appropriate bindee is actually added to the structure, in the form of the abstract location argument proposed by Kratzer. Unfortunately, this prediction is not borne out, since the logical forms in (60b) and (65b) do not correspond to legitimate interpretations of (59) and (64a), respectively. On the basis of these facts, we are led to conclude that the distribution of the existential readings cannot be easily reduced to the set of differences in argument structure between stage-level and individual-level predicates proposed by Kratzer.

Now, consider the following alternative hypothesis. Suppose that all present tense sentences (since they involve imperfective marking) are interpreted “categorically,” that is, as the ascription of a property to a subject of predication, as argued in section 4.3. This means that all present tense sentences will have a subject of predication that cannot be reconstructed, independently of the stage-level/individual-level distinction. Of course, the subject of predication (i.e., the referential constituent that is displaced to the PredP level) need not coincide with the grammatical subject, as repeatedly emphasized in section 4.3. In this perspective, the relevant difference between a sentence like (52) and a sentence like (59) is that in the former, contrary to what happens in the latter, there is a spatial location argument, distinct from the grammatical subject, that may count as a subject of predication. If this is what happens in (52), there will be no need for the grammatical subject to be displaced to the PredP level. Whatever the final syntactic position of the grammatical subject may be, VP-internal reconstruction will be permitted and this will automatically turn the existential reading of the subject into a legitimate construal. In (59), on the contrary, there is no argument—besides the grammatical subject—to be “promoted” to the PredP level. Displacement of the grammatical subject to the PredP level will be the only way to ensure that the structure is interpreted categorically, as required by the semantic instruction encoded by imperfective marking.

The same explanatory paradigm can now be applied to the analysis of the contrast between transitive sentences like (63) and the intransitive sentences in (64). In (63) there is a legitimate construal in which the direct object counts as the subject of predication (with the grammatical subject reconstructed VP-internally), whereas in (64) the grammatical subject necessarily coincides with the logical subject (this arguably rules out the existential construal associated with VP-internal reconstruction). Notice that this style of explanation implies a complete rejection of Kratzer’s
hypotheses. It is not true that predicates expressing a temporary property uniformly license a (possibly null) spatiotemporal argument: if this were the case, the null location argument might be promoted to logical subject in (59) and (64) and we would be left without a principled explanation for the exclusion of the existential reading of the grammatical subject. It is also not true that predicates expressing a temporary property uniformly admit VP-internal reconstruction of their grammatical subject: if this were the case, the existential interpretation of the grammatical subject in (59) and (64) should be fully legitimate. In a nutshell, these remarks show that it is preferable to replace the lexical opposition between stage-level and individual-level predicates with the grammatical opposition between perfectively and imperfectively marked predicates: the latter, which instantiate the default aspectual marking, uniformly encode a categorical interpretation of the sentence (hence a nonexistential interpretation of the grammatical subject in all structures in which there is no extra argument available as the logical subject). If this analysis is essentially correct, it provides indirect empirical corroboration for the logical interpretation of aspectual marking that I proposed in section 4.3: the absence of certain existential readings clearly correlates with the categorical interpretation of all imperfectively marked sentences.

In fact, I believe there is another nice extension of this explanatory paradigm, which somehow completes the resolution of the present tense paradox. Consider the following facts. In the literature, there is widely considered to be a large set of nonverbal heads that behave quite differently from predicates like *available* in (55), even though they express a rather extreme sort of temporary property, namely, a report on contingent events or states ("reports on the passing scene"). Some of them have already been instantiated in (53). Other examples are given in (66) (see Delfitto 2002a and the references quoted therein).

(66) Firemen are rich/sad/hungry.

What we should manage to explain is why a null location argument is arguably licensed with predicates like *available* in (55) and completely excluded with the kind of predicate in (66). From Kratzer’s perspective, all these predicates should qualify as stage-level (they clearly refer to temporary properties). This shows that what is relevant for an explanation is certainly not the boundary between stage-level and individual-level predicates. As originally noted by Higginbotham and Ramchand (1996), predicates such as *available* involve a notion of spatiotemporal location in the form of spatiotemporal proximity to the speaker: *available* in (55) actually means something like ‘available around here’ (at least whenever the sentence is uttered in an “out-of-the-blue” context). Licensing of a null location argument thus correlates with the assignment of a default indexical reading: only the cases where speaker orientation is somehow encoded in the lexical meaning of the predicate will be cases where a
phonetically silent location argument is syntactically licensed and possibly promoted to logical subject. There is in fact a striking empirical observation that strongly corroborates the hypothesis that predicates allowing existential readings are predicates expressing the speaker’s point of view. There is a systematic correlation between the availability of existential readings in English and the availability of postverbal subjects with unmarked interpretation in Italian. To see this, let us consider the following English predicates, all allowing an existential reading of the subject:

(67) a. Firemen are available.
    b. Firemen are on strike.
    c. Firemen are nearby.

The Italian equivalents of (67) are sentences involving a postverbal realization of the subject. This subject is not necessarily interpreted as the only focused constituent of the sentence (narrow focus); rather, the whole sentence is easily interpreted presentationally, in terms of an “all-focus sentence” (“There are some firemen available/on strike/nearby”). The relevant examples are given in (68).

(68) a. Sono disponibili pompieri/i pompieri.
    are available firemen the firemen
    ‘There are firemen available around here.’
    ‘Firemen are available around here.’
    b. Sono in sciopero pompieri/i pompieri.
    are on strike firemen the firemen
    ‘There are firemen on strike around here.’
    ‘Firemen are on strike around here.’
    c. Ci sono qui vicino pompieri/i pompieri.
    there are here nearby firemen the firemen
    ‘There are firemen nearby.’
    ‘Firemen are nearby.’

As the English translations show, all sentences in (68) involve spatiotemporal proximity to the speaker whenever interpreted “out of the blue.” Apparently, licensing a neutral interpretation of the postverbal subject involves licensing of a null location argument expressing spatiotemporal proximity to the speaker. This empty spatiotemporal argument is likely to play a crucial role in ensuring that inversion structures are syntactically licensed while receiving an “all-focus” interpretation. A possibility that comes to mind is that the Extended Projection Principle (EPP), or whatever condition is assumed to subsume it (like checking of a strong D-feature in T in the minimalist system of Chomsky 1995), is satisfied by covert displacement of the empty locative to the relevant syntactic position. In this way, we predict that in intransitive structures where there is no empty locative, it is the grammatical subject that
obligatorily moves to Spec,T in order to satisfy the EPP. If the subject surfaces postverbally, this position is arguably the result of some marked (i.e., informationally related) rightward movement strategy: the subject moves rightward in order to find itself in a position where it can be assigned “narrow focus” (a sort of “prosodic movement” in the sense of Zubizarreta 1995). This prediction is clearly borne out. The Italian equivalents of (66) (for which I have argued that the ban on the existential reading of the subject depends on the absence of an empty locative) are necessarily interpreted with a narrow focus reading of the inverted subject: since the EPP cannot be satisfied by the empty locative, the structure necessarily involves rightward prosodic movement.

(69) a. *Sono ricchi pompieri/i pompieri.
   (OK with narrow focus of the inverted subject)
   ‘There are rich firemen.’
   ‘Firemen are rich.’

b. *Sono tristi pompieri/i pompieri.
   (OK with narrow focus of the inverted subject)
   ‘There are sad firemen.’
   ‘Firemen are sad.’

c. *Sono affamati pompieri/i pompieri.
   (OK with narrow focus of the inverted subject)
   ‘There are hungry firemen.’
   ‘Firemen are hungry.’

The proposed correlation between existential reading of the subject in English and unmarked subject inversion in Italian thus corroborates the view that the presence of a null spatiotemporal argument is not a property of all stage-level predicates. In fact, only a small fraction of stage-level predicates interpreted as reports on the passing scene license empty locatives, whose presence is essential to the existential reading of the subject. This is due to the fact that existential readings are based on the availability of a subject of predication distinct from the grammatical subject: for a subset of the sentences interpreted as reports on the passing scene, this logical subject can coincide with a phonetically unrealized location argument. This conclusion shows that what is relevant to a proper understanding of the existential readings is the aspectual opposition perfective/imperfective, and not the lexical opposition stage-level/individual-level. It also provides additional empirical evidence for the categorical status of progressives and, more generally, sentences expressing reports on contingent events or states: in spite of their intuitive presentational status, these sentences are uniformly associated with a subject-predicate logical form. It is this logical form that arguably leads to a resolution of Carlson’s present tense paradox.
4.5 Conclusions

In this chapter, I have argued against two influential analyses of imperfective morphology: (i) the imperfect as an aspectually sensitive tense and (ii) the imperfect as encoding quantification over individuals or events. The analysis I developed views imperfective marking as encoding a predicational interpretation of the minimal functional complex (VP) of the predicate to which it applies: imperfective sentences are thus uniformly interpreted as the ascription of a property to an object/individual. What the two most salient readings of the imperfect (the progressive reading and the habitual reading) have in common is a predicational logical form and its concomitant modal import. Imperfective morphology expresses default semantic instructions (concerning culmination and predication) that do not discriminate between progressivity and habituality. Moreover, I have argued for the view that progressives are not “thetical” sentences expressing reports on the passing scene. Rather, they have the predicational format proper to generic sentences, a fact that helps clarify the intriguing set of facts that I have dubbed the “present tense paradox.”

References


5.1 Introduction

In Demirdache and Uribe-Etxebarria 1997b, 2000, 2002, to appear a, we propose a uniform analysis of Tense and Aspect as spatiotemporal predicates, projecting their temporal argument structure in the syntax and defined in terms of a basic semantic opposition: [+− central coincidence] in the location of the figure with respect to the ground (Hale 1984).

In this chapter, we extend this proposal to time adverbs. That is, we defend the thesis that time adverbs, just like tenses and aspects, are dyadic predicates of spatiotemporal ordering, projecting their argument structure in the syntax and establishing a topological relation—inclusion, subsequence, or precedence—between their time-denoting arguments. With this proposal, we seek to reduce the grammar of tenses, aspects, and time adverbs, crosslinguistically, to the same set of universal substantive and structural primitives, thus defining a single, uniform grammar for temporal relations.

Our proposal holds for all time adverbials—whether they have the semantics of locational or durational adverbs, or whether they have the syntax of PPs, bare NPs, bare CPs, or clausal adjuncts headed by a temporal connective. The core of the proposal is simple. Tense and Aspect relate time-denoting arguments projected in the syntax. Time adverbs are semantically and syntactically restrictive modifiers of these temporal arguments. Indeed, once we assume, following Zagona (1990) and Stowell (1993, 1996), that time arguments are represented in the syntax as temporal DPs or Zeit Phrases (Stowell 1993), the null assumption is that they can be modified, just like any DP can. This is precisely the proposal defended here: time adverbs are semantic and syntactic modifiers of Zeit Phrases projected in the syntax as arguments of temporal heads. They modify the reference of these time spans by establishing an ordering relation—inclusion, subsequence, or precedence—between the time argument of which they are predicated and the time denoted by their internal argument.
We conclude by showing how our proposal explains the disappearance of certain readings when time adverbs are embedded in temporal adjunct clauses.

5.2 The Syntax of Tense and Aspect

5.2.1 The Semantic Parallelism between Tense and Aspect

The theory proposed in Demirdache and Uribe-Etxebarria 1997b, 2000, 2002, to appear a., is grounded in a semantic and syntactic parallelism between Tense and Aspect. To establish a semantic parallelism between Tense and Aspect, we take as our point of departure Klein’s (1995) proposal that both Tense and Aspect relate two times. Tense relates the time of utterance ($\text{ut}$-t) to a reference time: the assertion time ($\text{ast}$-t). Aspect then relates the $\text{ast}$-t to the time at which the event (or state) denoted by the VP occurs or holds ($\text{ev}$-t). We derive this proposal from the thesis that tenses and aspects are dyadic predicates of spatiotemporal ordering, defined in terms of (non)central coincidence in the location of the figure with respect to the ground.

This proposal allows us to capture the traditional idea that the role of grammatical Aspect is to focus an interval in the temporal contour of the event described by a sentence. The time focused by Aspect is the $\text{ast}$-t—that is, “the time for which an assertion is made or to which the assertion is confined; for which the speaker makes a statement” (Klein 1995, 687). Why does Aspect focus (pick out) a time interval in the temporal contour of the event described by a sentence? Because Aspect (just like Tense) is a spatiotemporal predicate, establishing a topological relation between the $\text{ast}$-t and the $\text{ev}$-t (or a subinterval of the $\text{ev}$-t). Only the time interval focused by Aspect is visible to semantic interpretation. As Smith (1991, 91) puts it: “Continuing the analogy of a viewpoint with the lens of a camera, we shall say that the part focused by a viewpoint [aspect] is visible to semantic interpretation... What is focused has a special status, which I will call visibility. Only what is visible is asserted.”

5.2.2 The Phrase Structure of Tense and Aspect

The semantic parallel thus established between Tense and Aspect is captured syntactically by proposing a uniform phrase structure for temporal relations.

The idea that Tense relates two times has been captured in syntactic terms by breaking down Tense syntactically into its semantic components. For Zagona (1990), Tense is a head that projects a maximal projection (TP) taking two time-denoting arguments. Its external argument is a $\text{ref}$-t (typically, the $\text{ut}$-t). Its internal argument is the $\text{ev}$-t. Stowell (1993, 1996) extends this proposal by analyzing Tense as a two-place predicate of temporal ordering. We propose that Aspect, just like Tense,
is a dyadic predicate, taking time-denoting phrases as arguments and projecting its temporal argument structure in the syntax. We thus define a single uniform phrase structure for temporal relations, as illustrated in (1).

(1) \[\text{TP} \rightarrow \text{UT-T} \rightarrow \text{T'} \rightarrow \text{AspP} \rightarrow \text{UT-T, AST-T, EV-T are time-denoting phrases/Zeit Phrases} \]

\[\text{T}^0 \rightarrow \text{AST-T} \rightarrow \text{Asp'} \rightarrow \text{Asp}^0 \rightarrow \text{VP} \rightarrow \text{EV-T} \rightarrow \text{VP}\]

This proposal reduces Tense and Aspect to the same set of substantive primitives: both Tense and Aspect are spatiotemporal ordering predicates. \(T^0\) is a spatiotemporal ordering predicate with the meaning of \(\text{after (past), before (future), or (within) present}\) (see Stowell 1993). Likewise, \(\text{Asp}^0\) is a spatiotemporal ordering predicate with the meaning of \(\text{after (perfect aspect), before (prospective aspect), or (within) progressive aspect}\).

This proposal also reduces Tense and Aspect to the same set of structural primitives: Tense and Aspect are both dyadic predicates taking time-denoting phrases as arguments. The external argument of \(T^0\) is a reference time (typically, the \(\text{UT-T}\)); its internal argument is the \(\text{AST-T}\). Likewise, the external argument of \(\text{Asp}^0\) is a reference time (the \(\text{AST-T}\)); its internal argument is the time of the event denoted by the \(\text{VP}\) (the \(\text{EV-T}\)). We thus establish a strict parallel between the syntax-semantics of Tense and that of Aspect.

We briefly illustrate our proposal with an analysis of two aspects: the Progressive and the Perfect.

5.2.3 The Progressive

We analyze Progressive Aspect as a spatiotemporal predicate with the meaning of \((\text{within})\). Under this proposal, the Progressive acts like a Present Tense since both Present and Progressive are spatiotemporal predicates with the meaning of \((\text{within})\). Progressive sentences have the phrase structure exemplified in (2).
(2) a. *The Present Progressive*

Ikbal is making a ring.

```
TP
   UT-T
      T'
         T^0
            AspP
               WITHIN
                  AST-T
                     Asp'
                        Asp^0
                           VP
                              WITHIN
                                 EV-T
                                    VP
```

b. *The Past Progressive*

Ikbal was making a ring.

```
TP
   UT-T
      T'
         T^0
            AspP
               AFTER
                  AST-T
                     Asp'
                        Asp^0
                           VP
                              WITHIN
                                 EV-T
                                    VP
```

Progressive Aspect in (2) is a spatiotemporal predicate with the meaning of *(WITH)IN*: it orders the AST-T within the EV-T. It thus picks out a time within the interval defined by the EV-T, as illustrated by the temporal schema in (3a). Present Tense in (2a) is also a spatiotemporal predicate with the meaning of WITHIN. It orders the UT-T within the AST-T. (2a) thus focuses a subinterval of the EV-T, which contains the UT-T, as illustrated by (3b).
The past progressive sentence in (2b) has the same phrase structure except that Tense is a spatiotemporal predicate with the meaning of after. Just as was the case in (2a), Progressive Aspect in (2b) focuses a subinterval of the EV-T, as illustrated in (4a). Note that the AST-T denotes a proper subpart of the EV-T that includes neither its initial nor its final bound. T0 then orders the UT-T after this subpart of the EV-T (= the AST-T). Ordering the UT-T after the AST-T can thus yield either of the temporal schemas in (4b) or (4c). Since the UT-T is ordered after the AST-T, but unordered with respect to the final bound of the event, the event might or might not have culminated before UT-T, even though the sentence is in the past.

Although our analysis makes use of three times (EV-T, AST-T, UT-T), it cannot be reduced to a classical (neo-)Reichenbachian system (i.e., EV-T, REF-T, UT-T). Within such a system, a reference time cannot be ordered within another time—that is, a REF-T cannot denote a subpart of the event time.1

5.2.4 The Perfect
We have proposed that the Progressive acts like a Present Tense: both Present Tense and Progressive Aspect are spatiotemporal predicates with the meaning of within. In contrast, the Perfect acts like a Past Tense: both Past Tense and Perfect Aspect are analyzed as spatiotemporal predicates with the meaning of after. (5) illustrates the phrase structure of past and present perfect sentences.
(5) a. *The Past Perfect*

Ikbal had made a ring.

```
    TP
   / \        /
  UT-T  T'    T^0  AspP
        /       /  \
       AFTER  AFTER Asp' Asp^0  VP
            /     /      |
           EV-T  VP      |
```

b. *The Present Perfect*

Ikbal has made a ring.

```
    TP
   /     \
  UT-T  T'    T^0  AspP
        /       /  \
       WITHIN  AFTER Asp' Asp^0  VP
            /     /  |
           EV-T  VP |
```

Perfect Aspect in (5a) is the spatiotemporal predicate *after*, ordering the *ast-T* after the *ev-T*. It thus picks out a time after the interval defined by the *ev-T*, as illustrated in (6a). Past is also a spatiotemporal predicate with the meaning of *after*. It orders the *ut-T* after the *ast-T*, as illustrated in (6b). Since the *ut-T* follows the *ast-T*, which itself follows the *ev-T*, the event of making a ring is viewed as completed prior to a past reference time (*ref-T = ast-T*).
The present perfect sentence in (5b) has the same phrase structure except that Tense is the spatiotemporal predicate within. Perfect first orders the Ast-T after the Ev-T, as in (7a). Present then orders the Ut-T within the Ast-T, as in (7b).

The event of making a ring is thus viewed as completed prior to a present reference time (i.e., prior to the Ast-T that itself contains the Ut-T).\(^2\)

In conclusion, our model of temporal representation integrates both the Progressive and the Perfect without resorting to features such as [+/-completed] or [+/-imperfective]. The event described by a perfect sentence is viewed as completed because the Perfect orders a reference time (our Ast-T) after the Ev-T and, hence, after the time defining the final bound of the event.

### 5.2.5 Tense without Morphological Aspect

We now turn to the temporal interpretation of sentences with morphological tense but without morphological aspect—that is, to the grammar of simple tenses in English. To derive the grammar of temporal relations in systems without either morphological tense or morphological aspect, we make the following two assumptions:

(8) a. TP and AspP are always projected.

b. When either T\(^0\) or Asp\(^0\) lacks morphological content, its external temporal argument binds its internal temporal argument.
(9) a. *Future Tense without morphological aspect*
   Ikbal will make a ring.

   \[
   \text{TP} \\
   \text{UT-T} \quad \text{T'} \quad \text{T}^0 \quad \text{AspP} \\
   \text{BEFORE} \quad \text{AST-T} \quad \text{Asp'} \quad \text{Asp}^0 \quad \text{VP} \\
   \text{EV-T} \quad \text{VP}
   \]

b. *Past Tense without morphological aspect*
   Ikbal made a ring.

   \[
   \text{TP} \\
   \text{UT-T} \quad \text{T'} \quad \text{T}^0 \quad \text{AspP} \\
   \text{AFTER} \quad \text{AST-T} \quad \text{Asp'} \quad \text{Asp}^0 \quad \text{VP} \\
   \text{EV-T} \quad \text{VP}
   \]

Let us first consider the grammar of Future Tense without morphological aspect, as illustrated in (9a). Future Tense in (9a) orders the \text{UT-T} before the \text{AST-T}. The \text{AST-T} binds the \text{EV-T} since \text{Asp}^0 has no morphological content. The \text{EV-T} thus follows the \text{UT-T}—yielding a future tense interpretation, as illustrated by the schema in (10).

(10) \[
\text{UT-T} \quad \text{AST-T} = \text{EV-T}
\]

Let us now turn to the grammar of Past Tense without morphological aspect, illustrated in (9b). Past Tense in (9b) orders the \text{UT-T} after the \text{AST-T}. The \text{AST-T} binds
the \textit{ev-t} since Asp\textsuperscript{0} has no morphological content. The \textit{ev-t} thus precedes the \textit{ut-t}—yielding a past tense interpretation, as illustrated by the schema in (11).

\begin{equation}
\text{EV-T} = \text{AST-T} \quad \text{UT-T}
\end{equation}

(11) \quad \begin{tikzpicture}
  \node (A) at (0,0) {\text{[---]}};
  \node (B) at (1,0) {\text{[---]}};
  \node (C) at (2,0) {\text{\text{---}}};
  \draw (A) -- (B) -- (C);
\end{tikzpicture}

Notice that this analysis explains why in a simple past tense sentence, the event is portrayed in its entirety—as including both its initial and its final bounds (perfective viewpoint aspect, in Smith’s (1991) classification). The described event is viewed in its entirety because the \textit{ast-t} coincides with the \textit{ev-t}, from its initial to its final boundary.\textsuperscript{3}

\subsection*{5.2.6 Defining Spatiotemporal Relations}

We adopt Hale’s (1984) thesis that spatiotemporal relations can be uniformly defined in terms of an abstract basic semantic opposition: [+/- central coincidence] in the location of an entity—the \textit{figure} (\textit{f})—with respect to a place—the \textit{ground} (\textit{g}). His proposal is summarized in (12).

(12) a. [+central coincidence]: \textit{f} \textit{WITHIN} \textit{g}
- The location, trajectory, linear arrangement of \textit{f} coincides centrally with \textit{g}.

b. [−central coincidence]: \textit{f} \textit{BEFORE/AFTER} \textit{g}
- The location, trajectory, linear arrangement of \textit{f} does not coincide centrally with \textit{g}.

i. [−central \textit{centripetal} coincidence]
- The location of \textit{f} is before \textit{g}. The trajectory of \textit{f} is toward (will end at) \textit{g}.

ii. [−central \textit{centrifugal} coincidence]
- The location of \textit{f} is after \textit{g}. The trajectory of \textit{f} is from (begins at) \textit{g}.

Hale’s proposal allows us to explain the striking diversity of predicates that surface across languages to express temporal relations: prepositions, as well as verbs of motion, direction, stance/posture, or location. This diversity is not random, but principled and predictable.\textsuperscript{4}

Under the proposal in (12), Progressive Aspect is defined as a predicate of central coincidence: it orders the figure (i.e., the \textit{ast-t}) within the ground (i.e., the \textit{ev-t}). This proposal immediately explains why predicates expressing central coincidence between \textit{f} and \textit{g}—that is, prepositions such as ‘in’, ‘on’, or ‘at’ (Basque, Dutch, French, spoken German, or Old English) as well as verbs of location, stance, or posture (as illustrated in (13))—are typically used to form progressive sentences across languages.
Progressive/durative markers (Givón 1982, 149)
‘stay’ (Hawaii-Creole), ‘sit’ (Siluyana [Bantu]; Juba Arabic), ‘be there’ (Krio),
‘sleep’/‘spend the night’ (Bemba [Bantu]), ‘be with’ (Swahili), ‘lie down’/
‘stand’, ‘live’/‘reside’ (Hindi)

Prospective Aspect and Future Tense are defined as predicates of $\llbracket$—central centripetal coincidence$\rrbracket$: they order the figure (respectively, the ast-T/ut-T) before the ground (respectively, the ev-T/ast-T). This analysis explains why predicates expressing $\llbracket$—central centripetal coincidence$\rrbracket$ between $f$ and $g$—typically, verbs of motion toward the ground such as ‘go’—are crosslinguistically used to express the Future/Prospective.

Finally, Perfect Aspect and Past Tense are defined as predicates of $\llbracket$—central centrifugal coincidence$\rrbracket$: they order the figure (respectively, the ast-T/ut-T) after the ground (respectively, the ev-T/ast-T). This proposal correctly predicts that predicates of $\llbracket$—central centrifugal coincidence$\rrbracket$ between $f$ and $g$—that is, prepositions such as ‘after’ (Breton, Gaelic, or Irish English) or verbs of motion from the ground such as ‘come from’ (Margi) or ‘throw away’ (Palaung)—can surface crosslinguistically to express the Perfect/Past.

In sum, by adopting Hale’s proposal in (12), we provide a principled explanation for the typology of predicates instantiated crosslinguistically to express temporal relations. At the same time, we restrict the set of logically possible Tenses and Aspects since Hale’s system yields only the three basic topological relations defined in (12)—whatever the diversity of predicates used across languages to express these three relations might be.

We now turn to the core of the proposal defended in this chapter.

5.3 Time Adverbials

We argue that time adverbs, just like tenses and aspects, are phrases headed by a two-place spatiotemporal predicate, projecting its temporal argument structure in the syntax and establishing a topological relation (inclusion, precedence, subsequence) between its time-denoting arguments. These spatiotemporal predicates are uniformly defined in terms of central versus noncentral coincidence of the figure with respect to the ground. The proposal put forth here holds for all time adverbs—whether they have the semantics of locational or durational adverbs, or whether they have the syntax of PPs, bare NPs, bare CPs, or clausal adjuncts headed by a temporal connective.

We first integrate prepositional time adverbs within our model. As we show, the analysis of PP adverbs is straightforward since these adverbs are indeed, syntactically, phrases headed by a spatiotemporal preposition. We then turn to the temporal
syntax of bare time adverbs such as *Monday* or *yesterday* and, finally, we incorporate adjunct temporal clauses within our model of temporal interpretation.

### 5.3.1 PP Time Adverbs

Consider the sentence in (14). What is the semantic contribution of each PP?

(14) Maddi was born in 2000, after/before Christmas.

The sentence *Maddi was born* describes an eventuality occurring at a past time. The role of each PP is to restrict the reference of this past event time by ordering it *within/after/before* the time denoted by its internal argument—that is, the Zeit Phrase *2000/Christmas*. The semantic contribution of locating PP adverbs will follow straightforwardly from their syntax: these adverbs are phrases headed by predicates of spatiotemporal ordering. The prepositions *in/after/before* establish a topological relation between two times: the event time of the matrix VP and the time referred to by their complement DP. Thus, the PPs in (14) specify that the past time of Maddi’s birth is contained within the time designated by *2000* and precedes or follows the time designated by *Christmas*. We conclude that a PP time adverb is a modifier of the time of the event described by the sentence in which it occurs, restricting the reference of this time span to the time designated by its internal argument.

Let us now turn to the temporal syntax of locating temporal PPs. We first give, in (15), the temporal structure of the past sentence in (14) without a time adverb. Note that since there is no morphological aspect in (15), the *ast-t* binds and thus temporally coincides with the *ev-t*, as illustrated by the temporal schema in (15c). Binding in (15b) entails that the described event is portrayed in its entirety—as including both its initial and its final bounds. The Past then orders the *ut-t* after the *ast-t*, as illustrated in (15d).

(15) a. Maddi was born.

b. 

```
            TP
               |
              UT-T
               |
              T'
               |
              T^0
               |
            AFTER
               |
            AST-T_i
               |
            AspP
               |
            Asp'
               |
            Asp^0
               |
            VP
               |
            EV-T_i
```
Now, let us add a PP to (15a), as in (14). Recall that the PPs in 2000, before/after Christmas serve to restrict the reference of the time of the event described by (15). That is, they are semantically restrictive modifiers of a time-denoting argument projected in the syntax—either the EV-T or the AST-T (itself cotemporal with the EV-T in (15)). The null assumption is then that syntactically they are also restrictive modifiers of temporal arguments. Modifiers of nominal arguments are base-generated as adjuncts to the NP whose reference they restrict, as illustrated in (16a). We therefore propose that modifiers of time-denoting arguments are likewise base-generated adjoined to the time-denoting argument (or Zeit Phrase) whose reference they restrict, as illustrated in (16b). We thus establish a semantic and syntactic parallel between nominal and temporal modification.

(16) a. The syntax of nominal modification

```
NP
   NP modifier (PP/AP/CP . . .)
```
e.g., cat in the box

b. The syntax of temporal modification

```
AST-T/EV-T
   AST-T/EV-T PP
```
e.g., AST-T/EV-T IN 2000

(16a) illustrates the syntax of nominal modification: the modifier (PP/AP/CP . . .) restricts the reference of its sister NP. Modification is established via predication: the modifier is predicated of its sister NP—the latter is formally its external argument. Temporal modification has exactly the same syntax: the PP in 2000 restricts the reference of its sister Zeit Phrase. Temporal modification is thus also established via predication: the spatiotemporal predicate in 2000 is predicated of the AST-T/EV-T, its external argument—as shown in (16b).

Notice that analyzing the time adverbs in (14)—as (i) modifiers restricting the reference of the EV-T, or (ii) modifiers restricting the reference of the AST-T—will yield
nondistinct interpretations since the ev-t and the ast-t arguments are cotemporal (as previously illustrated in (15c)). For concreteness, we will analyze the PPs in (14) as modifiers of the ast-t. In the next section, we discuss perfect sentences where the ev-t and the ast-t are disjoint in reference. We will then show that modification by a time adverb of the ev-t versus the ast-t yields distinct readings.

The syntax of temporal modification in (14) is given in (17).

(17) a. 

```
       AST-T
       /PP
  AST-T  
   
P0
   in

2000
```

b. 

```
       AST-T
       /PP
  AST-T  
   
P0
   BEFORE/AFTER

CHRISTMAS
```

The PPs in (17) are predicates headed by a spatiotemporal preposition, ordering two time-denoting arguments. The internal argument of the spatiotemporal predicate in/after/before is the time interval denoted by 2000/Christmas. Its external argument is the time argument of which it is predicated: ast-t. The preposition in restricts the reference of this time span by relating the ast-t to the time designated by its internal argument 2000. The ordering relation is one of central coincidence. Likewise, the predicates before/after restrict the reference of the ast-t by establishing a relation of noncentral coincidence between the ast-t and the time designated by Christmas. Since the ast-t is itself cotemporal with the ev-t (see (15b,c)/(18b)), the PPs in (17) indirectly provide a location time for the ev-t of the eventuality described by (14). The full temporal representation of (14)/(18a) is given in (18).

(18) a. Maddi was born in/before/after 2000.

Maddi was born at/before/after Christmas.
(18a) describes a past time event since the UT-T in (18b) is ordered after the AST-T—
itself cotemporal with the EV-T (Perfective Aspect). Now, the AST-T in (18b) is also the 
external argument of the spatiotemporal preposition IN/BEFORE/AFTER. The PP thus 
further restricts the reference of the AST-T (= EV-T) by ordering this past time span in/
before/after the time designated by 2000/Christmas, as illustrated in (19).

(19) a. \( \text{AST-T} = \text{EV-T IN 2000/CHRISTMAS} \)

b. \( \text{AST-T} = \text{EV-T BEFORE 2000/CHRISTMAS} \)

c. \( \text{AST-T} = \text{EV-T AFTER 2000/CHRISTMAS} \)

In sum, the PPs in (14)/(18) ultimately serve to provide a location time for the past 
event described by Maddi was born.

5.3.2 AST-T Modification versus EV-T Modification

Consider now the past perfect sentence in (20a), which is assigned the temporal structure 
in (20b). The phrase structure in (20b) yields the temporal interpretation illus-
trated in (20c). The time of Maddi’s departure is presented as having culminated before a reference time, the \textit{ast-T}, itself ordered by Tense prior to the \textit{ut-T}. (For the analysis of the Perfect, see section 5.2.4.)

(20) a. Maddi had left school.

\[ (T \text{ TP }) \]

\[ UT-T \rightarrow T' \]

\[ T^0 \rightarrow \text{AspP} \]

\[ \text{AFTER} \rightarrow \text{AST-T} \rightarrow \text{Asp'} \]

\[ \text{Asp}^0_0 \rightarrow \text{VP} \]

\[ \text{AFTER} \rightarrow \text{EV-T} \rightarrow \text{VP} \]

Notice that, this time, the \textit{ast-T} and the \textit{ev-T} are disjoint in reference. Hence, we correctly predict that adding a PP to (20) will yield two distinct readings for (20a) depending on whether the time adverb modifies the \textit{ev-T} or the \textit{ast-T}, as illustrated in (21).

(21) Maddi had left school at 5 p.m.

\textit{Maddi's leaving occurs at 5 p.m.}

a. \[ (EV-T \text{ TP }) \]

\[ EV-T \rightarrow PP \]

\[ EV-T \rightarrow P^0 \rightarrow 5 \text{ PM} \]

\[ \text{AT} \rightarrow \]

b. \[ [---] [---] [---] \rightarrow \]

5 PM
Maddi’s leaving occurs prior to 5 p.m.

c.  \[ \text{EV-T} \quad \text{AST-T} \quad \text{UT-T} \]
\[ \text{AT} \]
\[ \text{PP} \]
\[ \text{5 PM} \]

In (21a), the PP is predicated of the ev-t. The preposition AT establishes a relation of central coincidence between the ev-t and its internal time argument, thus restricting the reference of the ev-t to the span designated by 5 p.m., as illustrated in (21b). This yields the so-called event time reading: the event described by the VP MADDI LEAVE SCHOOL occurs at 5 p.m. In contrast, in (21c), the PP is predicated of the ast-t. The preposition AT thus establishes a relation of central coincidence between the ast-t and the time designated by 5 p.m., as illustrated in (21d). This yields the reference time reading: the time of Maddi’s departure is presented as having culminated prior to past reference time—our ast-t—which itself coincides with the time denoted by 5 p.m.

The PP time adverbs analyzed so far are locating adverbs in the sense of Kamp and Reyle (1993). Locating adverbs serve to locate a time span—either the ast-t or the ev-t (of the clause in which they occur)—by relating it/ordering it with respect to the time represented by their internal argument. As we will show in the following sections, the analysis presented here extends to all locating adverbs—whether they have the syntax of PPs, bare NPs, or clausal adjuncts. Further examples of locating adverbs are given in (22).

(22) Locating adverbs
   PP: at Christmas; in 2000; before Sunday; after nightfall; on Easter Monday
   NP: Sunday; June 10, 2001; this morning; tomorrow
   CP: after/before Zazy left; when Zooey arrived

5.3.3 Recursion of Locating Time Adverbs
Temporal modification can be recursive, as illustrated in (23).

(23) a. Maddi was born at 5 a.m., before dawn.
In (23b), two PPs have been predicated of the \textit{ast-t}, thus modifying it. Each of the PPs serves to restrict the reference of the \textit{ast-t}, itself cotemporal with the \textit{ev-t} since there is no morphological aspect in (23a). The spatiotemporal predicate \textit{[at Zeit Phrase]} restricts the reference of the \textit{ast-t} by relating it to the time designated by its internal argument \textit{5 a.m.}; the ordering relation is one of central coincidence. The predicate \textit{[before Zeit Phrase]} further restricts the reference of the \textit{ast-t} by establishing a relation of noncentral centripetal coincidence between the \textit{ast-t} and the time designated by \textit{dawn}. Since the \textit{ast-t} and the \textit{ev-t} are cotemporal, the PPs in (23b) indirectly provide a location time for the \textit{ev-t} of the matrix. This time span will centrally coincide with the interval denoted by \textit{5 a.m.} and will be ordered before the time designated by \textit{dawn}, as shown in (23c).

5.3.4 Durational Adverbs

We now generalize our analysis of locating adverbs to adverbs of duration. As the examples in (24) show, they can have the syntax of either a PP, a bare NP, or a clausal adjunct, as was the case with locating adverbs.

(24) Durational adverbs

- PP: for three weeks; in an hour; from 3 to 4; until 2001; from 1924
- NP: six months (e.g., \textit{She worked six months})
- CP: since Zazy left; until Zooey arrived

Durational adverbs are also analyzed as modifiers predicated of a time-denoting argument projected in the syntax—either the \textit{ev-t} or the \textit{ast-t} of the clause in which they occur. The syntax of temporal modification is illustrated in (25).\textsuperscript{6}
The PPs in (25) specify either the duration/the temporal size or the boundaries of the AST-T/EV-T, by relating this time span to the time denoted by their internal argument. Thus, in (25a), we have a PP adverb headed by the spatiotemporal preposition FOR/IN ordering two time-denoting arguments. This spatiotemporal predicate measures the duration/the temporal size of the AST-T/EV-T (its external argument) by relating it to the time span represented by its internal argument 3 hours—the ordering relation is one of central coincidence.

In (25b), the predicate UNTIL specifies the final boundary of the AST-T/EV-T by establishing a relation of noncentral centripetal coincidence between the AST-T/EV-T (its external argument) and the time denoted by its internal argument. UNTIL specifies that the location/trajectory of the figure (AST-T/EV-T) ends at the ground (1924). UNTIL thus makes visible the final bound of the AST-T/EV-T by indicating that it ends at 1924. In contrast, the predicate SINCE delimits its initial bound by establishing a relation of noncentral centrifugal coincidence between the AST-T/EV-T and the time denoted by 1924. SINCE specifies that the location/trajectory of the figure (AST-T/EV-T) begins at the ground (1924). SINCE thus makes visible the initial bound of the AST-T/EV-T by indicating that it begins at 1924.7

The full temporal structure of a clause with a durational PP adverb is illustrated in (26).

(26) a. Zooey painted the room in three hours.
The adverb *in three hours* specifies the duration of the event described by the VP *ZOOEY PAINT THE ROOM*. The UT-T in (26b) is ordered by Past Tense after the AST-T—which itself binds the EV-T since there is no morphological aspect, as illustrated in (26c). The preposition *in* specifies the duration of the event described by the VP *ZOOEY PAINT THE ROOM* by establishing a relation of central coincidence between its external argument—the AST-T, cotemporal with the EV-T—and the time span designated by its internal argument *three hours*.

### 5.3.5 Recursion of Durational Time Adverbs

(27) illustrates the phrase structure of recursive temporal modification, assigned to a complex durational adverb such as *from 1924 to 2001*.
Each of the PPs in (27) specifies/delimits a boundary of the ast-t/ev-t, thus measuring its duration.

5.3.6 Bare Time Adverbs
We now generalize our analysis of PP time adverbs to bare time adverbs—that is, to adverbs that are not introduced by a preposition. We will distinguish two subclasses of bare time adverbs: bare NP adverbs and bare CP adverbs.

5.3.6.1 Bare NP Time Adverbs  Consider (28).


The time adverbs in (28) are locating adverbs—even though they are not introduced by an overt preposition. Take the bare time adverb *June 10, 2001*. As a locating adverb, it contributes to the temporal interpretation of the sentence in which it occurs, the time interval that it designates, as well as the relation that holds between the designated time (June 10, 2001) and the past time of the event described by the VP *Abdel leave*. This relation is one of central coincidence. The bare NP adverbs in (28) thus specify that the past time of Abdel’s departure is contained within the time designated by *last year/June 10, 2001*. (29a), for instance, has the temporal schema in (29b). The ut-t is ordered by the Past after the ast-t—itself cotemporal with the ev-t (since there is no morphological aspect). The bare time adverb then locates the ast-t—coreferential with the ev-t—within the interval designated by *June 10, 2001*.


 b. \[\text{AST-T} = \text{EV-T} \]

\[\text{JUNE 10, 2001} \]

We conclude that bare time adverbs are in fact concealed PPs—that is, PPs headed by a silent preposition expressing central coincidence (see also Emonds 1987; Kamp and Reyle 1993; Leder 1991). We thus analyze bare NP adverbs on a par with locating adverbs introduced by an explicit preposition of central coincidence. They are base-generated as modifiers of the ast-t/ev-t, as shown in (30). The silent preposition of central coincidence in (30) restricts the reference of its external argument (the ast-t/ev-t) by ordering it within the time designated by its internal argument.
5.3.6.2 **Bare CP Time Adverbs** We now introduce new data to support the claim that silent spatiotemporal prepositions express central coincidence. Consider the French and Basque paradigm in (31). Note, in particular, that the temporal adjunct clauses in (31) are not introduced by an overt preposition, but merely by a complementizer. We refer to these clausal temporal adjuncts as **bare CP time adverbs**.

(31) a. *French* (Grévisse 1980)

\[
\begin{align*}
\text{[IP La mort nous prend [CP que [IP nous sommes encore pleins de nos} \\
\text{death us takes that we are still full of our} \\
\text{misères et de nos bonnes intentions]].} \\
\text{miseries and of our good intentions} \\
\text{‘Death takes us while we are still full of our miseries and good intentions.’}
\end{align*}
\]

b. *Basque*

\[
\begin{align*}
\text{[IP[CP[IP Liburu-a irakur-tze-n ari nintze] [C₀ la]] heldu ziren].} \\
\text{book-DET read-NOM-IN engaged was that arrived were} \\
\text{Lit.: ‘That I was in the reading of this book, they arrived.’} \\
\text{‘They arrived while I was reading this book.’}
\end{align*}
\]

The spatiotemporal relation between the time of the event described by the main clause and the time of the event described by the subordinate adjunct clause is one of central coincidence although, once again, there is no overt preposition expressing central coincidence. We analyze these bare CP adverbs as concealed PPs—that is, PPs headed by a silent preposition of central coincidence. The syntax of temporal modification in (31b) is illustrated roughly in (32). The silent spatiotemporal predicate **WITHIN** establishes a relation of central coincidence between the time of the event described by the matrix clause ‘They arrived’ and the time of the event described by the adjunct clause ‘I was reading this book’.
Bare CP time adverbs

Summarizing, we have incorporated bare (NP and CP) time adverbs into our grammar of temporal relations by assuming that these adverbs are PPs headed by a silent predicate of spatiotemporal ordering. We derive their semantic contribution to the temporal interpretation of the sentence in which they occur from the generalization in (33).

(33) Silent spatiotemporal predicates express central coincidence.

We have further shown that silent spatiotemporal prepositions can take as their internal argument either NPs or CPs. We now turn to the analysis of temporal adjunct clauses—whether they are introduced by overt or nonovert spatiotemporal prepositions.

5.3.7 Adverbial Temporal Clauses

Consider the adjunct clauses in (34), both introduced by a spatiotemporal preposition.

(34) a. Franny left [before Zooey arrived].
   b. Franny left [after Zooey arrived].

(35) a. Franny left [before noon].
   b. Franny left [after noon].

Notice that the adjunct clauses in (34) are syntactically PPs—that is, phrases headed by a spatiotemporal predicate. Moreover, the spatiotemporal predicates in (34) have exactly the same role as those in (35): they restrict the past temporal reference of the event described by the clause Franny left. In particular, the adverbial clauses in (34) restrict the temporal reference of the eventuality described by the matrix clause, by establishing a relation of spatiotemporal ordering between the event time of the matrix and the event time of the subordinate clause. The past time of Franny’s departure is ordered before/after the past time of Zooey’s arrival.

We conclude that all time adverbs—whether they have the overt syntax of PPs, bare NPs, or bare CPs—are in fact PPs headed by a spatiotemporal predicate. They...
modify (are predicated of) a time argument of the clause in which they occur. This relation of temporal modification is illustrated in (36). The spatiotemporal predicate in (36) restricts the reference of the $\text{ast-T/ev-T}$ by establishing a relation of (non)central coincidence between two time spans: the $\text{ast-T/ev-T}$ (its external argument) and the time designated by its internal argument.

(36) 
```
        AST-T/ev-T
       /      \\
AST-T/ev-T PP
       |      |
   P^0  +/-CENTRAL COINCIDENCE
```

Once we assume, following Zagona (1990) and Stowell (1993), that time-denoting arguments are represented in the syntax as temporal DPs or Zeit Phrases, the null assumption is that they can be modified, just as any DP can. This is precisely the proposal put forth here: time adverbs are semantically and syntactically modifiers of Zeit Phrases projected in the syntax as arguments of temporal heads.

5.3.7.1 Subordinate Temporal Clauses as Modifiers of the Matrix $\text{ast-T}$ 
In sentences with simple tenses such as those in (34), we cannot tell whether a temporal subordinate clause modifies the $\text{ast-T}$ or the $\text{ev-T}$ of the matrix clause—since these two time spans temporally coincide when there is no morphological aspect in the clause. (That is, the $\text{ast-T}$ will bind the $\text{ev-T}$ as required by principle (8b).) Hornstein (1990) argues, however, that a temporal adjunct clause never modifies directly the event time of the matrix clause, but rather modifies its reference time (which corresponds to our $\text{ast-T}$). To see why, consider (37) from Hornstein 1990. The perfect sentence in (37) is not ambiguous: John’s departure occurs prior to 3 p.m., but not at 3 p.m. (In particular, compare (37) with the perfect sentence in (21), which is ambiguous.)

(37) John had left the office when Sam walked in at 3 p.m.

If $\text{when}$ can express overlap between the event time of the matrix and the event time of the adjunct clause, then (37) should have the reading illustrated by the temporal schema in (38a). (The neo-Reichenbachian notation in (38a,b) is from Hornstein 1990.) In (38a), the matrix event (John’s departure) is understood as simultaneous with the event described by the adjunct clause (Sam’s arrival at 3 p.m.). But this reading of (37) is unavailable.
(38) a. $E_1$ simultaneous with $E_2$: John’s departure is at 3 p.m.

$$\begin{array}{c}
E_1 \quad R_1 \quad S \\
\downarrow \\
R_2, E_2 \\
3 \text{ p.m.}
\end{array}$$

b. $R_1$ simultaneous with $R_2$: John’s departure is prior to 3 p.m.

$$\begin{array}{c}
E_1 \quad R_1 \quad S \\
\downarrow \\
R_2, E_2 \\
3 \text{ p.m.}
\end{array}$$

The only available reading is the one represented in (38b): John’s departure is unambiguously prior to the reference point $r$, itself simultaneous with Sam’s arrival at 3 p.m.

We thus conclude, following Hornstein (1990), that a temporal adjunct clause never modifies (directly) the event time of the main clause. Rather, it modifies its reference time—that is, our AST-T. This conclusion entails that the adverbial clauses in (34) must be analyzed as modifiers of the AST-T of the main clause. That is, the spatiotemporal predicates BEFORE/AFTER in (34) establish a topological relation between the AST-T (itself cotemporal with the EV-T) of the matrix clause and the AST-T (itself cotemporal with the EV-T) of the adjunct clause.

Let us now examine the syntax of the spatiotemporal predicates in (34)–(35). Note that the spatiotemporal prepositions in (35) take a time-denoting DP as internal argument (noon). Those in (34), however, take a clause as internal argument (Zooey arrived). Since a clause cannot itself denote a time interval, we propose that the subordinate clauses in (34) are in fact subordinate relative clauses, restricting the reference of an implicit Zeit Phrase. That is, we analyze the adverbs in (34) as PPs taking as internal argument a temporal DP/Zeit Phrase, modified by a restrictive relative clause—roughly, $[_{PP \ before/after \ [_{ZeitP \ the \ time \ [_{CP \ \emptyset} \ [_{TP \ Zooey \ arrived \ t_i]}]]}]$. The full temporal structure of the adverbial temporal clauses in (34) is given in (39).

(39) a. before/after the time at which Zooey arrived
The PP, in (39a), is a modifier of the matrix assertion time (ast-T₁). BEFORE/AFTER thus establishes an ordering relation between two times: its external temporal argument (ast-T₁) and its internal temporal argument (ZeitP). We have analyzed the subordinate clause *Zooey arrived* as a relative clause restricting the reference of this time span. The relation between ZeitP and the relativized temporal argument (ast-T₂) is, as is the case with any relative clause, a predication relation established via null operator movement. Predication requires that the head of the relative clause (ZeitP) be coindexed with the null operator, which moves to Spec,CP in order to create a predicate variable. Predication via null operator movement thus ensures that the internal temporal argument of BEFORE/AFTER in (39) (i.e., ZeitP) denotes the assertion time of the subordinate clause (i.e., ast-T₂). Since, moreover, ast-T₂ binds ev-T₂ (as there is no morphological aspect), it follows that the internal argument of BEFORE/AFTER in (39) denotes the time of the event described by the VP *ZOOEY ARRIVE*. P₀
thus ultimately orders \textit{ast-T}_1 before/after \textit{ast-T}_2—itselt cotemporal with \textit{ev-T}_2. Finally, \textit{ast-T}_2 is itself in the past since \textit{T}^0 orders the \textit{ut-T} after \textit{ast-T}_2, as illustrated in (39c).\textsuperscript{10}

Let us now see what happens when we put together a temporal adjunct clause—such as \textit{before Zooey arrived}—with the matrix clause \textit{Franny left}, as in (40).

(40) a. Franny left before Zooey arrived.

b. Franny left before Zooey arrived.

c. Franny left before Zooey arrived.
The assertion time of the matrix (\(ast-t_1\)) binds the event time of the matrix (\(ev-t_1\)). The event described by the VP \textit{franny leave} is thus viewed in its entirety, as including both its initial and final boundaries (Perfective Aspect). This event culminates in the past since the tense of the matrix orders the \(ut-t\) after \(ast-t_1\), itself cotemporal with \(ev-t_1\), as in (40c).

Now, \(ast-t_1\) is also the external argument of the spatiotemporal predicate \texttt{before}. Recall, from the discussion of (39), that \texttt{before} indirectly orders \(ast-t_1\) before \(ast-t_2\)—itself cotemporal with \(ev-t_2\). It thus follows that the past event described by the matrix (Franny’s departure) is ordered before the past event described by the subordinate clause (Zooey’s arrival), as illustrated by the schema in (40d).

To conclude. We have incorporated temporal adjunct clauses within our model, by assuming that they are PPs headed by a spatiotemporal predicate establishing a topological relation between two time intervals: the assertion time of the main clause and another time that itself indirectly denotes (via predication of a relative clause mediated by null operator movement) the assertion time of the subordinate clause.

### 5.3.7.2 A Note on the Syntax of When-Clauses

Temporal adjunct clauses expressing central coincidence do not always have the overt syntax of a PP, at least in languages like English. Thus, the adjunct clause in (41a) is not headed by an overt spatiotemporal preposition (unlike the \texttt{before-} and \texttt{after-}clauses discussed above).

(41) a. Franny was leaving when Zooey arrived.
   
   b. Franny was leaving *when noon.

We integrate \textit{when}-clauses into our model by assuming that these time adjuncts are concealed PPs—that is, phrases headed by a silent predicate of spatiotemporal ordering. That \textit{when}-clauses express central coincidence then follows automatically from the generalization in (33). Recall, indeed, that silent spatiotemporal predicates—whether they take NP or CP arguments—always express central coincidence. As for the \textit{wh}-phrase \textit{when}, we analyze it as a relative temporal operator—that is, as the overt realization of the null temporal operator posited in (39)–(40). The temporal syntax of a \textit{when}-clause is illustrated in (42).
French temporal adjunct clauses, on the other hand, can be overtly headed by a predicate of central coincidence, as shown in (43a).

(43) a. Overt preposition of central coincidence, null temporal operator
   i. Zoë dort *pendant* que je travaille.
      Zoë sleeps *P⁰* that I work
      ‘Zoë sleeps while I work.’
   ii. Zoë dort *pendant* le jour.
       Zoë sleeps *P⁰* the day
       ‘Zoë sleeps during the day.’
   b. Null preposition of central coincidence, overt temporal operator
      Zoë travaille *quand* Franny dort.
      ‘Zoë works when Franny sleeps.’
   c. Null preposition of central coincidence, null temporal operator
      See example (31).

As (43) illustrates, French in fact instantiates three different possible structures for adjunct clauses of central coincidence.
5.3.8 Evidence for Movement of Temporal Arguments

We have assumed that relativization of the ast-t in a temporal adjunct clause involves movement of an operator. We have further argued that this temporal operator can be either null or overt (i.e., spelled out as when/quand). We now provide evidence for movement by showing that it correctly predicts Subjacency and Condition on Extraction Domain (CED) effects.

5.3.8.1 Subjacency Effects

The sentence in (44), from Larson 1990, is ambiguous: it can have either of the two readings roughly illustrated in (44a,b) (see also, e.g., Geis 1970; Larson 1990; Munn 1991; Thompson 1995).

(44) I saw Mary in New York [PP before [TP₁ she claimed [CP₂ that she would arrive]].

Short-distance reading

a. I saw Mary in New York before the time at which she made a certain claim.
a’. [PP before [CP₁ Ø₁ [TP₁ she claimed [CP₂ that she would arrive] t₁]]]]

Long-distance reading

b. I saw Mary in New York before the time of her presumed arrival in New York.
b’. [PP before [CP₁ Ø₁ [TP₁ she claimed [CP₂ that [TP₂ she would arrive] t₁]]]]

The claim made in the literature is that the ambiguity of (44) is due to movement of a null operator, base-generated in an adjunct position internal to either one of the subordinate clauses in (44). Short-distance movement out of TP₁ (illustrated in (44a’)) yields the short-distance reading in (44a), whereas long-distance movement out of TP₂ (illustrated in (44b’)) yields the long-distance reading in (44b). This analysis correctly predicts that (45a) is not ambiguous: (45a) cannot have the reading in (45b).

(45) a. I saw Mary in New York [before [she made [NP the claim [that she had arrived]]]].
b. *I saw Mary in New York before the time of her presumed arrival in New York.
b’. *[before [CP Ø₁ [TP₁ she made [NP the claim that [TP₂ she would arrive] t₁]]]]

The reading in (45b) is ruled out because a complex NP is an island for movement. The structure generating the ungrammatical reading of (45a) is given in (45b’): movement of the null operator out of TP₂ is not subjacent as it skips two bounding nodes (NP, TP₁).
The contrast between (44) and (45) provides evidence for our analysis of temporal adjunct clauses as relative clauses, predicated of a time-denoting argument via movement of a temporal operator. This analysis correctly predicts the ambiguity of (44): extraction of the ast-t—not be it long-distance (from within TP$_2$) or short-distance (from within TP$_1$)—will not violate locality constraints on movement. In contrast, (45a) will not be ambiguous: long-distance extraction of the ast-t (from within TP$_2$) is illicit, as it violates Subjacency.

5.3.8.2 Condition on Extraction Domains Effects Hornstein (1990) argues that the reference time of a temporal adverbial clause cannot itself be modified by a time adverb. To see why, consider (46a). In this sentence, Harry’s departure is unambiguously understood as occurring at 3 p.m., and not prior to 3 p.m. In other words, the time adverb at 3 p.m. must modify the event time of the past perfect subordinate clause. It cannot modify the reference time (in our terms, the ast-t) of the subordinate clause. The lack of reference time reading in (46a) is very surprising since (46b) with an adverb modifying a past perfect matrix clause allows both an event time and a reference time reading, as was illustrated with the parallel example in (21). Why then does the reference time reading disappear in (46a)?

(46)  a. John left after Harry had departed at 3 p.m.
    b. John had left at 3 p.m.

The analysis of time adverbs defended here provides a straightforward explanation for Hornstein’s generalization. The assertion time reading of the adverb 3 p.m. disappears in (46a), because once the ast-t is itself modified by a PP, it becomes an island for movement.

(47) Illicit assertion time reading
    a. after Harry had departed at 3 p.m.
(47) illustrates the syntax of the illicit reference time reading. Note that relativization of the \textit{ast-t} in (47) takes place from a position embedded inside \textit{Spec,AspP}. Extraction in (47) thus violates the CED (or the Left Branch Condition), since specifier/subject positions are islands for movement (Huang 1982). We thus automatically predict the reference time reading of the PP \textit{at 3 p.m.} to be ungrammatical: extraction of the \textit{ast-t} from within \textit{Spec,AspP} cannot take place without violating the CED, as shown in (47). In (46b), on the other hand, the PP is base-generated adjoined to the \textit{ast-t} and no (operator) movement is involved. (The phrase structure of this reading was given in (21d).) The reference time reading of the adverb in (46b) is therefore grammatical.

(46a) allows an event time reading, however. This reading obtains when the PP \textit{at 3 p.m.} is predicated of the \textit{ev-t}, as illustrated in (48). This reading is grammatical since no extraction from within the \textit{ev-t} (i.e., from inside \textit{Spec,VP}) is involved. Further, extraction of the \textit{ast-t} in (48) is licensed since it is movement of the specifier
itself—and not movement from a position embedded inside Spec,AspP, as was the case with the ungrammatical assertion time reading in (47).

(48) *Licit event time reading*

a. after Harry had departed at 3 p.m.

b. 

\[
\begin{array}{c}
\text{AST-T}_1 \\
\text{AST-T}_1 \\
\text{PP} \\
\text{AFTER} \\
\text{ZeitP} \\
\text{ZeitP}_1 \\
\text{CP} \\
\varnothing_i \\
\text{TP} \\
\text{UT-T} \\
\text{T'} \\
\text{AFTER} \\
\text{AspP} \\
 t_{\text{AST-T}_2} \\
\text{Asp'} \\
\text{AFTER} \\
\text{VP} \\
\text{EV-T}_2 \\
\text{VP} \\
\text{HARRY DEPART} \\
\text{EV-T}_2 \\
\text{PP} \\
\text{AT} \\
3 \text{ PM} \\
\end{array}
\]

Finally, consider the temporal structure of the adverbial clause in (49).
The adverbial clause in (49) is in the simple past tense. Since there is no morphological aspect, the AST-T and the EV-T in the adjunct clause are cotemporal. By hypothesis, the PP at 3 p.m. in (49) must modify the EV-T of the subordinate clause, as shown in the tree. The alternative—that is, modification of the AST-T—would yield a CED violation.

To recapitulate. The phrase structure of time adverbs proposed here provides a principled explanation for Hornstein’s generalization. Why can’t the assertion time of a temporal adverbial clause be modified by a time adverb? Because once the AST-T is itself modified by a PP, it becomes an island for movement. This is why (46a) allows an event time reading but not an assertion time reading, whereas (46b) allows both readings.
5.4 Conclusion

We have argued that time adverbs are semantically and syntactically PP modifiers, predicated of time-denoting phrases projected in the syntax as arguments of temporal heads (either the AST-T or the EV-T of the clause in which they occur). Time adverbs are thus uniformly analyzed as PPs headed by a dyadic predicate of spatiotemporal ordering. This predicate can be overt or null. Silent spatiotemporal predicates always express central coincidence.

PP time adverbs restrict the reference of the AST-T/EV-T, by establishing a relation of (non)central coincidence—inclusion, precedence, or subsequence—between the AST-T/EV-T (their external argument) and the time denoted by their internal argument.

The spatiotemporal predicate that heads a temporal subordinate clause relates the AST-T of the main clause and another time, which itself indirectly denotes (via predication of the subordinate clause) the AST-T of the subordinate clause. Predication is mediated by movement of a temporal operator, which can be null or overt (i.e., spelled out as when in English, and as quand in French). This analysis allows us to uniformly derive the disappearance of certain readings, when time adverbs are embedded within temporal adjunct clauses, as violations of locality constraints (the CED and Subjacency) on movement of a temporal operator. We conclude that the hypothesis that time-denoting arguments can be relativized and modified by time adverbs provides strong evidence for Zagona’s (1990) and Stowell’s (1993) proposal that these time spans are projected in the syntax as temporal DPs or Zeit Phrases.

Notes

We thank Brenda Laca, Ricardo Gomez, Javi Ormazabal, and Tim Stowell, as well as the participants of the International Round Table on the Syntax of Tense and Aspect (Université Paris 7, 2000), for insightful comments, questions, and discussion. This research was partially supported by grants PI-1998-127, BFF 2002-04238-C02-01, and UPV 00033-130-1388/2001 from the Basque government, the Ministry of Science and Technology, and University of the Basque country, respectively.

1. As argued in Demirdache and Uribe-Etxebarria 2000, 2002, this analysis of the progressive also allows us to derive, without any additional stipulation, recursive aspects such as the perfect of a progressive.

2. This analysis derives the existential present perfect, which indicates the existence of some past event(s) located prior to a reference time. See Demirdache and Uribe-Etxebarria 1997a, 2002, for arguments that the three readings of the perfect (existential, resultative, and continuative) can be uniformly derived from the proposal that the Perfect is a spatiotemporal predicate with the meaning of AFTER.

3. As argued in Demirdache and Uribe-Etxebarria 2002, to appear b, the joint assumptions in (8) derive the grammar of temporal relations in both (i) systems with tense but without morphological aspect, and (ii) systems with aspect but without morphological tense—that is, languages that are “inherently aspectual” (Givón 1982).
4. See Demirdache and Uribe-Etxebarria 2002, to appear b and references therein for extensive discussion and illustration of the generalizations and proposal put forth in this section.

5. Following Kayne (1994) and Chomsky (1995), we do not distinguish formally between the specifier of XP and adjunction to XP.

6. Note that in a sentence with a simple tense, modification of the ast-t and modification of the ev-t yield nondistinct interpretations since the ast-t and the ev-t corefer. These two types of modification will, however, yield distinct readings when the ast-t and the ev-t are disjoint in reference, as is the case in perfect sentences, for instance. See Demirdache and Uribe-Etxebarria 2002 for discussion of such ambiguities.

7. Sentences with a from-phrase but no until-phrase (or conversely, with an until-phrase but no from-phrase) specify only one of the temporal boundaries of the eventuality they describe. The other bound can often (but not always) be inferred from context—see Kamp and Reyle 1993 for discussion.

8. Note that the appearance of C0 in (31a) is expected since temporal adjunct clauses in French have the structure [P0 [C0 [IP]]]—for example, pendant/alors/dès/après/avant que . . . ‘while/as/as soon as/after/before that . . . ‘.

9. The linear ordering of the time points E, R, and S represents their temporal ordering. The comma represents temporal coincidence between two time points, and the vertical line temporal modification. The Past Perfect in the matrix is assigned the representation E_R_S, and the Past in the subordinate the representation E_R_S.

10. We will present arguments for movement of the null operator in section 5.3.8. The alternative would be to assume that the null operator is base-generated in Spec,CP and coindexed with the assertion time of the subordinate clause; that is, predication is established via control as opposed to movement.

11. Note an important difference between subordinate adjunct clauses and subordinate complement clauses. In a complement clause, the external argument of T0 is not the ut-t; rather, it is controlled by the ev-t of the matrix (Stowell 1993, 1996). Thus, in Zooey will claim that Zasy left Paris, the time of Zasy’s departure is ordered before the future time at which Zasy makes her claim—but not necessarily before the ut-t. In contrast, in an adjunct clause, the external argument of T0 must be the ut-t. To see why, take the adjunct clause (40). If the external argument of T0 in the adjunct clause in (40) were controlled by the matrix ev-t (as is the case in a complement clause), then the matrix ev-t (i.e., ev-t1—the time of Franny’s departure) would end up ordered by the Past Tense in the subordinate clause after ast-t3 itself, cotemporal with ev-t2 (i.e., after the time of Zooey’s arrival)—which is the reverse of the temporal ordering we want. For discussion of the temporal interpretation of complement versus adjunct clauses, see Demirdache and Uribe-Etxebarria, to appear a.

12. The temporal syntax of the subordinate clause in (42) is transparently reflected in the overt syntax of temporal adjunct clauses such as [PP at [DP the time when [TP Zooey arrived t1]]].

References


6.1 Introduction

In this chapter, I will focus on the morphological development of the synthetic conditional in Western Romance and its use as a “future-in-the-past” tense. I will mainly be concerned with Italian and French and the way they contrast. Still, it is to be expected that what can be said about French also extends to the other Romance languages that have developed a synthetic conditional based on the same constitutive elements as French—namely, languages such as Spanish, Portuguese, and Provençal.

As time went by, the Latin tense system underwent a series of radical innovations in its evolution toward the tense systems of the Romance languages. The creation of the synthetic conditional is only one of these innovations, and one may wonder how it interacted with the other changes that affected the original Latin tense system and how it came to fit in with the temporal systems of the modern Romance languages. I will argue that the temporal properties of the constitutive elements underlying modern conditional forms have gradually changed and that these changes have affected in consistent ways their use as a “future-in-the-past” tense and their morphological shapes.

The historical data at hand give reason to believe that there are essentially three stages in the development of conditionals or—for that matter—futures and that the transitions from one stage to another essentially consist of gradually moving temporal information upward from lower functional positions. In this sense, I fully endorse Roberts’s (1992) view on the grammaticalization process of Romance synthetic futures. However, whereas Roberts’s main concern is the exact syntactic characterization of this grammaticalization process (verb movement, incorporation, etc.), mine is not. Instead, my goal will be to determine the way in which the temporal information producing the future-in-the-past reading is scattered in the syntactic structure of conditionals and their predecessors and the way the grammaticalization process has affected the mode of rendering the future in the past.
Unfortunately, the historical data relative to the early Romance period are extremely sparse. Therefore, I will try to reconstruct the historical development of conditionals on the basis of a more frequently attested form, which is both etymologically and semantically related to the conditional, namely, the Romance synthetic future.

This chapter is organized as follows. In section 6.2, I will introduce a double contrast between French and Italian concerning the etymology of futures and conditionals and the future-in-the-past reading of conditionals. This will allow me to formulate the three central questions addressed in this chapter. In section 6.3, I will briefly sketch the theoretical framework put forward by Giorgi and Pianesi (1997), focusing on those aspects that bear directly on the problems addressed here. In section 6.4, I will provide a tentative chronology of the development of future and future anterior forms in Gaul/France and Italy. On the basis of this chronology, I will provide, in section 6.5, an analysis of the process that has led to the emergence of the modern future and conditional forms and of the way future and future in the past became encoded in these forms.

6.2 Two Contrasts between French and Italian

6.2.1 The Etymology of Future and Conditional

Modern Romance languages all have abandoned the Classical Latin synthetic future morphology (amabo ‘I will love’, audiam ‘I will hear’). Most of them ended up with an entirely new synthetic form based on a Vulgar Latin periphrastic construction, which was not entirely unknown even in Classical Latin.\(^1\) This construction was formed with the present tense of habere ‘have’ and an infinitival complement, as in (1) (see, e.g., Bourciez 1967; Fouché 1967; Ménard 1973; Rohlfs 1968).\(^2\)

\[(1) \quad \text{cantare habeo}\]
\[\quad \text{‘I will sing’}\]
\[\quad \text{a. > je chanterai (Fr)}\]
\[\quad \text{b. > canterò (It)}\]

Vulgar Latin also used this periphrastic construction with past tense on habere. In this form, the periphrastic construction served as a basis for the development of conditional morphology, at least in those Romance languages that have developed synthetic morphology for the future. The conditional morphology of most Romance languages is based on the pattern in (2), with imperfect morphology on habere. Old Italian had such an imperfect-based morphology, but it was the only language to also derive a paradigm from the periphrastic construction with perfect tense on habere (3). Eventually, this was the only form to survive in Modern Italian.
6.2.2 Future in the Past
Among Romance languages, Italian is unique not only for having continued the perfect-based periphrastic construction but also in the way it expresses future in the past. While French, Spanish, Portuguese, Provençal, and even Old Italian draw on the simple conditional, Modern Italian relies on the composed form.

(4) French
Paul était sûr qu’elle reviendrait après deux jours.
‘Paul was sure that she would come back two days later.’

(5) Italian
Paolo era sicuro che sarebbe tornata dopo due giorni.
‘Paolo was sure that she would come back two days later.’

One is tempted to consider that the double exceptional behavior of (Modern) Italian is not accidental. However, there is no direct historical connection between the two phenomena. The use of the past conditional for future in the past only became popular in the nineteenth century and wasn’t grammaticalized until the twentieth, while the imperfect-based morphology (cantare (2)) was already more marginal in the early period of Italian literature (Rohlfs 1969).

6.2.3 Questions
The development of French, which I take to be the exemplary exponent of the phenomena illustrated in (2) and (4), and the development of Italian, with its deviant behavior illustrated in (3)–(5), raise a number of interesting questions:

1. What has made the conditional the ideal candidate for the expression of future in the past?

This question may sound trivial if one adopts the view—as I will do—that cantare habebam ‘I would sing’ and cantare habui ‘I would sing’ contain both an anteriority (or past) relationship (habebam, habui) and a posteriority (or future) relationship (contained in the infinitival complement): that is, exactly the relationships one
expects to be realized in order to express future in the past. The question becomes less trivial once these two relationships become syncretized: how can one express both past and future in a single category?

2. If Italian developed two conditionals, why did French not do the same?

This question becomes quite relevant in the light of Pulgram’s (1978) claim that—at least in the context of hypotheticals—cantare habebam and cantare habui both occurred in the Vulgar Latin period of the regions in question. So, if Vulgar Latin of northern Gaul had cantare habui, why did this form not leave any reflex in the early stages of French?

3. What caused (Modern) Italian to shift from simple to composed conditional to express future in the past?

Although this question is not directly related to the preceding ones, I will argue that the use of the composed form constitutes a further shift in the temporal properties of conditionals that is in line with the development of conditionals in earlier stages of Italian or French.

6.3 Theoretical Framework

6.3.1 The General Framework

Giorgi and Pianesi’s (1997) framework is a minimalist syntactic implementation of Reichenbach’s (1947) temporal logic. As such, it assumes that verbal tenses encode a relationship between speech time (S) and event time (E) that is mediated through a reference time (R). Following Comrie (1976) and Hornstein (1990), they argue that the relationship linking S, R, and E is not ternary; instead, it is a double binary relationship between S and R and between R and E. These relationships take either the default value (coincidence) or one of the two marked values (anteriority, posteriority). Marked relationships are mapped into syntax on a temporal functional projection: T₁ for the marked values of the relationship between S and R, and T₂ for those between R and E. Default values are not projected syntactically.

Considering that finite tenses in Romance always give rise to subject agreement through an Agr_S projection (see Pollock 1989; Belletti 1990), French (or Italian) tenses like the present, present perfect, and past perfect are represented as shown in (6)–(8).
(6) *Present*^5^

\[
\begin{array}{c}
\text{Agr}^P_{s} \\
\text{je} & \text{Agr}^P_{s}' \\
\text{chante} & \text{VP} & \text{V}' \\
\text{t}_{\text{chante}}
\end{array}
\]

(7) *Present perfect*^6^

\[
\begin{array}{c}
\text{Agr}^P_{s} \\
\text{j}' & \text{Agr}^P_{s}' \\
\text{ai} & \text{VP} & \text{V}' \\
\text{t}_{\text{ai}} & \text{Agr}^P_{o} \\
\text{Agr}^P_{o}' \\
\text{chanté} & \text{T}^P_{2} \\
\text{T}^P_{2}' \\
\text{t}_{\text{chanté}} & \text{VP} & \text{V}' \\
\text{t}_{\text{chanté}}
\end{array}
\]

French and Italian Conditionals
The Latin system of indicative tenses, schematically represented in table 6.1, exploits all possible values for the relationships between S and R and between R and E. Furthermore, T2 with the anteriority (past) value has verbal properties, allowing the verb to move up to T1 and/or Agrs, without the need to insert an auxiliary. The posteriority value for the relationship between R and E is realized with a nominal T2,
blocking any further raising of the lexical verb past AgrO and requiring the use of an auxiliary verb (esse ‘be’).

Comparing table 6.1 with table 6.2, we note that French and Italian differ from Latin in two fundamental respects: (i) just like the other Romance languages, they have completely lost the morphological marking of posteriority (future) in T2; and (ii) T2 with anteriority (past) value has nominal features, requiring the projection of AgrO, which blocks further movement and renders the use of the auxiliary obligatory. In its evolution toward French and Italian, the Latin tense system has been affected by three additional changes: (iii) replacement of the synthetic future by another synthetic form; (iv) shift of the anteriority (past) value of the perfect from T2 to T1 (the “perfect shift”); and (v) anaphorization of the imperfect (see Tasmowski 1985).

Giorgi and Pianesi represent the anaphoric and temporal properties of the French and Italian imperfect in the following way: \(t_E - X\), meaning that the event time (\(t_E\))
is anterior to an anaphoric anchoring point \( (X) \). I will depart slightly from this formal representation, assuming that the temporal encoding of the imperfect parallels that of the deictic tenses in table 6.2 in the sense that it involves a double relationship: an anaphoric anteriority relationship realized in \( T_1 \) \( (X_a \rightarrow X_e) \) and the syntactically silent default relationship \( R, E \). This reinterpretation allows us to maintain a straightforward analysis of the simplex-complex alternation: imperfect has the default value for the relationship between \( R \) and \( E \), and the past participle of the analytic pluperfect realizes an anteriority relationship, as is the case in the deictic complex tenses (see table 6.2).

6.3.3 Future in the Past
With respect to the expression of future in the past, one would expect the Romance languages to display morphological forms that exactly express the relationships holding in (9): that is, an anteriority relationship in \( T_1 \) and a posteriority relationship in \( T_2 \). This is exactly what Classical Latin instantiated in forms such as cantaturus eram ‘I would sing’, as Giorgi and Pianesi point out.

(9) \( T_1: \) \( R \rightarrow S \)
\( T_2: \) \( R \rightarrow E \)

In order to provide a satisfactory answer to question 1 (What has made the conditional the ideal candidate for the expression of future in the past?), we need to find out how the periphrastic form that emerged in Vulgar Latin as a consequence of the loss of the future participle came close to the picture sketched in (9) and how it developed further in the modern Romance languages.

6.4 Tentative Chronology of Future Tense Formation in Romance

6.4.1 Fourth Century
As the Roman Empire came to an end, the Classical Latin forms were still in use, as shown by the occurrence of the Latin synthetic futures and future anteriors in the Vulgar Latin fragments in (10) and (11).

(10) *Cookbook of Apicius (late fourth century)*

‘Casserole Lucretius. You clean leeks, you will throw away their green parts, you will cut them into a saucepan. A small amount of liquid mixture, oil and
While this is being cooked, you put raw salted (meat) into it. And as soon as it will have been nearly cooked you will pour in a spoon(ful) of honey, a bit of vinegar and grape juice. You taste (it). If it should be (or: will have been) tasteless, you will add (more) liquid, if salty, a small amount of honey. You add some ox-tongue (that is, a plant, a spice), and it should boil.’

(11) Mulomedicina Chironis (late fourth century)


‘If a horse will have had his leg pierced and this will have caused a tumor, thus you will cure it. You will soak chalk from Kimolos and red chalk in vinegar, and smear the leg. If any horse will have become ulcerated on the leg, the following is the modern remedy. Drain some blood from the shin, you will at once tie fresh wool around the leg. Watch out that you do not heat it. Such is the cure, it is cured thus. Watch out you do not cauterize it (the leg). You will use a raw poultice, which is described below. You take it off every third day. When it will seem to you that the gait is normal, you will apply a caustic. He (the horse) will get well.’

6.4.2 Seventh and Eighth Centuries

In the early seventh century, three Frankish authors composed the so-called Fredegar’s Chronicle (Chronicon Fredegarii; see, e.g., Valesio 1968, 279–281). The most ancient part of the book contains the often cited form daras ‘you shall give’, which scholars all recognize to be the earliest occurrence of the Romance synthetic future.11

(12) Fredegar’s Chronicle (seventh century)

Et ille respondebat: Non dabo. Iustinianus dicebat: Daras.

‘But he (the Persian king) in reply said: “I shall not give (them back).”’

Justinian said: “You will give (them back).”’

The fragment in (12) calls for two comments: (i) The Chronicle relates to the early Merovingian history of France, and the author of the fragment presumably lived in central-eastern France.12 Therefore, the daras form can be assumed to reflect the state of Vulgar Latin in Gaul. (ii) In the same passage, we also encounter the form dabo, suggesting that the evolution from the Classical Latin future (dabo) to the Modern French synthetic form (daras; MFr donneras) has been rather swift. This
conclusion is also confirmed by traditional scholars, who observe that the fusion between infinitive and auxiliary was completed in French by the time the first texts in the vernacular emerged.\textsuperscript{13}

Around the same period, Vulgar Latin spoken in Italy had also abandoned the Classical Latin future, as shown by the fragments in (13)–(14). However, unlike Vulgar Latin spoken in Gaul, it had been less progressive, maintaining the Romance periphrastic construction in its analytical (i.e., unmerged) shape.

(13) \textit{Breve di Inquisizione (715)}\textsuperscript{14}

a. “Ecce missus venit inquirere causa ista. Et tu si interrogatus fueris, quomodo dicere habes?”
   “‘Look, the deputy has come to investigate this case. And if you \textit{will be} interrogated, how \textit{will you say}?’”

b. “Cave ut non interroget; nam, si interrogatus fuero, veritatem dicere habeo.”
   “‘Beware that he does not interrogate me, because, if I \textit{will be} interrogated, I \textit{will say} the truth.’”

(14) \textit{Edicta Liutprandi (713–735)}

a. “Veni et occide dominum tuum et ego tibi facere habeo bonitatem quam volueris.”
   “‘Come and kill your master, and I \textit{shall do} the kindness that you \textit{will have wished}.’”

b. “Feri eum adhunc, nam si non eum feriueris, ego te ferire habeo.”
   “‘Strike him now, for if you \textit{will not} have struck him \textit{I shall strike} you.’”

The same fragments also show that, by the time the future had been replaced by the analytical Romance construction (\textit{facere habeo}, \textit{ferire habeo}), the future anterior was still very consistently the old Latin synthetic form \textit{cantavero} ‘I \textit{will have sung}’ (\textit{volueris}, \textit{feriueris}).

6.4.3 Eleventh and Twelfth Centuries

In Italy, full fusion of infinitive and auxiliary only took place by the time the first vernacular texts appeared. In fact, one of the earliest attestations of the modern synthetic future—if not the very first—was the double occurrence of the form \textit{farai} in the following fragment of the \textit{Umbrian Confession}:

(15) \textit{Formula di confessione umbra (1040–1095)}

Et qual bene tu \textit{ài factu} ui \textit{farai} enquannanti, ui altri \textit{farai} pro te, si sia computatu em pretiu de questa penitentia.
‘And what good you have done or \textit{will do}, or another \textit{will do} for you, thus let it be reckoned in the value of this penance (i.e., to reduce it).’
Another early vernacular document, the *Carta Fabrianese*, offers some examples of the morphology of the future anterior. As the fragments in (16) show, both the modern composed and the Latin synthetic future anteriors are used, suggesting that the replacement of the latter by the former can be ascribed to this period.

(16) *Carta Fabrianese (May 1186)*

a. . . . et de mo ad sante Marie de agustu l’atverimo tuttu complitu senza inpedementu . . .
‘and from now until the day of St. Mary in August (Assumption Day) we’ll have the whole agreement settled without an obstacle’

b. . . . et si qui ista carta corrumpere adfalsare volueri . . .
‘and if anyone should wish (will have wished) to alter or falsify this document’

### 6.4.4 Summary

From the discussion of the preced ing examples, we may tentatively sketch the development of future morphology from Vulgar Latin to French and Italian as shown in table 6.3.\textsuperscript{15}

Two interesting conclusions may be drawn from this overview: (i) The development of the Romance synthetic form was an early and swift process in Gaul—witness the occurrence of the Latin synthetic form next to the Romance synthetic form in the same seventh-century document, without any occurrence of the hypothetical intermediate analytical Romance form. (ii) The formation of the modern future anterior may have been an equally swift process, since once again we find the (Classical) Latin and the modern Romance form close to each other, without any trace of an intermediate stage. Rapid as the process may have been, it surely did not

<table>
<thead>
<tr>
<th>Table 6.3</th>
</tr>
</thead>
</table>

| Tentative chronology of Romance future and future anterior morphology |

<table>
<thead>
<tr>
<th>Future</th>
<th>Future anterior</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gaul/France</strong></td>
<td><strong>Italy</strong></td>
</tr>
<tr>
<td>4th century</td>
<td>L-synthetic</td>
</tr>
<tr>
<td>7th century</td>
<td>L- &amp; R-synthetic</td>
</tr>
<tr>
<td>8th century</td>
<td>R-analytic</td>
</tr>
<tr>
<td>11th century</td>
<td>R-synthetic</td>
</tr>
<tr>
<td>12th century</td>
<td></td>
</tr>
</tbody>
</table>
occur early in history; and it occurred quite a long time after the introduction of the Romance analytic simple future, even by Italian standards.

6.5 Analysis

As has been pointed out by both traditional and formal linguists, the origin of the modern future and conditional forms in Romance lies in a periphrastic construction with main verb *habere* and an embedded infinitival clause.\(^{16}\) I will call this stage 1. The transition from the biclausal construction to the fully merged conditional (and future) proceeds in two steps that are common to both the French and Italian forms (*stage 2, stage 3*) and one additional step that pertains only to the Italian conditional (*stage 4*).

6.5.1 Stage 1: The Vulgar Latin Setting

For as long as the *habere* plus infinitive construction was biclausal, I take it that *habere* had the properties sketched in the table depicting the (Classical) Latin verbal system (table 6.1): *habeo* realizes only Agr\(S\), *habebam* realizes Agr\(S\) and T\(_1\), *habui* Agr\(S\) and T\(_2\). Therefore, the futurate readings of *habeo cantare*/*habebam cantare*/*habui cantare* cannot come from the main clause; instead, they must come from the embedded one. A number of options come to mind: posteriority may be expressed by a temporal operator or a tense feature in the embedded CP or by a posteriority value realized in embedded T\(_1\) or T\(_2\). Which of these options has been taken in stage 1 is an open question. It is crucial, however, that the future property of the infinitival construction is consistent in the three cases in (1)–(3). The settings of the future and conditional periphrastic constructions are given in table 6.4.\(^{17}\)

With these settings, the periphrastic construction with past tense on the auxiliary roughly satisfies the picture sketched in (9): although past and future are not realized

<table>
<thead>
<tr>
<th>Vulgar Latin</th>
<th>Agr(S)</th>
<th>T(_1)</th>
<th>T(_2)</th>
<th>V</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaul/Italy</td>
<td>habeoh(^a)</td>
<td>Past</td>
<td>Past</td>
<td>t(_h)</td>
<td>cantare</td>
</tr>
<tr>
<td>Gaul/Italy</td>
<td>habebam(_h)</td>
<td>t(_h)</td>
<td>t(_h)</td>
<td>t(_h)</td>
<td>cantare</td>
</tr>
<tr>
<td>Gaul/Italy</td>
<td>habui(_h)</td>
<td>t(_h)</td>
<td>t(_h)</td>
<td>cantare</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) t\(_h\) stands for the trace of the moved verb (*habere*). The same abbreviation is used in subsequent tables.
in the same clause, the latter is dominated by the former, which is exactly what is required in order to express future in the past.

(17) Main clause: \[ R \quad S \]
Embedded clause: \((a \rightarrow) E^{18}\)

6.5.2 Stage 2: The Proto-Romance Setting
In its evolution toward the Romance languages, the periphrastic structure has been reduced from a biclausal to a monoclausal construction. Basically following Roberts’s (1992) analysis, I take it that the verb has climbed up to the matrix clause, transforming lexical *habere* into auxiliary *habere*. As a result of the change to the monoclausal state—which I take to be the basic change in stage 2—the future of the formerly embedded construction is reanalyzed as a T_{2} in the main (and single) clause.

In the case of the future, reanalysis of embedded future to future in T_{2} produces no side effects: just as *cantare habeo* had the reading of a proximate future at stage 1 as a consequence of embedding a future under a present, so it maintains this reading at stage 2 as a consequence of having future in T_{2}. As for the imperfect-based conditional, *cantare habeamb*, reanalysis is fairly neutral here as well: T_{1} maintains its past setting and continues to govern an embedded future.

The picture is dramatically different for the perfect-based conditional: as shown in the settings of table 6.4, the past value of the perfect is realized as T_{2}, leaving no possibility for reanalyzing the embedded future as main clause T_{2}. For reanalysis to take place, it is imperative that the past value of the perfect have shifted from T_{2} to T_{1}. This is exactly the result produced by the “perfect shift” (see section 6.3.2). When the “perfect shift” has taken place and the embedded future has been subsequently reanalyzed as T_{2}, the settings of the perfect-based conditional mirror those of the imperfect-based conditional, as one can see from the overview in table 6.5.

The analysis developed thus far provides an answer to questions 1–2 of section 6.2.3. French could not have developed a perfect-based conditional because the merging process occurred too soon (see section 6.4.2)—that is, before the “perfect shift.” In other words, I assume that the answer to question 2 lies in the four-century gap that separates the Romance synthetic forms of Gaul and Italy.

As for question 1 concerning the relationship between the conditional and the expression of future in the past, the settings for the conditional forms exactly reuticate the settings of Classical Latin—that is, the relationships expressed in (9), repeated here.

(18) T_{1}: \[ R \quad S \]
T_{2}: \[ R \rightarrow E \]
6.5.3 Stage 3: The Romance Setting

Now, consider that if at stage 2 future was expressed as $T_2$, no possible composed form could ever have been generated for future or conditional, since the past feature of the past participle would have competed for the same position as future, namely, $T_2$. This explains both why the composed future shows up as late in history as it does (in Italy, somewhere round the twelfth century) and why the Classical Latin synthetic future anterior survived as long as it did (in Italy, at least until the twelfth century).

In order for such forms as the composed future or the composed conditional to arise, it must be the case that the future expressed in $T_2$ at stage 2 has moved up toward $T_1$ at a later period. I will call this change the future shift.

With respect to future morphology, future shift from $T_2$ to $T_1$ is less problematic than in the case of the conditional: *cantare habeo* had no $T_1$ projected up until stage 2, allowing reanalysis of future in $T_2$ as future in $T_1$ to take place. The interpretive effect of future shift consists merely in reanalyzing the original proximate future as a distant future, a welcome result as it reflects the traditional analyses of these futures.

With respect to the conditional forms, future shift turns out to be more pervasive owing to the presence of the past value in $T_1$. Still, we can maintain the idea of movement of future, if past and future of $T_1$ and $T_2$ are syncretized as follows: the future value of $T_2$ shifts to $T_1$, erasing the past value originally realized in $T_1$, but the first temporal entity acquires anaphoric properties (see (19)). In this way, the future-in-the-past reading of simplex conditionals such as (4) follows if the anaphoric anchoring point $X_c$ of $T_1$ is anaphoric with respect to the past event of the matrix clause. Furthermore, this analysis makes it possible to analyze the contrast between present and past conditionals in exactly the same way as the contrast between other simplex and complex tense pairs (see table 6.2).

\[(19) \text{Present conditional} \]
\[
\begin{align*}
T_1: \quad & X_c \quad \underline{R} \\
\text{Default:} \quad & (R, E)
\end{align*}
\]

---

**Table 6.5**

<table>
<thead>
<tr>
<th>Proto-Romance</th>
<th>Agr$_S$</th>
<th>$T_1$</th>
<th>V</th>
<th>$T_2$</th>
<th>VP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Past</td>
<td>Future</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaul/Italy</td>
<td>habeon</td>
<td>$t_h$</td>
<td></td>
<td>cantari</td>
<td>$t_i$</td>
</tr>
<tr>
<td>Gaul/Italy</td>
<td>habebam</td>
<td>$t_h$</td>
<td></td>
<td>cantari</td>
<td>$t_i$</td>
</tr>
<tr>
<td>Italy</td>
<td>habeui</td>
<td>$t_h$</td>
<td></td>
<td>cantari</td>
<td>$t_i$</td>
</tr>
</tbody>
</table>

---

Yves D’hulst
Past conditional

\[
\begin{align*}
T_1: & \quad X_e \quad R \\
T_2: & \quad E \quad R
\end{align*}
\]

As shown in table 6.6, the settings of future and conditional forms at stage 3 differ only in the referential versus anaphoric properties of the future value realized in T_1.

6.5.4 Stage 4: The Italian Setting

As was pointed out in section 6.2.2, by the end of the nineteenth century Italian started to use the past conditional to express future in the past, rather than the simplex conditional as in Modern French. This suggests that the settings of Italian, but not French, had changed once more in the course of history. What could have been the nature of this change?

Consider the case where the future-in-the-past event is located between some past event (usually expressed in the main clause) and speech time, as in (21).

(21) La settimana scorsa, Maria mi ha informato che Paolo sarebbe tornato il giorno dopo.

‘Last week Maria informed me that Paolo would return the next day.’

The anaphoric properties acquired at stage 3 by the conditional will require the first anchoring point of the embedded T_1 to be bound by an event—namely, the event expressed by the main clause. The use of the past participle, hence the expression of past in the embedded T_2, implies that the embedded event is anterior with respect to R. Now consider that if R in embedded T_1 were referential as in French or
in nineteenth-century Italian, there would be no need to express an anteriority relationship in $T_2$ in the first place: $R$ would be able to refer directly to the temporal entity covered by the embedded event. Therefore, it must be that the second anchoring point of $T_1$ cannot have direct reference; that is, it is anaphoric as well. I assume this anaphorization of the second anchoring point in $T_1$ to be the specific development that the conditional underwent in Italian at stage 4.

The final issue to be addressed at this point relates to what might be the antecedent of this second anchoring point. In the example in (21), it might be tempting to identify the antecedent with the time of the speech event ($S$). As shown in (22), the future-in-the-past reading is obtained by identifying the antecedents of the two anchoring points in the embedded $T_1$ as the main event and the speech event, respectively. The anteriority relationship expressed in the embedded $T_2$ correctly positions the embedded event between the event of the main clause and the speech event.

(22) a. Main clause
   Default: $(S, R)$
   $T_2$: $E \quad R$

   b. Embedded clause
   $T_1$: $X_e \quad X_e'$
   $T_2$: $E \quad R$

   Although the above analysis proves descriptively correct for the example in (21), it must be pointed out that the use of the past conditional allows for any positioning relative to the event expressed in the main clause or the speech event. Depending on the choice of the main predicate, as in example (23), the embedded event may be located before the main event (“hearsay” reading, favored by the predicate confirm) or after the main or the speech event (“prediction” reading, favored by the predicate announce).

(23) I giornalisti hanno confermato/annunciato che il candidato repubblicano avrebbe vinto le elezioni.
     ‘The journalists have confirmed/announced that the Republican candidate would (have) won the elections.’

The multiple ambiguity of the past conditional may be captured by reconsidering the choice of antecedent for the second anchoring point in conditional $T_1$. In order to identify this antecedent, it is necessary to focus on one specific interpretive property of conditionals that has been left out of the discussion thus far. Unlike indexical tenses, conditionals—almost by definition—entail no commitment whatsoever on behalf of the speaker concerning the truth value of the proposition. Therefore, let us assume that conditionals also posit an evaluation event with the function of determining the truth value of the proposition. Such an evaluation event will necessarily
be located after the event time and not before the speech event (otherwise, there would be a commitment on the part of the speaker with regard to the truth value of such propositions). The evaluation event generally remains implicit. However, the second sentence in (24) may be taken to naturally make this evaluation event explicit.

(24) I giornalisti *hanno annunciato* che il candidato repubblicano *avrebbe vinto* le elezioni. Vedremo./Si vedrā.

‘The journalists *have announced* that the Republican candidate *would win* the elections. We shall see./(lit.) One shall see.’

The assumption that conditionals posit an evaluation event is not specific to Italian, since the lack of commitment on behalf of the speaker is a general interpretive property of conditionals. What is specific to Italian is that this evaluation event binds the second anaphoric anchoring point as sketched in (25).

(25) *Embedded clause*

\[
\begin{align*}
T_1: & \quad X_e \quad \quad X_e' \\
T_2: & \quad E \quad R
\end{align*}
\]

This analysis makes possible a uniform account of the temporal properties of past conditionals in Italian, independently of the event’s location with respect to the speech event.

6.6 Conclusion

Intuitively, we expect the future-in-the-past reading of conditionals to be encoded as a future that is dependent upon a past. Within Giorgi and Pianesi’s (1997) framework, such an encoding would consist of expressing an anteriority (past) relationship in $T_1$ and a future relationship in $T_2$. While this state of affairs may very well correspond to the state of affairs in Classical Latin (stage 0) and, under relaxation of the specific nodes where these relationships are expressed, even in Vulgar Latin (stage 1), it does not correspond to the way these relationships eventually were reanalyzed in Romance conditionals.

I have argued that in Proto-Romance (stage 2), the relationships reduplicated the intuitive setting of Latin, but that the subsequent development of past conditionals forced a conspicuous reinterpretation of these relationships. To be more precise, in Romance (stage 3), conditionals were forced to give up the anteriority (past) relationship in order for the posteriority (future) relationship to be able to move up to $T_1$. The interpretive effect of the lost anteriority relationship is partially restored under the assumption that the posteriority (future) relationship is anaphorically anchored to a past tense.
The intuitive picture is actually reversed in the case of the final development of conditionals in Italian (stage 4): rather than a posteriority (future) relationship that is dependent on an anteriority (past) relationship, Italian displays an anteriority (past) relationship that is dependent on a posteriority (future) relationship.

I have argued that the surprising developments of stage 3 and stage 4 are actually caused by the same phenomenon: anaphorization of an anchoring node in \( T_1 \). The anaphorization processes not only allow us to account for the development of the temporal encodings of conditionals and their ascendants, they also make it possible to see how, in spite of the dramatic effects of the morphological developments, the properties of the original Latin building blocks of conditionals have struggled to survive within each new setting. In this sense, the fact that the surprising development can be reduced to the cumulative effect of smaller and more comprehensible developments lends credence to the general principle of inertia requiring that languages remain sufficiently stable throughout their history (see, e.g., Keenan 1994; D’hulst 2000; Longobardi 2001).

Notes

1. In Classical Latin, the \textit{habere} plus infinitive construction was primarily modal, contributing an interpretation of obligation or necessity (see, e.g., Gamillscheg 1913; Bourciez 1967; Valesio 1968, 1969).

2. In the early period, \textit{habere} could either precede or follow its infinitival complement. As time passed, the infinitive came to systematically occupy the position in front of \textit{habere} (see, e.g., Valesio 1968, 1969).

3. In his morphological comments upon the \textit{debueras} occurrence in \textit{Fredigar’s Chronicle} (seventh century), Pulgram (1978, 301) observes that it is a pluperfect, but ... has the meaning of a conditional ‘you should have’, which is the way it came to function in Spanish and Portuguese. ... But French and Italian form the conditional by composition with \textit{habere}: \textit{cantare habebat} > fr. \textit{il chanterait}, \textit{cantare habui} > it. \textit{canterebbe}. But this applies only to the current standard languages. In medieval and modern dialectal usage any one of these three modes of the conditional may occur in any Romance country.

So, if Pulgram is right, the Vulgar Latin spoken in Gaul had both \textit{cantare habebam} and \textit{cantebe habui}.

4. The reverse of question 2—namely, Why did Italian retain only the perfect-based conditional?—might equally be of interest. Although there might be a more principled explanation for the loss of the imperfect-based conditional, I suggest that it is due to a trivial coincidence. As we shall see, the developments from \textit{cantare habebam} and \textit{cantebe habui} eventually end up with the same compositional and interpretive properties. As a consequence, Italian might have chosen to continue the more frequent pattern.

Note that the frequency argument relates not only to the fact that forms like \textit{cantebe} ‘I would sing’ were more popular than forms like \textit{cantaria} ‘I would sing’ ever since the early Italian literary texts, but also to the fact that the ending of the \textit{cantaria} forms became involved in some peculiar phonological developments that isolated it with respect to the overall verbal morphology. Contrary to the development in French, where conditional and imperfect mor-
phology share the same endings, the (r)ía ending of the imperfect-based conditional showed little resemblance to the Old Italian ea/eva ending of the imperfect.

5. The present (présent, presente) realizes the default value both for the relationship between S and R and for that between R and E. As a consequence, the only functional category to be projected is AgrS. Since subject agreement is strong in Romance, the verb moves up to the head of this projection.

6. Present perfect (passé composé, passato prossimo) realizes the default value for the relationship between S and R and the anteriority (past) value for the relationship between R and E. Therefore, T2 is projected. Since T2 is nominal in Romance (see Giorgi and Pianesi 1997), an additional agreement projection, Agr0P, is realized above T2. Agr0P attracts the lexical verb but blocks any subsequent raising. An additional (auxiliary) VP is projected in order to realize subject agreement.

In Giorgi and Pianesi’s framework, auxiliaries are inserted exclusively to realize AgrS or AgrS + T1. They cannot combine with T2.

7. Past perfect (passé antérieur, trapassato remoto) realizes the anteriority relationship in both T1 and T2. As in the case of the present perfect, the lexical verb moves up through T2 to Agr0 and an auxiliary VP is realized, the head of which moves up to T1 and AgrS.

8. Shaded cells indicate the default values—in other words, the values that have no morphological or syntactic realization. These are the coincidence relations (indicated by commas). Dashes indicate chronological sequences; for example, R–E indicates that R precedes E chronologically.

9. Xa stands for an anchoring time that is anaphoric with respect to a temporal argument, Xe for an anchoring time that is anaphoric with respect to an event. In standard cases, Xe is anaphoric with respect to the speech event. The temporal argument that Xa links to may be a superordinate event or given by the context (time adverbials). See Giorgi and Pianesi 1997.

10. Unless otherwise indicated, the examples and translations are from Pulgram 1978.

11. As Valesio (1968) points out, Fredegar’s Chronicle also offers a second occurrence of the Romance synthetic future: adarrabo ‘I will add’.

12. Von Schnürer (1900) attributes this part to Agrestius, a monk of Luxeuil in Franche-Comté.

13. See, for example, Jensen 1990, 351:

The process leading to the replacement of the Classical Latin synthetic feature by the infinitive plus habere periphrasis in Gallo-Romance was by and large accomplished prior to the appearance of the earliest texts in the vernacular. This substitution may have taken place somewhat earlier in the North, where the two constituent elements are found merged into a single unit as early as the Serments de Strasbourg: salvarai ‘I shall save’; prindrai ‘I shall take’; while the South provides evidence of their separability: mas servir l’ai dos ans o tres (Cercamon 1.29) ‘but I shall serve her two years or three’; un sirventes m’as quist et donar lo t’ai (Uc de Saint Circ 22.1) ‘you have asked me for a sirventes, and I shall give it to you’.

14. From Cecchi and Sapegno 1965. The translation is mine.

15. L-synthetic stands for the (Classical) Latin synthetic paradigm, R-analytic for the Vulgar Latin–Early Romance analytic paradigm with unmerged infinitive and auxiliary, and R-synthetic for the modern Romance paradigm in which infinitive and auxiliary have fully merged. In the case of the future anterior, the last term is somewhat misleading and should be interpreted as the use of the fully merged auxiliary with the past participle as in modern Romance.
16. The biclausal nature of this periphrastic construction is most clearly manifested in those occurrences where an overt prepositional complementizer is realized, as in the following example from 721 (Pardessus 1843–1849, 330; quoted in Bourciez 1967, 270):

(i) recipimus vel ad recipere habemus
   ‘we receive or will receive’

The biclausal structure has survived as such in a number of southern Italian dialects (see Bourciez 1967; Rohlfs 1969).

17. The table is a schematic representation of the syntactic structures and should be read in linear order. Shaded cells indicate categories that are not projected.

18. As pointed out in the text, I assume that, in one way or another, future is realized in the embedded clause. The representation in (17) intends to capture this property of the embedded clause, whose effect is that the event of the embedded clause is necessarily located after the event of the matrix clause.

19. In Italy, the future shift must have taken place not much before the twelfth century—witness the double future anterior of example (16).

20. The anaphorization of the conditional closely resembles the passage from deictic Latin imperfect to anaphoric Romance imperfect, and it might very well be the case that for the imperfect-based conditional, the anaphorization of the imperfect has caused a similar development in the conditional.

   It is harder to determine the process that has led to the anaphorization of the perfect-based conditional. A possible explanation could be that the different morphological shape of the past morpheme in T₁ (see note 4) was sufficient to impose different (i.e., referential vs. anaphoric) properties on these morphemes.

21. Note that the “hearsay” reading already follows from the above analysis, since the binary Reichenbachian encoding of temporal relationships does not entail any relationship between the event time (E) and the first anchoring point expressed in T₁ (Xₑ for conditionals).

22. In the case where the evaluation event coincides with the speech event, the subject of the evaluation event must be distinct from the subject of the speaking event, pace the entailment of no-commitment.

References


7.1 The Problem

The behavior of tense seems straightforward in simple sentences. What is not straightforward is to extend the analysis to tenses in embedded clauses. In this chapter, I will focus only on past tense in complement clauses.

No matter what the framework, past tense is traditionally analyzed as always shifting one step back. In (1), both the matrix and the complement have past tense and the complement has an event verb. As predicted, each tense shifts back. According to (1), Teresa heard something before the speech time, and what she heard was that Mary had won prior to her hearing about it.

(1) Teresa heard that Mary won the race.

However, if the complement has a stative predicate, there is an additional temporal interpretation.

(2) Peter claimed that Alice was sick.

The two readings of (2) can be distinguished with temporal modifiers. If the modifier is the week before, the lower tense shifts back, and the sentence is true if Alice is sick before Peter makes the claim. If the modifier is at that moment, the lower tense does not shift back, and the sentence is true if Alice is sick at the time Peter makes the claim. In Enc 1987, I called the first reading the shifted reading and the second reading the simultaneous reading.

The Priorean analysis of tense has an advantage over other approaches with respect to embedded past, since it treats past tense as a sentential operator that shifts the evaluation time to the past. Thus, the shifted reading is obtained automatically, without additional stipulations.

In Reichenbachian analyses, which specify relations between reference times, event times, and speech times, the past tense again shifts one step into the past, whether in
a matrix clause or in an embedded clause. However, such analyses do not derive the behavior of embedded tenses automatically, since nothing forces an embedded tense to shift away from the matrix event time. If the embedded tense shifts back from the original speech time, we get a reading that does not exist. For example, (2) would be predicted to be true if Peter’s claim was about a time before the speech time but after the time of the claim. To remedy this, something extra has to be stipulated, as in Hornstein 1990, where the speech time of the lower clause is identified with the event time of the matrix clause.¹

Both the Priorean approach and the Reichenbachian approach are adequate for the shifted readings of the past tense in embedded clauses (albeit with an extra stipulation in the Reichenbachian approach), but neither can predict the simultaneous readings, since both approaches treat the past tense as an expression that shifts back in time. Yet in the simultaneous readings, the embedded tense clearly does not shift back. This issue has traditionally been dealt with by stipulating that the lower past tense is not always a real past tense. This is the so-called sequence-of-tense (henceforth, SOT) phenomenon. In some analyses, the lower clause in (2) starts out with a present tense, and an SOT rule copies the higher past onto the complement. This must take place at a level of representation like PF, because the semantics must not see the lower past tense. Only then is it ensured that the lower past tense, which does show up on the surface, does not shift back. One example of this approach is found in Comrie 1986.

Such analyses run into empirical problems. Elsewhere (Enç 1987), I show that the simultaneous reading of (3) is not equivalent to (4).

(3) They said that they were happy.
(4) They said that they are happy.

This problem encountered by the past-is-really-present approach to SOT is avoided in the past-is-really-not-there approach, as developed by Ogihara (1989, 1995, 1996). Ogihara proposes an optional SOT rule that deletes the lower past when it is embedded under another past. Thus, the complement in (2) starts out with past tense, which is deleted at LF by the SOT rule. The semantics then sees only a tenseless embedded sentence, and the simultaneous reading is obtained.

All SOT analyses, whether they rely on deletion or on copying of tense, depend on the lower clause not having a past tense on the simultaneous reading. Thus, one is forced to assume a mismatch between the overt past morphology and the semantics of the clause: the overt past tense might not really be a past tense.

In Enç 1987, I argue against SOT analyses and construct an alternative theory where every occurrence of surface past tense behaves like a past tense. I propose Anchoring Conditions that link tenses via binding, thereby obtaining the simultaneous readings without an SOT rule. Briefly, I make the following claims:
Tenses denote intervals.
Every tense must be anchored.
A tense is anchored in one of three ways:
a. The c-commanding local tense binds it, or
b. The c-commanding local tense binds its evaluation time.
c. If there is no local tense, its evaluation time is identified as the speech time.

The simultaneous reading is obtained via option (a), where the higher past tense binds the lower past tense. By the definition of binding, the two tenses denote the same interval and the lower tense does not shift a step back.

As argued in Enç 1987, this approach has conceptual advantages. The denotation of the past tense is kept constant, and every occurrence of the past tense, whether on the shifted reading or the simultaneous reading, is a real past tense. Furthermore, the simultaneous reading is derived via binding, a phenomenon familiar from other domains of the grammar, such as quantifiers and pronouns, and therefore provides a more unified view of grammar than a treatment that posits an SOT rule.

Abusch (1988) brings up counterexamples to the approach taken in Enç 1987, which are also discussed by Ogihara (1989, 1995, 1996). The analysis in Enç 1987 entails that a past tense always denotes a time prior to the speech time, whether or not it shifts. (5) and (6) show that this prediction is not correct.

(5) Sarah knew that, at the next meeting, she would upset the people she was talking to.

(6) We decided to tell the prosecutor tomorrow that we were talking to him reluctantly.

In these sentences, there is a shift to the future, either by an inflectional element such as would, as in (5), or by a verb taking a future-shifted infinitive complement, as with decide in (6). In such cases, the most deeply embedded clause describes a situation that does not have to be prior to any other mentioned time. Therefore, it is impossible to maintain that the past tense in that clause still has a real past tense, bound or not, and thus the analysis proposed in Enç 1987 clearly faces empirical problems. We now have two choices: abandon the Anchoring Conditions to return to an SOT analysis, or revise the Anchoring Conditions. While most linguists have chosen to maintain the SOT approach, I will explore the second alternative.

7.2 The Proposal

7.2.1 The Meaning of Past Tense
SOT approaches are based on the notion that the defining characteristic of past tense is that it shifts to the past. That is why the past tense in a complement clause with
a simultaneous reading turns out to be problematic. However, the theory proposed here is based on binding and does not assume that the tense morpheme always shifts. Therefore, it does not have to devise a way of getting rid of the tense on the simultaneous readings. There is independent support from Turkish for the idea that there exist tenses that sometimes shift and sometimes do not.

The Turkish tense morpheme -\textit{di} occurs mainly in matrix clauses and always shifts to the past, whether it attaches to a verb or a nonverbal predicate.\(^2\) In that respect, it is no different from the English past tense in matrix clauses.

(7) Gel-\textit{di}-k.
\textit{arrive-PAST-1PL}

‘We arrived.’

(8) Memnun-\textit{du}-k.
\textit{pleased-PAST-1PL}

‘We were pleased.’

Turkish has another morpheme that shifts into the past, -\textit{mi\c{s}}, which is traditionally called the evidential past.\(^3\)

(9) Gel-\textit{mi\c{s}}.
\textit{arrive-EVIDENTIAL+PAST}

‘Apparently, he/she arrived.’

In (9), -\textit{mi\c{s}} has two components to its meaning: evidentiality and past tense. In this particular example, -\textit{mi\c{s}} obligatorily shifts to the past, and the sentence has only one reading. However, (10) has a stative predicate and is ambiguous.

(10) Ays\c{c}e ev-de-\textit{ymi\c{s}}.\(^4\)
\textit{Ays\c{c}e house-LOC-EVIDENTIAL}

‘Apparently, Ays\c{c}e was at home.’

‘Apparently, Ays\c{c}e is at home.’

(9) and (10) are significant, since the phenomenon they exhibit seems to mirror the SOT phenomenon. We can characterize the two readings of (10) as the shifted reading and the simultaneous reading. On the shifted reading, -\textit{mi\c{s}} shifts to the past just like -\textit{di}. On the simultaneous reading, the original time (the speech time) does not get shifted at all, and the time of the state described by the sentence is the same as the speech time. The only semantic contribution of -\textit{mi\c{s}} is evidentiality.

The -\textit{mi\c{s}} structures and the SOT structures are similar in the following respects: When the tense occurs on an event verb, it obligatorily shifts to the past. When the tense occurs on a stative predicate, both a shifted reading and a simultaneous reading exist. When -\textit{mi\c{s}} does not shift, one cannot assume that -\textit{mi\c{s}} is visible at PF but invisible at LF. This is because there is no higher clause that will allow the deletion or
the copying of -miş as in SOT approaches. Furthermore, even on the nonshifted reading, the meaning of evidentiality is still there. That is to say, -miş preserves the nontemporal part of its meaning in all cases. This means that no analysis can be adequate if it relies on -miş being invisible at LF.

What -miş shows is that in principle, it must be possible for morphemes to shift in some cases and to not shift in others. This supports the conceptual underpinnings of the analysis in Enç 1987, where it is assumed that even on the simultaneous reading, the past tense is a regular past tense and is visible to the semantics.5

7.2.2 The Anchoring Conditions

I propose an analysis here that is a revision of the analysis in Enç 1987. It is still based on binding, but anchoring is extended to all I nodes, not just the tense. In addition to the general Anchoring Conditions, the semantic properties of the particular morphemes dominated by I contribute to interpretation. This allows an explanation for the sentences in (5) and (6). I first outline the postulates of the theory, then show how the correct readings are derived.

(11) Anchoring Conditions

a. All Is carry two temporal indices: an index, which yields the evaluation time of I (Reichenbach’s reference time); and a referential index, which yields the time (Reichenbach’s event/state time) at which the situation described by the sentence holds. Given iIj, i is the evaluation index and j is the referential index.

b. All Is must be temporally anchored.

c. An I is temporally anchored if and only if

i. it is bound by the local c-commanding I (through its referential index), or

ii. its evaluation time is bound by the local c-commanding I, or

iii. its evaluation time is fixed as the speech time when there is no local I to bind it.

d. Only Is with the feature [+past] can bind other Is.6

7.2.3 The Past Tense

Is can have additional restrictions on their anchoring determined by the features they carry or the meaning of the lexical items they dominate. One feature they can carry is [+past]. When they do, they can dominate a number of morphemes, among them a typical past tense morpheme like -ed. The lexical entry for -ed specifies the following:

(12) English -ed

a. $i \neq j$

b. If it shifts, it shifts to the past and $j < i$. 

This analysis differs from other analyses in that it does not assume that the basic meaning of the past tense requires a shift to the past. In that respect, -ed is very much like the evidential -miş discussed above. It is different from -miş, however, because it shifts back obligatorily in matrix clauses whereas -miş does not have to. This difference is captured in (13).

(13) Italian -miş

When there is no local I to anchor -miş, it is anchored by fixing either its evaluation time or its reference time as the speech time.

(14a) and (14b) are the structures representing the readings of a typical embedded tensed I as in English.

(14) a.

(14b) yields the simultaneous reading. The matrix I shifts to the past. The lower I is anchored by binding it. Therefore, the lower I denotes the same interval as the matrix I.

Unlike the cases discussed so far, some languages do not exhibit SOT. In embedded clauses, past tense always shifts to the past and there are no simultaneous readings. For the simultaneous readings, such languages usually have present tense. Russian, Hebrew, and Japanese are such languages. The following Japanese example is from Ogihara 1996:

(15) Taroo-wa [Hanako-ga be ooki-dat-ta] it-ta.

‘Taroo said that Hanako had been sick.’

In (15), both the matrix past and the complement past shift, and therefore, unlike similar English sentences with two past tense morphemes, the sentence has no simultaneous reading. In SOT analyses, it is customary to claim that languages like
Japanese simply lack an SOT rule. In the analysis proposed here, the explanation has to rest elsewhere. I assume that (16) holds.

(16) *Japanese* -ta
   It cannot be bound.

As a consequence of (16), Japanese tense can only be anchored by binding its evaluation as in (14a), and therefore it always shifts.

### 7.2.4 Modals

Not all Is are tensed; some dominate modals, and some are nonfinite. However, they all must be anchored. First, I take up modals. The temporal properties of modals are different from those of tenses. Some, like the epistemic modal in (17), do not shift time; and others, like the deontic in (18), shift to the future.

(17) She must be in her office now.

(18) You must finish the paper by the end of the week.

Here I will briefly discuss the future-shifting modals, which I assume include the future *will*.\(^8\) (19) shows that these modals do not exhibit SOT.

(19) She must/will tell him that he must/will turn in her keys.

(19) has no simultaneous reading, either with the deontic *must* or with *will*. Each occurrence of the modal shifts one step into the future. Thus, (20a,b) hold.

(20) *Shifting modals*
   a. Shifting modals cannot be bound.
   b. Where \(i\_j\) dominates a shifting modal, \(i < j\).

   When past tense is embedded under a future-shifting modal, it always shifts back from the future time.

(21) At the meeting next month, Joan will tell everyone that she just got out of prison.

(21) is unambiguous. The modal shifts to the future. It does not have the feature [+past] and therefore cannot bind the lower tensed I. The past in the complement can only be anchored by having its evaluation time bound. Then the complement must shift back from the future time and the simultaneous reading is blocked.

### 7.2.5 Tensed Modals in English

Some English modals show remnants of past tense. These are *would*, *could*, and *might*. However, the tense here is not robust.

(22) He might bring his children.
(22) only means that it is possible now that he brings his children in the future. There is no past meaning; (22) cannot mean that it was possible at some past time that he bring his children later. We could conclude from this that the past here shows up on the morpheme for historical reasons, but has lost its past meaning. However, when these modals occur embedded under a past tense, they behave differently.

(23) Peter said that he would/could/might bring the beer.

In (23), the matrix tense shifts to the past, and the tensed modal shifts to the future from that past time. That is to say, even though the [+]past feature of the modal cannot shift to the past in a matrix clause, it can anchor to the past interval that the higher tense denotes. This is captured in (24).

(24) *English tensed modals*

If $i_I$ dominates a tensed modal,

a. it carries the feature [+]past,

b. its evaluation index carries the feature [+]anaphor,

c. $i < j$.

Since the evaluation index is anaphoric, it must be locally bound. This ensures that it cannot occur in matrix clauses. It also ensures that in embedded clauses, as in (25), it is anchored through its evaluation time and therefore must shift to the future.

(25)

The matrix $i$ is identified with the speech time, and $j$ shifts back from the speech time. The lower $I$ that dominates *would* has an anaphoric evaluation index, and therefore the evaluation index must be bound by the higher $I$. Since $i < j$ by stipulation, the referential index $k$ shifts to the future from the past time. Thus, the correct reading is obtained.

The behavior of *would* shows that there is a difference between being a past tense and having pastlike properties. That is why this analysis makes use of two distinct notions: an $I$ with the feature [+]past, and a true past tense morpheme.

We can now return to the sentences that have been brought up as counterexamples to the analysis in Enç 1987. The analysis of tensed modals proposed above automatically predicts the correct interpretations for these sentences. I stated above that
an I dominating a modal like *will* or *must* does not have the feature [+past] and therefore cannot bind a lower past tense. This correctly blocks a simultaneous reading for the lower tense. However, the tensed modals do have the feature [+past] and can therefore bind a lower past tense. This allows us to derive the problematic simultaneous reading for the lowest clause in sentences like (26), where the Is are indexed as in (27).

(26) He said he would claim that he was happy.

(27)

\[
\begin{array}{c}
\text{I}_j \\
\text{[-ed]}
\end{array} 
\quad \quad \quad 
\begin{array}{c}
\text{I}_k \\
\text{[-ed]}
\end{array} 
\quad \quad \quad 
\begin{array}{c}
\text{would} \\
\text{[-past]}
\end{array}
\]

In (27), as in (25), the matrix tense shifts to the past and *would* shifts to the future of that past time. Since *would* has the feature [+past], it can bind the lowest past tense, and in (27) it does so. As a consequence, the lowest past tense denotes the same interval as *would*, which is the future time that *would* has shifted to. The structure only requires *would* to shift to the future from its past evaluation time, leaving it free to shift to any time before or after the speech time. This allows (26) to be true on the simultaneous reading, even if the time of being happy turns out to be after the speech time.

The analysis proposed here can account for the simultaneous reading in sentences like (26) with the Anchoring Conditions, precisely because it does not assume that the characteristic meaning of past tense is shifting to the past. Thus, it avoids the empirical difficulties encountered in Enc¸ 1987.

7.2.6 Infinitive Complements

There is a class of more complex sentences where shifting to the future is not a property of the I. Up to this point, we have looked at tense, modals, and tensed modals, all of which are dominated by I in English. However, some verbs that take infinitive complements also result in shifting to the future. (28) is an example.

(28) I persuaded Peter to say tomorrow that he was sick.
On the simultaneous reading of the lowest clause in (28), where the time of being sick is the time of Peter’s speaking in the future, the lowest past time must denote an interval that is not prior to any other time mentioned in the sentence. The closest I is the nonfinite I in the infinitive, and it dominates neither a modal nor a tense. How is the simultaneous reading of (28) to be obtained?

Let us first look at a simpler sentence containing only one embedded clause, the infinitive.

(29) I persuaded him to run.

We note that it is the verb that is causing the shift to the future. *Persuade*, like other verbs such as *promise, ask, expect, and want*, takes an infinitival complement that must be evaluated in the future.\(^{11}\) The exact mechanism for shifting will not be explored here, but I will make the plausible assumption that the verb selects a future infinitive. This means that the I node in the infinitive will carry a pair of indices just like finite nodes dominating tense and modals, and that the interval assigned to the referential index will be later than the interval assigned to the evaluation index. Thus, *persuade* selects a nonfinite \(i_{ij}\), where \(i < j\). (30) represents the way the infinitive I is anchored in (29).

\[
(30) \quad \frac{\frac{i_{ij}}{-ed\; persuade}}{j_{lk}} \longleftarrow to
\]

The infinitive I must be anchored in the same way as the finite Is, and the only I that can anchor it is the matrix I, which contains past tense. If the infinitive I is anchored by binding its referential index k, it will not shift into the future and the lexical requirements of *persuade* will be violated. Therefore, the higher tense must bind the evaluation time of the infinitive. This will ensure shifting to a future time from the past time of persuading, and the correct reading results.

We can now extend this treatment to sentences like (28) with one more level of embedding, where a clause with past tense is embedded under the infinitive. The inflectional system of (28) can be represented as in (31).
This indexing provides exactly the reading we want, where the lowest clause has a simultaneous reading. However, the theory developed so far does not allow it. I claimed above that only an I with the feature [+past] can bind another I, and it is hard to defend the view that infinitives can come with the feature [+past]. Instead, the issue will be resolved by making the infinitive I inherit the feature.

First, note that the indexing in (31) exactly mirrors the indexing in (27). Therefore, there cannot be anything wrong with the indexing itself. In (27), the intermediate I is finite and dominates *would*, which comes with the feature [+past]. The infinitive I does not, and must somehow acquire it during the derivation. I will assume that finite Is are [+−past] and that infinitive Is come without a value for this feature but can acquire it through anchoring, as stated in (32).

(32) If a nonfinite I is anchored to an I that has the feature [+past], it inherits the feature [+past].

This now allows the indexation in (31), and the simultaneous reading follows.12

7.3 Conclusion

The analysis I have proposed accounts for simultaneous readings without an SOT rule. Doubtless, SOT approaches can also account for the same data with another set of stipulations. The choice between the two must eventually be made on the basis of the grammar as a whole. The anchoring approach fares better, in my opinion, on conceptual grounds. First, it relies on a set of conditions that are more general than the ad hoc SOT rule, since these conditions also apply to nontensed Is and infinitive Is. Second, it entails a more transparent morphology where every occurrence of the past tense is the past tense. Third, it is based on binding, which is familiar from other areas of the grammar. Fourth, it allows crosslinguistic variations to be captured via
lexical differences, rather than via the presence or absence of a rule. Finally, it de-
defends a nontraditional view of past tense where a shift to the past is truly optional.
This view is supported by the behavior of the Turkish morpheme -miş and, if correct,
sheds new light on an old notion.

Notes

1. Many linguists seem to favor Reichenbachian approaches, perhaps because of the intuitively
plausible notions of speech time, reference time, and event time. However, once the speech
time of an embedded clause is identified as the event time of a superordinate clause, “speech
time” is no longer literally the speech time, and it becomes as abstract as the Priorean notion
of evaluation time.
2. This morpheme can also occur in embedded clauses with exceptional case marking. I will
not discuss those instances because for independent reasons, they cannot occur with stative
predicates and therefore can shed no light on the issue at hand.
3. This morpheme is restricted to matrix clauses and is not to be confused with the homo-
ophphous perfect morpheme.
4. The -y in -y-miş is a remnant of the old Turkish copula i.
5. There is another tense -dik that occurs only in nominalized sentences, which behaves like the
English embedded -ed. Since these morphemes do not shed further light on the treatment of
tense, I will not discuss them.
6. I leave open the question of whether or not there is a T node. Also, there may be only one
tense possible across languages, the past (see Enc 1990, 1996). In that case, the relevant feature
would be [+tense] instead of [+past].
7. In languages like Turkish with more than one I node, I assume all Is have to be anchored.
9. One exception is would, which can occur in a matrix clause with a past meaning, though this
is stylistically marked.
   (i) He would visit India before he died.
   The meaning of this sentence is not quite what one would expect. In particular, it is not
equivalent to (ii), which means that (iii) was true at some past time.
   (ii) He was going to visit India before he died.
   (iii) He will visit India before he dies.
   Instead, (i) seems to entail both (ii) and, additionally, that he did visit India. I will not specu-
late on how to analyze these sentences.
10. Ogihara (1996) does not make this distinction and therefore makes two incorrect pre-
dictions: that would, might, and could can occur in matrix clauses with ordinary past meaning,
and that they can shift one step back in embedded clauses.
11. These verbs contrast with verbs like believe or consider, where the time is not shifted at all
for the infinitive.
12. In both (26) and (28), the lowest clause can have a shifted reading that is derived in a
straightforward manner by having its evaluation time bound by the intermediate I.
References


Chapter 8  

8.1 The Component Projection Model

We present a theory of structure projection that identifies the properties of verbs that determine syntactic structure; the result is a simplified aspectual classification. This revised classification unifies different types of change events and, together with the projection model in which it is formulated, accounts for a variety of linguistic phenomena, both syntactic and interpretive. As one small example, the model explains transitivity possibilities, such as those illustrated by *cut in (1).

(1) a. Jane cut the bread.
   b. *This bread cut.
   c. This bread cuts easily.

In this model of component projection, syntactic structure is projected from a limited inventory of lexical semantic components, the meaning components of verbs. It is a combination of these meaning components and the projected structures that determines thematic and aspectual interpretation.

We propose a minimal lexical entry for the meaning of verbs, consisting solely of their meaning components. Such components identify the abstract meaning that derives a verb’s interpretation in all contexts. We analyze these meaning components as bound semantic morphemes, themselves derived from a limited inventory. For instance, the meaning of a verb such as *cut is composed of a manner of cutting (with a sharp instrument) and a resulting (cut) state. In (2), we show the inventory of meaning components that can make up a verb’s lexical entry.

(2) Verbal meaning components
    \[ M = \text{manner/means/instrument} \]
    \[ S = \text{state} \]
    \[ L = \text{location} \]
Each component type can be either simple or complex, when combined with a path. The manner-of-motion verb *run*, for example, is lexically represented as \textbf{MP}, ‘rapid manner of progression along a path’.

The verb and its components may project the syntactic structures shown in (3).

\begin{center}
\begin{prooftree}
\AxiomC{V}
\UnaryInfC{V N}
\UnaryInfC{V A}
\UnaryInfC{V P}
\UnaryInfC{V V}
\end{prooftree}
\end{center}

\begin{center}
\textit{Components} \quad M \quad S \quad L
\end{center}

\textit{Interpretation} \quad \text{activity} \quad \text{inchoative/achievement} \quad \text{accomplishment}

Syntactic structure is constrained by the requirement that lexical verbs be typed (by merging a complement) and by a principle of Full Interpretation: that all meaning components be interpreted according to the structure projected.

Each component has an unmarked categorial realization. As (3) shows, \textbf{M} projects \textit{N} as the complement of the projected \textit{V}, \textbf{S} projects \textit{A}, and \textbf{L} projects \textit{P}. The resulting \textit{V}-complement predicate types have aspectual/thematic interpretations (following Hale and Keyser—e.g., 1993).

Consider examples of structures that can be projected by different verbs, exemplified here by \textit{laugh} and \textit{break}, together with their arguments. (The role of the non-projecting component, represented in (4) in parentheses, is explained below.)

\begin{center}
\begin{prooftree}
\AxiomC{D}
\UnaryInfC{V}
\UnaryInfC{V N}
\UnaryInfC{V \textit{laugh}}
\UnaryInfC{\textit{Jane}}
\end{prooftree}
\end{center}

\begin{center}
\begin{prooftree}
\AxiomC{D}
\UnaryInfC{V}
\UnaryInfC{V A}
\UnaryInfC{V \textit{break}}
\UnaryInfC{\textit{the vase}}
\end{prooftree}
\end{center}

(4) a. \textit{Activity}

b. \textit{Change of state}

\textit{(achievement)}
c. *Cause + change of state* 

*accomplishment*

Merge and projection are free, in accordance with principles of minimalism and bare phrase structure. Chomsky (2000) suggests that an item of a lexical array not be removed when accessed in computation, thus allowing the projection of multiple copies of a lexical item. As shown in (4c), we adopt this suggestion: *break* projects twice (the two copies forming a chain), the upper copy merging the change-of-state structure. This yields the complex structure that underlies the transitive *Jane broke the vase*. (We are abstracting away from the complete structures that include sentential functional categories like tense and agreement.)

Transitivity thus follows from the number of meaning components. If a verb has two meaning components, as with *break* ("forceful" means and "broken" state), it can, by itself, be transitive. Alternatively, transitivity can result when a one-component verb merges another lexical item, the new one providing the second, projecting component. Consider, for example, the verb *laugh*. *Laugh* has one component (M) and can project the intransitive activity structure, as shown in (4a). But when the same verb merges a prepositional phrase, the complex accomplishment structure, exemplified in (5a), results; this yields a transitive sentence like (5b).\(^1\)
b. The audience laughed the actors off the stage.

In this way, our model derives the same structures as does that of Hale and Keyser (1991, 1993, 1995; henceforth, H&K), but by different means. Whereas our structures are freely derived by component projection, H&K’s structures are associated with a verb in its lexical representation.

It is worth emphasizing that verbs can freely merge any complement type. The strong constraints on the types of structures follow, adapting H&K’s proposal, from the limited inventory of meaning components and our requirement that they be interpreted. And we find a corresponding limit on the aspectual interpretations of these structures.

8.2 Interpretation

8.2.1 The Interpretation of Structures

Following H&K (and adopting, roughly, the Vendler 1967–Dowty 1979 classification), each projected structure has a particular aspectual interpretation, according to the category of its predicate. V-N represents the production of an instance and, as shown in (3), is interpreted as an activity. V-A represents the production of a state and is interpreted as a change-of-state achievement. V-P represents the production of a change of location and so is also interpreted as a change achievement. And V-V represents the production of an event, yielding a causative, or accomplishment, interpretation.

As in H&K’s theory, each predicate type imposes a particular interpretation on its merged subject (although, contra H&K, every verb-complement structure in our theory is a predicate). The V-N activity predicate imposes an agentive, actor interpretation on its subject. The subject of the V-A and V-P achievement predicates is interpreted as an (affected) theme, that is, the element that measures out the change
in state or location described by the A or P. And the V-V cause predicate’s subject is interpreted as an initiator/causer.

Such interpretations, or θ-roles as they have been called, are by no means primitives of this theory. As in H&K’s model, the information that these roles supposedly contain is derived structurally. We also derive, from a combination of a verb’s meaning components and their projected structure, all the information necessary for interpretation: our model has no aspectual functional categories or empty light verbs, in contrast with other structural approaches. Our model therefore has in common with lexicon-based models (e.g., Levin and Rappaport Hovav 1995) that interpretation is driven by lexical meaning components. What is unique to our model is that these meaning components project structure. And it is these same components that determine transitivity possibilities.

As shown above, transitivity can result if two meaning components are available. An intransitive results if only one meaning component is. An intransitive use of a two-component verb is also possible, as exemplified in (4b), when one component does not project. The possibility of such nonprojecting components is constrained by the principle of Full Interpretation.

8.2.2 The Interpretation of Components
We assume a comprehensive version of the principle of Full Interpretation (FI) (e.g., Chomsky 1986) in which the interpretation of a lexical item requires the interpretation of all its meaning components.

(6) Full Interpretation (FI)

The interpretation of a lexical head \( u \) requires the interpretation of each meaning component of \( u \).

As we will show, it is this requirement that gives our model much of its explanatory power.

In the simplest case, a verb and its component project a predicate, as shown in (3) and (4). The projected component satisfies FI via the interpretation of this predicate: the s and l components, when they project as the complement of their verb, are interpreted as the particular state or location of the predicate’s change-of-state/location interpretation. When \( m \) projects, it is interpreted as the particular manner of activity of the predicate’s activity interpretation. In this way, syntactic structure directly reflects the meaning of verbs.

But components do not always project structure, as is the case with break’s \( m \), the means ‘with force’ in (4b) and (4c). FI nevertheless requires that they be interpreted. Such nonprojecting components are interpreted as predicate modifiers—in these cases, of their predicate’s event type: break’s \( m \) is interpreted as modifying the V-A change event in (4b) and the V-V cause event in (4c), yielding the interpretations that
the respective events happen with force. All components, then, whether projecting or not, are interpreted, meeting FI.

A clear illustration of the constraints imposed by FI is given by the inchoative construction. The inchoative is one of the interpretations of the change structure of (4b), repeated in (7).

\[(7)\]

```
     V
    /\  \
   /  \  /
  D   V  A
  the vase  break  s
```

This structure represents sentences like those in (8).

(8) a. The vase broke.
    b. The plastic melted.
    c. The juice froze.

The interpretation of (8a) is ‘The vase went to a broken state (with force/forcefully)’. Such modification is possible, and FI is satisfied, when \( m \) is a means (e.g., force (\textit{break}), heat (\textit{melt}), and cold (\textit{freeze})).

However, as is well known, not all verbs can be inchoative, as the sentences of (9) demonstrate.

    b. *This wood sawed.
    c. *The lawn mowed.

We attribute the unacceptability of such sentences to the inability of the \( m \) components of these particular verbs to modify the change event. The \( m \) of these verbs is an instrument, and instrument manners cannot be interpreted as modifying a change event. This is because instruments implicate a causer (the instrument’s wielder); and since the inchoative describes a referential event, this implicated causer must be referential as well. But in the sentences of (9), or in their structure (7), no such causer is supplied. \( m \) cannot be interpreted, FI is therefore contravened, and the sentences are consequently unacceptable.\(^5\) It thus follows from FI that when a verb’s \( m \) is an instrument, that verb cannot be an inchoative.

The possibility of the inchoative is therefore due, not to argument manipulations (as in Chierchia 1989; Pesetsky 1995; Reinhart 2000), but to event modification. Transitivity alternations in general follow both from the number of meaning com-
ponents and from the availability of an interpretation for each component in its particular structure type.

8.2.3 Structural Coercion of Interpretation

The structure type drives interpretation. This can be seen in structure (5a), for example. Here, laugh’s M, interpreted as modifying the cause event, is irrelevant to the change-of-location interpretation of the lower V-P predicate. As in the cases of verbal component projection (e.g., (7), The vase broke), the interpretation is structurally derived, owing to the content of the predicate (e.g., the V-A of break and the V-P of off the stage).

Structure type not only drives interpretation, it coerces it. This can be seen in sentences with manner-of-motion verbs.

(10) a. Jane ran to the store.
    b. Jane hopped to the store.
    c. Jane rolled down the hill.

We analyze the verbs run, hop, and roll as consisting of manner-of-progression along a path (MP). As illustrated by the sentences of (10), each verb can merge a prepositional phrase, resulting in the change achievement structure shown in (11).6

(11)

```
\[ \text{V} \]
\[ \text{D} \]
\[ \text{Jane} \]
\[ \text{V} \]
\[ \text{P(P)} \]
```

The V-P structure is necessarily interpreted as a change of location. With structure (11), (10a) can mean only ‘Jane got to the store’. The manner of Jane’s getting there, that is, by a running activity, has been argued to be subordinate to this basic interpretation. For example, Levin and Rapoport (1988) and Levin and Rappaport Hovav (1995) have argued that (10a) means ‘Jane got to the store by running’. In fact, we claim, this is not the interpretation of (10a); more than simple subordination of the running activity is involved.

Run’s MP is ‘rapid manner of progression along a path’.7 In (11), M’s enforced interpretation as a modifier of the change structure (in which no agent is present) means that an agentive manner of producing a rapid path (yielding the action of ‘running’ for run) or a brief path (yielding the action of ‘hopping’ for hop) is impossible. All that we get with the modifier interpretations of M in this structure are
‘rapidly’ and ‘briefly’ for *run* and *hop*, respectively, yielding the sentence interpretations ‘Jane got to the store rapidly’ and ‘Jane got to the store briefly’, in which the subject *Jane* is the theme of the change. These quasi-idiomatic interpretations are a necessary result of the projection and interpretation of the change achievement structure. (Whether such a quasi-idiomatic interpretation is possible depends on the particular *m*. *Walk’s m*, for instance (‘stepping’, which implicates an agent), does not allow this interpretation.)

We thus can explain the thematic ambiguity noted (e.g., by Jackendoff (1990, 127–128)) for sentences like (10c): the subject can be interpreted either as an agent or as a theme. In the former case, Jane is deliberately rolling her way down the hill; in the latter, Jane is moving down the hill in a rolling manner (if someone has pushed her, for example). As shown above, the nonagentive interpretation under our analysis results from the projection of the change structure (11). The agentive interpretation results from the projection of the accomplishment structure, as shown in (12).

This sentence is interpreted as ‘Jane made her way, with a running/hopping (≡ rapid/brief) motion, to the store’. (This is an approximation of the analysis in Erteschik-Shir and Rapoport, in preparation, which is influenced by Goldberg’s (1997) and Marantz’s (1992) analysis of the *one’s way* construction.) Jane is interpreted as an agent of the running/hopping action via identification with the path, the nonovert *her way*. This path in turn is identified with its overt goal *to the store* because they are in the same verb projection.

### 8.3 Aspectual Classification

The analysis of motion verbs, relying on component projection and the interpretation of the resulting structures, leads us in turn to a revised aspectual classification. This
classification differs in significant ways from that in Vendler 1967 and Dowty 1979. In those models, eventive predicates are divided into three classes: nontelic activities, telic accomplishments, and achievements. Achievements, according to Vendler, have no duration but rather “occur at a single moment.” But Dowty extends this class to include verbs of change of state, such as cool and sink, that are not instantaneous in this way, as shown in (13) (using the for-adverbial as a diagnostic of duration).

(13) a. The soup cooled for ten minutes.
   b. The ship sank for an hour.

Dowty claims (p. 90) that a sentence like (13a) should be analyzed as saying that for each time t within an interval of ten minutes’ duration, there is some resolution of the vagueness of the predicate cool by which the soup is cool is true at t but not true at t – 1. Conditions on the acceptable resolutions of the predicate cool will in effect require that a different, higher threshold of coolness . . . be chosen for each successive time in the interval. . . .

We adopt this view of a series of successive changes: each increment of a change is itself a change of state. And we therefore assume Dowty’s classification of change-of-state verbs like cool, sink, melt, and freeze as achievements. Achievements may describe not only a single, final change of state, but also the increments of that change. This means that achievements can be telic or atelic. This is shown in (14), in the compatibility of the same achievement sentences with both the perfective in- and the durative for-adverbials.

(14) The sauce cooled/froze/melted in/for ten minutes.

Since an accomplishment includes an achievement, we extend the analysis of incremental change to this class. Telicity, then, is no more a necessary condition on the causative accomplishment than it is on the achievement contained within it. This predicts the two adverbial possibilities in (15).

(15) Jane cooled/froze/melted the sauce in/for ten minutes.

In sum, then, the same verb, the same sentence, and even the same aspectual class can be telic or atelic.

Incremental change extended. Given this, we take the natural step of further extending Dowty’s analysis of incremental changes of state as achievements and accomplishments to incremental changes of location (progression along a path). Thus, as already demonstrated by (11), MP verbs like roll can project the change achievement structure just as melt can, resulting in the unified analysis of change predicates shown in (16).
With \textbf{mp} verbs, the incremental changes are changes of location along an implicit path, rather than changes of state.\textsuperscript{10} (16b), then, is simply another case of an atelic achievement. Its V-P structure is identical to that projected by the analytic \textit{laugh off the stage} of (5b) and \textit{roll down the hill} of (10c), both of which are telic achievements (given the specification of the endpoint of a path). All three of these structures yield the progression-along-a-path interpretation.\textsuperscript{11}

The “natural” extension that allows our unified change analysis is not made by either Vendler or Dowty. Sentences like \textit{The ball rolled} or \textit{Jane rolled down the hill} are not achievements according to Vendler (1967, 102), for whom achievement verbs are “predicated only for single moments in time.” And Dowty classifies \textit{The ball rolled} as an activity, thus being forced to posit two activity types, agentive and non-agentive. In our framework, such an analysis is impossible, since the subject of the V-N activity predicate is necessarily agentive. Classification as an achievement is therefore the only option, one allowed by the projection of the \textbf{p} part of the \textbf{mp} component of such verbs, and one that allows us to account for \textit{hop/run} and \textit{roll down the hill}’s ambiguity.

Taking our analysis one step further forces a reanalysis of even some classic examples, such as the activity ‘push a cart’.

\begin{enumerate}
\item[(17)] a. Jane pushed a cart.
\item[(17b)] b. Jane pushed a cart to the wall.
\end{enumerate}

(17a) has been analyzed (e.g., Vendler 1967; Dowty 1979; Tenny 1987) as an activity and (17b), with the addition of the goal prepositional phrase, as an accomplishment. Under our analysis, both of these sentences are accomplishments: in both, a succession of changes of location is measured out by the movement of the cart along some (implicit) path. It is the noun \textit{cart} that, in combination with the verb \textit{push}, describes a path and so allows this interpretation. \textit{Push} itself does not necessarily describe a change of location. Consider (18).

\begin{enumerate}
\item[(18)] Jane pushed a boy.
\end{enumerate}

In (18), \textit{a boy} cannot be understood as necessarily undergoing a change of state or location. \textit{Push} here is simply a contact verb and (18) is interpreted as an activity.
Evidence for classifying the two predicates *push a cart* and *push a boy* differently is found in their different behavior in the middle construction. The middle construction is generally limited to accomplishment predicates (Fagan 1992; Erteschik-Shir and Rapoport 1997). Given our proposed classification, we expect that *push a cart*, describing a change, will allow the middle and that *push a boy*, involving no change, will not. And we indeed find this contrast, as shown in (19) (from Erteschik-Shir and Rapoport 1997).

(19) a. Small carts sure push easily.
   b. *Small boys sure push easily.
      (cf. Small boys sure push down easily.)

We differ, then, from Dowty’s (1991, 568) definition of an incremental theme as an object “entailed to undergo a definite change of state.” Dowty notes that the verb *push* by itself implies only an indefinite change of position (and is atelic) and so its object, even when it changes location, does not meet the criterion for an incremental theme. Under our analysis, in contrast, incrementality is derived from the elements projecting the structure: the accomplishment structure must include the interpretation of a change of state/location and so it forces that interpretation where possible; with a cart, which naturally allows an incremental progression, it is possible. 12

Our model thus imposes a revised, and simplified, aspectual classification, in which the relevant factors are change and causation. 13

8.4 Aspectual Focus

In this section, we show that whether a structure is telic or atelic, and even whether it is stative or eventive, may be due, not to the use of a particular type of verb, but to a shift in aspectual focus.

Aspectual focus (termed “AS focus” in Erteschik-Shir and Rapoport 1997) contributes to structure interpretation: it is the foregrounding, or emphasis, of a particular part of a structure, with the consequent backgrounding, or de-emphasis, of any other parts of that structure. 14 (Such aspectual focus is not the same as sentential focus, as expressed intonationally (see Erteschik-Shir 1997), although the two types of focus are related (see Erteschik-Shir and Rapoport 2000a).)

In principle, aspectual focus is freely assigned within a structure. In simple structures, focus possibilities are necessarily limited: in an activity structure, only the manner of the activity can be focused; in change achievements, only the change to the endpoint (or the endpoint itself) can be. (This is shown in (10a), *Jane ran to the store*, in which Jane’s getting to the store is what is focused and not her manner of getting there.) The complex accomplishment structure, in contrast, allows focus on either of its two parts: the upper cause or the lower change.
The same time-adverbials used as diagnostics for atelic and telic change can be used, as argued in Erteschik-Shir and Rapoport 2000a and Rapoport 1999, to illustrate the accomplishment’s two aspectual focus possibilities.

(20) a. Jane painted a picture for an hour and then just sketched it in.
    b. Jane rolled the barrel to the store for five minutes and then kicked it the rest of the way.

(21) a. Jane painted a picture in an hour.
    b. Jane rolled the barrel to the store in five minutes.

In (20), aspectual focus is on the upper, cause part of the structure; this is emphasized by the contrasted activity of the continuation of each sentence. Aspectual focus on the causing action is compatible with the *for*-adverbial, which modifies its duration. In (21), aspectual focus is on the lower part of the structure, on the change to the end result, the painted picture and the barrel’s reaching the store; so the perfective *in*-adverbial is compatible.

8.4.1 Initiation
Aspectual focus assignment can also result in singling out the initial state for modification. This is possible in accomplishments because their structure contains the causer/initiator subject, which, adapting van Voorst 1988 and Ritter and Rosen 1998, identifies the beginning, or the initial state, of an event. This means that in accomplishments, the initial state of the participants in the event is available for modification. This can be demonstrated by depictive predication. Depictives modify an argument of a verb at the time of the action denoted by that verb; this modification can be restricted to the initiation of that action, as shown in (22).

(22) Jane boiled [the lobster]i alivei.

The depictive *alive* modifies the theme *the lobster* at the beginning of the action only: a lobster that is alive at the beginning of a boiling event does not, normally, remain so throughout. Compare this accomplishment with the change achievement of (23).

(23) *The lobster boiled alive.

In our model, change achievements represent only the change of state of a theme: as opposed to accomplishments, they have no initiator to bring the initial state into the picture. The initial state is not available for modification and (23) is unacceptable.

In this way, the structures themselves, together with aspectual focus, constrain modification possibilities. Aspectual focus in (22) must be on the part of the structure that includes the initiation, that is, the upper part, in order to be compatible with the depictive. Since aspectual focus cannot be simultaneously on both the upper and
lower structural parts, we expect that focus cannot also be on the endpoint in a depictive sentence like (22). The conflicting foci are shown in the incompatibility of the depictive and perfective modifiers in the sentences of (24).

(24) a. *Jane boiled [the lobster]_i alive_ in three minutes.
    b. *Jane wrote all of her books drunk in ten years.

Two modifiers cannot co-occur when compatible with contrasting focus assignments. However, the simultaneous presence of the durative adverb and the depictive predicate is allowed, as the sentences of (25) indicate.

(25) a. Jane boiled [the lobster]_i alive_ for the first seconds, and after that . . .
    b. Jane wrote all of her books drunk for ten years and then wrote the rest sober.

Both modifiers are compatible with upper aspectual focus assignment, and so the two can co-occur.

8.4.2 The Middle Construction

Aspectual focus plays a larger role in interpretation than that of restricting modification. Aspectual focus is also vital in constraining certain construction types. We illustrate this with the inchoative and middle constructions and the contrast between them.

We have shown that the inchoative has the change achievement structure, repeated in (26), and that such a structure can have the inchoative interpretation, for example, ‘The vase went to a broken state (forcefully)’.

(26)  
```
            V
           /\  
          D   V(M)
         /   /   |
       the vase V( A
      /   /  |
     break s
```

The sentences of (9), repeated in (27), show that certain verbs cannot be intransitive.

    b. *This wood sawed.
    c. *The lawn mowed.

However, the ban on intransitivity for these verbs is not absolute, as the well-formed middles of (28) show.
In fact, we claim, the sentences of both (27) and (28), both the inchoatives and the middles, are based on the same structure, the V-A change-of-state structure in (26). The difference between them is simply a difference in aspectual focus. Focus on the V-A predicate in (26) is focus on the change of state and yields an eventive interpretation: the inchoative; focus on the A is focus on the state and yields a stative interpretation: the middle. The middle structure includes the aspectually defocused change event, so although it is a stative construction, the middle still includes an event description. But whereas the inchoative describes a particular, referential event, the middle, in contrast, does not describe an actual occurring event, but a set of potential events that the subject has the capacity to undergo.\(^{15}\) The sentences of (28) thus describe a characteristic property of their subjects with respect to this set of potential events: the interpretation of the middle of (28b), for example, is roughly ‘This kind of wood has the capacity to go to a sawed state easily’.

As argued above, the causer implicated by a modifying instrument manner (M\(_i\)) must be referential in a particular change event; it is because no such causer is present that inchoatives with M\(_i\) verbs are unacceptable. But since the middle involves not an actual, referential event but a set of potential events, the modifying M\(_i\) does not implicate a particular causer; rather, it implicates a generic one. The resulting interpretation is ‘This kind of wood has the capacity to go to a sawed state (with a sawing instrument) easily (for anyone who might apply a saw to it)’. Just as (non-subject) arguments under generic quantification can be suppressed, so can this generic causer.\(^{16}\) It follows that the requirement of an overt causer that rules out M\(_i\) inchoatives does not apply in the middle and so middles with M\(_i\) verbs are fine.

Whether the inchoative or the middle construction is licensed for M-S verbs is thus due to the interpretability of the M component. When M is a means, both inchoatives and middles are fully interpreted; when M is an instrument, only the middle is. This difference is due to the difference in interpretation that follows from the different aspectual focus assignments.\(^{17}\)

### 8.5 Conclusion

Our model allows an explanation of verbal syntactic behavior and verbal interpretation that requires no multiple lexical entries or lexical operations, no functional light verbs or aspectual categories, and no rules that add or delete arguments. This strictly minimalist approach relies on current theories of projection together with an analysis of meaning components, which are necessary in any case for interpretation.
We have addressed two basic questions: what are the properties of verbs that determine syntactic structure? and what are the properties of verbs that determine thematic and aspectual interpretation? Our model’s meaning components give the same answer to both.

Notes
We gratefully acknowledge our debt to the work of Ken Hale and Jay Keyser, our original inspiration.

1. See Rappaport Hovav and Levin 1999 for a discussion of these and other resultative types, and the constraints on the different event structures associated with them.

2. The view that a subject receives its interpretation from the predicate is found often in the literature (e.g., Chomsky 1981; Marantz 1984). In the cases we discuss here, the verb-complement constituting the predicate is not the verb and surface object, but the V-A, V-P, V-N, and V-V projected by the verb and its components.

3. Unlike Tenny (1987), we do not require affected themes to delimit.

4. This is one of the two clauses of FI in Erteschik-Shir and Rapoport, in preparation. The second clause is this:

   (i) The interpretation of each merged v requires the interpretation of a distinct meaning component.

5. The presence of an overt causer, as in *This wood sawed by Jane or *The bread cut with a knife, does not solve the problem because the passive by-phrase is not licensed in the former and the instrumental phrase is not licensed in the latter. (See Erteschik-Shir and Rapoport, in preparation.)

6. The overt prepositional phrase is identified with the verb’s p component via modification. See Erteschik-Shir and Rapoport, in preparation, for details.

7. See Ritter and Rosen 1996 for a discussion of just how accurate, and necessarily flexible, this definition of run’s MP is.

8. See Levin 2000 for a view in which the telicity/atelicity distinction is also irrelevant to classification.

9. See Rothstein, in preparation, for a complex-event structure analysis of atelic as well as telic accomplishments.

10. But see Erteschik-Shir and Rapoport, in preparation, in which melt’s change of state is also analyzed as a series of incremental changes along a path.

11. In this, our model of component projection differs significantly from many structural approaches (e.g., Ritter and Rosen 2000), in which achievements and accomplishments are defined as terminally bound.

12. Dowty (1979) defines indefinite change of state in terms of interval semantics. Our classification therefore does not conform with his definitions of accomplishments and achievements.

   In Verkuyl 1993, atelic transitive verbs like push are analyzed differently than telic transitives, because of Verkuyl’s structural treatment of the opposition between terminative and durative aspect.
13. See Levin 2000 and Rappaport Hovav and Levin 1999, for the view that the simple/complex event distinction, rather than aspectual notions, is what determines argument realization.

14. Aspectual focus is structural foregrounding and is therefore to be distinguished completely from the foregrounding involved in Croft’s (e.g., 1998) profiling of an event by a particular verb, from Goldberg’s (1995) profiling of a verb’s semantic role or a construction’s argument role, and from Smith’s (1997) “lexical focus” whereby superlexical morphemes focus on parts of situations.

15. This description is an abstraction from a detailed analysis in terms of focus structure in Erteschik-Shir 1997 and in Erteschik-Shir and Rapoport, in preparation.

16. The suppression in generics is illustrated in the following contrasts:

(i) a. Jane draws (pictures).
   b. Jane has drawn *(pictures).

(ii) a. In this progressive nursery, children punch a lot.
   b. In this progressive nursery, the children punched *(each other) a lot.

17. For a detailed analysis of the properties of the two construction types, see Erteschik-Shir and Rapoport, in preparation.

References


9.1 Introduction

Temporal and aspectual relations and differences in their grammaticalization across languages can be traced back to detectable morphosyntactic properties. Past, Perfect (= Perf), and Perfective (= Pfv) and their negative/neutral counterparts Imperfect (= Imperf) and Imperfective (= Ipfv) will be taken as the core grammatical components building the aspectuotemporal systems. In the context of Semitic, there is a longstanding debate on whether some of these components are lacking (typically Tense), which then makes Semitic an “aspect language”.¹ There is also a debate on whether among “tense languages,” only languages like Slavic and Greek are “truly” aspectual.² The ambiguity or lack of morphological expression of some temporal or aspectual categories in some languages, in addition to its total absence in others (in tenseless and/or aspectless languages), is sufficient to stress that the descriptive program of temporal/aspectual variation is basically morphological (or more generally morphosyntactic) and that semantically temporal crosslinguistic generalities have to be built in general syntax.³ Furthermore, in addition to interactions between Past, Perf, and Pfv, the actional (Dowty/Vendler) classes of predicates (so-called lexical aspect; = Akt(ionsart)), or their properties (such as telicity; = Tel), contribute to determining temporal interpretation.⁴

Arabic is typically characterized by the ambiguous use of the same inflected verbal form to express Past or Perf (or non-Past, Imperf) meanings, namely, to express Anterior (= Ant) (or non-Ant) relations between reference time (= RT), utterance time (UT), and/or event time (= ET). Moreover, Pfv (or Ipfv) is typically not morphologically expressed, being correlated with either Past or Perf (or non-Past or Imperf). Pfv interacts with Tel (or more generally Akt), but does not depend on it. For concreteness’ sake, I assume a neo-Reichenbachian model of tenses, conceived as expressing relations between times, with two syntactic TP projections headed by predicative Ts, to account for Perf tenses. Each T defines a temporal ordering relation between two temporal arguments: T₁ orders RT with respect to UT (and/or
ET), and $T_2$ orders $RT$ with respect to $ET$. $T_1$ is usually qualified as “deictic” or “absolute” (Past, Present (= Pres), or Future (= Fut)), and $T_2$ as “relative” (Perf or Ant). As for Pfv, it is conceived as an expression of completeness, boundedness, or culmination of events or situations (which cannot be further extended). In contrast, Ipfv events do not allow completion or addition of an end. Following Giorgi and Pianesi (2001; G&P), I will take the semantic correlate of Pfv to be terminativity (= Term). Represented in tree form, the core configurational structure of $T$ and Asp is roughly as shown in (1).

\[
(1) \\
T_1 \ (\text{Past}) \\
\quad T_2 \ (\text{Perf/Ant}) \\
\quad \quad \text{Asp} \ (\text{Pfv/Term}) \\
\quad \quad \quad \text{VP} \ (\text{Tel})
\]

Within this framework, I provide a new description of the essential ingredients of the Arabic $T$/Asp system, focusing on the following issues:

- the Past/Perf ambiguity;
- the dependency of Pfv on Past (or Perf), and the dependency of Ipfv on Pres (or Imperf);
- the existence of a dependent Imperf in Arabic, with Past interpretation arising from contextual distribution, typically in sequence-of-tense situations; and
- the role played by synthesis and analysis in determining complementary values of $T$/Asp chains.

To the extent that Asp can be separated from $T$, the picture that emerges is that Arabic is more of a “tense language” than an “aspect language.” This typology, once redefined, can be used to differentiate languages in which (a covert) Pfv is a feature associated with an expressed Past $T$ from languages in which (a covert) Past is inferred from an expressed Pfv (depending on whether the association is oriented from top to bottom, or from bottom to top). A third type briefly discussed is Slavic, where both $T$ and Asp are morphologically expressed.

### 9.2 Past, Perfect, Perfective

Arabic verbal morphology exhibits two fully inflected contrasting forms characterized by Person placement (as a suffix for Past/Perf, and as a prefix for non-Past/Imperf). The two forms are also distinguishable in that each exhibits its own set of
internal vocalic patterns in the verb stem, and Mood marking occurs in the non-Past/Imperf form. Number and Gender are suffixed in both cases. Thus, these two finite forms contribute to mark Mood, T, and Asp interactions. For the sake of convenience, I limit the discussion to the latter two categories, and I designate the two forms as *suffixed T* (= ST) and *prefixed T* (= PT), taking into account only Person marking.  

9.2.1 A Morphology for Past and Perfect

ST expresses PAST in neutral (nondependent, nonembedded) contexts. It then co-occurs with appropriate deictic adverbs.

(2) a. katab-a r-risaalat-a (?amsi, *gād-an)
   wrote-3 the-letter-ACC (yesterday, *tomorrow)
   ‘He wrote the letter (yesterday).’

b. jara-a (?amsi, *gād-an)
   ran-3 (yesterday, *tomorrow)
   ‘He ran (yesterday).’

In (2), ST locates RT (and ET) prior to UT. The collocational adverb forces this reading as the only interpretation.

ST also expresses PERFECT (= Pres Perf) in neutral (nondependent, nonembedded) contexts. The adverbial test also applies here, similar to what happens in English (4).

(3) a. katab-a r-risaalat-a (l-?aan-a, *gād-an)
   wrote-3 the-letter-ACC (now, *tomorrow)
   ‘He has written the letter (now).’

b. jara-a (l-?aan-a, *gād-an)
   ran-3 (now, *tomorrow)
   ‘He has run (now).’

(4) John has written the letter (just now, *tomorrow).

In (3), ST locates ET prior to RT (and UT), and this reading is forced by the RT-level adverb. Since the latter can collocate only with a PRESENT (RT, UT) interpretation, ST cannot be successfully associated with a deictic (or “absolute”) T. ST can, however, express a nondeictic T. In the Semitic literature, ST has often been designated as Perf, *Accompli* (a French term), or Pfv, and treated as Asp. But given its unique PAST meaning with a deictic past adverb, and its collocation with RT adverbs, it is hard to see how ST can be conceived as marking primarily Asp (expressing Pfv or nondurativity), given that the latter is not sensitive to those adverb contrasts (typically Past and Fut).  

ST is then reasonably construed as T, whether “absolute,” as in (2), or “relative,” as in (3).
ST can also be the embedded member of Past Perf or Fut Perf tenses, under an overtly realized auxiliary.

(5) kaan-a (qad) katab-a r-risaalat-a lammaa daxal-tu
     was-3 already wrote-3 the-letter-ACC when entered-I
   ‘He had (already) written the letter when I entered.’

(6) sa-yakuunu (qad) katab-a r-risaalat-a ġadan
     fut-is already wrote-3 the-letter-ACC tomorrow
   ‘He will have (already) written the letter tomorrow.’

In (5), the writing event (which occurs in the Past) is prior/anterior to the entering (which occurs also in the Past). This indicates that two tenses are involved in the matrix clause (a Past of the Past, or a Past Perf). The two anteriority relations do not follow if the thematic verb is interpreted as expressing Asp only (i.e., PfV). They do not obtain in (7), for example, where the thematic verb, although read as PAST PFV, is not able to express the same temporal orderings.

(7) katab-a r-risaalat-a lammaa daxal-tu
     wrote-3 the-letter-ACC when entered-I
   ‘He wrote the letter when I entered.’

In (7), both verbs can be construed as PAST, but the entering is understood as prior/anterior to the writing. As for (6), although the action occurs in the future (which is posterior to UT), the time adverbial is interpreted as a bound prior to which the completion of the writing must occur (hence the anterior future interpretation, a complex time reference).

9.2.2 Temporal qad

Let the two temporal interpretations be attributed to T₁ (for Past) and T₂ (for Perf/Ant). If we state that ST expresses either T₁ or T₂, then significant progress is made in identifying the nature of ST alternations. The ambiguous use of ST is not to be qualified as “temporal” versus “aspectual.” In both cases, temporal anteriority is associated with ST. The variation arises only from the nature of the time arguments that ST orders (UT and RT, or RT and ET). But even if the ambiguity is so construed, ST is at least temporal in the genuine PAST case. Other temporal components in the clause (such as adverb level type) or the context may play a coercive role, to yield finer time reference and ST disambiguation.

The particle qad is typically acknowledged in the traditional literature to be collocating with a Perf reading when it is interpreted as meaning ‘already’ (i.e., precedence) or ‘just’ (immediate precedence). The former meaning is illustrated with the complex Perf tenses in (5) and (6), where qad occurs in front of the “participle” the-
matic verb. The latter meaning is illustrated in (8), where the thematic verb can also be interpreted as a Perf “participle.”

(8) qad ?ataa
    just came
    ‘He has just come.’

But note that in (8), qad can be ambiguous in a way that it cannot be in (5) or (6). Here it can mean ‘indeed’ or ‘in fact’, to stress the factual certainty of the event. The sentence is then translated as ‘He came indeed’ or ‘He did come’. In this case, it serves as a modal (= Mod). Mod is projected higher than T (or T₁). Unsurprisingly, then, when qad is inserted under Mod, it takes T₁ projections as its complement (e.g., Past projections), and it can occur with past time adverbials, as (9) illustrates.

(9) qad ?ataa ?amsi
    indeed came yesterday
    ‘He did come yesterday.’

The distributional behavior of qad is further corroborated by its possible occurrence in front of the auxiliary of a complex tense.

(10) qad kaan-a y-uṣallii
    indeed was-3 3-pray
    ‘He was indeed praying.’

If all Perfs exhibit a structure with two (hierarchized) TPs, where a high auxiliary supports T₁ and a lower thematic verb supports T₂, then the duality of ST in Arabic may find its source in the emptiness of the present copula in that language. This double T (auxiliary) structure is diagrammed in (11).

(11)

```
     T₁
     /\    /
    /  \  /  \
  T₂ kataba VP
```

Such an analysis of the Pres Perf is consonant with other Perfs being doubly headed structures. The overt periphrastic character of Past or Fut Perfs or Passive Pluperfs clearly supports the double T analysis, given that both Ts are temporally specified.12

9.2.3 Distinguishing Past and Perfect

As seen in the examples above, Arabic exhibits an important peculiar property: it makes no morphological distinction between Agr₁ and Agr₂, and no morphological
distinction between T1 and T2. Since both the auxiliary V and the thematic V carry the same morphology, the latter cannot be taken as discriminatory as far as the T1/T2 distinction is concerned. Furthermore, although the synthetic nature of the Pres Perf makes it identical in form to the Past, the interpretations of the two tenses are different. In order to distinguish Perf from Past, I propose that the latter projects only one T, whereas Perf projects two Ts. This morphosyntactic difference is supposed to account for temporal divergences and time adverb co-occurrences.

9.2.4 Suffixed Tense as Perfective

Up till now, I have established the (primary) temporal nature of ST. But I have not dealt with its aspectual character—namely, when it expresses Pf— and how the two facets are connected. I will examine these questions in the next sections by using various tests. For the moment, I will just mention that ST as a simple PAST can be interpreted only perfectly. This statement is true regardless of the Akt class of the verb. For example, the accomplishment (2a) cannot be uttered if the writing of the letter is not already finished and the letter completed. Likewise, the activity (2b) is terminated and cannot be further extended.

9.3 Present, Imperfect, Imperfective

In traditional Western grammars, PT is usually named “Imperfect” and commonly thought of as expressing “... no idea of time” or denoting “... an act which takes place at all times” (Wright 1898, III, 18). However, like ST, PT can express T. It is associated with PRESENT in neutral (nondependent, nonembedded) contexts, regardless of whether the verbal predicate is stative or nonstative.

(12) y-abnii d-daar-a l?-aan-a (*?amsi)
   3-build the-house-ACC now (*yesterday)
   ‘He is building the house now.’

(13) y-ajrii l?-aan-a (*?amsi)
   3-run now (*yesterday)
   ‘He is running now.’

(14) y-a‘rifu l-jawaab-a l?-aan-a (*?amsi)
   3-know the-answer-ACC now (*yesterday)
   ‘He knows the answer now.’

Construction (12) is an accomplishment, (13) is an activity, and (14) is a state. Constructions (12) and (13) mean ‘He is involved presently in the act of building or running’. Furthermore, there is no culmination of that act, which indicates that Pres is also imperfective. As for (14), it means roughly that ‘a certain state holds of the
subject at the *present* moment’. The interpretations for (12) and (13) cannot be obtained for English *John runs* or *John eats* (which are normally construed as habitual or reportive). English can form actual PRES only from statives (*knows, loves*, etc.). This difference in the interaction between *actional* properties of eventualities and the availability of the actual PRES reading recalls the well-known difference between English, on the one hand, and Romance and other Germanic languages, on the other hand. The latter languages do form actual PRES from accomplishments and activities, but English does not, unless progressive morphology is used. Arabic is like French or German, rather than English, in this respect. The interaction mentioned might serve as a basis for postulating that only languages that allow PRES interpretation of nonstatives (typically accomplishments and activities) have Pres T, since PRES meaning requires the latter eventualities to be Ipfv (i.e., with no telos or culmination reached).\(^\text{17}\)

G&P (1991) suggest that the variation between English and Romance/Germanic can be implemented through a difference in X-bar level, \(X^0\) for English, but \(X^1\) for Romance/Germanic. They argue that simultaneous readings for nonstatives require duration (or more precisely imperfectivity). It is the languages exhibiting this interaction that have Pres T in their morphological inventory, while English Pres is lexical, and only progressive *-ing* is morphological.\(^\text{18}\) The lexical/morphological contrast can be observed or tested with complements of perceptual reports.

(15) a. John saw Mary eat an apple.
   b. John saw Mary eating an apple.

In (15a), where the verb is bare, only a Pfv reading is possible, whereas (15b) is interpreted only as a progressive. Arabic behaves exactly like English in that the complement sentence in (16), which contains a (morphologically null) Pres, has only the simultaneous Ipfv reading.

(16) raʔay-tu r-rajul-a y-aʔkulu t-tuffaaḥat-a
    saw-I the-man-ACC 3-eat the-apple-ACC
    ‘I saw the man eating the apple (*eat the apple).’

Note that in Romance/Germanic, infinitive verbs are used in such contexts, and the interpretation is ambiguous between (15a) and (15b).\(^\text{19}\) The fact that PT cannot be ambiguous in (16) suggests that it behaves (with regard to relevant properties) like a progressive (although it has no progressive morphology as far as I can tell).

Arabic also differs from Romance/Germanic in another important respect. Factual PRES of achievements is possible in Arabic, but not in Romance/Germanic.

(17) y-ablugu r-rajul-u l-qimmat-a lʔaan-a
    3-reach the-man-nom the-top-ACC now
    ‘The man is reaching the top now.’
Construction (17) is interpreted as Ipfv, like a progressive form in Romance/Germanic; and unlike the Pres form in the latter languages, it has no performative (or PFV) interpretation.

(18) John reaches the top.

(19) Gianni trova un libro.
    Gianni finds a book
    ‘Gianni has found a book.’

Thus, the Arabic Pres is strongly associated with Ipfv, compared to that of Romance/Germanic. As a corollary, it is insensitive to Akt.20

In addition to being Pres, PT is interpreted as IMPERFECT (associated with non-anteriority), typically when used with a past auxiliary in complex tenses, to express roughly what Greek or Latin Imperf expresses, or English Past Progressive.

(20) kaan-a y-aktubu r-risaalat-a
    was-3 3-write the-letter-ACC
    ‘He was writing the letter.’

The same is true with Fut or Habitual Imperf.

(21) y-akuunu y-aktubu r-rasaa?il-a fii l-’ašiyy-i
    3-is 3-write the-letters-ACC in the-evening-GEN
    ‘He will be (is usually) writing letters in the evening.’

Observe that the Imperfs here are periphrastic, like their Perf counterparts. Other properties of PT as Imperf will become clear when we look at dependent tenses. PT is often misinterpreted as (primarily) Ipfv (see Comrie 1976). Wright (1898) takes it to express only duration. It is necessary to maintain the Imperf/Ipfv distinction, not only to make precise the right notion involved, but also to determine whether PT is the neuter-negative (non-Past/Imperf) counterpart of the positive Past/Perf or whether it grammaticalizes Ipfv, as opposed to Pfv, a position that I reject. Recall that Perf denotes Ant, a before relation.21 Imperf is non-Ant, usually simultaneous (= Simul), expressing a within relation.22

We can then conclude that the Arabic Pres is morphologically expressed, although it interacts interestingly with Ipfv. PT also expresses Imperf, which is distinct from Ipfv. The morphology turns out to be one of “tense” (Pres or Imperf). Ipfv can be associated with these tenses. I will clarify this interaction further, after examining other specific contexts in which PT is used as Imperf.

9.4 Present/Imperfect and Temporal Dependencies

In addition to its use as Pres or non-Ant/Simul in complex tenses, PT has other specific uses, which can be contextually dependent on a Past T. It does not form a
complex tense with the latter, but has roughly the same interpretation as a French *Imparfait* or Italian Imperf, that is, the interpretation of Past Imperf. That interpretation can be determined by anaphoricity with an immediately dominating Past T, or it can be contextually conditioned by other temporal elements. The following construction with an adjunct clause is an example of an Imperf use:

(22) jalas-a y-ašrabu l-xamr-a
    sat-3 3-drink the-wine-ACC
    ‘He sat, drinking wine.’

In the adjunct clause, only PT can be used, and it expresses Pres under Past. The use of Past or Perf here is impossible, indicating that these tenses cannot be referentially dependent or anaphoric.23

Likewise, in complement clauses, simultaneity with Past is acceptable only if Imperf is used (just like the situation in Japanese or Hebrew).24

(23) qaal-a l-ii ?inna-hu y-aktubu r-risaalat-a
    said-3 to-me that-him 3-write the-letter-ACC
    ‘He said to me that he was writing the letter.’

The use of Past or Perf does not yield that interpretation.

(24) qaal-a l-ii ?inna-hu katab-a r-risaalat-a
    said-3 to-me that-him wrote-3 the-letter-ACC
    ‘He said to me that he wrote the letter.’

In (24), the writing and the saying do not overlap, as they do in (23). Rather, the writing is anterior to the saying (with a shifted-past reading). This contrasts with the situation in English, where a double access reading in complement clauses is possible. Thus, in (25) the tense of the embedded verb can be interpreted as anaphoric, or simultaneous, basically meaning ‘Mary is ill’.25

(25) John said Mary was ill.

G&P (1995) compare languages that possess Imperf (like Italian) with languages that do not (e.g., German or English). They observe that Italian Imperf is a dependent anaphoric T, which denotes Pres under Past, Past being provided normally by the matrix verb. Moreover, (simple) Past cannot be used in this language as dependent; and in embedded contexts, only Imperf is used with a double access effect.26 In contrast, languages like German use Past (ambiguously) as dependent or nondependent, the latter use being neutral with respect to Pfv. It can be read either way, as Simul (Ipfv) or non-Simul (Pfv).

(26) Hans sagte, dass Marie einen Apfel aß.
    Hans said  that Marie an  apple ate
a. ‘Hans said that Marie was eating an apple.’  
b. ‘Hans said that Marie ate an apple.’

In (26a), the Simul reading is available, and Past is interpreted as Ipfv. In (26b), Past is Pfv and the Simul reading is excluded. Thus, (simple) Past is necessarily Pfv in Italian, but not in German. The conclusion, then, is that if a language has an Imperf Past, as opposed to a simple Past, the latter cannot be used as dependent in embedded contexts. On the other hand, Imperf is dependent and is used to denote simultaneity. In languages in which Past is unspecified, it can be used as dependent/simultaneous. Arabic is close to Italian in this respect. Past is Pfv and nondependent, contrary to Imperf, as illustrated above. Furthermore, a Past Imperf interpretation can be provided by the context.

(27) li-maa t-aqtutul-uuna ?anbiyaa?-a l-laah-i min qabl-u  
   why you-kill-PL.M prophets-ACC Allah-GEN before  
   ‘Why were you killing the prophets of Allah before?’

(28) baynamaa n-nabiyy-u y-us˙allii ?id ?aqbala ‘uqbat-u  
   while the-prophet 3-pray then appeared Oqba-NOM
   ‘While the prophet was praying, Oqba showed up.’

In these examples, the subordinate clause acts as a temporal adverbial forcing the shifting of the Imperf in the matrix clause to a past interpretation (through a “hidden” past auxiliary, just like what happens in embedded dependent contexts). Such examples have been used repeatedly by the “aspectualists” to show that PT expresses all tenses, from which they conclude that it is devoid of T. But these facts can be taken as evidence to the contrary, namely, that PT is an Imperf T (denoting simultaneity, possibly with a Past). If PT were “purely” aspectual, then it is hard to see how the Pres-under-Past interpretation could arise.27

9.5  Perfectivity

9.5.1  Suffixed Tense as Perfective

We have seen that Arabic Past and Perf are not anaphoric, and they do not allow Simul Ipfv readings (see, e.g., (24)). Consequently, Past and Perf ST are associated with Pfv. The correlation between Pfv and Past (or Perf) normally obtains in languages that distinguish Imperf from simple Past (i.e., Italian, and somewhat differently Arabic, as opposed to German). Furthermore, like Perf, Pfv is not compatible with a Simul interpretation. Pres and Imperf, however, are usually associated with Ipfv (see, e.g., the interpretations of (16), (22), and (23)).

Unlike what happens in Russian (or Slavic), Arabic Pfv is not marked by two distinct verbal conjugations (or two distinct lexemes), opposed in the same tense, as
illustrated by the following Russian minimal pair, contrasting Ipfv and Pfv in the preterite:

(29) a. ya pisál
   b. ya napisál

This pair is rendered only approximately by English I was writing and I have written or French J’écrivais and J’ai écrit. The latter pairs, instead contrast Perf and Imperf (Ant and Simul), although Asp may be associated with them. Likewise, Pfv in Arabic is a feature on a specific T, rather than a grammaticalized (derivational) morpheme (or a lexicalized opposition) differentiating the same tense. Arabic has only one Past/Perf synthetic form, which is also Pfv/Term when interpreted as PAST (see (2)). It contrasts minimally with the Imperf, which either is a member of a complex tense, in contexts with an expressed past auxiliary, as in (20), or functions as Imperf in appropriate contexts (with a “hidden” PAST interpretation), as in (23), (27), or (28). But as clarified above, Arabic Imperf is not necessarily a PAST (unlike Italian Imperf or French Imparfait). Only the analytic Past Imperf is. Moreover, Imperf is (normally) Ipfv and (roughly) equivalent to both Italian Imperf and English Past Progressive. Consider, for example, (2b) (repeated here as (30a)), expressing a past activity, and its analytic Past Imperf counterpart, given in (30b).

(30) a. jaraa r-rajul-u
    ran the-man-NOM
    ‘The man ran.’
   b. kaan-a r-rajul-u y-ajrii
       was-3 the-man-NOM 3-run
    ‘The man was running.’
   c. . . . wa maa zaala y-ajrii
      and still 3-run
    ‘. . . and he is still running.’

The event in (30a), which is completed or terminated, cannot be further extended, contrary to that in (30b), which is nonterminated and can be extended. The sequence in (30c) can then be used after (30b), but it leads to ungrammaticality after (30a). In fact, the combination of (30a) and (30c) is acceptable only if two events are involved, one terminated to make the first clause true, and one nonterminated and ongoing at UT, to make the second sequence possible.28

The Pfv nature of ST is corroborated by its use in so-called performative sentences, as instantiated by the following examples:

(31) ju‘-tu
    was.hungry-I
    ‘I am hungry (lit. I “hungered”).’
(32) bi’-tu
    sold-I
    ‘I sell (lit. I sold).’

Sentences like these (with appropriate contexts and presuppositions) express merely reaching a terminating point (the state of being hungry, the decision of selling) rather than any past action. In English or French, they are normally translated by a Pres (which should be construed as Term). In Arabic, the use of ST focuses on their perfectivity. Observe that the Pfv/Term nature of ST versus the Ipfv/nonTerm nature of PT should follow naturally from the Western philologist or Semitist view, which takes the nature of the opposition to be aspectual (be it Perf/Imperf, Ipfv/Pfv, or Accomplished/Unaccomplished). 29

But note that Kuryłowicz (1972) denies the existence of verbal Asp as a (discrete) grammatical category in Semitic, and he takes the Pfv/Ipfv meaning to be a tertiary function (in his terms) of the ST/PT opposition. The primary function of the latter is preterite/nonpreterite (or Past/Pres), and its secondary function Ant/Simul (or Perfectum/Infectum; p. 83). Since T and Asp are inseparable from a semantic point of view, he claims that Asp is “a non-distinctive feature of tense forms in every language. The present tense referring to the moment of speaking is by itself imperfective or linear, the preterite or the future are by themselves perfective or punctual” (p. 79). He then observes that it would be an elementary error to treat equally the tertiary temporal/aspectual system of Western Semitic (e.g., Akkadian) and the binary system found in Arabic and Hebrew. In the latter case, Asp must be subordinate to Ant (a tense notion), the primary content of the sole opposition (p. 80). Arabic Perf and Imperf function primarily as Preterite/Pres when related to the moment of speaking, and secondarily as Ant/non-Ant when related to another tense. Thus, Kuryłowicz’s view represents significant progress in adequately describing the Arabic and Hebrew systems, and it comes close to my view (and in part to that of traditional Arabic grammarians) when it denies that the grammaticalization of Asp is the primary content of the verbal inflectional opposition. It favors T instead, and organizes the aspectuotemporal system around three “functions,” with their dependencies and correlations. 30 But divergences between Kuryłowicz’s system and mine, although less crucial than those between mine and the “aspectualists,” are still important for more precise description, as well as for conceptual foundations and empirical consequences. 31

Likewise, Comrie (1976, 78–82) also defines a mixed (or combined) T/Asp interpretation of Arabic verbal inflection, but he does not take issue with the predominance of T or Asp, or with the question of how the system is descriptively organized. Comrie correctly observes that when the rest of the sentence contains no overt specification of time reference (e.g., no temporal adverbs), ST (named “Perf”) has Past
and Pfv meanings (as in (i) in note 28, taken from Wright 1898), while PT (named “Imperf”) is interpreted with Pres and Ipfv meanings (as in (33), also taken from Wright 1898).

(33) llaah-u y-a’lamu bi-maa t-a’mal-uuna
Allah-nom 3-know about-what 2-do-PL.M
‘Allah knows what you are doing.’

The contrast between these two constructions cannot be used to favor either solely the tense or solely the aspect distinction. The system appears to be mixed. First, the use of PT as Fut does not necessarily imply Ipfv meaning, but could well correspond to a Slavonic Pfv, as illustrated by the following sentence (also found in Wright 1898):

(34) fa-llaah-u y-ahkum-u bayna-hum yawm-a l-qiyyaamat-i
and-Allah 3-judge between-them day-ACC the-resurrection-GEN
‘And Allah will judge them on the day of resurrection.’

Given that the day of resurrection takes place sometime in the future, RT is Fut. But the day of resurrection functions as a telos of the event, which suggests that the sentence is Term (and/or “Pfv”). PT then ends up being both terminative and nonterminative in our terms, and hence the ST/PT opposition cannot be purely aspective.

Similarly, ST does not always denote a past RT, but could express a future RT, as in the often-quoted sentence (35).

(35) ?-ajii?u-ka ?idaa ẖmar-r-aa l-busr-u
I-come-you when reddened-3 the-unripe.date
‘I will come to you when the unripe date ripens.’

Thus, although the embedded verb carries ST, the ripening is understood as occurring in the future. What ST denotes, then, is “relative” (anterior) RT, since the ripening is prior to my coming. Comrie then establishes the combined nature of the opposition, but does not go any further. However, his contribution is a step forward, when compared with the “pure aspect” view (initiated by Caspari (1859) and Reckendorf (1895); see note 1).

9.5.2 Prefixed Tense and Imperfective

I established earlier that ST (being either Past or Perf) is correlative Pfv, and hence terminative. I now consider whether PT (being Imperf and Ipfv) is necessarily non-Term, or whether it can be also Term (or “Pfv”). Consider first PT in the analytic Past Imperf/Ipfv. The latter is typically non-Term, regardless of the actional properties of predicates. This is true of accomplishments as well as achievements.
In both cases, the action in the matrix clause is not terminated, whereas that in the embedded one is. The analytic Past Ipfv thus behaves like the English or Italian Progressive with regard to its interpretation.

In contrast, PT in simple Imperf/Ipfv tenses is not so committed to nonterminativity, but can be terminative as well. This value depends on the actional properties of the predicate (which include telicity and durativity), but also on the T of the Imperf. The telic/atelic distinction is clear in the contrast between (38a,b) and (39a,b), all of which are finished or terminated events.

The clauses in (38) are telic, in the sense that a certain goal or endpoint, the telos, has been reached, or that the event culminates at the telos. The distance has to be entirely covered, the top reached, and so on. The event cannot be continued any further—for instance, by adding a clause like ‘and he is still . . .’. The clauses in (39) are atelic, in that although the event is finished, it does not culminate at any endpoint or goal. It is conceivable that it might be continued. In-X versus for-X adverbials successfully identify telic and atelic sentences, respectively. With simple Imperf clauses, however, telicity cannot be (directly) tested by using the in-X/for-X adverbial opposition. In clauses with Pres tense interpretation (normally ambiguous between actual (or progressive) and habitual readings), the use of the adverbial removes the actual reading, so that only the habitual interpretation is available.
With these telic predicates, the use of in-X adverbs is only possible when the interpretation is habitual or nonactual. Actual Pres is not compatible with those adverbs. But note now that with Imperf Fut, the in-X test is completely felicitous.

(41) y-aqt’a’u l-masaafat-a ḍad-an fii saa’at-in
3-cross the-distance-ACC tomorrow in hour-GEN
‘The man will cross the distance tomorrow in an hour.’

The same result obtains with achievements. The common behavior of Fut and Past/Perf vis-à-vis the in-X test, as opposed to that of Pres, indicates that the difference is due to the value of Pfv, associated with T: Past, Perf, and Fut are Pfv, whereas Pres is Ipfv. With actual tenses, the in-X/for-X opposition then applies not to test telicity (as commonly thought), but to test a combination of perfectivity and telicity.32

9.5.3 From Tense to Aspect

Granted that the PT/ST opposition expresses a combination of T and Asp, and having indicated that Asp is merely associated with T (rather than being the value of the PT/ST opposition), I would like to corroborate this view by showing that the system is oriented from top (T) to bottom (Asp), rather than the other way around. The opposite orientation appears to hold in western African languages, for example, as I will explain.

In Arabic analytic T/Asps, both Pfv and Ipfv can be dominated by either Past or non-Past of the auxiliary kaana ‘be’ (see, e.g., the (5)/(6) contrast for Pfv, and the (20)/(21) contrast for Ipfv). Hence, no Asp/T correlation is predictable. In synthetic T/Asps, however, simple Past is always Pfv, Fut can be Pfv, and Pres is Ipfv (see, e.g., (38), (41), and (12), respectively). Ipfv, on the other hand, can be associated with Imperf Past, as in (37), Pres, as in (12), or nonbounded Fut, as in (42).

(42) sa-y-ajrii
FUT-3-run
‘He will run.’

Contrary to (41), (42) is neither terminative nor culminative (nor telic). It is Ipfv. These contrasts indicate that Asp cannot induce a (specified) T, given that Pfv can be associated with Past or Fut, and Ipfv with Pres, Past, or Fut. But a (specified) T can induce a specific Asp (simple Past is Pfv, actual Pres is Ipfv, etc.). The conclusion
then is that in Arabic, T is associated with Asp, but not vice versa. Assuming that the two categories project separately, the system is clearly oriented from top to bottom. In contrast, Comrie (1976, 82–84) observes that in a number of western African languages, including Yoruba and Igbo, there are no specific markers of T, although there are markers of Asp. Thus, nonstative verbs have the prefix marker n in Yoruba and nà in Igbo if they have imperfective meaning, whereas perfectives have no morphology (statives have only imperfective meaning, with no marker). But sentences with these forms are unambiguous with regard to time reference (in the absence of any contextual indication): perfectives are interpreted as referring to Past, and imperfectives to Pres.

(43) a. Yoruba: ó wá
    b. Igbo: ó byárá
       ‘He came.’

(44) a. Yoruba: ó n sisé
    b. Igbo: ó nà árú órú
       ‘He is working; he works.’

Thus, in these languages, Asp is marked overtly, and time reference is a “secondary consequence” of the Asp marking (except in contexts where overt time reference adverbs like ‘yesterday’ are used, in which case Ipfv refers to Past). Clearly, then, although these sentences are morphologically “tenseless,” T is not absent from their interpretation. It is presumably projected as null T and interpreted by association with Ipfv or Akt (i.e., ingredients from the bottom of the structure). By contrast, Arabic can be thought of as morphologically “aspectless,” but Asp values are associated with specific values of T.

9.5.4 The Tense/Aspect Typology Revisited

We have observed that there are two types of languages with regard to the lack of either T or Asp marking: the Arabic type (call it A-type), and the western African type (call it W-type). A third type, like Russian or more generally Slavic, appears to mark both categories (call it S-type). But as amply explained above, the first two types do express both categories of time reference (or T) and Asp, like the third type, except that they differ in how they do it morphologically. In the A-type, the Asp value is (normally) associated with specific time reference marked on the verb, and in the W-type, time reference is associated with Asp marking. Leaving aside other factors that play an important role, like markedness (in the Past/non-Past or the Pfv/Ipfv distinctions), finiteness, and actionality (vs. perfectivity), I can sketch a rough picture of the typology at this point, assuming that all languages instantiate the same syntactic partitioning (as exhibited in (1)) and that only morphology gives rise to differences, in addition to morphosyntactic derivations. In A-type languages, T has a
specified value (Past or Perf), and Pfv is a feature inherited by T. Assuming that V moves to T, the displacement occurs so that V can check its features against those of “rich” T (i.e., through a sort of attraction). In W-type languages, Pfv (induced from Akt) is compatible only with Past. If T is null, then it is V that carries the relevant features that percolate to “poor” T, to make it interpretable (assuming that there are universal default Asp, Akt, and T correlations, as proposed by Kuryłowicz (1972), for example). The Ipfv in W-type languages, which is morphologically marked, can be associated with Pres through the same mechanism of movement, except that other overt expressions of time reference (like past time adverbs) may prevent interpreting Ipfv as Pres (i.e., adverb specifications block Asp values from percolating up, presumably by coercion). The Ipfv in A-type languages appears to exhibit a similar default behavior. However, Asp has no morphological mark. Since PT can be both Ipfv and Pfv, it must be that it is T—in fact, Pres T—that imposes imperfectivity, rather than the other way around. Language type distinctions can be based on the grammatically marked members of the pairs (Pfv, Perf, and Past), or their semantically marked positive counterparts (when Akt operates). Many details of the analysis remain to be worked out, but it is clear that if the T/Asp language typology is to be properly defined, the A-type would qualify as a T language, while the W-type would represent an Asp language, the S-type being marked for both T and Asp (or so it appears).

9.6 Conclusion

In this chapter, I have examined how Asp and time reference (or T) correlate in languages, and specifically in Arabic. I have rejected the widespread view among Western philologists that Arabic is an “aspect” language in the sense that the morphological ST/PT opposition does not express RT. On the contrary, I have shown that the opposition has no primary Asp content, compared with W-type (or S-type) languages. I have provided a more principled description of how the system of aspectuotemporal relations and correlations is organized, based on the morphosyntactic typology proposed. Obviously, many questions remain, but they can presumably be addressed more adequately if the “tense”-dominant view of Arabic T/Asp morphology is adopted, it being clearly understood that no language appears to lack the essential semantic notions associated with T and Asp.33

Notes

This chapter elaborates on previous work of mine, in particular Fassi Fehri 1990, 1993, 1996. It has benefited from penetrating remarks and comments by Jacqueline Guéron and Jacqueline Lecarme, as well as useful discussions with Jim Higginbotham. I would like to acknowledge significant editorial improvements proposed by Anne Mark. The usual disclaimers apply.
1. This idea was initiated by German philologists Caspari (1859) and Reckendorf (1895); the former work was later translated (and modified) by Wright (1898). The idea was later developed by many scholars, among them Meillet (1910) and Cohen (1924). More recently, Cohen (1989) has defended the “pure aspect” view of Semitic verbal morphology. On the opposite side, Kuryłowicz (1972, 1973) in particular denies the existence of aspect (or perfective) as a grammaticalized category in Semitic (typically Arabic and Hebrew).

2. For a partial review of references on the matter, see for example Szemerényi 1965.

3. It is an empirical question whether the absence of some temporal words is correlated with a complete lack of their meaning, or whether this absence can be compensated for through default (morphosyntactic) correlations, in addition to temporal adverb specifications.

4. Mood and Modality, which also interact with temporal interpretation, will not be dealt with here (see, e.g., Fassi Fehri 1990, 1993, 1996, on this interaction in Arabic).


6. Regarding temporal chains, see Guéron and Hoekstra 1988 and Fassi Fehri 1990; and for a description of synthetic/analytic variation, see Fassi Fehri 2001.

7. This view is close to that of Kuryłowicz (1972, 1973) and differs radically from the aspectualist view defended in many works on Arabic and Chamito-Semitic (e.g., Cohen 1989).

8. The ST and PT designations are meant to be morphological, and they do not presuppose specific temporal or aspectual semantics. The latter will be clarified below. Likewise, their qualification as “finite” is also basically morphological; that is, they carry whatever morphology occurs on the verb in finite sentences (in terms of Mood/T/Asp and Agr). This does not necessarily lead to any FINITE semantics, if such a notion is descriptively relevant.

9. I will use words written in full capital letters to refer to semantic notions only, hence distinguishing them from other sequences of letters, which point to essentially morphosyntactic notions (e.g., PAST is distinguished from Past, and past is used informally otherwise). In the contexts discussed, adverbs are taken to be RT level, rather than ET level (see Fassi Fehri 2003 for detailed discussion). Wright (1898, III, 1) takes ST here to be equivalent to English Past, Greek Aorist, or German Imperf. But this description is incorrect, as will be shown below.

10. These contrasts aim at establishing a genuine PAST/PRES PERF ambiguity of the ST form. The latter ambiguity can be represented in a very sketchy way as follows, using a simplified Reichenbachian representation of time.

(i) ET, RT < UT
(ii) ET < RT, UT

It is important to note that only (i) can be used as a representation of (2); (ii) cannot. The anterior part of (ii) is disputed among linguists, and may be interpreted as temporal or aspectual (see note 11).

Note that Wright (1898) equates Arabic Perf with the Perf of English, German, or Greek. But this is incorrect, as we will see.

11. I rely here on theories of T/Asp like those of Cinque (1999), G&P (1991, 1997), and Comrie (1985), among others, where Perf is treated as “relative tense” (or T₂), which is higher in the structure than Pfv. At the same time, I dismiss Klein’s (1994) theory of Perf, which treats it as Asp, in the same way Pfv is treated. The latter is inadequate when faced with the distributitional behavior of Perf in John has been eating. It also fails to account for the complexity
of Perf tenses—for example, the Fut Perf of Past as in *He would have worked*, where according to Cinque (1999, following a proposal in Vikner 1985), two reference points (= Rs) are needed, R₁ and R₂. See Fassi Fehri 2003 for motivation.  

The ambiguity of ST in (2) and (3) has a synthetic analogue in Portuguese (i) and an analytic counterpart in French *passé composé* (ii).

(i) Comi as quatro.
   ate.1 at four
   ‘I ate/have eaten at four.’

(ii) a. Jean a mangé la pomme hier.
    Jean has eaten the apple yesterday
    ‘Jean ate the apple yesterday.’

b. Jean a mangé la pomme en ce moment.
   Jean has eaten the apple at this moment
   ‘Jean has eaten the apple now.’

For a treatment based on T₂ of the French *passé composé*, see Guéron 1995, and for an analysis of the Portuguese Past/Perf as T₂ (which parallels the Latin Perf form), see G&P 1997.

12. The Arabic copula, when unspecified temporally, surfaces as null. The pronominal copula *huwa* ‘he’ can appear as an overt expression of Agr in verbless sentences, when needed, indicating the existence of a clear-cut distinction with the verbal copula. The visibility of the latter has nothing to do with Agr specification, but only with temporal specification (see Fassi Fehri 1990, 1993). Since Pres Perf is synthetic, it is reasonable to think that T₂ merges with T₁, when T₁ is null. In analytic Perfs, however, Agr must be visible (see Fassi Fehri 2001 for details).

13. I adopt a system of functional categories like Chomsky’s (1995). Note that the two Agrs must be anaphoric, owing to conditions on chains, which preclude the repetition of identical heads in the same chain, as I argue in Fassi Fehri 1990, 1996.

14. I see no reason to favor a simple T₂ interpretation of the form over a complex one. The situation of T here is parallel to that of time adverbs or particles like *qad*, which can have different interpretations depending on the level of structure at which they are inserted. However, the question arises more seriously with the ambiguity of analytic Pres Perfs, typically when interpreted as Past. See, for example, Guéron 1995 and G&P 1997 for plausible though different analyses.

15. Perf might be equally associated with Pfv, as we will see, but it must not be. The description of the various Arabic Perf meanings is beyond the scope of this chapter (see Fassi Fehri 2003).

16. For the Arabic tradition, on the contrary, PT is basically non-Past, being Pres or Fut (see, e.g., Siibawayhi, 8th c.).

17. The impossibility of Pfv interpretation with the Pres of these classes (see G&P 1991, 1995; Guéron 1995) is attributed by G&P (1997) to the Punctuality Constraint, as stated in (i), and the interpretive principle (ii), once the notion of punctuality is appropriately defined.

(i) A closed event cannot be simultaneous with a punctual event. (p. 163)

(ii) The anchoring event is punctual. (p. 160)

The speech event is one case of an anchoring event. Punctuality has to be durational with activities and accomplishments to make Pres possible with these classes. G&P follow Kamp in defining an event as punctual “iff it is not temporally partitioned by other events” (p. 159). Pres can be an interval, not necessarily a moment, as in Guéron 1995.
18. See Guéron 1995 for a similar view.

19. For instance, this is the case in Italian (i), from G&P 1997, 165, which is ambiguous.

(i) Ho visto Gianni mangiare una mela.

‘I saw Gianni eat an apple.’

20. Jacqueline Guéron (personal communication) points out that achievements in the Pres are normally interpreted as performatives in a number of languages. On the other hand, G&P (1997) claim that achievements are inherently Pfv in all languages, and hence can form no actual Pres. By contrast, Arabic achievements can form actual Pres, but it is normally ST that is used for performatives. This difference in behavior is correlated with (in)sensitivity of the Pres to Akt, and it indicates that Arabic Pres is strongly correlated with Ipfv, but Romance/Germanic Pres inherits Ipfv only through (a particular) Akt. The existence of Pres progressive achievements even in Romance/Germanic (G&P 1997, 172, 177) appears to be truly problematic for the hypothesis of inherent perfectivity. To solve this problem, G&P resort to a notion of continuity, which they associate with the progressive, and which they take to be not incompatible with Pfv (Ipfv not being a prerequisite of continuity). A more convincing analysis, it seems to me, has to abandon the inherent Pfv hypothesis and postulate that the progressive is a case of a morphologically marked Ipfv, while other cases of Ipfv in Romance/Germanic are only induced from Akt (in interaction with Pres T).

21. I leave aside the notion of “relevance” of the reference or evaluation time (or simultaneity meaning), which can be used, for instance, to distinguish Pluperf from Past of the Past.

22. For the moment, I leave aside the after/posterior relation.

23. For anaphoricity of Pres/Imperf, see Fassi Fehri 1990, 1993.

24. See, for example, Ogihara 1996 and Abusch 1997. See also Higginbotham’s (2000) analysis of the double access reading and sequence of tense, based on anaphoricity.

25. The Arabic stative counterpart to (25) read as anaphoric is (i), where no copula surfaces.

(i) qaal-a l-ii  ?inna-hu mariid-un

said-3 to-me that-him sick

‘He said to me that he (was) sick.’

When the past copula is used, no Pres-under-Past reading is possible.

(ii) qaal-a l-ii  ?inna-hu kaan-a mariid-an

said-3 to-me that-him was-3 sick-ACC

‘He said to me that he was sick.’


27. For various kinds of arguments leading to this conclusion, see among others Eisle 1990; Zaborski, to appear; and in particular Fassi Fehri 1990, 1993.

28. G&P (2001), who analyze quite similar contrasts in Italian, reach a similar conclusion. Italian simple Past and Perf are Pfv, and they contrast with Past Imperf, which is Ipfv. The former tenses cannot be extended (unless the interpretation is different, as indicated). See, for example, the contrast between G&P’s (22) and (23).

Because it is Pfv, Arabic simple ST cannot be equated with German Imperf or even English Past (as claimed by Wright (1898, III, 1)). Comrie (1976) correctly analyzes Wright’s example (= (i)), which appears to be nonterminative as Past Pfv.
(i) jalas-uu ‘alaa l-baab-i
sat-3.pl on the-door-gen
‘They sat down at/on the door.’

The natural interpretation of (i) is that the event cannot be further extended (with the proviso
made in the text with respect to (30a)).

29. Even Wright (who awkwardly attributes to ST the meaning of German Imperf) correctly
states later on (1898, III, 21) that “to express the imperfect of Greek or Latin languages, kaana
is frequently prefixed to the imperfect.”

Recall that Pres is not normally used in performatives in Arabic, owing to its general Ipfv
nature, which then makes it a grammatically marked form for Asp (the value of which depends
on that of T), compared with Romance or Germanic, in which Asp is only inherited from Akt
and is somehow more “lexical.”

30. In Kuryłowicz’s view, the primacy of Tense is assessed at different places, even though he
sometimes talks about a system with no Tense and no Asp, only a binary opposition. Ante-
riority (or time reference) is temporal, and it is needed for Kuryłowicz (1973, 114) to assess
that “whereas the existence of tense does not entail that of aspect, the latter presupposes that
of tense,” the dependency of Asp vis-à-vis Tense in Arabic, the inherent nature of Asp as a
nondistinctive feature of Tense in every language, and the systematic imperfectivity of Pres and
perfectivity of Past and Fut. All these statements are almost true (as rough descriptions), but
regrettably questionable, when we attempt to make them precise, as will become clear.

31. Clearly, Kuryłowicz’s claims make either wrong or no predictions about variation in
aspectual/temporal expressions in languages and how it is organized. On the other hand, the
general “primacy” of Tense over Asp that he adopts is not empirically motivated. It is lan-
guage specific, as explained below. Furthermore, even if it turned out to be true of Arabic,
Kuryłowicz provides no evidence for such orientation. Similar criticisms carry over to the
work of Zaborski (to appear), who wholly adopts Kuryłowicz’s views.

32. Various authors, taking various routes, reach a similar conclusion (see, e.g., Bertinetto
distinction does not apply to Ipfv predicates and that the Pfv/Ipfv distinction is privative, in
the sense that only Pfvs are associated with the (positive aspectual) value of terminativity, whereas
Ipfvs are left unspecified. My analysis of the Arabic Imperf suggests that the postulated priva-
tive nature is not established, since only the clearly Ipfv factual Pres cannot be terminative, as
far as I can tell, even when telic. As for the simple Imperf contextually interpreted as Past, it
has been shown that it can be interpreted as Simul, and hence Ipfv.

33. I have neglected the active participle in this description because it does not play a central
role in the temporal system, carrying no T morphology. See, for example, Fassi Fehri 1993,
Eisle 1990, and Shlonsky 1997 for remarkably convergent views on this matter.

References
Bertinetto, P. M. 2001. On a frequent misunderstanding in the temporal-aspectual domain:
The ‘perfecrive-telic confusion’. In C. Cecchetto, G. Chierchia, and M. T. Guasti, eds., Se-
Chapter 10

On the Speaker’s and the Subject’s Temporal Representation: The Case of the Italian Imperfect

Alessandra Giorgi and Fabio Pianesi

10.1 Introduction

In many respects, the imperfect tense of Romance languages has been a puzzle for linguistic theory because of the variety of contexts of use, and the diversity and apparent contradictoriness of its occurrences. Moreover, the imperfect tense occupies a central role in linguistic theory, since it has been one of the main sources of the distinction between perfective and imperfective aspect, a point over which much linguistic ink has been spilled during the last decades.

We address these issues in this chapter, attempting an analysis that in many respects differs from others in the literature. In the first place, we will add more puzzles to the stock of phenomena that have been considered so far. At the same time, we will depart from many current approaches that, more or less explicitly, take the behavior of the imperfect in quantificational environments as displaying and revealing the very basic properties of this tense. We will de-emphasize the importance of the quantificational readings due to the presence of adverbs such as *always* and *often*, and the habitual/generic readings as well.

A reason for doing so is that the “quantificational” view of the imperfect tends to either disregard the so-called continuous readings, as in the Italian sentence *Alle cinque Mario dormiva* ‘At five Mario slept*’.IMP*’, or explain them as instances of the partitive phenomenon (Krifka 1992, 1998). In previous work (Giorgi and Pianesi 2001c; see also section 10.3 below), we argued that the partitive analysis of the imperfect (and, generally, of imperfective aspect) is inadequate, both empirically and theoretically. We believe that in order to understand the properties of the imperfect tense in Italian (and in Romance languages in general), the continuous readings, and the many others that do not seem to directly involve quantificational phenomena, need to be taken as prime sources of evidence. This can be accomplished by acknowledging a basic distinction between terminated and nonterminated eventualities, by readdressing the telic/atelic divide, and by limiting imperfectivity/perfectivity to the morphosyntactic domain, separating it from its notional counterpart.
In this chapter, we will review and provide some details on these points, and we will develop a theory of the Italian imperfect that crucially relies on two intuitions (which, taken separately, are by no means new): (i) that in some sense to be made more precise, this tense is a “dependent” one, often relying on the availability of suitable temporal referents, and (ii) that it behaves as a sort of present in the past.

Indeed, it is an old observation that the continuous readings of the imperfect require some contextual temporal referent. However, we extend this idea to readings of the imperfect that have rarely been addressed in the literature, namely, the ones we will dub modal.

Even the idea of the imperfect as a present in the past is not new. On the one hand, the data show that most of the phenomena (including continuous, modal, quantificational/habitual, and reportive readings, as well as the behavior of the imperfect in subordinate contexts) pertain to the present tense as well.

On the other hand, the intuition is clear that the dependence of the imperfect on contextually supplied temporal referents corresponds to introducing a different perspective, or point of view, from the one provided by a perfective tense. As many scholars would say, the imperfect (and imperfective aspect in general) seems to provide an internal perspective on events, presenting them as if they were seen from the inside, and contrasting with perfective tenses, which provide an external appreciation of eventualities.

This chapter is structured as follows. In section 10.2, we will set the scene, describing the distribution of the imperfect in various contexts, many of which have been neglected in the literature. In section 10.3, we will review results from previous works, concerning the interplay between perfectivity/imperfectivity, telicity/atelicity, and terminativity/nonterminativity. We will also discuss the distribution and role of temporal phrases with the imperfect tense. In section 10.4, we will discuss sequence-of-tense phenomena and temporal anchoring, along with the idea that they require temporal coordinate shifting. In section 10.5, we will propose our analysis of the imperfect tense, building on the framework provided in the previous sections.

10.2 The Distribution of the Imperfect: A Description

10.2.1 Temporal and Modal Interpretations

The imperfect has usually been considered in the literature as an anaphoric past verbal form, since it appears to need a past referent, made available by the sentential or the extrasentential context. Consider, for instance, the following examples:

(1) Ieri alle quattro Gianni studiava matematica.

‘Yesterday at four Gianni studied IMPF math.’
Gianni studiava matematica.

‘Gianni studied.math.’

Mario ha detto che Gianni studiava matematica.

‘Mario said that Gianni studied.math.’

Sentence (1) represents a very common use of the imperfect—namely, as a form for introducing a past event, therefore compatible with adverbs such as ieri ‘yesterday’. Sentence (2), on the other hand, is infelicitous if uttered out of the blue—that is, without a previous context—for lack of a suitable temporal referent. Sentence (2) becomes perfectly acceptable if the right context is provided—for instance, if it is used as an answer to the question, Che faceva Gianni ieri alle quattro? ‘What was Gianni doing yesterday at four?’.

In sentence (3), the studying can be taken to be simultaneous with the saying. According to the traditional point of view mentioned above, therefore, the anaphoricity requirements of the imperfect are satisfied by hooking up to the temporal location of the superordinate event.

Importantly, the imperfect is a nonperfective form and does not entail the reaching of a telos, contrasting in this with the simple past and the past/present perfect tenses. In a sense to be made more precise in section 10.3, the imperfect is noncompletive, so that (1) can be paraphrased by saying that a certain event was going on at a given time.

The generalization underlying these cases seems to be that the imperfect needs a temporal topic. Notice that if explicitly provided by the sentential contexts, the phrase realizing the temporal topic must appear at its left. The counterpart of (1) with the temporal specification appearing on the right is grammatical, but it has a different range of interpretations.

Gianni studiava matematica ieri alle quattro.

‘Gianni studied.math yesterday at four.’

If pronounced with a “normal” intonation, without adding contrastive focus, this sentence is not easily interpretable and does not mean what (1) does—namely, that at a certain time, yesterday at four, a certain event was going on. It could mean, for instance, that Gianni was supposed to study math yesterday at four, or that he intended to study it at that time. We will consider these modal readings below. Here, it is enough to stress that (4) does not have the continuous/factual reading of (1).

In a sentence such as (3), the topic can be taken to be an empty category, which receives its interpretation from the matrix event. That is, the topic of the embedded clause is identified with the (time of the) event of the main clause.

The imperfect can also be used to express a variety of meanings that have often been called modal. Consider, for instance, the following sentence:
(5) Domani cantava Placido Domingo.

‘Tomorrow Placido Domingo sang.IMPF.’

Contrary to examples (1)–(3), (5) does not convey that an event of a certain kind (a singing) was ongoing at a given past time. First, the temporal phrase makes clear that pastness does not affect the event: the latter is neither located at nor ongoing in the past. Second, utterances of (5) do not inform about actual states of affairs; instead, they talk about possibilities. So (5) could be used as a reply to someone inquiring about whether there’s going to be any interesting performance tomorrow. By replying in this way, the utterer of (5) does not directly endorse the proposition that tomorrow Placido Domingo will do the singing; instead, she reports that, as far as she knows, a performance by Placido Domingo was expected. In another context, suppose A invites B to dinner; B already has tickets for a concert where Placido Domingo is going to sing, and she is reluctant, even if tempted, to give up the opportunity of hearing it. She might then reply with (5). Notice, incidentally, that there is nothing counterfactual about this use, for Placido Domingo is indeed going to sing tomorrow (as far as the utterer of (5) is concerned). Yet the reference to a (not necessarily current) schedule invites the implication that the utterer had elaborated plans in this respect, which somehow interfere with the new proposal.

Contrasting with examples (1)–(3), in modal cases the temporal phrase can appear either in rightmost or in leftmost position, without truth-conditional changes.

(6) Placido Domingo cantava domani.

‘Placido Domingo sang.IMPF tomorrow.’

We will argue in section 10.3 that this contrast reveals the different interpretive roles of temporal phrases in continuous and modal sentences with the imperfect.

Modal readings of the imperfect can be exploited in a dialogue to correct or update the information provided by someone else.

(7) A: Domani Pavarotti canterà alla Scala.

‘Tomorrow Pavarotti is going to sing at the Scala Theater.’

B: Veramente, domani cantava Placido Domingo!

‘Actually, tomorrow Placido Domingo sang.IMPF!’

Here, B counters A’s statement, which concerns a future event, by using a sentence whose verb is in the imperfect. In so doing, she conveys something that can be paraphrased as the expectation was that Placido Domingo sings tomorrow.

The examples we have given of modal/epistemic readings of the imperfect might suggest that they are available only in the presence of a future-oriented adverbial. This is not so. True, the presence of such an adverb makes the modal reading the only available choice, but a modal reading is always available, if the right context is provided. Consider, for instance, the following dialogue:
(8) A: Ieri *ha cantato* Pavarotti.
   ‘Yesterday Pavarotti *sang.*’

B: Ma veramente ieri *cantava* Placido Domingo!
   ‘Actually, yesterday Placido Domingo *sang.IMPF!*’

This exchange is very close to (7). Speaker A states something about a past event—namely, that a performance by Pavarotti took place yesterday—and B rejects A’s statement. She doesn’t do so, however, by explicitly stating that the actual performer was Placido Domingo; this would have required the use of an “ordinary” past tense, as in (9).

(9) Ma veramente, ieri *ha cantato* Placido Domingo.
   ‘Actually, yesterday Placido Domingo *sang.PAST.*’

By using the imperfect, B conveys that the expected performer was Placido Domingo. The rest is left to conversational implicatures. Example (8) is important since it shows that modal readings do not stem from, or require, a mismatch between the past component of the imperfect and the nonpast meaning of the temporal phrase (as Ippolito (this volume) claims). At the same time, (8), together with (7), shows that the modal readings can be used to go so far as to almost endorse the relevant proposition. B’s utterance in (7) is a clear case in point. Hence, it does not seem entirely correct to hypothesize (as Ippolito (this volume) does) that the modal uses of the imperfect trigger a conversational implicature to the effect that at the speech time, the speaker does not fully endorse the relevant proposition (e.g., that Pavarotti will sing tomorrow). If we stick to the suggested paraphrases and maintain that the meaning of such a sentence involves past expectations concerning a tenseless proposition, $p$, then the absence of a present endorsement of $p$ need not be left to conversational implicatures. At the same time, the kind of propositional attitude toward $p$ that the speaker presently (at speech time) entertains is vague and susceptible of further contextual determination, ranging from something close to full endorsement, as in (7), to compatibility with explicit assertion of the contrary, as in (10).

(10) Domani *cantava* Placido Domingo, ma questa notte gli è venuto il mal di gola, quindi sarà sostituito.
   ‘Tomorrow *sang.IMPF* Placido Domingo, but tonight he came down with a sore throat, hence he will be substituted.’

Just to stress this point, it should be remembered that while discussing (5), we considered a scenario in which that sentence was used to actually convey that Placido Domingo will sing tomorrow, and that the speaker has plans in this respect that conflict with the other speaker’s proposal. In other words, (5), in the intended scenario, does not support hypothesizing an implicature to the effect that the speaker does not fully endorse the relevant proposition.
If the present analysis is correct, therefore, even in modal cases, the imperfect contributes a past meaning. This does not affect the event, though, as the future orientation of (5)–(7) makes clear. Rather, it affects a set of expectations or, more generally, propositional attitudes toward the content of the clause: I knew|expected that yesterday|today|tomorrow Placido Domingo sing(tenseless). The paraphrase explicitly extends to examples such as (8) where there is no superficial mismatch with the meaning of the temporal phrase. Future orientation is present in all cases, since an utterance of (8) clearly requires the relevant attitudinal state about Domingo’s singing to occur before the event itself. So, it seems that the suggestion that the relevant attitude takes the form of an expectation is on the right track, for expectations are intrinsically future oriented. The conclusion is that in modal readings, the imperfect differs from other tenses in that it does not locate the event with respect to any temporal anchor. In section 10.5, we will argue that this is actually a more general property of the imperfect, which extends to continuous readings as well.

The modal readings share with the factual/continuous ones a certain amount of context dependency; sentence (11) is odd if uttered out of the blue, as (2) is.

(11) #Mario partiva domani.
‘Mario left.IMPF tomorrow.’

For an utterance of (11) to be felicitous, an appropriate discourse context is necessary wherein the modal meaning can find an appropriate discourse anchor, as in the following example:

(12) Ieri ho incontrato Giuseppe. Mario partiva domani e lui appariva preoccupato.
‘Yesterday I met Giuseppe. Mario left.IMPF tomorrow, and he looked worried.’

This piece of evidence emphasizes the fact that context dependency is an important property of the imperfect, which can take different forms according to the relevant reading. It can be oriented toward times, hence time topics, as in (1)–(3), yielding continuous readings, or toward more generic discourse topics, past expectational backgrounds, as in the examples just discussed.

To conclude this section, let us point out that (12) shows that the relevant set of past expectations need not be the speaker’s. According to at least one possible reading of the second sentence of (12), Mario’s leaving was something communicated by Giuseppe. If so, for the small discourse to be felicitous there is no need to understand the speaker as sharing, at some past time, the expectation that Mario leave tomorrow. All that is required in this case is that Giuseppe had that expectation—that is, the modal background is that of a subject different from the speaker and suitably located at a past time. Generalizing a bit more, all the cases we have considered so far rely on (possibly unexpressed) subjects that are different from the current one (the
speaker) in that they have a different temporal coordinate. Ultimately, this statement covers both examples (8) and (9), where the subject of the expectation can be the speaker as located in the past, and (12), where the subject can be a different person, provided that, again, she is located in the past.

### 10.2.2 Embedded Contexts

In embedded contexts, at least those introduced by verbs of propositional attitude, the properties of the imperfect parallel those found in matrix contexts.

(13) Mario ha detto che Gianni *studia*va matematica.
    ‘Mario said that Gianni *studied*.IMPF math.’

In (13), the embedded event can be interpreted either as simultaneous with the saying or as preceding it. In the latter case, the sentence reports about a past-oriented utterance by Gianni, as for instance in the following example:

(14) Questa mattina Mario ha detto che ieri alle quattro Gianni *studia*va matematica.
    ‘This morning Mario said that yesterday at four Gianni *studied*.IMPF math.’

Modal readings are available in embedded contexts as well.

(15) Due giorni fa Gianni ha detto che ieri *canta*va Placido Domingo.
    ‘Two days ago Gianni said that yesterday Placido Domingo *sang*.IMPF.’

(16) Due giorni fa Gianni ha detto che oggi *canta*va Placido Domingo.
    ‘Two days ago Gianni said that today Placido Domingo *sang*.IMPF.’

(17) Due giorni fa Gianni ha detto che domani *canta*va Placido Domingo.
    ‘Two days ago Gianni said that tomorrow Placido Domingo *sang*.IMPF.’

Examples (15)–(17) are all grammatical, and express future orientation—namely, the embedded event follows the event of the main clause independently of its location with respect to the utterance time. Such a future orientation is (notoriously) unavailable with “normal” past tenses, as in (18a) with an embedded present perfect and in (18b) with an English simple past.

(18) a. *Due giorni fa Gianni ha detto che ieri/oggi/domani *ha cantato* Placido Domingo.
    ‘Two days ago Gianni said that yesterday/today/tomorrow Placido Domingo *sang*.PAST.’

b. *Two days ago John said that Placido Domingo *sang* tomorrow.

The future orientation, and the modal/epistemic reading underlying it, is therefore strictly dependent on properties of the imperfect, which displays properties
similar to those of the so-called future in the past, realized in Italian by the conditional perfect.

(19) Due giorni fa Gianni ha detto che ieri/oggi/domani avrebbe cantato Placido Domingo.

‘Two days ago Gianni said that yesterday/today/tomorrow Placido Domingo would sing.’

Here, the embedded event is temporally located only with respect to the matrix event, and not with respect to the time of the utterance. Moreover, it is future oriented with respect to the matrix clause, independently of its location with respect to the utterance time. The meaning is modal, though we still find a pastness component, affecting the epistemic state, which, as noted earlier, must be based on the past experience of the subject bearing the modality.

Let us now return briefly to examples where the imperfect is interpreted as simultaneous with the matrix verb. Consider in this respect the following well-known contrast:

(20) Gianni ha detto che Maria ha mangiato/mangio una panino. (past)

‘Gianni said that Maria ate a sandwich.’

(21) Gianni ha detto che Maria mangiava un panino. (simultaneous)

‘Gianni said that Maria ate a sandwich.’

In Giorgi and Pianesi 2001b, we argued that (20) instantiates the generalized double access reading (DAR). Normally, in Italian the embedded tense must be interpreted in such a way that both the perspective of the speaker and that of the attitude’s subject are accounted for, as happens with the present tense in traditional DAR contexts.

(22) Gianni ha detto che Maria è incinta.

‘Gianni said that Maria is pregnant.’

In (22), the pregnancy is taken to (somehow) hold both at the saying time and at the time of the utterance. In (21), however, the embedded event is anchored to the matrix clause (say, by being simultaneous with it), but it is not directly related to the speech time/event. In other words, there is no DAR in these cases.

10.2.3 Fictional and Oneiric Contexts

In this section, we consider a different set of examples involving the Italian imperfect, which behave quite differently from the examples previously discussed. What these examples have in common is that they all involve contexts that are in some respects fictional. Unexpectedly, in these sentences the imperfect can fail to have a temporal meaning, and/or a modal one, without undermining the acceptability of the sentence.
We start with the so-called *imparfait préludique*, typically used by children when playing (see (24)) or by any other subjects (e.g., actors) involved in role-playing activities (see (23)).

(23) (Nella terza scena), Gianni *era* il re e Maria la regina.

‘(In the third scene), Gianni was.IMPF the king and Maria the queen.’

(24) (Facciamo finta che) Gianni *era* il ladro e Maria la guardia.

‘(Let’s pretend that) Gianni was.IMPF the thief and Maria the guard.’

In these contexts, the imperfect seems to be atemporal. With actual uses of (23), the state of Gianni’s being the king and Maria’s being the queen is clearly not located with respect to the usual anchor (the speech time/event); in the end, this is fiction. Nor is there any suggestion that the relevant scene was, is being, or will be performed. Finally, (23) can be used when talking about a play that hasn’t been written, hasn’t ever been performed, and never will be performed. At the same time, it could be used to instruct real actors who are actually going to perform a certain scene, as a description of a scene being performed right now, or as a report about a scene performed in the past.

In these examples, the imperfect does not seem to express a modal meaning either. Not, at least, the kind of modal reading discussed above—that is, one involving the notion of expectation. In particular, (23) does not require that there be some past expectation to the effect that Gianni was the king and Maria the queen. Finally, no deontic/volitional/etc. modality is at stake. Quite directly, utterances of (23) are true if and only if it is the case that in the third scene (irrespective of whether it was/is being/will be performed), the people mentioned play the specified characters.

Sentence (24) might seem to indicate some modal involvement, because of the exhortative nature of the matrix (let’s pretend that). But the latter is by no means a necessary ingredient of the phenomenon in question. The same reading arises with plain assertions.

(25) a. Gianni e Maria stanno recitando *Amleto*. Lui *era* il re e lei *era* la regina.

‘Gianni and Maria are playing *Hamlet*. He was.IMPF the king and she was.IMPF the queen.’

b. Facevano che lui *era* il re e lei la regina.

‘(They) were pretending that he was.IMPF the king and she [was.IMPF] the queen.’

As with (24), an utterance of (25a) or (25b) is true if and only if it is/was actually the case that the two people are/were playing the specified characters, acting appropriately, and so on.

If these observations are correct, then the assimilation of the *imparfait préludique* to the modal readings attempted by Ippolito (this volume), is not so straightforward.
Rather, using the *imparfait préludique* turns out to be close to using the imperfect to report about the content of books, movies, and the like—so-called *contensive contexts* (see Katz 1996; see also Zucchi 2001).

(26) In *Peter Pan*, Capitan Uncino *catturava* Campanellino.
   ‘In *Peter Pan*, Captain Hook *captured.*’

In all these cases, the imperfect contributes neither a temporal nor a modal meaning. As for other tenses in contensive contexts, the present tense yields results similar to the imperfect, and both contrast with other past forms.

(27) In *Peter Pan*, Capitan Uncino *cattura* Campanellino.
   ‘In *Peter Pan*, Captain Hook *captures.*’

(28) #In *Peter Pan*, Capitan Uncino ha *catturato/catturo* Campanellino.
   ‘In *Peter Pan*, Captain Hook *has captured.*’

Past tenses are either marginal or very marginal in these contexts, as several scholars have pointed out.\(^5\) Intuitively, the contrast seems to be due to the fact that (28) means that an event of capturing Tinker Bell by Captain Hook took place in the speaker’s past—a meaning not appropriate for describing the content of a book. On the other hand, the acceptability of (26) and (27) emphasizes that in these contexts, the present tense and the imperfect do not require the relevant event to be in the speaker’s past.\(^6\)

Another context with similar properties is provided by dream sentences (see Giorgi and Pianesi 2001c).

(29) Gianni ha sognato che Maria *partiva*.
   ‘Gianni dreamed that Maria *left.*’

(30) #Gianni ha sognato che Maria *è partita/partì*.
   ‘Gianni dreamed that Maria *left.*’

As with the previous cases, the leaving in (29) is not temporally located with respect to the dream (the temporal anchor). That is, it is neither simultaneous with, nor in the past or in the future of, the dreamer. Further evidence that these contexts do not trigger temporal anchoring is provided by the absence of the restrictions on temporal interpretation of embedded past tense achievement predicates in English, often discussed in the literature (see, e.g., Giorgi and Pianesi 1997).

(31) a. John dreamed that Mary ate an apple.
   b. John said that Mary ate an apple.

In (31a), the event of eating need not precede the dreaming, whereas the interpretation of (31b), where anchoring is at play, crucially requires the eating to precede the
saying; that is, the past tense of the embedded verb locates the eating in the past with respect to the perspective of the attitude’s subject. See also section 10.4.

10.2.4 Conclusions
Concluding this section, we can state the generalizations concerning the distribution of the imperfect as follows:

- The imperfect usually needs a local (time) topic. Such a topic can be a temporal reference, an epistemic background, or a fictional location.
- The imperfect can appear in contexts requiring anchoring, where it appears to be interpreted as a past tense. The pastness can directly concern either the event appearing with imperfect morphology or the (epistemic) modality expressed by it.
- When in anchoring contexts, the imperfect can give rise to a simultaneous reading.
- The imperfect can also appear in contexts not enforcing anchoring. In these cases, it does not contribute any temporal information. The resulting readings are atemporal and nonmodal.

Let us also briefly point out that in English, only some of the functions described for the imperfect can be taken over by the simple past.

As a first consideration, note that only a noneventive predicate can be predicated of a topic as the imperfect is—namely, meaning that at a certain time a certain event was happening. If the predicate is eventive, the verb must appear in the progressive.

(32) Yesterday at four John was sick.
(33) #Yesterday at four John studied mathematics.
(34) Yesterday at four John was studying mathematics.

The same happens in embedded contexts as well: namely, an embedded event is interpreted as simultaneous with a superordinate one only if the predicate is noneventive or, if eventive, features progressive morphology.

(35) John said that Mary was sick. (simultaneous)
(36) John said that Mary ate a sandwich. (shifted in the past)
(37) John said that Mary was eating a sandwich. (simultaneous)

In previous work (Giorgi and Pianesi 1997), we analyzed these contexts and attributed the differences to aspectual properties varying across languages. We will briefly address this question in section 10.3.

The English past can never be interpreted modally, independently of word order, either in matrix or in embedded clauses.
Moreover, the English past cannot be used in certain fictional contexts.

(42) #I was the king and you were the queen.

(43) #In Peter Pan, Captain Hook captured Tinker Bell.

Sentence (42) is grammatical, but it does not correspond to Italian préludique sentences. Sentence (43) is infelicitous if used to describe the content of a fictional context.

On the other hand, the English past is perfectly acceptable in dream contexts, where it plays the same role the imperfect does in Italian.

(44) John dreamed that Mary ate an apple.

The interpretation of the embedded clause is analogous to that of the Italian one. As far as the aspectual interpretation is concerned, the English embedded verb in (44) is perfective, as expected. It contrasts with the embedded verb in the following example:

(45) John dreamed that Mary was eating an apple.

In (45), the embedded event is viewed as continuous.

With the exception of dream contexts—which will be considered below—we can therefore conclude that the English past must always, and only, be interpreted as a temporal relation, locating an event with respect to another one, and can never be used in contexts where the verbal form undergoes some other kind of interpretation.7

10.3 The Imperfect at the Interface

10.3.1 Terminativity versus Nonterminativity

In this section, drawing mainly on our previous work (see especially Giorgi and Pianesi 2001a), we briefly review the aspectual properties of the imperfect, in particular with respect to the telic/atelic distinction. Our purpose is to clarify a number of points that will be useful when we turn to developing our theory of the temporal interpretation of the imperfect in section 10.5.

The telic/atelic distinction can be firmly established by resorting to the well-known for-X-time/in-X-time adverbial test. Sentences classed as telic can be modified by in-X-time adverbials, but not by for-X-time adverbials.

(46) a. John ate an apple in/*for ten minutes.
b. John ran home in/*for ten minutes.
c. John reached the top in/*for ten minutes.
d. John died in/*for ten minutes.

Conversely, atelic sentences admit *for-X-time* adverbials but resist *in-X-time* adverbials.

\[(47)\]

a. John ate apples #in/for ten minutes.
b. John ate #in/for ten minutes.
c. John ran #in/for ten minutes.
d. John pushed the cart #in/for ten minutes.

Finally, the telic/atelic distinction is affected by the nature of the arguments the verb combines with. Thus, \((46a)\), where the direct object is countable, is telic, whereas \((47a)\), with a bare plural, is atelic. Similarly, \((46b)\), with a prepositional locative phrase, is telic, whereas \((47c)\), lacking any such phrase, is atelic.

The *in-X-time/for-X-time* adverbial test seems to be a rather secure basis for distinguishing telic and atelic sentences. Extending it to languages other than English, and to tenses other than the English simple past, yields interesting results. With the Italian imperfect, the use of *in-X-time/for-X-time* adverbials makes the factual, continuous reading unavailable, whereas, depending on the actional nature of the verbal predicate, the habitual reading might remain.

\[(48)\]

a. Mario *mangiava* (una mela) *in/* per un’ora.
   'Mario *ate.IMPF* (an apple) *in/* for an hour.'
b. Mario *correva* (a casa) *in/* per un’ora.
   'Mario *ran.IMPF* (home) *in/* for an hour.'

For our purposes, the stars in \((48)\) mark the unavailability of the factual reading. Factoring habituality out, the examples in \((48)\) seem to show that the telic/atelic distinction simply does not apply to continuous sentences with the imperfect. The problem at this point is to figure out what’s wrong with the imperfect. One possibility is that the problem arises because the imperfect is an imperfective verbal form, a conclusion strengthened by the observation that the same pattern can be reproduced with the Italian present, another imperfective tense.\(^8\)

\[(49)\]

a. Mario *mangia* (una mela) (*in/* per un’ora).
   'Mario *eats* (an apple) *in/* for an hour.'
b. Mario *corre* (a casa) (*in/* per un’ora).
   'Mario *runs* (home) *in/* for an hour.'

Whereas sentences with present tense eventive predicates—with the exception of achievement predicates—are grammatical in Italian, yielding a continuous reading, the same sentences become ungrammatical when featuring an *in-X-time* or *for-X-time*
adverbial. Therefore, it seems possible to propose a generalization to the effect that the telic/atelic distinction does not apply to imperfective predicates. This, however, is not the whole story. In Giorgi and Pianesi 2001b, we proposed the following generalization:

(50) a. The notional counterpart of morphologically perfective verbal forms is 
\textit{terminativity}.

b. The morphological distinction between perfective and imperfective verbal 
forms does not correspond to two distinct aspectual (notional) values; 
rather, it corresponds to the presence versus absence of the unique aspectual 
value of terminativity.

The first thesis is rather simple and, in a way, uncontroversial. Sticking, for the time 
being, to an intuitive notion of terminativity, (50b) states that the events referred 
to by perfective predicates are terminated. The second thesis, on the other hand, 
says that the distinction between perfective and imperfective verbal forms does not 
amount to that between terminated and nonterminated events. Rather, perfectivity/ 
imperfectivity distinguishes between verbal forms enforcing terminativity and verbal 
forms that do not impose any requirement to this effect. In technical terms, the 
perfective/imperfective distinction is a privative one.

Consider the following sentences:

(51) a. (Alle tre) Mario \textit{mangiava} una mela (e la sta mangiando 
tutt’ora). (continuous, nonterminative) 
‘(At three) Mario \textit{ate.IMPF} an apple (and he is still eating it).’

b. *(Alle tre) Mario \textit{mangiò/ha mangiato} una mela (e la sta mangiando 
tutt’ora). (*continuous, terminative) 
‘(At three) Mario ate (SP)/has eaten an apple (and he is still eating it).’

In its continuous reading, it is possible to understand (51a) as being made true by an 
event $e$ such that $e$ was ongoing at a past time and is still ongoing at the utterance 
time. This is not possible if the imperfect tense of (51a) is replaced by a perfective 
one, as in (51b): in this case, the intuition is that the event has come to an end and 
that it cannot continue at the utterance time. Similar effects can be obtained if the 
accomplishment predicates of (51) are replaced by activity predicates.

(52) a. Questa mattina Mario \textit{spingeva} il carretto, e lo sta spingendo tutt’ora. 
‘This morning Mario \textit{pushed.IMPF} the cart, and he is still pushing it.’

b. ?Questa mattina Mario \textit{ha spinto} il carretto, e lo sta spingendo tutt’ora. 
‘This morning Mario \textit{pushed.PERF} the cart, and he is still pushing it.’

While it is possible to understand (52a) as being made true by one and the same 
event, which was ongoing at a past time and is still ongoing at the time of utterance, 
this is not the case with (52b). If accepted, (52b) requires two different events: a ter-
minated event making the first clause true, and a nonterminated one that is ongoing at the utterance time. These differences do not depend on the use of past tenses. They can be found with the future tense, too.

(53) *Domani mattina Mario mangerà una mela. Alle tre del pomeriggio la stara ancora mangiando.
   ‘Tomorrow morning Mario will eat an apple. At three in the afternoon he will still be eating it.’

To conclude, perfective verbal forms require events that are, in an intuitive sense, terminated, whereas imperfective ones may refer to nonterminated events. As a further argument in favor of (50b)—namely, the noncommittal nature of imperfective verbal forms with respect to terminativity—consider the following sentence:

(54) Tre ore fa Messner raggiungeva la vetta (*e la sta ancora raggiungendo). (*continuous)
   ‘Three hours ago Messner reached the top (*and he is still reaching it).’

This example is parallel to (51b). Despite the presence of the imperfect, the event is terminated—Messner reached the top at a past time—and the continuous/ongoing reading is disallowed. Consider also (55).

(55) a. #Mario raggiungeva la vetta quando un fulmine lo colpì (e lui non arrivò mai in cima).
   ‘Mario reached the top when a lightning bolt struck him (and he never got to the top).’

   b. Mario stava raggiungendo la vetta quando un fulmine lo colpi (e lui non arrivò mai in cima).
   ‘Mario was reaching the top when a lightning bolt struck him (and he never got to the top).’

Example (55a) is odd because the first part asserts that Mario did reach the top, whereas the second implicitly denies that this was the case. However, if we replace the imperfect tense of (55a) with a progressive form, as in (55b), the oddness is removed. Now the sentence conveys that Mario was on the point of reaching the top, when a lightning bolt struck him so that he never actually reached it.

Examples (54) and (55) show that sentences featuring an achievement predicate in the imperfect tense pattern together with perfective sentences in the relevant respects: namely, they yield terminative readings. Given that in other cases—for example, (52a) and (53a)—sentences with an imperfective predicate can provide for nonterminative readings, it is possible to conclude that (i) the facts in (54) and (55) are due to the actional properties of achievements, and (ii) the imperfect is compatible
with both terminative and nonterminative readings. This proves (50b): imperfective verbal forms are aspectually neutral.

Now, consider the following sentences:

(56) a. Ieri Gianni *raggiungeva* la vetta in tre ore.
    ‘Yesterday Gianni reached.IMPF the top in three hours.’

b. Ieri Mario *correva* il miglio in un’ora.
    ‘Yesterday Mario ran.IMPF the mile in an hour.’

c. Due giorni fa Gianni *leggeva* la *Divina Commedia* in tre ore.
    ‘Two days ago Gianni read.IMPF the *Divine Comedy* in three hours.’

Despite the presence of the imperfect, these three sentences report about terminated events, something that is possible according to (50b). Importantly, in these cases *in-X-time* adverbials are allowed, showing that the predicates in (56), when terminative, are also telic.

These facts are important because they allow us to improve on the conclusion we reached earlier about why the telic/atelic distinction does not seem to apply to the continuous readings of sentences with the imperfect (or present) tense. The right generalization seems to be that telicity/atelicity is restricted to terminative predicates and that the restriction is independent of the (morphological) ways terminativity is realized—either by means of a perfective verbal form, as in *Mario corse a casa in tre ore* ‘Mario ran home in three hours’, or by means of imperfective ones, as in (56).

As expected, it is sometimes possible to force terminative atelic readings with the imperfect.

(57) Nel 1995 Mario Rossi *dormiva* per tre giorni, battendo cosı `il record.
    ‘In 1995 Mario Rossi slept.IMPF for three days, thus beating the record.’

Suppose that the topic of the discourse is how long people can sleep before waking. Then (57) would be both appropriate and acceptable, reporting about a remarkable achievement by Mario Rossi in this respect. The event making the sentence true is terminative and atelic, as witnessed by the acceptability of the *for-X-time* adverbial. Interestingly, similar conclusions hold for the events featured in sentences with modal readings.

(58) a. Domani Gianni *correva* per/*in un’ora.
    ‘Tomorrow Gianni ran.IMPF for/in an hour.’

b. Domani Gianni *leggeva* la *Divina Commedia* in tre ore.
    ‘Tomorrow Gianni read.IMPF the *Divine Comedy* in three hours.’

In conclusion, we have established the following three facts:

(59) a. The notional counterpart of morphologically perfective verbal forms is terminativity.
b. The morphological distinction between perfective and imperfective verbal forms does not correspond to two distinct aspectual (notional) values; rather, it corresponds to the presence versus absence of the unique aspectual value of terminativity.
c. The telic/atelic distinction applies only to terminative predicates.

As already observed, the relevant connection is that between telicity/atelicity, on the one hand, and terminativity/nonterminativity, on the other. Both distinctions are notional/semantic, whereas that between perfectivity and imperfectivity is morphological and plays a role only as a vehicle for the other two. The proposal accounts for the phenomena discussed above (the vacuity of the telic/atelic distinction with continuous predicates) while also addressing such facts as (57) (terminative predicates built out of imperfective verbal forms) without resorting to such devices as coercion.

10.3.2 Temporal Phrases

In this section, we focus on temporal phrases, showing that both their distribution and their contribution to truth-conditions vary according to the status of the verbal predicate along the terminative/nonterminative dimension (see also Delfitto and Bertinetto 2000).

(60) a. Alle tre Mario *ha preso* il té.
   ‘At three Mario *had* tea.’
b. Mario *ha preso* il té alle tre.
   ‘Mario *had* tea at three.’

In perfective sentences such as these, the initial versus final position of a temporal locating phrase such as *alle tre* ‘at three’ does not affect truth-conditions. Both (60a) and (60b) are true if and only if there is a past and terminated event of Mario having tea that occurred at three o’clock. Using the predicate *t* to pick out terminated events (see Giorgi and Pianesi 2001b), and given the asymmetric *at* relation, which is true of two temporal entities (events and/or times) if and only if the first is located at the second, we have the following truth-conditions for both (60a) and (60b).

(61) \[ \exists e (\text{have-tea}(e) \land t(e) \land \text{at}(e, \text{three-o’clock})) \]

With imperfective sentences, the position of the temporal phrase does matter.

(62) a. Alle tre Mario *prendeva* il té. (continuous, habitual, futurate)
   ‘At three Mario *had.IMPF* tea.’
b. Mario *prendeva* il té alle tre. (*continuous, habitual, futurate)
   ‘Mario *had.IMPF* tea at three.’

When the temporal locating phrase is in sentence-initial position, the continuous/nonterminative, habitual, and future-oriented (modal) readings are all available. On
the other hand, when the temporal locating phrase is sentence-final, the factual/continuous reading is unavailable, and (62b) cannot convey that at the given past time (three o’clock), an event of having tea was ongoing. Achievement predicates, which always provide terminative readings, give rise to the same pattern as in (60), with the position of the temporal phrase being truth-conditionally irrelevant.

(63) (Alle tre) Mario *raggiungeva* la vetta (alle tre).

‘(At three) Mario *reached.IMPF* the top (at three).’

Thus, setting habitual and futurate readings aside, it must be concluded that sentence-final locating temporal phrases are allowed only with terminative readings.

Those differences seem to be related to the fact that in terminative sentences, temporal phrases provide a value for the temporal location of the event, whereas this is clearly not the case in nonterminative, continuous ones. Thus, sentences (60a), (60b), and (63) report about (terminated) events whose temporal location is as specified by the temporal phrase. On the other hand, a sentence such as (62a), on its continuous reading, does not have the same meaning: its truth-conditions are not such that there is a past event whose temporal location is three o’clock. This is clear from the fact that (62a) can be continued as follows:

(64) . . . e lo *sta ancora bevendo*.

‘. . . and he *is still drinking it.*’

Given that the relevant event can still be ongoing at the utterance time, it is impossible to assign it a (past) location. Indeed, it turns out that nonterminated events cannot be located at all: only terminated events can. How would a nonterminated event be assigned a temporal location, under the intuitive understanding that the latter is some entity temporally containing the former? (See Giorgi and Pianesi 2001c.)

If the ability of a temporal phrase to provide the location of the event depends on whether the event is terminative, we expect the temporal phrase will have this ability not only in sentences with perfective verbal forms, like those in (60), but also in imperfective sentences whenever terminative readings arise. We have already shown that this expectation is confirmed by achievement predicates in the imperfect tense (see (63)). It is also borne out by the “modal” readings of sentences with the imperfect whose events, as argued in connection with (58), are terminated.

(65) a. Domani Mario *partiva*.

‘Tomorrow Mario *left.IMPF.*’

b. Mario *partiva* domani.

‘Mario *left.IMPF tomorrow.*’

As with (60), the position of the temporal phrase does not affect the sentence’s truth-condition. In both cases, utterances of the examples in (65) are true if and only if
it was expected/established that Mario would leave on the mentioned day. In other words, in these cases too the temporal phrase fixes the temporal location of the event. Finally, the same conclusions hold for other cases of terminative readings with the imperfect—for example, with “reportive” sentences.

(66) a. Nel 1492 Cristoforo Colombo scopriva l’America.
   ‘In 1492 Cristoforo Colombo discovered. IMPF America.’

b. Cristoforo Colombo scopriva l’America nel 1492.
   ‘Cristoforo Colombo discovered. IMPF America in 1492.’

As expected, the two sentences have the same truth-conditions, irrespective of the position of the temporal phrase.

It can be concluded that the ability of a temporal phrase to fix the location of the event is determined by aspectual properties: as soon as the event is terminated, the temporal phrase can function in the expected way, yielding truth-conditions that are insensitive to its position. As we have shown, this is so irrespective of whether terminativity is morphologically enforced (by means of a perfective verbal form), or whether it is due to lexical properties (as in (63)) or to any other source.

Delfitto and Bertinetto (2000) have argued, as have we (Giorgi and Pianesi 1997), that the temporal phrase of an example such as (60a) actually is an argument of the verb, indeed, the lowest one. Cases such as (60b), then, are obtained from (60a) by moving the temporal argument to sentence-initial position. The facts just discussed suggest extending this account to all terminative sentences, again irrespective of how terminativity is arrived at: in (60), (63), and (65), the temporal phrase fixes the location of the event and is an argument of the verb. Quite generally, we can state the following conclusions:

(67) a. Temporal arguments locate the event.
   b. Their presence is ruled by aspectual properties; in particular, they are
      selected/licensed whenever the predicate is terminative.

Given this picture of the syntax and semantics of temporal phrases in terminative sentences, what can be said of cases such as (62a) where those phrases appear in their continuous/factual reading? According to the observations above, alle tre ‘at three’ in (62a) does not fix the location of the event. If (67) is taken as stating the defining properties of temporal arguments, it can be concluded that those appearing in contexts like (62a) are different entities.

We propose that those temporal phrases are topics that are generated in leftmost position. Interpretively, they introduce (or regulate) the perspective from which the truth or falsity of the rest of the clause is assessed, as we will show in section 10.5. This view accords well with the idea that the imperfect is a present in the past: once the past perspective is fixed, by virtue of the time topic, the interpretation proceeds
as if the main tense were the present. In past works (Giorgi and Pianesi 2001a,b), we argued that sequence-of-tense phenomena require that the perspective of the subject (the believer, the sayer, etc.) be taken into account when interpreting embedded clauses. We also showed how this can be accomplished through a semantics that manipulates assignment sequences, making them sensitive to those subjects. Here, we would like to suggest that the perspective shifts induced by the imperfect can be accounted for by resorting to, fundamentally, the same machinery.

10.4 Sequence of Tense

In the previous section, we suggested that the imperfect tense induces perspective shifts. In section 10.5, we will propose that a mechanism of assignment sequence change (or update) similar to that developed for tenses in subordinate contexts can be exploited to account for the basic properties of the imperfect tense. Hence, it seems appropriate to devote this section to giving some details about the facts mentioned above and about the proposed account of temporal anchoring.

Besides the facts discussed in section 10.2.3 in connection with (29)–(31), there is other evidence indicating that dream contexts do not enforce or require anchoring. For instance, (68a) and (68b) are acceptable, simply conveying that in Gianni’s dream the singing or leaving was taking place at the specified times (yesterday, today, or tomorrow).

(68) a. Gianni ha sognato che ieri/oggi/domani cantava Placido Domingo.
   (not modal)
   ‘Gianni dreamed that yesterday/today/tomorrow Placido Domingo sang.IMPF.’

b. Gianni ha sognato che partiva ieri/oggi/domani. (not modal)
   ‘Gianni dreamed that he left.IMPF yesterday/today/tomorrow.’

If the matrix predicate is a verb of saying, the only available reading is that in which the subordinate clause has the sort of “modal” reading discussed in section 10.2.1.

(69) a. Gianni ha detto che domani cantava Placido Domingo. (modal)
   ‘Gianni said that tomorrow Placido Domingo sang.IMPF.’

b. Gianni ha detto che partiva domani. (modal)
   ‘Gianni said that he left.IMPF tomorrow.’

Sentence (69a) conveys that Gianni said something to the effect that, from his perspective, it was expected that Placido Domingo would sing tomorrow.

Furthermore, we know that achievement predicates in the imperfect tense do not give rise to simultaneous readings when embedded under verbs of saying, given that,
for aspectual reasons, they could not be properly anchored. Only backward shifted readings are available for (70a), provided that the context supplies a suitable temporal referent.\textsuperscript{13}

(70) a. \#Gianni ha detto che Maria \textit{raggiungeva} la vetta.
   ‘Gianni said that Maria \textit{reached}.\textsuperscript{IMPF} the top.’
   
   b. Gianni ha sognato che Maria \textit{raggiungeva} la vetta.
   ‘Gianni dreamed that Maria \textit{reached}.\textsuperscript{IMPF} the top.’

Such a restriction is not at work in the dream context of (70b).

Finally, in dream contexts the matrix eventuality may be unavailable for reference from within the subordinate clause. Consider a temporal locution such as \textit{in quel momento} ‘at that moment’. It is anaphoric, as it ordinarily requires a temporal referent to be made available by the context, either sentential or extrasentential.

(71) \#In quel momento Gianni \textit{mangiava/mangio} una mela.
   ‘At that moment Gianni \textit{ate}.\textsuperscript{IMPF/\textsc{simple past}} an apple.’

Sentence (71) is odd if the context does not provide a suitable temporal reference for the locution \textit{in quel momento} to draw its reference from. Matrix eventualities seem capable of playing this role, so the sentences in (72) are acceptable, even when uttered out of the blue.

(72) a. Gianni credeva che in quel momento Maria \textit{mangiassse} una mela.
   ‘Gianni believed that at that moment Maria \textit{ate}.\textsuperscript{PAST SUBJ} an apple.’
   
   b. Gianni ha detto che in quel momento Maria \textit{mangiava} una mela.
   ‘Gianni said that at that moment Maria \textit{ate}.\textsuperscript{IMPF} an apple.’

In both cases, \textit{in quel momento} can have the same referent as the matrix eventive variable. However, this possibility is hardly available with dream predicates.

(73) \#Gianni ha sognato che in quel momento Maria \textit{mangiava} una mela.
   ‘Gianni dreamed that at that moment Maria \textit{ate}.\textsuperscript{IMPF} an apple.’

The temporal locution can connect to something outside the dream context, provided that it is not the dream itself. An example is (74), where the event providing the reference is the event consisting in the taking of the math examination.

(74) Tre giorni fa Mario ha dato l’esame di matematica. Ieri Carlo ha sognato che in quel momento Mario \textit{partiva}.
   ‘Three days ago Mario took the math examination. Yesterday Carlo dreamed that at that moment Mario \textit{left}.\textsuperscript{IMPF}.’

Also, \textit{in quel momento} can draw its reference from times/events that are part of the dream content.
Mario ha sognato che sua sorella entrava. In quel momento la madre piangeva.

‘Mario dreamed that his sister entered.IMPf. At that moment his mother was crying.’

This is a case of modal subordination, where the second sentence is understood as continuing the description of the dream, and the temporal locution’s antecedent consists of the event of Mario’s sister’s entering.

The oddness of (73) is a striking fact, especially in view of the acceptability of (74), which shows that contextually supplied referents are available in dream sentences. More generally, we consider these observations important because they show that temporal anchoring is not (easily) reducible to cross-clausal anaphoric processes—that is, processes that rely on previously supplied linguistic material for the purpose of reference assignment. If this were so, and temporal anchoring simply amounted to the fact that the embedded tense directly accessed the matrix eventuality, then we would have trouble explaining why such a process does not obtain in the dream contexts we have discussed. Why (and how) shouldn’t the matrix eventuality figure among the accessible referents for the tense of (73)? Moreover, even if we stipulated that tenses embedded in dream contexts behave in peculiar ways, we would still have to explain why cross-clausal anaphora should fail with in quel momento.

We must then admit that (i) when in quel momento has the same reference as the temporal anchor, as in (72), this is not because it takes its reference directly from the matrix event (time), but because it has the same reference as the (local) temporal anchor; and (ii) from within the embedded clause, the matrix event is either available (represented) as the local anchor, or not accessible at all. Hence, utterances of the sentences in (72) are felicitous for the following reasons:

- Temporal anchoring is enforced.
- The temporal anchor is the saying/belief eventuality, and it is available from within the embedded clause.
- The temporal locution ends up having the same referent as the temporal anchor—that is, the saying/belief eventuality.

On the other hand, (73) is odd because temporal anchoring is not enforced, so that the dream eventuality is not an available referent.

Ultimately, temporal anchoring turns out to be closer to indexicality than to anaphora: in both cases, reference is not simply a matter of what has been made available by linguistic means, but involves other factors as well. We will return to those in a while.

Before closing our review of dream context phenomena, we note that if the tense of the embedded clause is an indicative tense other than imperfect, a different meaning—the evidential dream—is obtained (see Giorgi and Pianesi 2001c).
(76) a. Gianni ha sognato che c’è stato un terremoto.
    ‘Gianni dreamed that there has been an earthquake.’

   b. Gianni ha sognato che Maria mangerà un panino.
    ‘Gianni dreamed that Maria will eat a sandwich.’

In these cases, (some form of) temporal anchoring is enforced.

(77) La settimana scorsa Gianni ha sognato che ieri Maria vinceva/*ha vinto al totocalcio.
    ‘Last week Gianni dreamed that yesterday Maria won the lottery.’

The sentence is grammatical with the imperfect, but not with the present perfect. The incompatibility of the present perfect with the future-oriented temporal phrase shows that with such a verbal form, temporal anchoring is enforced. In some sense, the subordinate event of (77) is located in the (speaker’s) past.

The availability of temporal anchoring with nonimperfect indicative tenses has further consequences. Consider the following sentences:

(78) a. Gianni ha sognato che c’è stato un terremoto.
    ‘Gianni dreamed that there has been an earthquake.’

   b. Gianni ha sognato che c’era un terremoto.
    ‘Gianni dreamed that there was an earthquake.’

These sentences not only differ in that the first locates the earthquake in the past, with respect to the utterance and the dream, whereas the second sentence does not. They also differ in the kind of attitude the speaker takes with respect to the content of the subordinate clause. When uttering (78b)—and, more generally, any dream sentence with the imperfect—the speaker simply reports about someone’s dream. When using (78a), on the other hand, the speaker does something more: she uses the dream to talk about current states of affairs, by exhibiting an attitude of hers toward the dream content. More precisely, the speaker presents the content of the dream as concerning her actuality, by offering the dream itself as evidence. Obviously, the speaker need not commit herself to the truth of the embedded proposition; rather, she is presenting a proposition/possibility together with supporting evidence, the dream. In Giorgi and Pianesi 2001a, we argued at length that these and other facts make dream contexts with a nonimperfect indicative tense very similar to epistemic evidentials.

(79) Visto che i suoi libri sono qui, Mario deve essere/sarà in casa.
    ‘Given that his books are here, Mario must be/will be at home.’

In this case, the presence of the books is offered as evidence in favor of Mario’s presence. These contexts and nonimperfect dream sentences exhibit several similarities at the interface, even if they are realized by means of different morphosyntactic structures. For more on this topic, see Giorgi and Pianesi 2001a.
So we can state the following generalizations concerning dream contexts:

- A dream context can be nonanchored, in which case the tense is the imperfect.
- When a tense other than the imperfect is used, temporal anchoring is again obligatory. Temporal anchoring mainly obtains with respect to the speaker, and goes together with the expression of some kind of attitude on the speaker’s part toward the proposition expressed by the embedded clause (the dream’s content).

Moreover, the discussion above suggests that when temporal anchoring obtains, the anchor is explicitly represented at some level in the embedded clause and is available for anaphoric reference.

We argued above for a close relationship between temporal anchoring and indexical phenomena; the two share a reliance on information that is not provided by linguistic means alone. That tenses behave like indexicals in matrix clauses is by no means a new idea. More interesting is the possibility that they display this property in embedded clauses too.

Indexicality is usually associated with reference to such “contextual” parameters as the time, the agent, or the place of utterance/thought. According to the classical view (Kaplan 1989), indexical reference always targets the current context. Recently, however, attempts have been made to show that indexicals can shift their reference, considering contexts different from the current one (see Schlenker 2003).

In previous work (see Giorgi and Pianesi 2001a,b), we argued for a theory assigning subjects of (ascribed) mental states a major role in determining the kind of assignment sequences to be used in the evaluation of embedded clauses. More precisely, when an embedded proposition is anchored, the temporal anchor corresponds to the temporal coordinate of the subject to whom the mental state/event is ascribed. Finally, we hypothesize that such a temporal coordinate is nothing but the eventuality (communicative act, thought, etc.) the subject is engaged in. Hence, the content of thoughts and of dicta are anchored, and the anchoring entity (the subject’s temporal coordinate) is the thought/utterance itself.

Reports about thoughts and dicta maintain this anchoring and reproduce the temporal perspective of the subject by using the very attitudinal state/event as the temporal anchor, with the embedded tense connecting the event to it. This explains why tenses do not behave in embedded contexts the same way as in matrix ones: their primary function is to allow speakers/hearers to recover the relation between the described events/states and the temporal anchor, which was at work in the ascribed thought/utterance.

The existence of contexts in which temporal anchoring is not enforced requires that we sharpen these conclusions. Dreams and statements about books have content, referring to events, states, and the like. But dreams differ from thoughts in that there
is no intrinsic (ontological?) connection between the temporal anchor of the subject/dreamer and the dreamed event. Despite being mental events, dreams do not have the same status as thoughts. In particular, whereas the contents of thoughts and utterances include the connection between the events/states they talk about and thoughts/utterances themselves, this is not the case with dreams. The latter are not tensed the same way thoughts are: thoughts and utterances are, so to speak, containers that require their content to be connected to them; dreams are containers that do not. Similarly with books: the content of _Moby Dick_ as expressed by _In Moby Dick_ the whale smashes the boat with its tail is untensed in that there is no connection between the smashing and the container.

So, there are mental events/states whose content includes a connection with the event/state itself, and others whose content does not. What is important here is that reports about the former (have to) reproduce that temporal connection, whereas reports about the latter don’t, for there isn’t any to reproduce. Notice that the distinction seems to parallel that between predicates that express a propositional attitude and predicates that do not. The former (say, believe, etc.) enforce temporal anchoring; that is, they require the embedded event to be linked to the subject’s temporal coordinate (the attitude itself). The latter do not.

We will now try to capture these intuitions within an ILF-based semantics for embedded clauses, according to which verbs taking clausal complements establish a relation between individuals (sayers, believers, dreamers) and syntactic objects enriched with semantic values, so-called *interpreted logical forms* (see Higginbotham 1991; Larson and Ludlow 1993; Larson and Segal 1995). As usual, values for variables (traces, pronouns, etc.) are provided by assignment functions/sequences. If tenses contribute a relation between the eventive variable and the temporal coordinate, then the discussion above justifies the following hypotheses:

(80) a. Temporal anchoring amounts to the fact that the ILF of the embedded clause contains a relation between the relevant event/state and the eventuality of the embedding clause (the attitude’s eventuality).

b. If a clause is the complement of a verb entailing a propositional attitude by the subject, then temporal anchoring obtains.

If we factor out the relational part (which we can take to be due to tense), we obtain the following hypothesis:

(81) If a clause expresses the object of an attitude by a subject, then its ILF contains the attitude’s eventuality.

By this, we mean that the ILF of a clause that expresses the (ascribed) content of a propositional attitude of a subject _X_ has one of its nodes annotated with a value corresponding to the attitude’s eventuality. Given that the latter amounts to
the temporal coordinate of the attitude’s subject, we can state the following condition on propositional attitudes:

(82) **Condition on propositional attitudes**

If a clause is the object of an attitude by a subject, then its ILF contains her temporal “egocentric coordinate” (Evans 1982).

In general, if $S$ is a clause describing the content of the attitude of some subject $X$, the tense relates the event to $X$’s egocentric coordinate. In ordinary matrix clauses (assertions), the subject in question is the speaker, and the attitude is one of asserting the truth of the clause itself. In clauses that are subordinate to verbs of propositional attitude, $X$ is the attitude’s subject. On the other hand, if $S$ is subordinate to the verb *dream*, anchoring does not obtain and the behavior of tense may vary according to other factors. In the end, tenses seem to behave as shiftable indexicals: rather than always and invariably picking out the speaker’s coordinate, in anchored contexts they relate the relevant entity (time and/or event) to the temporal coordinate of the attitude’s subject.

The sensitivity of tenses to subjects of propositional attitudes suggests that the computation of ILFs exploits assignment sequences that are appropriately manipulated/updated, so as to provide the correct value for the subject’s temporal coordinate.\footnote{For the sake of simplicity, let us assume that tenses are relational devices, which relate a distinguished variable, $x_0$, to the eventive variable.}

(83) a. $\text{Val}(\langle x_0, e \rangle, \text{Pres}, \sigma) \iff \text{overlaps}(\sigma(0), \sigma(e))$

b. $\text{Val}(\langle x_0, e \rangle, \text{Past}, \sigma) \iff \sigma(e) < \sigma(0), \text{etc.}$

Assignment sequences for clauses reporting about attitude’s contents are relativized to the subject’s coordinate. Hence, we distinguish between $\sigma_{\text{sub}}(0)$ and $\sigma_{\text{sp}}(0)$, the values assigned by the subject-oriented and speaker-oriented sequences, respectively. $\sigma_{\text{sub}}(0)$ corresponds to whatever value the matrix eventive variable is given by $\sigma_{\text{sp}}$ (the subject’s attitude episode).\footnote{In both cases the sequence assigns the 0th variable the (contextually determined) value of the temporal coordinate of the attitude/communicative act episode.}

### 10.5 Deriving the Properties of the Imperfect

In this section, we will develop the idea that the main properties of the imperfect discussed in the previous section can be explained by hypothesizing that this tense is a “present in the past.” This is a recurring idea that builds on the many parallelisms between the two tenses, some of which we have already remarked upon. Here is a sample of relevant cases:
(84) **Continuous/Factual readings**
  a. Mario *canta/mangia* (una mela)/*ama* Maria.
     ‘Mario *sings/eats* (an apple)/*loves* Maria.’
  b. (Alle cinque) Mario *cantava/mangiava* (una mela)/*amava* Maria.
     ‘(At five) Mario *sang.IMPF/ate.IMPF* (an apple)/*loved.IMPF* Maria.’

(85) **Habitual readings**
  a. Mario *mangia* sempre/spesso/talvolta una mela.
     ‘Mario *eats* always/often/sometimes an apple.’
  b. Mario *mangiava* sempre/spesso/talvolta una mela.
     ‘Mario *ate.IMPF* always/often/sometimes an apple.’

(86) **Future-oriented (modal) readings**
  a. Domani Mario *scrive* a sua sorella.
     ‘Tomorrow Mario *writes* to his sister.’
  b. Domani Mario *scriveva* a sua sorella.
     ‘Tomorrow Mario *wrote.IMPF* to his sister.’

Both the present tense and the imperfect are aspectually neutral. In particular, with both tenses, continuous readings are nonterminative.

(87) a. #Mario *mangia* una mela per un’ora/in un’ora.
    ‘Mario *eats* an apple for an hour/in an hour.’
 b. #(Alle tre) Mario *mangiava* una mela per un’ora/in un’ora.
    ‘(At three) Mario *ate.IMPF* an apple for an hour/in an hour.’

Both tenses admit modal readings, and in both cases they are terminative.

(88) a. Domani Mario *mangia* una mela in un’ora.
    ‘Tomorrow Mario *eats* an apple in an hour.’
 b. Domani/Il giorno dopo Mario *mangiava* una mela in un’ora.
    ‘Tomorrow/The day after Mario *ate.IMPF* an apple in an hour.’

### 10.5.1 The Imperfect in Matrix Clauses

There seem to be plenty of empirical reasons in favor of the idea that the imperfect tense is a present tense upon which some kind of temporal shift has operated. According to the examples above, the imperfect seems to behave as the present tense would, though it presents events/states not from the same perspective as that of the speaker, but from a point of view that has been shifted in the past. For instance, in (84b) the point to which shifting takes place is provided by the temporal phrase that appears in the leftmost position of the sentence.

Our strategy in what follows will be twofold. First, we will take the idea of the imperfect as past-shifted present tense at face value, proposing that the relevant tense
morpheme contributes two features: [*past] and [present]. The feature [*past] is pre-
suppositional and ensures that the relevant assignment sequence obeys certain con-
ditions. The feature [present] behaves as one would expect a present tense to behave,
basically obeying axiom (83a).

Second, as for the shift of temporal perspective, we implement it as a change/
update of temporal coordinate and, eventually, of assignment sequence: the imper-
flect is a present tense that is evaluated with respect not to the speaker’s (current)
temporal coordinate, but to a past one. Therefore, let us hypothesize that in an-
chored contexts, the continuous reading of the present tense amounts to requiring that
a nonterminated event overlap the temporal coordinate, as provided by the current
assignment sequence, σ(0). Normally, in main clauses the temporal anchor is the
utterance; hence, σ(0) = u. With this, a continuous/factual reading of (89a) has the
logical form in (89b) and the truth-conditions expressed in (89c).

(89) a. Mario dorme.
   ‘Mario sleeps.’
   b. [Mario T-pres [VP dorme]]
   c. ∃e(sleep(e) ∧ overlap(e, u))

With the imperfect, the temporal coordinate is shifted to a past temporal anchor; the
shift can be realized by selecting an assignment sequence whose temporal coordinate
is past with respect to that of the speaker, and that is then used to evaluate the rele-
vant portion of the clause. The imperfect presupposes the availability of a different
time that is in the past, thanks to the feature [*past]. This view can be implemented
by imposing suitable conditions on available assignment sequences.

(90) Let σ be an assignment sequence defined on the index 0. Then σ is appropriate
for [[*past] XP] iff σ(0) < u.

According to (90), among the assignment sequences that are appropriate for the
evaluation of a phrase introduced by a node hosting the feature [*past], there are
those that are defined for the 0th variable, and that assign it an entity that temporally
precedes the utterance.

As for morphosyntax, we propose that the continuous/factual reading of the sen-
tence in (91a) corresponds to the schematic logical form in (91b).

(91) a. Alle cinque Mario dormiva.
   ‘At five Mario slept.IMPF.’
   b. [alle cinque [F0-[*past] [IP Mario [present] dorme]]]

The temporal phrase alle cinque ‘at five’ plays the role of a time topic and is inserted
in the derivation as the specifier of an appropriate functional category, F.19 The
latter has features that match/attract the feature [*past] of the imperfect tense mor-
pheme, so that, at LF, the time topic and the temporal features of the imperfect are in a specifier-head relationship. We hypothesize the following interpretive axiom:

\[(92) \text{Val}(t, [T-term F'], \sigma) \iff \text{Val}(t, F', \sigma')\]

where \(\sigma'\) is like \(\sigma\) except that \(\sigma'(0) = \sigma(T-term)\)

This axiom performs the time shifting, by requiring \(F'\) to be evaluated with respect to a new, modified assignment, \(\sigma'\), whose temporal coordinate (the value of the 0th index) is (the referent of) the temporal term (as determined by the old assignment sequence \(\sigma\)). Shifting is treated syncategorically and is triggered by a configuration where the head has the [*past] feature and its specifier is a temporal term.

In (91b), then, the first step is the shifting, as required by (92). Once this is accomplished, appropriateness of the new assignment, \(\sigma'\), is checked within \(F' = [F0-[*past] \text{IP}]\), according to (90); given that the new sequence is defined for the 0 index, the check is passed if its temporal coordinate is in the past with respect to the speaker’s.

The interpretation then proceeds as it should, the feature [present] within IP being interpreted by means of (83a) and with respect to \(\sigma'\). Eventually, the following truth-conditions result:

\[(93) \text{for a time } t \text{ such that five-o’clock}(t) \& t < u, \exists e(\text{sleep}(e) \land \text{overlap}(e, t))\]

In (94), where no explicit temporal phrase is present, we take Spec,FP to be occupied by an empty pronominal, as in (94b).

\[(94) \text{a. Mario dormiva.} \quad \text{‘Mario slept last year.’} \]

\[(94) \text{b. [T-pro [F0-[*past] [Mario [present] dorme]]]}\]

In conclusion, our analysis of the continuous readings of the imperfect in matrix sentences is based on the following ingredients:

- The imperfect has both a [*past] and a [present] feature.
- The feature [*past] presuppositionally checks that, if the phrase it combines with at LF is interpreted by means of an assignment sequence that defines a temporal coordinate, then the latter is shifted in the past.
- The feature [present] is interpreted in the usual way, according to (83a).\(^{21}\)
- The presence of a temporal topic results in the current assignment sequence’s being updated to another sequence whose temporal coordinate corresponds to the referent of the time topic.

Let us turn now to modal cases, again starting with a present tense example.

\[(95) \text{Mario parte domani.} \quad \text{‘Mario leaves tomorrow.’} \]
We know that “modal” sentences involve terminated events and that in these cases the temporal phrase, even if it appears to the left of the clause, is an argument, as in Domani Mario parte ‘Tomorrow Mario leaves’. The usual rule for the present tense, which requires the temporal coordinate to overlap the event, cannot apply. If it did, there would be a temporal mismatch between the location of the event as specified by domani ‘tomorrow’ and as constrained by the present tense. Moreover, recall that a terminated event cannot be simultaneous with the temporal coordinate (see Giorgi and Pianesi 1997, 1998, 2001a). Given that (95) is acceptable, it must be concluded that the tense does not affect the event; rather, it affects something else. Hence, in this respect too the present tense parallels the imperfect. In fact, in section 10.2.1 we showed that in modal readings, the pastness of the imperfect does not affect the VP’s event, but constrains the expectation. The same happens with the present tense: what is simultaneous with the speaker’s coordinate is the expectation that Mario leaves tomorrow.

We analyze modal readings with the present tense as being due to the presence of an optional empty modal head, which we indicate as 0-expect, the name explicitly suggesting that the favorite reading of (95) can be spelled out as ‘It is expected/planned that Mario leaves tomorrow’. Concerning the position of 0-expect, we note that modal interpretations are in complementary distribution with quantificational readings.

(96) Ogni volta che la incontravo/le parlavo, Maria partiva il giorno dopo.
‘Every time I met her talked to her, Maria left the day after.’

In (96), quantification ranges over actual events: to each event in which the speaker met Maria there corresponded an event of Maria’s leaving the following day. The modal reading—according to which each time the speaker met Maria there was an expectation to the effect that she would leave the following day—is hardly available. To obtain something close to this reading, we need to resort to an overt modal head.

(97) Ogni volta che la incontravo, Maria doveva partire il giorno dopo.
‘Every time I met her, Maria had to leave the day after.’

Following many authors (including Delfitto and Bertinetto (2000) and, at least partially, Chierchia (1995)), we hypothesize that quantificational and habitual readings involve an (overt or covert) adverb of quantification in Spec,Asp, which can be selected/checked by an appropriate quantificational feature in Asp. Then, the complementary distribution between modal and quantificational readings can be accounted for by hypothesizing that the empty modal head and the quantificational features compete for the same position. In other words, 0-expect occupies the head of AspP.

We take 0-expect to have, in the relevant respects, the same properties as the verb to expect. In particular, it takes a propositional complement, in our case the VP.
With this, the logical form and truth-conditions of (95) are as shown in (98a) and (98b), respectively.\(^{24}\)

(98) a. \([T-[\text{present}][\text{AspP} 0-\text{expect}[\text{VP Mario partire domani}]]]\)
   
   b. \(\exists e(\text{expect}(e) \land \text{overlap}(e, u) \land \text{Theme}(e, /\psi/))\)

Here, /\psi/ stands for the ILF of the VP, whose truth-conditions require a terminated event of leaving occurring tomorrow. Hence:\(^{25}\)

(99) \(\exists e(\text{expect}(e) \land \text{overlap}(e, u) \land \text{Theme}(e, /\exists' e' \text{ leave}(e') \land t(e') \land \text{at}(e', \text{tomorrow}))))\)

Accordingly, the case with the imperfect tense is as follows:

(100) a. Mario \textit{partiva} domani.
   
   ‘Mario \textit{left.IMPF} tomorrow.’
   
   b. \([T-\text{pro} [F0-*\text{past}][T-[\text{present}][\text{AspP} 0-\text{expect} \text{Mario partire domani}]]]]\)

As before, the presence of the temporal topic T-pro causes the current assignment sequence to be updated to one whose temporal coordinate corresponds to the referent of T-pro, \(\sigma'\). The appropriateness condition for clauses headed by *-past checks that the new coordinate is before the speaker’s. The rest of the clause is evaluated with respect to \(\sigma'\), and from now on, the interpretation proceeds as with (98). The result is as follows:\(^{26}\)

(101) for a time \(t, t < u, \exists e(\text{expect}(e) \land \text{overlap}(e, t) \land \text{Theme}(e, /\exists' e' \text{ leave}(e') \land t(e') \land \text{at}(e', \text{tomorrow}))))\)

10.5.2 Embedded Contexts

Let us turn now to embedded contexts introduced by predicates of propositional attitude. In Giorgi and Pianesi 2001b, we argued that the complementizer of the embedded clause, C, can attract (some or all of) the temporal features of T, and we proposed the following axiom:

(102) \(\text{Val}(\langle e, x \rangle, [\text{V[CP C [XP \_]]}], \sigma) \text{ iff for some } y, \text{Val}(\langle e, x, y \rangle, V, \sigma) \text{ and } y = /\text{XP}/\sigma_{\text{sub}}\)

Axiom (102) is used to compute the semantic value of phrases of the form \([V[CP [XP \_]]]\), where V is a verb of propositional attitude and \([CP[XP \_]]\) is its complement. The axiom requires the ILF of the complement clause to be computed by means of the subject-oriented sequence, and skipping the C node.\(^{27}\)

Suppose that in the simultaneous reading of (103a), the feature *-past moves to C and the feature [present] remains in situ, yielding the logical form in (103b).

(103) a. Mario ha detto che Carlo \textit{dormiva}.
   
   ‘Mario said that Carlo \textit{slept.IMPF}.’
   
   b. \([\ldots [C-*\text{past}][\text{XP T-[present]]]]\]
According to (102), the ILF of the embedded clause is computed by means of $\sigma_{\text{sub}}$, which assigns the 0th-indexed variable the matrix eventuality (see section 10.4). The only temporal feature within XP is [present], so that the ILF of the embedded clause ends up talking about a sleeping event that is simultaneous with $\sigma_{\text{sub}}$’s temporal coordinate—that is, the matrix event. As for [*past], the configuration it is in triggers (90), checking that XP is evaluated by means of an assignment sequence $\sigma'$ such that, if $\sigma'(0)$ is defined, then $\sigma'(0) < u$. The test is successful: XP is evaluated by means of $\sigma_{\text{sub}}$, and $\sigma_{\text{sub}}(0) < u$. Thus, the case in which [*past] moves to C accounts for the simultaneous readings of the embedded imperfect.

It can be observed that the structure assigned to the embedded clause of (103b) differs from the structures discussed in the previous section, because of the absence of (implicit or explicit) temporal topics. Indeed, we believe that the presence of temporal phrases (topics) with the imperfect is optional. The difference between (103b) and cases such as (94b), where we posited an implicit temporal topic, becomes clear if we consider the option without the temporal pro for (94).

(104) $\langle F0-[*\text{past}] \langle \text{Mario [present} \text{ dorme]}angle \rangle$

According to the theory developed in the previous section, this logical form would be evaluated by means of $\sigma_{\text{sp}}$, without any intervening temporal shift, for the latter is triggered by (92), which requires a temporal topic. But then, the presuppositional check (90) fails, for $\sigma_{\text{sp}}$ is defined for the 0th index, but $\sigma_{\text{sp}}(0)$ cannot precede itself. Hence, in cases such as (94) (the imperfect in matrix contexts), the lack of temporal topics leads to presuppositional failure. Example (103a) is different: the imperfect is embedded under a verb of propositional attitude, and even if there is no temporal topic, no presuppositional failure need arise, for the sequence used to evaluate the relevant constituent is the subject-oriented one, which passes the check, as we showed earlier.

The remaining case to be discussed features a temporal topic (explicit or implicit) in a subordinate context.

(105) $\langle \ldots \langle C \mid \text{T-term [F0-[*\text{past}] \langle \text{[IP [present} \text{ dorme]]}\rangle} \rangle \rangle$

This case parallels those discussed in section 10.5.1: [*past] raises to F0, and the interpretive process is the same as for (91) or (94). The only difference is that the assignment sequence for the subordinate clause of (105) is $\sigma_{\text{sub}}$, rather than $\sigma_{\text{sp}}$. As a consequence, the ILF ends up talking about a nonterminated event that is ongoing at a time preceding the subject’s temporal coordinate. That is, (105) accounts for the so-called backward-shifted readings.

In conclusion, we propose two configurations for the features of an embedded imperfect at LF:

(106) a. $\langle \ldots \langle C-[*\text{past}] \langle \text{XP T-[present} \text{ V} \ldots \rangle\rangle \rangle$

b. $\langle \ldots \langle C \mid \text{T-term [F0-[*\text{past}] \langle [IP T-[present} \text{ V} \ldots \rangle\rangle} \rangle \rangle$
The first option takes advantage of the property of embedded Cs to attract (some or all of) the temporal features of the embedded tense, thereby accounting for the simultaneous readings. The second option, which reproduces the structures discussed in section 10.5.1, accounts for backward-shifted readings. No particular changes and/or additions are needed to the theory introduced in the previous section. We need only recall that predicates of propositional attitude introduce subject-oriented assignments that can be used in (106a) and (106b) to provide the relevant meanings.

10.5.3 Dreams

In the previous sections, we have developed our theory of the imperfect by focusing on ordinary matrix contexts and on subordinate environments created by verbs of propositional attitude, both being anchored contexts. The idea we have developed is that the imperfect is a present in the past. Its interpretive properties rely on updating the current assignment sequence to one that features a new temporal coordinate, and on the presupposition that this new temporal coordinate is in the past with respect to the previous temporal anchor.

Nonanchored contexts differ from anchored ones in that the latter do not require that any temporal entity (be it a time or an event) be related to the coordinate of any subject. As discussed in section 10.4, this amounts to saying that these contexts do not define any temporal coordinate. It seems natural to hypothesize, then, that the assignment sequence used to compute the ILF of the relevant clause, and determined by the lexical properties of the verb, is undefined for the 0th index. In this case, (90) applies vacuously, in the sense that such an assignment sequence qualifies (or at least is not prevented from qualifying) as an appropriate one. Consider the following case:

(107) a. Gianni ha sognato che alle tre (di domani/ieri/oggi) sua madre mangiava un panino.
   ‘Gianni dreamed that at three o’clock (of tomorrow/yesterday/today) his mother ate IMPF a sandwich.’
   b. $\exists e (\text{dream}(e) \land e < u \land \text{Theme}(e, \sigma_{dr}/\psi))$

Now, let $\sigma_{dr}$ be the assignment sequence used to compute $\psi$. According to our proposal, $\sigma_{dr}(0)$ is undefined; hence, (90) applies vacuously. There is, however, a temporal phrase in the time topic position; therefore, (92) applies, changing the assignment sequence to $\sigma'$, with $\sigma'(0)$ being the value of ‘three o’clock’. From now on, the computation of $\psi$ proceeds in the usual way, yielding the following truth-conditions:

(108) for a time $t$ such that $t = \text{three-o’clock}$, $\exists e' (\text{eat-a-sandwich}(e') \land \text{overlap}(e', t))$

Accordingly, the dream content is about a nonterminated event that is ongoing at three o’clock. As expected, there is no sign of temporal anchoring; that is, the time topic is not explicitly related to any temporal coordinate.
Now, consider the case where there is no time topic (either explicit or implicit).

(109) a. Gianni ha sognato che Carlo *mangiava* un panino.
‘Gianni dreamed that Carlo *ate.IMPF* a sandwich.’

b. [sognato [C-[*past] [XP T-[present] V . . .]]]

As with the simultaneous readings discussed in the previous section, the [*past] feature raises to C. However, the assignment sequence determined by the lexical properties of the verb, $\sigma_{dr}$, does not define any temporal anchor; hence, again, (90) applies vacuously, whereas (92) does not apply, so that the current assignment sequence, $\sigma_{dr}$, is left unchanged and is used to interpret XP in (109b). What remains to be considered is the contribution of the feature [present] within XP.

Up to now, we have taken [present] to fully correspond to the feature(s) of the ordinary present tense, and we have interpreted it by means of (83a). But now this analysis cannot be maintained, since $\sigma_{dr}$ is undefined for the index 0. The only possibility seems to be to give [present] a treatment similar to the one we suggested for [*past].

(110) If $\sigma$ is defined for the 0th index, then $\sigma$ is appropriate for [[present] XP]. If so, (83a) applies.

In other words, to the extent that anchoring is required, so that the environment supplies an assignment sequence that is defined for the 0th index, [present] contributes what it is expected to. When anchoring is not enforced, as in the case at hand, nothing happens, and eventually all there is to the content of the dream as described by (109) is a (possibly terminated) event of eating a sandwich, unconnected to any temporal anchor.

(111) $\exists e'(\text{eat-a-sandwich}(e') \land t(e'))$

When a temporal argument is available, as in (112a), the computation proceeds as for (109a), the only difference being the overt temporal argument itself.

(112) a. Gianni ha sognato che domani/ieri/oggi Carlo *mangiava* un panino.
‘Gianni dreamed that tomorrow/yesterday/today Carlo *ate.IMPF* a sandwich.’

b. [Gianni . . . [sognato . . . [C-[*past] [XP domani$_i$ T-[present] V . . . t$_i$ . . .]]]]

c. $\exists e'(\text{eat-a-sandwich}(e') \land at(e', \text{tomorrow}) \land t(e'))$

Notice that the reading of (112a) that (112b) and the ILF’s truth-conditions capture is nonmodal. Modal readings are possible in dream contexts, can be obtained through computations similar to those used for (107a), and depend on the availability of a time topic and of the $0$-expect head. Hence, the following logical form for (112a) is possible:

(113) [Gianni . . . [sognato [C-[*past] [XP domani$_i$ T-[present] 0-expect [V t$_i$]]]]]
Again, the crucial factor is anchoring. If the subordinate clause of (112b) were embedded under a verb of propositional attitude, anchoring would trigger a nonvacuous application of (110), resulting in a terminated event of eating overlapping the anchor—an impossible outcome, as we have shown.

10.6 Conclusions

This was a long tour through the subtleties and apparently strange behavior of the Italian imperfect in a variety of contexts. To recap, we considered and discussed:

- continuous, factual readings,
- modal readings,
- simultaneous and backward-shifted readings in embedded contexts, and
- the imperfect in fictional contexts.

The basic tenets of our approach on the part of the imperfect are these:

1. The imperfect is a present in the past, this being obtained by changing the current assignment sequence to update the temporal anchor.
2. The imperfect has a presuppositional import, checking that the new temporal coordinate is in the past.

Together with these tenets, we have exploited more general principles related to temporal anchoring:

3. Temporal anchoring amounts to requiring that the event/state being talked about be related to the temporal anchor.
4. Usually, the latter corresponds to the temporal coordinate of some relevant agent (the speaker, the subject of a propositional attitude).
5. It can be manipulated and updated, as is the case with the imperfect.
6. Temporal anchoring is enforced through independent means—that is, lexical properties of the matrix verb, more general properties of the context, as in ordinary matrix clauses, and so on.
7. The absence of temporal anchoring amounts to the absence of temporal anchors in the relevant assignment sequence.

The proposed theory succeeds in providing a unitary account of the many phenomena we discussed, by resorting to a very few additional hypotheses. Obviously, much work is needed to extend and polish the theory. In particular, it must be extended to other fictional contexts (contensive cases, imparfait préludique, etc.) and to phenomena we have not discussed here, most notably, the role of the imperfect in conditionals. Finally, the theory itself needs a clearer and more formal restatement. All this is a matter for future work.
Notes

1. See, for example, Delfitto and Bertinetto 1995; Giorgi and Pianesi 1995, 1997, chap. 4, 2001c.

2. Besides being acceptable with contrastive focus, the sentence could be acceptable with a list reading: Gianni studied math yesterday at four, literature on Tuesday, and so on. As is well known, the two readings share several properties, though we will not discuss them further here.

3. See Bertinetto 1991; Giorgi and Pianesi 1997, chap. 4, 2001c; Ippolito, to appear, this volume. But see also Cipria and Roberts 2000, where these readings are discussed with respect to the Spanish imperfect.

4. In Giorgi and Pianesi 1997, we suggested that the ability of the event associated with the imperfect morphology to be interpreted as simultaneous with the superordinate form depends on its aspectual properties. We will consider this issue later.

5. For a recent analysis of these contexts in Italian, see Bonomi and Zucchi 2001 and Zucchi 2001. The judgments given in these works are analogous to the ones we are discussing here, with the difference that these authors do not analyze the distribution of the imperfect. Notice also that for some speakers, the imperfect is more marked than the present tense. For one of us, in fact, the sentences with the imperfect are slightly degraded with respect to those with the present.

6. In préjudice contexts, the present is felicitous only with current plays.

(i) a. Facciamo che io sono il re e tu la regina.
   ‘Let’s pretend that I am the king and you [are] the queen.’
   
   b. #Facevano che lui è il re e lei la regina.
   ‘They were pretending that he is the king and she [is] the queen.’

7. Notice also that in dream contexts in English, the present tense gives rise to marginal sentences.

(i) ?*John dreamed that Mary is pregnant.

8. We have not reproduced examples with achievement predicates because they are ungrammatical with the present tense, irrespective of the presence of in-X-time/for-X-time adverbials. This fact holds crosslinguistically and is but another manifestation of the intrinsic perfectivity of achievement predicates, to be discussed below. For more on this point, and the reasons why perfective predicates are not available with the present tense, see Giorgi and Pianesi 1997, 1998.

9. Here and in other examples, we resort to both the Italian simple past (the so-called passato remoto) and the present perfect as cases of perfective verbal forms. Perfect tenses deserve a more complex analysis than the one we will provide here. In particular, they have been argued to involve reference to the consequent state of the event described by the past participle (see Parsons 1990; Higginbotham 1994; Giorgi and Pianesi 1997). For our purposes, however, we can neglect the stative component since it is clear that the eventuality described by the past participle falls under the generalization we are going to draw—namely, that it is terminated.

10. The possibility is open for the first event to be a part of the second, in case we admit that nonterminated events can have terminated parts. The important point is that (52a) differs from (52b) since one and the same nonterminated event can make true both clauses of (52a), but not those of (52b).
11. The sentences in (56) have a strong reportive flavor. We will not discuss what reportivity amounts to. For our purposes, it is enough to notice that, nuances apart, the imperfect is compatible with terminative readings.

12. Many authors (e.g., Ippolito, this volume; Cipria and Roberts 2000) apply the term progressive to the readings we have termed continuous, suggesting that they can actually be accounted for by resorting to the same machinery exploited for progressives. In previous works (Giorgi and Pianesi 1997, 2001c), we argued against such a reduction, proposing that the continuous reading be kept distinct from readings that arise with the progressive. One reason was the contrast exemplified by (55): the continuous reading is not available with achievement predicates—that is, (i) does not mean that at three, an event of reaching the top was ongoing. As discussed in the text, (i) can have only the terminative reading according to which the reaching culminated at the given time.

(i) #Alle tre Mario raggiungeva la vetta.
    ‘At three Mario reached.IMPF the top.’

The use of the progressive yields the expected result: (ii) actually means that at the given time, Mario was involved in an event of reaching the top.

(ii) Alle tre Mario stava raggiungendo la vetta.
    ‘At three Mario was reaching the top.’

The pattern is reversed with stative predicates: both the present and the imperfect tense are perfectly acceptable with them, whereas the progressive form, notoriously, is not.

(iii) Alla festa Mario sembrava felice.
    ‘During the party Mario looked.IMPF happy.’

(iv) #Alla festa Mario stava sembrando felice.
    ‘During the party Mario was looking happy.’

In our view, these distributional facts are strong evidence in favor of a distinction between the two verbal forms, as well as the resulting readings. This conclusion finds further support in the observation that whereas there seems to be enough evidence to think that the progressive is intensional, the same evidence does not seem to apply to continuous readings. We will not discuss this last point here, referring instead to the works cited earlier. In the end, it seems possible to conclude that there is enough support for the thesis that the continuous readings made available by imperfective verbal forms should be kept distinct, and given a different account, from those arising with the progressive.

13. The reason for this will be discussed briefly below: a terminated event cannot be simultaneous with its temporal anchor. See note 18.

14. One reason for preferring the very event of thinking, saying, and such, to the corresponding time is related to well-known problems concerning ignorance about temporal identity. Indeed, even though the subject of an utterance or a thought might have reason to doubt, or be wrong about, its temporal location in the objective time series (is it three or four o’clock?), it does not seem possible for her to doubt that when she thinks, “John is sleeping,” she is having the thought that the sleeping is simultaneous with that very thought, a situation that could be reported by saying, “X thought that John was sleeping.” The subject might still continue to wonder about time, but her uncertainty does not undermine her knowledge that the sleeping state she attributes to John is simultaneous with her thought. So, she cannot continue by asking herself, “Is John sleeping NOW?” In the end, it seems preferable that the subject’s
temporal coordinate be such that it does not require attributing full temporal knowledge to the subject. In this respect, states and events seem to be more appropriate—in particular, those mental/communicative states and events that are introduced by such verbs as say, believe, and fear.

15. So John might dream that he is a passenger on the Titanic and that the Titanic is sinking. While John is dreaming, he wonders, “Is the Titanic sinking NOW?”, yet he is certain that this cannot possibly be the case.

16. Another way to express the same point is that subjects locate themselves in time by means of certain episodes of their mental life: thoughts. Dicta, being the expression of thoughts, take over the same property. Other mental episodes do not have the same property/role.

17. The underlying hypothesis is that like other contextual parameters, the temporal anchor is directly provided by the assignment sequences. This can be done by appropriately distinguishing the variables referring to the parameters from those referring to other entities, as suggested by Larson and Segal (1995). In what follows, we will invariably use the index 0 for the temporal anchor.

18. That is, we can take $\sigma_{\text{sub}}$ to be like $\sigma_{\text{sp}}$ in relevant respects, except for the fact that $\sigma_{\text{sub}}(0) = \sigma_{\text{sp}}(i)$, where $i$ is the index of the variable of the matrix eventuality.

19. We follow Rizzi’s (1997) hypothesis that at LF, topics are located in the so-called left periphery of the clause.

20. Indeed, this a special present tense, in that it takes as its temporal anchor not the utterance, but the locally available temporal coordinate. That is, it does not behave like an ordinary indexical, but instead is sensitive to the local context.


22. This constraint was proposed to account for two well-known facts. First, present tense English sentences with an eventive predicate cannot have a factual (continuous reading).

(i) #John eats an apple.

Second, in no language can the present tense report about terminated events occurring at the speech time. The explanation we proposed in Giorgi and Pianesi 1997 was that terminated events cannot, quite generally, overlap their temporal anchors. The English facts then follow if one can argue, as we did, that English eventive verbs are uniformly terminative. The impossibility of the continuous reading for the Italian sentence (95) follows as well, given that partire ‘to leave’ is an achievement verb, hence lexically terminative.

This diagnosis is confirmed by the behavior of eventive predicates in clauses that are subordinate to verbs of propositional attitude.

(ii) John said that Mary slept.

(iii) John said that Mary was sleeping.

23. Alternatively (see, e.g., Cipria and Roberts 2000), the modal readings of the imperfect could be seen as a mere semantic phenomenon, due to the ability of such a tense to take appropriate modal bases. In light of our discussion in the text, this property should be extended to the present tense. Notice, however, that the complementary distribution of modal and quantificational readings would not follow as straightforwardly as in our hypothesis. Hence, the mixed syntactic/semantic approach in the text seems preferable to us.
24. Placement of the infinitive within the VP is meant to suggest that this propositional phrase is tenseless.

25. The fact that nonterminated events are excluded from (95) and (100) follows from our theory, if we are right in hypothesizing that Asp is occupied by 0-expect. As shown in Giorgi and Pianesi 2001c, in fact, activation of such a node is enough to provide for terminativity.

26. For some reason, when the imperfect yields modal readings, an explicit time topic is not fully acceptable.

(i) ??Ieri Gianni partiva domani.
   ‘Yesterday Gianni left.IMPF tomorrow.’

According to our theory, this sentence should mean that as far as the speaker knows, yesterday it was expected/planned that Gianni should leave tomorrow. Notice that similar results are obtained with overt modals.

(ii) ??Ieri Gianni doveva partire domani.
   ‘Yesterday Gianni had.IMPF to leave tomorrow.’

Such a sentence becomes almost acceptable if it has a contrastive reading.

(iii) Due giorni fa Mario doveva partire/partiva domani, ieri doveva partire/partiva
dopodomani, . . .
   ‘Two days ago Gianni had.IMPF to leave left.IMPF tomorrow, yesterday he had.IMPF to leave left.IMPF the day after tomorrow, . . .

So, the (un)availability of explicit time topics in sentences realizing the modal reading of the imperfect seems to be due to the same factors that prevent explicit temporal phrases from playing the same role in sentences with overt modals.

27. For reasons why the C node should be skipped, see Giorgi and Pianesi 2001b and Higginbotham 1991.

28. As in Abusch 1997, we take it that the time topic is interpreted de re, hence by means of the speaker-oriented assignment. We will not consider how this result is to be obtained.

References


11.1 Introduction

This chapter tries to answer three questions concerning the grammar of tense construal.

First, is there a morphosyntactic basis for the construal of the temporal structure of events? The event read a book is durative, while recognize someone is punctual. Are such interpretations based on semantic or lexical-semantic representations independent of syntax, or, rather, on morphological features and syntactic mechanisms filtered at the interface of syntax and semantics?

Second, how is the temporality internal to an event articulated onto the utterance/speech or reference time? Is this process semantic or does it too depend on grammatical mechanisms?

The second question is independent of the first. Both events, which have internal temporal structure, and states, which do not, can be projected onto the speech time interval, as in French (1), or fail to be so projected, as in English (2).

(1) a. Je lis un livre formidable en ce moment.
   b. Marie connaît Jean (depuis deux ans).

(2) a. *I read a good book now.
   b. Mary knows John (*for two years).

The contrast between French and English illustrated in (1) and (2) suggests an answer to the second question based on formal grammatical mechanisms. Since lire un livre and read a book refer to the same extragrammatical event and connaître Jean and know John denote the same cognitive state, the failure to project the event in (2a) and the state in (2b) onto the present time interval must be due to a formal difference between French and English in the grammar of tense interpretation.

Third, how is the temporality internal to the event linked to that of the reference or discourse time preceding and/or following the event? In other words, the third question concerns temporal continuity.
I claim that each facet of temporal interpretation depends on a formal element of the grammar.

First, I propose that eventualities are interpreted in terms of space and time in different syntactic domains.

The construal of the temporal aspect of an event in the Tense Phrase (TP) domain depends on the prior calculation of its spatial aktionsart (akt) in the lower vP domain. Spatial aktionsart is calculated on the basis of the inherent akt formal feature (FF) [+/-ext(ended)] of the lexical items in vP, motivated by lexical content.

Second, I assume that an event or state is mapped onto the event time in T via saturation of an event variable in v by the tense morpheme in T. Event time is itself calculated with respect to the speech or reference time associated with the C node within a syntactic T(ense)-chain linking C, T, v, and V (see Guéron and Hoekstra 1988, 1992, 1995).

My major claim is that the [+/-ext] akt F of a lexical item defines both spatial extension or aktionsart in vP and temporal extension or aspect in TP. Although they lack lexical content, grammatical morphemes also have a [+/-ext] akt F that is construed as aspect under merger with T. [+ext] T has imperfective aspect, while [-ext] T denotes a point in time.

In Guéron 2000, I proposed that the contrast between French and English illustrated in (1) and (2) is due to the presence of a [+ext] akt F construed as aspect in the French present tense, which the English present tense lacks.

Third, I claim that both the temporal extension internal to an event and the continuity between the temporality internal to the event and the temporality external to the event are licensed by an autonomous T(ense)-controller. In the simplest case, the T-controller is a [+human] subject in Spec,TP.

11.2 Levels of Construal

I propose that the sentence contains two distinct levels of construal, vP and TP.

11.2.1 The vP Level

11.2.1.1 The Aktionsart Feature  Every vocabulary item, lexical or grammatical, has an inherent [+/-ext] akt F ultimately based on lexical content.

The akt F of V plus that of its complement define the spatial extension of VP, according to a spatial calculus similar to that proposed by Verkuyl (1972, 1993) for “temporal” aktionsart. In (3), for example, the akt Fs of both V and N are [+ext], so VP denotes, not yet an event, for tense construal does not occur in VP, but a spatial configuration consisting of a figure and a ground. The verb read contributes the
physical gestures implied by a reading activity—fixing the eyes on a page, turning pages, and so on—that constitute the figure of a spatial configuration. The ground is implied by the verb and made explicit by the direct object.

(3) \[ \text{[VP read the book]} \]

\[ \text{[+ext] [+ext]} \]

We may ask whether the spatial configuration in (3) is bounded as well as extended, so that it will be construed in TP as telic as well as durative. Tenny (1987) proposed that the direct object functions as the temporal measure of the event. In a VP like *eat the apple*, the event proceeds incrementally until the object is exhausted. Verkuyl (1972) points out that the event in (4a) lasts longer than that in (4b).

(4) a. write a letter to the president
   b. write the letter A

Borer (1994) translated this hypothesis into syntactic terms: the direct object, which measures the time of the event, is generated in the specifier position of a Measure Phrase (MP) located between VP and TP. The subject, which originates the action, is generated in a higher aspectual projection, Origin Phrase (OrP).

(5) a. John read the book.
   b. \[ \text{[TP T[OrP John [MP the book [VP read]]]]} \]

However, Mulder (1992) cites (6) as a counterexample to the claim that the object measures the time of the event.

(6) John pushed the cart (all day).

The hypothesis that the spatial and temporal interpretations of an eventuality occur in distinct syntactic domains allows us to sort out such data. In (5a), the definite determiner *the* internally delimits the direct object *the book*. This DP in turn spatially bounds the configuration VP denotes. On the VP level, *read a book* is a “spatial accomplishment,” a configuration extending in space and bounded by its object, while *push the cart* is a “spatial achievement” occupying a single point in space.

On the TP level, however, a spatial boundary need not translate as a temporal telos. An iterative construal of the punctual VP in (6) transforms a spatial achievement into a temporal activity, extended in time and unbounded. Similarly, the spatially bounded *read the book* event in (5a) may but need not be temporally bounded. (5a) is construed in TP as an accomplishment in (7a), where a bounded adverb focuses its endpoint (see Erteschik-Shir and Rapoport, this volume), but as an activity in (7b), where an unbounded adverb focuses its temporal extension, and in (7c), where a conjunct explicitly denies the existence of an achieved telos.
(7) a. John read *Ulysses* in two months.
    b. John read *Ulysses* for two months and then stopped.
    c. John read *Ulysses* all his life, but never finished it.

11.2.1.2 The Aktionsart Feature of N and of V

I assume that at the syntax-semantics interface, the state or event VP denotes must be inserted within the extended spatial arena and the extended time interval presupposed by the speech act.

Formally, the [+/-ext] akt F of a lexical root is the interpretable face of an abstract number F [+/-pl(ural)]. V has a [+ext] akt F if it is defined on a plurality of spatial points (e.g., *sit*) or gestures (e.g., *swim*) and a [-ext] akt F if it is defined on a single spatial point (*arrive*).

All simple nouns have a [+ext] akt F: they all imply an extension in some space, be it physical (*house*), psychological (*love*), or mental (*idea*).

The v head that governs VP also has a [+/-ext]/[+/-pl] akt F. VP is [+ext] if V checks a [+ext] akt F with v [+pl], as in (8a). If V and its object are both [+ext], then the object is checked in Spec,vP, as in (8b), and its extension is added to that of the verb.

V checks a [-ext] akt F with a [-pl] v head. A [-ext] V must take a direct object so that VP describes a configuration with both a figure and a ground. In (8c), V plus its direct object define the intersection of two bodies (figure) on a single point in space (ground). I attribute the definiteness effect such examples manifest to the lack of a spatially extended configuration in VP. A definite object delimits a spatial extension, whereas a punctual event is inherently delimited.

(8) a. 

\[
\begin{align*}
\text{vP} & \quad [+\text{ext}] \\
\text{v} & \quad [+\text{pl}] \\
\text{VP} & \quad [+\text{ext}] \\
\text{V} & \quad \text{run} \\
\end{align*}
\]
11.2.1.3 Checking the Aktionsart Feature  The interpretable [+/-ext]/[+/-pl] akt F of a verbal root checked on v is distinct both from the interpretable [+/-ext]/[+/-pl] F of its aspectual suffix and from the uninterpretable [+/-pl] number F of its agreement morpheme. In (9), the French imperfective form parlons ‘(we) were speaking’ has a [+pl] F in each of its morphological segments: the [+ext]/[+pl] akt F of the root parl is checked in v; the [+ext]/[+pl] akt F of the aspectual affix i merged with past tense is checked in T; and the [+pl] agreement F of the suffix -ons is checked against the interpretable number F of the subject in whatever functions as an Agr head (AgrS or T).
In (10a), book + s has an interpretable [+pl] akt F in its root and an interpretable [+pl] number F in its agreement suffix. In (10b), a nominalizing suffix contains an akt F, which in a nominal cannot be construed as aspect (see Cornilescu, this volume, and the introduction).

The complementarity of number and aktionsart in nominals—there is no book + tion or plural destruct + s—suggests that plural number and [+ext]/[+pl] spatial aktionsart occupy the same structural position in nominals and are identical at a more abstract, context-free level.

11.2.1.4 The Spatial Subject A verb with a [+ext] akt F selects a “spatial subject” in Spec,vP. In (5), John, the subject of read the book, is construed in vP as a physical entity whose spatial contours delimit the configuration VP denotes and situate it in the discourse space. When the spatial extension of the verb is based on gestures, as in swim, run, laugh, draw, and so on, the spatial subject produces these gestures. When John reads a book, the motion of John’s eyes, hands, and brain creates the reading configuration.

The object of VP is indeed a measure. What it measures, however, is not the time of the event, for temporal construal is not available in vP, but the effort—more precisely, the number of gestures—the subject in Spec,vP must supply in order to realize the spatial configuration. Writing a letter to the president need not in fact take longer than writing the letter A: this depends on circumstances—above all, on the will of
the writer. But it definitely takes more effort, measured by the number of gestures involved, to write a letter to the president than to write the letter A.

11.2.2 The TP Level

11.2.2.1 Temporal Extension  The merger of V and T in syntax or LF transforms the spatial configuration vP denotes, placed in space by a physical delimiter in Spec,vP, into an eventuality to be placed in time. The linkages between C, T, v, and V within a T-chain create a syntactic path along which the temporal content of T radiates from the top to the bottom of the T-chain, situating every constituent in time.¹

A spatially extended configuration in vP is construed as a temporally extended event in TP. For this reason, certain sentences that intuitively seem to denote states rather than events, such as *He sits on the chair or *She wears a new dress are just as unacceptable in the deictic present tense in English as is (2a), I read a book now, while both types of sentence are perfect in French. Apparently, it is spatial extension construed in vP, not the undefined contrast “state versus event,” that determines the construal of temporal duration in TP.

Just as a spatially extended configuration in VP requires a spatial subject in Spec,vP to anchor it in discourse space, so a temporally extended event in TP requires a temporal subject, a T-controller, in Spec,TP to anchor it in discourse time.

The spatial subject is visible for construal when it checks its [+ext]/[+pl] akt F with the [+pl] number F of v. The temporal subject is visible when it checks a temporal F—in the simplest case, a person F—with the tense morpheme in T.

I assume that certain types of DP—in particular, those that denote humans—are construed as possessing an internal temporality, or biography. And just as the [+ext]/[+pl] number F of a lexical root is the formal correlate of the extension of its referent in space, so the person F of a [+human] nominal is the formal correlate of the extension of its referent in time.

When a [+human] subject checks its person F with the tense morpheme in T, its internal temporality merges with the external temporality of the discourse or reference time. The event vP denotes is placed directly within the subject’s time, and indirectly in the discourse time that contains the subject’s time.

The reference time includes points of time located before and, by inference, after the subject’s time. The subject’s internal time includes not only the event time but also temporal points located before and, at least in intention, after the event time. The sentence thus defines both a predication, an event placed in the subject’s biography, and a state or change of state placed in the discourse time.
In order to qualify as T-controller, the subject in Spec,TP must be construed as having properties that allow it to place an event in time. The property of consciously enables a [+human] subject to count the plural moments of an event. Properties of will and intention enable the subject to trigger the event, to maintain it in time, and to envisage its consequences.

11.2.2.2 The Interaction of Spatial and Temporal Construal (11) illustrates the interaction of the construal of a spatial configuration in VP and the construal of an event in TP.

(11) a. John read the book.

In (11), the V read checks its [+ext]/[+pl] akt F with the [+pl] F of v. V and its object, which checks its own [+ext] akt F in Spec,vP, together define a spatially extended configuration in which read implies the gestures that make up a figure and the book defines a ground. The direct object also measures the effort (the number of gestures) the subject must execute to realize the configuration.

When T and V merge in syntax or LF, the time T denotes radiates downward within the T-chain. The plurality of reading gestures that form a spatial configuration in VP are linearized, thus triggering a reanalysis of the spatial configuration in vP as an event in TP.

When the [+human] subject checks its person F with the tense F of T, its internal temporality merges with the external temporality of the discourse: the subject places
the *read a book* event directly in its own biography and indirectly in the discourse time.

The subject argument is construed in Spec,vP as a body whose contours delimit a spatial configuration; it is construed in Spec,TP as a person with consciousness and will. The different properties of the subject in vP and TP account for the data in (7a) and (7b,c). Whether a spatially bounded configuration defined in VP achieves a telos in TP or not depends on the T-controller, who triggers the event and either continues it to its natural spatial boundary, as in (7a), or suspends it before reaching the boundary, as in (7b) and (7c).

11.2.2.3 Aktionsart/Aspectual Functions I have so far derived three akt/asp functions by associating the [+ext] akt F of V with distinct syntactic positions.

The direct object of a V with a [+ext] akt F adds to its spatial extension, provides a possible spatial boundary, and measures the number of gestures needed to realize the configuration VP defines.

The subject in Spec,vP delimits the VP configuration within the spatial contours of its body and produces the gestures that realize it.

The T-controller in Spec,TP triggers the event, counts its subevents, and maintains it in both its own internal time and the external discourse time.

These akt/asp functions, derived by mapping onto distinct syntactic positions an aktionsart feature that is independently motivated, for example, by time-related adverbials with a matching [+/-ext] akt F, render θ-role features in lexical entries superfluous.

Unlike “θ-roles,” one syntactic argument is associated with two distinct akt/asp functions if it occupies two akt/asp-related positions in syntax. In (11), *John* realizes both the akt function of delimiter of a spatial extension in vP and the aspectual function of T-controller of the event in TP.

11.2.2.4 Order of Adverbs The hypothesis that the spatial and temporal construals of an event occur in different syntactic domains is supported by adverb ordering. Adverbs that modify the effort with which an event is realized are located in the vP domain, lower than adverbs that modify the manner of the event and still lower than those that modify the time of the event or the intention of the subject. Although all the adverbs in (12) are controlled by the T-controller in Spec,TP when tense radiates down the structure, they preserve the akt/asp functions defined by their syntactic scope. Lower adverbs modify spatial properties of the event construed in vP, while higher ones modify the intention of the subject construed in TP or the opinion of the speaker associated with CP (see Laka, this volume, for confirmation).
(12) a. John cleverly voluntarily quickly carefully easily read the book.
    b. *John carefully easily quickly voluntarily cleverly read the book.

11.2.2.5 The Aktionsart Feature of \textit{P} All predicates have a \([+/-\text{ext}]\) akt \textit{F}. Prepositions differ from verbs in lacking the \([+T]\) \textit{F} of \textit{V} that is attracted by \textit{T} and that, under merger of \textit{T} and the aspect \textit{F} of \textit{V}, triggers the transformation of the spatial configuration in \textit{vP} into an event in \textit{TP}. Prepositions do not merge with \textit{T} (unless grammaticalized and raised to \textit{T} where their akt \textit{F} is construed as aspect, like infinitival \textit{to/zu} in English/German). The akt \textit{F} of a Preposition trapped in \textit{VP} is construed as purely spatial throughout the derivation.

However, PP can be integrated into the T-chain through merger of \textit{V} and PP in syntax and incorporation of \textit{P} to \textit{V} in syntax or LF. When tense radiates down the T-chain, a PP in its path contributes to the temporal interpretation of the event. In general, \textit{P} contributes a spatiotemporal boundary to an event, like akt particles in German or, when grammaticalized within \textit{V}, the perfective aspectual prefix of Russian. (13) shows that a PP small clause may or may not provide a spatiotemporal boundary.

(13) a. John walked \([_{\text{pp}} \text{Mary home}]\).
    b. John pushed \([_{\text{pp}} \text{Bill out of the room}]\).
    c. John filled \([_{\text{pp}} \text{the room with smoke}]\).

In (13a), \([+\text{ext}]\) \textit{walk} defines a spatial extension in \textit{VP} and a temporal extension in \textit{TP}. The PP small clause (with \textit{P} internalized in \textit{home}) denotes the intersection of two physical bodies, that of Mary and her house, on a point of space in \textit{vP} and a point of time in \textit{TP}. The projection in the \textit{TP} domain of a punctual state onto the imperfective walk interval compositionally creates an aspectually \textit{perfective} event.

In (13b), \([-\text{ext}]\) \textit{push} merges with \([+\text{ext}]\) \textit{out} to define a spatially extended configuration in \textit{VP} and a temporally extended event in \textit{TP} that is once again bounded by an intersection of bodies, that of Bill and the room, at a point in space and time.

In (13c), however, attributed to Richard Larson, the verb is \([+\text{ext}]\) and the event is extended but not telic. Smoke having no spatial boundary, there is no physical basis in \textit{VP} for a telic, perfective construal of the event in \textit{TP}.

11.3 Punctual Events in Extended Time

I have so far considered verbs with a \([+\text{ext}]\) akt \textit{F}, like \textit{swim} and \textit{read}, which define a spatially extended configuration in \textit{VP} and a temporally extended event in \textit{TP}. But not all events are extended in space and time. Achievements, based on verbs like \textit{arrive}, \textit{hit}, and semelfactive \textit{scream}, occur at a point in space in \textit{VP} and a point in
time in TP. The grammar must contain mechanisms that insert such punctual events into the extended space and time of the discourse world.

### 11.3.1 Unaccusative Achievements

The French verb *arriver* ‘arrive’ has the [−ext] akt F that defines an event that is punctual in both space and time. I claimed that lack of spatial extension accounts for the definiteness effect in (8c) (= (14a)). Lack of temporal extension is shown by the choice of auxiliary verb. In languages with alternating auxiliaries, like French, participles containing events without an internal temporal extension (unaccusative achievements, passives, SE-reflexives) select *être* ‘be’, while those that contain temporally extended events (unergatives and transitives) select *avoir* ‘have’.

(14) a. Il est arrivé quelqu’un.
   
   [−ext]  
   it *is* arrived someone
   ‘someone arrived.’

b. Il a chanté beaucoup d’enfants dans ce choeur.
   
   [+ext]  
   it *has* sung many of children in this choir
   ‘Many children have sung in this choir.’

I propose that a punctual event based on a verb like *arriver* is inserted into the discourse space and time by the conversion of a part of its lexical content into an FF. Unaccusative verbs like *arriver* ‘arrive’, *partir* ‘leave’, and *monter* ‘go up’ have both locative and directional lexical content. I suggest that this lexical content is equivalent to the universal FF [deictic]. In (14a), this FF is construed as a variable bound by the discourse ground associated with the C node. The direct object is construed as a mobile figure that intersects with the discourse ground at one point in space.

The discourse ground itself functions as the spatial delimiter of the configuration VP defines. Spec,vP is not necessary and is not projected. The spatially punctual configuration in VP is construed as a temporally punctual event in TP, so no T-controller is selected either.

This is not to say that time and a T-controller are not hovering around the sentence, however. The directional semantic content of the verb is construed at the interface as defining a trajectory leading to (*arrive*) or away from (*leave*) the deictic ground. Spatial construal determines temporal construal. If so, a spatial trajectory involving elements contained within a T-chain (excluding adjuncts and dislocated constituents) is construed in TP as a temporal trajectory, and needs a T-controller.

For unity of construal, the T-controller must inhabit the same space as the spatial delimiter of the configuration VP defines. So in (14a), the T-controller of the temporal trajectory can only be the speaker. The speaker is accessible: she is located in the
discourse ground, which delimits the spatial configuration VP defines. She has a biography that began before the event (arrive) and extends beyond the event (leave). The typical human property of consciousness enables her to count the subevents of the spatiotemporal trajectory. The speaker triggers and maintains the event in time, not by virtue of will, for she is not a participant in the event, but by actively perceiving the event as it unrolls in time.2

11.3.2 Transitive and Unergative Achievements

Verbs that define transitive and unergative achievements have a [−ext] akt F, like those that define unaccusative achievements. The event is therefore construed as occurring at a point in space and time. Yet, paradoxically, the sentences of (15) must have a spatial extension, unlike (14a), for the direct object is not subject to the definiteness effect. And they must have a temporal extension as well, for they select auxiliary have when in participial form, and they take a [+human] T-controlling subject. But where does this spatial and temporal extension of the event come from if not from the akt F of V?

(15) a. John hit Bill.
   b. Mary screamed.

   Once again, the separation of the VP and TP domains of event construal allows us to solve the problem. The VP hit Bill or scream defines a “spatial achievement” in VP, but a temporal accomplishment in (15a,b).

   I claim that the key to the “type lifting” of the event when construal shifts from VP to TP is the pervasive grammatical phenomenon of inalienable possession (see Guérón 1983, 1985, 2003).

   A VP containing a verb like arrive or leave describes an intersection between a mobile figure and a stable ground that is not only punctual but total as well. When John arrives or leaves, all of John coincides with the deictic ground at the instant he appears or disappears from the observer’s view. But when John hits Bill or Mary screams, the spatial intersection that VP describes involves only a part of a body, John’s hand or Mary’s lungs and mouth. As Dick Carter remarked some years ago, when John kisses Mary it is not all of John but only his lips that make contact with Mary.

   Yet we cannot say John’s hand hit Bill, Mary’s mouth and lungs screamed, or John’s mouth kissed Mary, even though spatially speaking, the configuration holds true. Apparently, a body part can participate in a figure/ground configuration, but it cannot place the configuration in time.

   I propose that the body part that realizes the figure of a spatial configuration in VP necessarily selects its inalienable possessor as T-controller of the event in TP. In (15a), John hit Bill, John is a person with a biography who intends an act, picks out
its target Bill, and orders its body part into action as if it were a boss and the body part were its worker. The gap in space and time between John’s intention and the entrance into the fray of his body part defines a spatiotemporal trajectory internal to John’s biography, which John triggers and maintains. It is this temporality that is reflected in the choice of auxiliary have.

But suppose John hit Bill unintentionally, when he fell? Or suppose not John but a bullet hit Bill? Who then is the T-controller?

The T-controller need not be [+human], so long as it has properties appropriate to its function as implied by the predicate. In the nonagentive sentences just cited, John’s body or a bullet defines a moving figure within a spatiotemporal trajectory begun before the event time and triggered by the unintentional act of falling or by an implicit agent. John, or the bullet, acquires a biography and the status of spatial delimiter and T-controller within this trajectory. Bodies hurtling through space spatially delimit a trajectory and maintain it in time by their weight and their speed of motion.

I conclude that since events must be placed in space and time at the interface, all events need the spatial delimiter and the T-controller that accomplish these tasks.

11.4 Internal Time

11.4.1 The Subject’s Time

The subject’s internal time begins before the event time and can extend beyond it in intention, as shown in (16).

(16) a. John arrived late on purpose.
   b. John hit Bill [PRO in order to teach him a lesson].
   c. John left [PRO in order to see Betty].

By splitting the subject argument into a body construed as the delimiter of a spatial configuration in vP and a person with intention and will who controls the temporality of the event in TP, we obtain a clearer understanding of the phenomenon of control. Control of PRO in the adverbials of (16b,c) involves not the spatial delimiter John in Spec,vP, who arrives or leaves, or whose hand hits Bill, but solely the intentional property of the T-controller John in Spec,TP.

11.4.2 T-Control

Like the aspectual interval defined in TP by an activity verb, the aspectual interval defined by a [+ext] akt morpheme merged with tense also needs a T-controller, independently of the shape of the event predicated of it. Moreover, aspectual construal in TP overrides aktionsart determined in VP. In (17b), the imperfective aspect of the
present tense transforms the spatially punctual achievement of (17a) into a temporally extended accomplishment or activity.

(17) a. Jean/Le bus est arrivé.
    ‘Jean/The bus arrived.’

b. Attention, Jean/le bus arrive.
    ‘Careful, Jean/the bus arrives.’

The spatiotemporal trajectory that was implicit and external to the sentence proper in (14a) is foregrounded within the sentence in (17b). In VP, the body of John or the bus defines a series of movements in the direction of the discourse center. As in (14a), the discourse ground functions as spatial delimiter of the trajectory, and the speaker is the T-controller, who, by perceiving the event, triggers its existence, counts its spatiotemporal points, and maintains it in discourse time. However, since the whole trajectory has shifted from off-stage to on-stage, so to speak, its natural telos is unrealized at event time.

11.4.3 Properties of the T-Controller
A T-controller need not be [+human], but it needs a biography (i.e., existence in the time preceding the event) and properties that allow it to trigger and maintain the event in time. In (18), the storm has a past, which includes the atmospheric conditions that produced it and that preceded the contact with the crops culminating in their destruction.

(18) The storm destroyed the crops.

11.5 Internal versus External Time: Possessive and Psych Predicates

J’ai plus de souvenirs que si j’avais mille ans. (I have more memories than if I were a thousand years old.)
Charles Baudelaire, “Spleen”

11.5.1 Possessive Sentences
The English verb have has a [+ext] akt F. I assume its [+ext] value to be a vestige of the locative lexical content of its Indo-European ancestor, which meant ‘hold’ (cf. Spanish tener ‘hold’ or English We had/held a party). Have plus its object define a spatially extended configuration and select a spatial subject in Spec,vP whose body delimits or contains this configuration (see Guéron 1986, 1998).

(19) John has a book.
In (20), I have decomposed *have* into a semantically empty [−ext] “light” verb and a PP small clause whose P head has locative content and a [+]ext akt F. The small clause describes the inclusion of a body in a larger body. P [+]ext incorporates pre-syntactically in *have*, which thus acquires a [+]ext akt value. I submit (21) as the universal “possessive configuration” that denotes the inclusion of a spatially extended object within a spatial delimiter/container.

(20) a. John has a book.

b. 

```
TP
  Spec
  T
  vP
  [+pers]
  Spec
    v'
    T'
    v
    VP
    [+ext]
    [+pl]
    Spec
    V'
    V
    PP
    have
    Spec
    P
    DP
    John
    P
    DP
    [+ext]
    e
    a book
    (loc)
    [+ext]
    [+ext]
```

[−ext] copula *be* defines the same configuration when it acquires a [+]ext akt F by syntactic incorporation of the locative [+]ext P head of a PP small clause. In the Latin sentence (21), P is indirectly visible as an applicative morpheme on the dative subject.
(21) a. Mihi est liber.
   I-DAT is book
   ‘I have a book.’

b. 

I assume case marking to identify the position in a T-chain at which a DP checks its person F. An applicative morpheme on DP spelled out as dative case as in (21) identifies a DP that checks both its [+ext] akt F and its person F on a node I have labeled v/p (little v/little p), which inherits a [+T] F from T within the T-chain.

The dative argument in (21) functions in Spec,vP/pP as the spatial delimiter of the possessive state VP defines when it checks its [+ext] akt F with the number F of v/p. It is assigned a biography and the T-controller property of consciousness when it checks its person F on the same node.
A possessive sentence defines a state, not an event. Since states lack internal temporal content, why is the possessor argument invariably [+human], as shown in (22) for English? (The same is true in French, Latin, and so on.)

(22) a. John has the book.
    b. *The table has the book.

We can solve the paradox by allowing a partial disjunction between the internal time of the subject and the external time of the discourse.

When a sentence defines an event, the internal time of the T-controller is entirely included in the external reference or discourse time. But when the sentence defines a state, the internal time of the T-controller need only coincide with external time at a single point.

(22a) is a stative sentence that asserts that a property of John holds at the utterance time. Possession is a temporal property, however. If John has a book at time $t_i$, then he acquired the book at a past time $t_{i-n}$, however small the gap between the two times. So John must have a biography and properties of consciousness and will that allowed him to maintain the spatial configuration of possession from the time he obtained the book until the utterance time.

Note that there is no need for a [+human] T-controller if the sentence involves inalienable possession, which is independent of time.

(23) a. John has blue eyes.
    b. The table has three legs.

11.5.2 Psych Sentences

In many languages, possessive, psychological, modal, perception, and belief sentences contain a [+human] argument with dative/accusative case that functions as T-controller of an internal temporal interval. Lacking the scope over vP obtained by checking a person F with T, the dative argument cannot trigger an event or maintain it in external time. However, checking its [+ext] akt F on the v/p head assigns it scope over the spatial configuration in VP that it delimits physically. And checking of its person F with the [+T] F of this same head provides it with a biography and the property of consciousness that enables it to perceive the state contained in its internal space and to count the moments the state lasts in its internal time. While internal space may be embedded in external space, as it is in possessive structures, internal time is a subjective Bergsonian time not shared by other participants in a state or event.

In (24), as in possessive (20) and (21), the dative/accusative DP functions as both spatial delimiter and temporal controller of its internal space and time.
(24) a. Cela m’ennuie de t’entendre dire cela.
   that me-acc annoys to you hear say that
   ‘It annoys me to hear you say that.’
   b. La tête lui tourne.
      the head him-DAT turns
      ‘His head is spinning.’
   c. Il lui faut vingt euros.
      it him-DAT is-necessary twenty euros
      ‘He needs twenty euros.’
   d. Methinks the lady doth protest too much.
     (= It seems to me that . . .)

The T-controller of internal space and time replaces the vague “benefactive” θ-role, just as the akt function of spatial measure replaces the theme/patient θ-role and the T-controller of external time replaces, and is empirically more adequate than, the agent θ-role.

Internal and external space-time pairs interact in various ways. In the sentences of (25), a stage-level event includes a configuration that denotes individual-level inalienable possession in (25a) (lui P la tête) and one that denotes stage-level psychological possession in (25b) (me P de la peine).

     I him-DAT have broken the head
     ‘I broke his head/beat him up.’
     b. Tu me fais de la peine.
     you me-DAT make pain
     ‘You make me feel bad.’

In English (26a) and Hebrew (26b), both the event and the spatial configuration it contains are stage level.

     b. Ha-yalda kilkela le-Dan et ha-radio.
        the girl spoiled to-Dan ACC the radio
        ‘The girl spoiled Dan’s radio.’

The T-controller of a psychological or mental space/time has wider syntactic and semantic scope than the T-controller of a purely physical space/time.

(27) a. Je lui crois une femme dans chaque port.
     I him-DAT believe a woman in each port
     ‘I believe him (to have) a woman in every port.’
     b. I forgive John his sins.
Because deictic time radiates down through the T-chain, even though individual-level possession exists, as in (23b), (25a), or (28b), a small clause denoting inalienable possession cannot bound a spatiotemporal trajectory defined by the matrix verb, as in (28c).

    b. Philadelphia has nice park benches.
    c. *I sent Philadelphia nice park benches.

11.6 Auxiliary Verbs

11.6.1 Modal Verbs
Robert (1985) has suggested that modal verbs raise to I in English because they lack \( \theta \)-roles. Chomsky (1995) has proposed that auxiliaries are erased in LF because they lack content.

But if auxiliaries lack \( \theta \)-roles, what determines their complement selection? Why is (29a) grammatical, but not (29b)?

(29) a. John is writing a letter.
    b. *John has writing a letter.

Auxiliaries must have sufficient content to distinguish them one from the other. One element that distinguishes them is the value of the akt F.

Because auxiliaries lack lexical content, they cannot define a spatial configuration in vP, or, consequently, an event in TP. Rather, the auxiliary raises to T where its \([+/−]{ext}\) akt F combines with T and is construed as imperfective or punctual aspect.

Auxiliaries raise to T in English not because they lack “\( \theta \)-roles,” but because they lack the lexical content that motivates the akt functions of measurer and delimiter of a spatial configuration in VP. As aspectual verbs, auxiliaries take points in time as their arguments. Have and be take as their internal argument a temporal point of which a state/subevent is predicated, and as external argument a point within a time interval.

In my view, times are pronouns, as for Partee (1973) and Encü (1987). Auxiliary verbs are aspectual predicates that indirectly link events to times by linking two temporal points.

11.6.2 Participial Structures

11.6.2.1 The Construal of the Participle In the participial structure (30), VP denotes a spatially extended configuration in VP and a temporally extended event in
TP. EN is an aspect morpheme with a \([-\text{ext}]\) akt F, so T\(_2\) denotes one point of an undefined temporal interval.

(30) TP

\[
\begin{array}{c}
\text{T} \\
\text{EN} \\
\text{[-ext]} \\
\text{read} \\
\text{[-ext]} \\
\text{TP} \\
\text{VP} \\
\text{[+ext]} \\
\text{DP} \\
\text{the book} \\
\text{[+ext]}
\end{array}
\]

The event vP denotes is predicated of the closest T node. It is impossible, however, in the deictic discourse world—as opposed to, say, the narrative or historical discourse worlds—to predicate an entire event of a point of time. Only a subevent may be placed at a point of deictic time. In (30), however, whatever subevent is predicated of the point of time T\(_2\) defines, the rest of the temporally extended event will fail to be placed in time, violating Full Interpretation at the interface. English (2a) crashes for this very reason: the VP denotes an event while the English present tense has a \([-\text{ext}]\) akt/asp F that defines a point, not an interval, of time.

So a sentence containing (30) should also crash, like (2a).

If, however, we assume that a syntactic subject is necessary to trigger and maintain a temporally extended event in time then, if we refrain from projecting a Spec,TP position in the participle, the temporal onset and extension of the event remain unrealized in syntax. We can then predicate the sole remaining dimension of the event, its final subevent, of the temporal point T\(_2\) denotes. A perfect participle invariably lacks an external argument position; this allows it to avoid the fate of English (2a).

11.6.2.2 The Construal of the Auxiliary  Still, the whole event must be placed in time in order to respect Full Interpretation. In (31), the TP of (30), now TP\(_2\), is merged with auxiliary have.
In (31), as in (30), the last subevent of the *read the book* event is predicated of the point of time $T_2$ denotes.

*Have* has a [+ext] akt $F$ construed as imperfective aspect under merger with tense. In (31), $have + T_1$ denotes the present time interval.

When $T_2$ raises to $T_1$ in LF within the T-chain, the last subevent predicated of $T_2$ is inserted at a point of the ongoing tense interval $have + T$ defines. All the subevents leading up to the last one are inserted to the left of that point. We thus get the canonical interpretation of present perfect, that of a bounded past event situated inside the present interval.

Both the temporally extended event $VP_2$ describes and the imperfective temporal interval $have + T$ defines need a T-controller. In (31), *Mary*, the closest candidate, controls the temporal interval $have$ defines. As this interval includes not only the final subevent of the event but also all the subevents that preceded it, *Mary* also controls the entire temporal extension of the *read the book* event.

In a present perfect structure, the subject’s biographical time coincides with the utterance time. Consequently, the subject must be alive at the utterance time, so (32) is not allowed.

(32) *Einstein has borrowed the book from Planck.*

However, it is the space defined in vP that determines the time defined in TP. If the space that anchors the event is not a physical but a mental space, then any
metonymic property of the subject can qualify it as a T-controller, provided the property still holds at the utterance time. Since the “oeuvre” of a great man has a partially independent biography that, unlike his body, persists over multiple space-time locations, the sentences of (33) are grammatical.

(33) a. Einstein has greatly influenced Bethe’s work in science.
    b. Galileo has been exonerated by the Pope.

11.7 Split Arguments

No Projection Principle requires one-to-one correspondence between an argument and an akt/asp function. On the contrary, one argument often fills the roles of both spatial delimiter and T-controller.

However, the recurrence in sentence grammar of syntactically split constituents, whose akt F is checked and construed in vP and whose person F is checked and construed in TP, suggests that akt/asp functions may be associated with FFs rather than with the arguments that contain these Fs. If so, there is in fact a one-to-one correspondence between an akt/asp function and the FF that satisfies it.

The mechanism of pronominal binding allows the features of a single argument to be split over two syntactic domains.

11.7.1 Clitics

I assume that pronominals, like nominals, consist of two parts that are, roughly, content and form. As illustrated syntactically in languages with classifiers, like Chinese and Korean, or with classifying determiners, like French, a nominal has both a spatial content whose [+ext] akt F is checked in vP and formal classifier or ϕ-features (ϕ-Fs) checked on a higher functional node, QP or TP. Strong pronouns conflate the two parts: their ϕ-Fs are indistinguishable from their lexical content. Strong pronouns are generated in vP and contribute to spatial aktionsart in vP and to temporal aspect in TP.

But clitic pronouns are split into two parts in syntax, a classifying ϕ-segment that checks its Fs in TP and a pro segment with a [+ext] akt F checked in vP.

(34) a. Je les aime.
    I them-ACC love
    ‘I love them.’

   b. Je les_{i_1}^{+T} [vP aime pro_{i_1}]


     III [+ext]

     III

     f/M

     [+pl]

     [+ext]
11.7.2 Reflexive Pronouns

English reflexive pronouns are overtly segmented into two parts. In (35), *himself* is split into a lexical root *self* with a [+ext] akt F denoting the body (and which in some languages actually is the word for *body*) and a classifying prefix with φ-Fs. The body nominal, which never leaves VP, measures and bounds the spatial configuration vP defines. The subject checks its person F in T, functions as T-controller of the event, and binds the classifying φ-Fs of the body term.

(35) a. John washed himself.
   b. Johni T washed himi +SELF

Cliticization and reflexivity render the akt/asp construal of the sentence more transparent by separating the body of an argument, which has a purely spatial akt function in vP, from its personal properties, which allow it to function as T-controller of the event in TP. Binding at the interface reunites the segments of the individual that compositional interpretation of the phases of syntactic structure has dissociated.

11.7.3 Inalienable Possession

Inalienable possession structures provide the clearest example of an argument split in syntax into its body and its personal properties. In (36), a possessive PP configuration is embedded inside an eventive VP (see Guéron 1985, 2003).

(36) a. Je leur ai pris/caressé la main.
    I them-DAT have taken/caressed the hand
    ‘I took/caressed their hand.’
   b. Je leuri ai \{pris\ caressé\} [pp proi P [DP la main]]

In (36), the DP (or Classifier Phrase) *la main* ‘the hand’ contains an NP that denotes a body part and a classifier *la* containing uninterpretable φ-Fs (for *la* as a classifier, see Guéron, 2003). Pro in Spec,PP is the spatial delimiter of an individual-level possessive configuration. The person F that *leur* checks on a T-related node, vP/pP (not shown in (36)), binds the person F of the pro delimiter.
11.7.4 Middle Structures in French and English

Both French and English have middle structures like (37). In (37a), *se lave* identifies the French middle structure. There is no equivalent for *se* in English.

(37) a. Cette chemise *se lave* facilement.
   b. This shirt *washes* easily.

Yet a number of French middle structures have no English counterpart (see Zribi-Hertz 1982).

(38) a. La tour Eiffel *se voit* de ma fenêtre.
   b. *The Eiffel Tower sees* from my window.

(39) a. Ce vin *se boit* avec de la viande rouge.
   b. *This wine *drinks* with red meat.

(40) a. Cela *s’est dit* hier soir.
   b. *That said* yesterday evening.

English and French middles both allow EASILY adverbs, but only French middles allow manner and temporal adverbials as well.

(41) a. Cette chemise *se lave* facilement/avec soin/vigoureusement/rapidement.
   b. This shirt *washes* easily/*carefully/*vigorously/*quickly.

The contrasts in (41) suggest that the difference between English and French involves syntactic scope: EASILY adverbs, the only ones accessible to the English construction, are very low on the adverb hierarchy defined in Cinque 1999.

Only French allows agent control of a PRO subject in an adjunct.

(42) a. Cette chemise *se lave* sans PRO la repasser.
   b. This shirt *washes* (*without PRO ironing it).

(43) a. Ce tableau *se fixe* au mur facilement en PRO montant sur une échelle.
   b. This picture *fixes* to the wall easily (*by PRO climbing on a ladder).

11.7.4.1 The French Middle Construction I propose that in the French middle structure illustrated in (44), the subject argument is split into two morphologically underdetermined segments: pro, a spatial delimiter in Spec,vP, and SE, a clitic attached to T containing only a person F, which functions as T-controller. Each subject is identified in its syntactic domain.

(44) a. La chemise *se lave* t facilement.
In (44), the raised object *la chemise* measures the effort needed to realize the spatial configuration VP describes. The [+ext] verb *lave* ‘wash’ selects a spatial delimiter, pro, in Spec,vP, which checks its [+ext] akt F in v.

(44a) is a stative predication: the raised DP *la chemise* is asserted to have a certain property. The property is a temporal one, however, and its inherent temporal extension requires a T-controller.

SE checks its person F in T and takes scope over vP. But in order to qualify as a T-controller, SE must acquire appropriate temporal properties.

I propose that these properties are supplied by a modal operator merged with the reference time situated in C. Modal verbs, whether lexical or grammatical, have a [+ext] akt F motivated by the mental operations that the process of modal reasoning implies. A modal verb selects an event as its internal argument and a [+human] external argument with properties of consciousness and will that functions as T-controller of its temporal extension. In (44b), the person F of SE functions as a feature variable identified with the external argument of the modal. Under identity, SE obtains the properties of will and consciousness associated with the external argument of the modal that allow it to function as T-controller of the washing event.
Lower in the sentence, adjoined to vP, is a quasi-modal adverbia EASILY. EASILY has a [+ext] akt F based on the physical gestures it targets and evaluates. EASILY selects as its arguments a spatial configuration and a spatial manipulator: if something is easy to do, it can be realized with few gestures. The manipulator argument selected by EASILY identifies pro in Spec,vP as the delimiter and manipulator of the spatial configuration VP defines.

Finally, the person F of SE binds pro in Spec,vP, just as the person F of leur binds pro in the inalienable possession structure (36), thus including it in the time of the event. The modal argument α_j and the EASILY argument β_k are construed as a single argument/event participant whose body is active in vP and whose personal properties are active in the modal world associated with C.

The modal operator can be overt in French.

(45) a. Cette chemise peut se laver facilement.
   ‘This shirt can be washed easily.’
   b. Cette chemise doit se laver avec soin.
   ‘This shirt must be washed with care.’

11.7.4.2 The English Middle Structure In English, the middle structure contains no [+person] subject or clitic. Nor can it contain an overt modal verb.

(46) a. ?*That shirt can’t wash.
   b. *That shirt mustn’t wash.

Such facts suggest that the English middle is missing the top part of the structure in (44), that is, both a person F and the modal operator that identifies it as T-controller. I propose that in English, only the lower part of the structure, the manipulator and the EASILY operator, are active in syntax.

I assume the person clitic SE in Romance to be a morphosyntactic copy of the person F of the verb raised to T. On this model, in (47b) I have doubled the [+ext]/ [+pl] akt F of the verb raised to v in order to derive an abstract clitic with a [+ext] akt F, which functions, like French pro, as the manipulator of the spatial event in vP identified by the EASILY operator.

(47) a. That shirt washes easily.
The absence of a T-controller in (47b) accounts for all the properties peculiar to the English middle: lack of control of the PRO subject of an adjunct, absence of higher adverbs, and the absence of all verbs, such as see in (38) or drink in (39), in which a T-controller triggers an event and maintains it in time.

11.8 Conclusion

I have proposed that all lexical items have a $\{+/−\text{ext}\}$ akt F, motivated by lexical content. Grammatical morphemes may also have a $\{+\text{ext}\}$ akt F derived from past history as a lexical item, as with auxiliary have or infinitival to. $\{−\text{ext}\}$ is the default value of the copula verb and functional prepositions like à and de in French.

A $\{+\text{ext}\}$ akt F defines a predicate with a spatial extension construed in vP and a temporal extension construed in TP. Lexical verbs that raise to T in syntax have one $\{+/−\text{ext}\}$ akt F in their root, construed as aktionsart in VP, and another $\{+/−\text{ext}\}$ akt F in their affix, construed as aspect under merger with T. In English, a lexical verb has an akt F in its root but no aspectual suffix. The hypothesis that T attracts an isolated akt F construed as aspect would explain why in English, T does not attract lexical verbs but does attract auxiliary verbs in syntax. ³

Merger of V and T in syntax or LF transforms the spatial configuration construed in vP into an eventuality construed in TP. All parts of the event are placed in time by the radiation of tense downward through the T-chain. Pronominal binding is a syntactic manifestation of such radiation.
Spatial extension must be delimited and temporal extension must be controlled, so all sentences contain both a spatial delimiter identified in the vP domain and a T-controller identified in the T-C domain. A spatial delimiter is construed as a body whose spatial contours contain the configuration VP defines and whose body parts provide the gestures needed to realize it. A T-controller has a biography that begins before the event time and may extend beyond it in intention. Personal properties of consciousness and will enable a [+human] T-controller in Spec,TP to trigger and maintain an event in time. But, as we have seen, meteorological phenomena also have the requisite temporal properties. Alternatively, anchoring of an event (e.g., *arrive*) in the discourse space leaves only the speaker-perceiver as an accessible T-controller.

Possessive, psychological, and epistemic sentences contain a spatial delimiter, often bearing dative/accusative case, which doubles as T-controller. Because its person F is checked lower than T, this T-controller does not take scope over external objective time; rather, it takes scope only over an internal biographical time, which may join external time only at one point. So a sentence may contain both a T-controller of external time and a T-controller of internal time, without contradiction.

In a sentence like *John read a book*, the same DP, *John*, functions as spatial delimiter in vP and as T-controller in TP. I have proposed to describe this somewhat differently: a single argument can be split into a person F that determines its T-controller function in TP and a body that functions as spatial delimiter and producer of gestures in vP. I have placed inalienable possession structures, which overtly illustrate the split between the person and the body of a single argument, at the very heart of activities, accomplishments, and transitive achievements alike. I claim that a body part that contributes the gestures that form the figure of a spatial configuration in vP obligatorily selects its inalienable possessor in Spec,TP, which alone has properties capable of transforming a spatial configuration into an event.

In middle structures, the direct object raised to Spec,TP measures the physical effort (number of gestures) the spatial configuration in VP requires.

In French, pro in Spec,vP, licensed by the local EASILY adverb, functions as spatial manipulator, and the person morpheme SE attached to T and identified by a modal operator in C controls the temporality of the event. SE also binds pro in Spec,vP, unifying the spatial and temporal segments of the argument.

Alternatively, in French, the person morpheme SE may be absorbed by V in the lexicon or in VP, deriving a punctual passive event, as in (48).

(48) Cela s’est dit hier.

‘That said/was said yesterday.’

The English middle structure lacks a person clitic on T to function as T-controller. Only a manipulator exists, a copy, I proposed, of the [+ext]/[+pl] akt F of V raised...
to v, which is licensed by the same EASILY operator as in French. The absence of a T-controller in English accounts for lack of syntactic control of PRO, as well as lack of purpose clauses, higher adverbs, and all verbs that select a [+human] agent (eat) or a [+human] perceiver (see) to control the temporality of the event.

In English, the quasi-modal EASILY operator in vP licenses only sentences that assert the facility of executing a series of physical gestures. In *This shirt washes easily*, the spatial subject adjoined to v produces washing gestures, but does not control the time of the event. This situation is acceptable in timeless, generic sentences. But in the absence of a person F, it is impossible to generate a passive-middle by incorporating a person F in V as in French.

(49) *That said yesterday.*

The presence of both a person F functioning as T-controller and a morpheme with a [+ext]/[+pl] akt F functioning as manipulator in the French middle, and the presence of the latter alone in English, accounts for the contrasts in (50) and (51).

(50) a. Cette chemise *se lave* à la main/avec plaisir.
   b. This shirt *washes* by hand/*with pleasure.

(51) a. Ce tableau *se fixe* au mur avec un marteau et des clous/avec un soin extrême.
   b. This painting *fixes* to the wall with a hammer and nails/*with great care.

I claimed, however, that every sentence must be placed in time and so every sentence needs a T-controller. The English middle does have a default T-controller, the speaker, associated with the C-node, who judges the action VP describes to be easy. But here, as in (14a), the speaker takes scope over the entire T-chain, so that her semantic contribution, while “real” at the interface, lacks the syntactic reflexes that we find in the French middle.

Notes

I am grateful to Jacqueline Lecarme for comments on an earlier version of this chapter.

1. The idea of temporal radiation from top to bottom of the syntactic structure is due to Jacqueline Lecarme (see the introduction to this volume).


3. For my suggestion to go through, not only must the English present tense lack aspect, but so must the past tense. If so, the English morpheme ED must be construed as an aspectual morpheme in an embedded T but as a tense morpheme in the matrix T. In a language like Arabic, on the contrary, the suffixed form *kataba* ‘wrote’ must be construed as aspect in an embedded T but as aspect and tense combined in the matrix T. This would account for raising of V to T in Arabic but not in English.
References


12.1 Preliminary Remarks

I examine here the English progressive, concentrating upon the issues surrounding what David Dowty (1977) dubbed the “imperfective paradox.” My discussion concerns a single part of the general problem of tense and aspect, both within languages and crosslinguistically. That general problem has three pieces: namely, (i) what is the interpretation of tense and aspect? (ii) what is the nature of the syntactic structures to be interpreted? and (iii) what are the principles through which the mapping from these structures to the meaning is effected? None of these pieces can be assumed in advance: all must be solved simultaneously. A remarkable point about tense and aspect is that, although they belong to what we may regard as some of the most basic parts of language, their interpretation (unlike that of quantification, say) is not obvious, even to a first approximation. Native speakers, unreflectively, get things right; but what they are getting right is a matter for research. I will begin this discussion by remarking some assumptions about the nature of tense and aspect, including assumptions about question (iii), the nature of the mapping from structure to meaning. I will assume here without argument that the mapping is effectively trivial—that is, that it consists in putting together by locally compositional means the open or closed elements in simple ways, such as for example those outlined in Higginbotham 1985.

The English progressive is $be$+$-ing$, or as we shall see simply $-ing$ in certain of the environments that allow omission of the copula. Its elementary syntax is, I will assume, as given in Chomsky 1957, augmented by contemporary research suggesting that the linear order of “auxiliary” elements is also their hierarchical order,

Tense – (modal) – (have+$+$-en) – (be+$+$-ing),

with stems raising to affixes—for example, $cross$ to $-ing$ and $be$ to Tense, giving the structure of sentences like (1).

(1) John is crossing the street.
We expect (in the unmarked case) the hierarchical order of the auxiliary elements to correspond to the order of their semantic composition; and therefore, we expect that in (2) we have, as a matter of semantic fact, the present of the perfect of the progressive, and not any other order.

(2) John has been crossing the street.

Before launching into the progressive, we require a few preliminary words about tense, about the English perfect, and about the telic/atelic distinction, all of which will have subsequent roles to play. My own view of these matters occupies section 12.2. In section 12.3, I rehearse traditional material on the progressive, and in section 12.4, I consider, and suggest a revision of, David Dowty’s important early work on the subject. In section 12.5, I turn to Terence Parsons’s view (Parsons 1989, 1990), and to some very serious problems for it, several of them raised in Zucchi 1999. In section 12.6, I give the bare bones of the view developed in Landman 1992, and I sketch some issues raised by that view. In sections 12.7–12.9, I attempt a synthesis. A major theme of my discussion will be the contextuality of the progressive; but this theme has many threads, which are collected only in section 12.10. I conclude in section 12.11 with some crosslinguistic speculations.

12.2 Semantic Elements

I will assume that the tenses are binary predicates expressing temporal relations. I depart, at least for this discussion, from the “Reichenbachian” view that we have all of “event time,” “speech time,” and “reference time,” regarding the second as merely a special case of “reference time.” Assuming as I will throughout that stems contain a position E for events, I take up a simple sentence such as (3) as true if and only if there is a state of happiness accruing to John that surrounds the time of the context, here the time of utterance by default.

(3) John is happy.

The syntax from which this meaning is computed is effectively as in (4),

(4) \([T [\sim \text{past}] (1, 2) [VP \text{John happy (3)}]]\)

where the numerals in parentheses stand for the open positions or implicit arguments in the head T and the VP.\(^1\) In the semantic computation, the implicit argument 3 of the VP, which ranges over events, is identified with argument 1 of T, and argument 2 of T is set to the speech time or utterance \(u\). The feature \([\sim \text{past}]\) is interpreted as ‘1 surrounds 2’. This notion is expressed below by ‘\(\sim\)’, said of times (and of events through their times). Finally, there is default existential closure of argument 1, with the result for (1) that we may write as (5).
In other words, there is a state of John’s being happy whose time surrounds that of the utterance \( u \). Where the nonpast is interpreted by \( \sim \), the past and future tenses, paraphrastic or otherwise, are taken up as expressing the obvious relations of anteriority \( < \) and posteriority \( > \).

I assume also, as in Higginbotham 2000b, that with each event \( e \) there is associated its time \( \tau(e) \). In the cases considered here, \( \tau(e) \) will always be an interval (possibly half-closed or closed), or else a point; and, for simplicity, \( \tau(e) \) for each \( e \) will be constant across counterfactual situations.

For the (English) perfect, I assume with Parsons (1990) and others that it expresses a relation between events and their result or resultant states (these are distinguished as needed below). Thus, (6) has the interpretation shown in (7).

(6) John has been happy.

(7) \( \exists e' \sim u : e' \ \text{a result(ant)} \ \text{of} \ e \) happy(John, \( e \))

Note in particular that since result and resultant states must follow the states of which they are the results or resultants, John was happy in the past if (6) is true, even though any result or resultant state \( e' \) that makes (7) true is nonpast. The perfect will be of significance for certain readings of progressive sentences.

For the representation of telicity, I adopt the view in Higginbotham 1995 and elsewhere that the predicates that Zeno Vendler called “accomplishments” contain an ordered pair of implicit arguments for events, and that those he called “achievements” may be taken up with that status through syntactic combinatorics of various kinds. Thus, an accomplishment predication as in (8) will have the interpretation shown in (9).

(8) John crossed the street.

(9) \( \exists (e_1, e_2) < u \) cross(John, the street, \( (e_1, e_2) \))

Here (assuming (8) is true), we have an event \( e_1 \) consisting of John’s progress toward the other side of the street, and an event \( e_2 \) consisting of (the onset of) his being on the other side, the ensemble, taken in that order, constituting the crossing of the street.

Particular notice should be taken of the case where an accomplishment predicate is formed by syntactic means, as in a verb-particle or resultative construction (Higginbotham 2000b; Folli 2002). Thus, examples like (10) are ambiguous, with the “adjunct” upstairs indicating either (i) merely the direction of motion, or (ii) the telos of the activity (Mary got upstairs by running there).

(10) Mary ran upstairs.
12.3 Background to the English Progressive

In early discussion of the progressive in generative grammar, the following generalizations were recognized (as in traditional grammar).

A. Progressive predicates constitute “activities” in Vendler’s sense, even when the verbal constructions to which they apply were accomplishments or achievements, and in these cases there was no implication that the ends of the activity were reached, or the achievement attained, as in (11) or (12).

(11) John is dying.
(12) Mary is going to work.

(11) may be true now although John does not die in the end; and (12) may be true although Mary never makes it to work. On the other hand, the progressive of an activity predicate has no such effect: thus, from John was running there follows John ran.

B. Stative predicates do not allow the progressive. Thus, (13) allows only the (rather strange) “agentive” reading, and (14) is simply impossible.

(13) John is being happy.
(14) *Mary is knowing the answer.

C. There exists a possibly distinct “futurate” progressive, signifying that something is “scheduled” or “on the agenda,” as in (15) or (16).

(15) But I am singing in New York tomorrow!
(16) They said the world was ending tonight (but here it is midnight and we are still around).

D. It appears that existential generalization is not always valid for the progressive of a sentence (or VP) for which it is valid, a point that seems especially clear for verbs of creation, as in (17).

(17) John is building a house.

The skeletal form John build a house (with any tense) implies that for some house $x$, John build(s) $x$; but (17) may be true although there is no house anywhere, so it appears.

Any thorough account of the progressive should incorporate material from which the above and other generalizations noted below will follow.

12.4 Counterfactuals: Dowty 1977

The phenomenon A above received special attention from Dowty (1977, 1979), who suggested that progressives were to be assimilated to a variety of conditional, such
conditionals to be clarified in turn through modality, understood as in possible-worlds semantics. The central idea (the revision in Dowty 1979 of the original proposal in Dowty 1977) is that a progressive is true if, in all (possibly counterfactual) relevant situations (of which there must be at least one) in which things go on “as they might be expected to” (the “inertia worlds,” in Dowty’s terminology), the end of the accomplishment (or the existence of the activity) is to be found (Dowty 1979, 149).

I take the liberty of transposing Dowty’s account into a scheme with event positions, and with temporal reference interpreted as in section 12.2. (Dowty’s original exposition, self-consciously, did not take events as primitive.) Where truth is relative to pairs \((w, i)\) of possible worlds and intervals of time, Dowty’s intensional progressive operator \(\text{Prog}\) is definable by (18).

\[
\text{Prog}(p) \text{ is true at } (w, i) \iff [\forall w': w' \text{ is inertial with respect to } (w, i)] [\exists i': i \subseteq i'] (p \text{ is true at } (w', i'))
\]

(The containment ‘\(i \subseteq i'\)’ is proper.) If we “extensionalize” this operator, the progressive of a proposition \(p\) amounts to (19).

\[
[\forall w': w' \text{ is inertial with respect to } (w, i)] [\exists i': i \subseteq i'] p_{(w', i')}
\]

With the possible-worlds reference explicit, we should take up \(\text{John was running}\) as in (20), where ‘\(\tau(e)\)’ denotes the actual time of \(e\), and ‘\(@\)’ the actual world.

\[
[\exists e < u] [\forall w: w \text{ is inertial with respect to } (@, \tau(e))] [\exists e': \tau(e) \subseteq \tau(e')] \text{run}_{(w, \tau(e'))}(\text{John, } e')
\]

(I assume for simplicity that the name \(\text{John}\) is rigid.) Now, \(w'\) is inertial with respect to \((w, i)\) only if (intuitively speaking) the histories of \(w\) and \(w'\) are the same through the interval \(i\). From the fact that an event of the type \(\text{running}\) (as with other activities) is made up of subevents of the same type, we are therefore guaranteed as of the last moment of \(\tau(e') \geq \tau(u)\) that \([\exists e] \text{run}_{(w, \tau(e'))}(\text{John, } e)\) in any \(w\) inertial with respect to \((@, \tau(e))\), hence that it would be true at \(\tau(u)\) to say \(\text{John ran}\). The result, then, is to make the progressive of an activity trivially true if its interior is true; and by similar reasoning to make (11) true if John dies in each of the relevant situations (even if not in the actual world); and to make (12) true if Mary gets to work in all such situations, even if something detains her as things are.

A difficulty for Dowty’s original account elaborated especially by Vlach (1981) is that the interval semantics that he proposed did not capture the fact that for a progressive as in (11) or (12) to be true at a time, there must at that time be a relevant ongoing process: we cannot say that John is dying simply because his death is inevitable, or that Mary is going to work at the very moment when she retires for the night, even if, provided that things go on as expected, she will go to work in some
hours. This difficulty is not immediately overcome by requiring that the speech time of, say, *Mary is going to work* be an element of each interval $i'$ such that *Mary go to work* is true at $(w', i')$. For, where $i''$ is an interval such that *Mary go to work* is true at $(w', i'')$, and the speech time $\tau$ happens to precede every moment in $i''$, let $i'$ be the whole interval that includes both $\tau$ and $i''$. We would have to declare that in some cases, but not all, *Mary go to work* is not after all true at $(w', i')$; but which cases are these? Intuitively, they are those in which no process has begun as of $\tau$ that will, if successful, get Mary to work sometime later. There is, to be sure, some vagueness about exactly when Mary’s going to work commences; but that is not the issue. Rather, the difficulty is that the formulation (18) gives no way even to mark the distinctions that are wanted. However, the difficulty can be set aside, I believe, if we modify Dowty’s view in accordance with the picture of accomplishment predicates given in section 12.2, where the reference to events is explicit. For (12), repeated here, we would have (21).

(12) Mary is going to work.

(21) $[\exists e \sim u] [\forall w: w \text{ is inertial with respect to } (@, \tau(e))] [\exists e'] \text{ go to work}_{(w, \tau(e+e'))}(\text{Mary, } (e, e'))$

In (21), $e + e'$ is the sum of $e$ and $e'$ (i.e., the least event of which both are parts). Recalling that we postulate the existence of at least one $w$ inertial with respect to $(@, \tau(e))$, and that the history of any such $w$ will be that of $(@, \tau(e))$ through $\tau(e)$, (21) implies the existence in $w$ of a process $e$ that, in $w$, terminates with an event $e'$ of Mary’s being at work (it being understood that, in a telic predication $\phi(e, e')$, $\tau(e) \subset \tau(e + e')$). Where the actual world is not inertial with respect to itself and $\tau(e)$, we may have Mary going to work without actually getting there. In a further refinement, we may take it that $e$ itself is only an initial stage of a process $e''$, possibly different in different inertia worlds $w$, such that $(e'', e')$ is the entire process plus termination of Mary’s going to work. (The refinement does not affect the case of activity predicates, because an initial stage of an activity of type $T$ is already an activity of type $T$.) The final formulation is therefore (22).

(22) $[\exists e \sim u] [\forall w: w \text{ is inertial with respect to } (@, \tau(e))] [\exists (e'', e'): \tau(e) \subset \tau(e'')] [\exists e'] \text{ go to work}_{(w, \tau(e''+e'))}(\text{Mary, } (e'', e'))$

I agree to this extent with Dowty’s interval semantics, but only where the intervals are conceived as the intervals of underlying events, a more fundamental structure.

A virtue of Dowty’s account, retained under the revision just suggested, is that the progressive of an impossibility must be false, as in (23)–(24) (there being no relevant counterfactual situations, whereas there must be at least one inertia world).

(23) John is squaring the circle.
(24) Cyrano is rising to the moon in a balloon.

However, problems remain.

For one thing, the construction given does not allow the conjunction of incompatibles, as in (25), an example that, I take it, may be truly uttered.

(25) John is dying of cancer and heart disease, although only one of these will kill him (and it is a random matter which one it is).

For if John is dying of cancer, so that the ensemble of inertia worlds makes John is dying of cancer true, then he must in all of these die of cancer, rather than heart disease; but that falsifies the conjunction. Nor can Dowty’s condition be weakened so as to be said to hold at interval $i$ provided its interior comes to be true at some interval $i'$ properly containing $i$. That is too weak, since it would make it true, for example, to say both Mary is going to work and Mary is going to the baseball game when Mary is debating which to do, and hasn’t yet decided. In his original paper, where the truth-conditions for the progressive were existential rather than universal, Dowty (1977, 59) noted that conjunctions of incompatibles were allowed to come out true, contrary to intuition at least in many cases. The scheme with universal quantification, as in (18), or the extensionalized (19), disallows all such, on the assumption (independently necessary) that for every $(w, i)$ there is a world $w'$ inertial to it. But if (25) is acceptable, then further distinctions are required. I return to this matter below.

Several authors, especially Landman (1992) and Andrea Bonomi (1997 and elsewhere), have emphasized the contextuality of the progressive, which goes untreated in Dowty 1977. Standard example: Mary takes an airplane in New York, bound for London; the plane is hijacked en route and flown to Havana. Early on in the flight, would it be true to say that Mary is flying to London? That she is flying to Havana? Both? Neither?

It is noteworthy that in this case, unlike (25), the possibility of saying, “Both” is precluded: under the scenario envisaged, it is not true that Mary is flying to London and flying to Havana. It seems equally clear that she is either flying to London or flying to Havana, so that “Neither” is ruled out as well. However, incompatibles are sometimes possible, as in (25), so there is a serious question why (26) is false (no matter when asserted).

(26) Mary is flying to London and to Havana.

In sum, Dowty’s counterfactual theory can be recast with events as primitives, in such a way that Vlach’s objection can be turned aside. As for the traditional matters outlined in section 12.3: that stative predicates do not admit the progressive will have to be stipulated (on the grounds, perhaps, that nothing is “going on” when a stative is true); and the futurate progressive will simply have to be set aside as a different construction, perhaps (as suggested in Ippolito, this volume) as analogous to the
imperfect, which has no distinctive morphological realization in English. Existential generalization is in general invalid, and the valid cases will have to be treated independently. But there remain problems with the contextuality of the progressive, and, of course, with the determination of inertia worlds.

12.5 An Extensional View: Parsons 1990

Terence Parsons, in articles reprinted with emendations in Parsons 1990, formulated a simple and purely extensional view of the English progressive, whose central tenets are (i) that all predicates range over events; (ii) that a present or past progressive has it that some event of the sort classified by the predicate is or was going on; and (iii) that the simple past (future) of a predicate adds, besides a temporal relation of anteriority (posteriority), the notion that whatever event it was “culminated” (will “culminate”), where what it is for \( e \) to culminate is given by the nature of \( e \).

Thus, our example (8), repeated here, comes out for Parsons as in (27), whereas the progressive (28) simply lacks the final clause of (27), expressing culmination.

(8) John crossed the street.

(27) \([\exists e < u] \operatorname{cross}(\text{John, the street, } e) \& \operatorname{culminate}(e)\]

(28) John was crossing the street.

(I have suppressed some redundancies in Parsons’s formulation.) The suggestion made here, and in Higginbotham 1995, may be seen as providing a further and more explicit elucidation of Parsons’s notion of culmination, one that puts the situation constituting the telos of the accomplishment directly into the representation.

Evidently, there are a number of phenomena that Parsons’s account does not address. It is not easy, for example, to apply it to achievement predicates, as in John die, which appear to contain within themselves no hint of a process that could be said to culminate. But attention has focused on other issues, to which we now turn.

Parsons’s account allows, indeed demands, that predications such as John cross the street can hold of events even if they do not culminate; their accomplishment character in the past tense, as in (29), is said to arise from the tense itself.

(29) John crossed the street.

As noted in the lecture Higginbotham 1993 and in print in Zucchi 1999, however, a quick survey of gerundive versus root verb contexts appears to show that, in English at least, the predicate is itself an accomplishment.

(30) a. I saw John cross the street.

b. I saw John crossing the street.
(31) a. For Mary to cross the street would be a mistake.
    b. For Mary to be crossing the street would be a mistake.

(32) I didn’t let John cross the street (although I let him start to cross, I didn’t let him get to the other side).

(33) [John quickly crossing the street] is a welcome sight.

(34) a. At this point in the story, John crosses/will cross Broadway.
    b. At this point in the story, John is crossing/will be crossing Broadway.

(Zucchi (1999) attempts a repair, which I will not discuss here.) If (30a) is true, John must have reached the other side of the street; not so with (30b). Likewise, we can imagine situations where a terrible danger awaits Mary if she reaches the other side of the street, so justifying the assertion of (31a); but there is no danger in her crossing itself, and indeed one could say that for Mary to be crossing the street wouldn’t be a mistake, so long as she doesn’t actually cross it. Further, (32) is a fine defense of one’s conduct when charged with not letting John cross the street. In (33), the use of the verbal gerundive subject clearly refers to what is seen when one spots John in mid-crossing, independently of whether he gets to the other side. Finally, (34a) but not (34b) implies that, in the story, John gets to the other side of Broadway.

The contexts in (30)–(34) are all nonfinite, and in the case of (30) and (32)–(33) in particular show every evidence of lacking inflection altogether. Yet the examples with the bare verb, where available, signal telicity, whereas those with \(-ing\) do not. Furthermore, the examples in (34) underscore the independence of the distinction between progressive and nonprogressive forms from the specific matter of tense.

The crosslinguistic evidence that the root construction is telic for predications such as *cross the street* is complicated by the fact that the English simple present, unlike that of Romance and most of Germanic, cannot be used as a report of contemporaneous goings-on, and, moreover, that in those languages where the simple present can be so used, it carries no implication of telicity. The English (35) (by itself, and not as an understood “habitual” assertion) cannot be a report of what John is now doing; and when it can be used as a nonhabitual, as in the recounting of what happens in a story or play, it is, like (34a), clearly telic.

(35) John eats an apple.

By contrast, an Italian sentence like (36) can be a report of what is presently going on, and in any use can be atelic.

(36) Gianni mangia una mela.
    Gianni eat-PRES an apple
    ‘Gianni eats an apple.’
Moreover, the tests used in (30)–(33) to distinguish the bare verb from the progressive are not in general available in Romance or Germanic, the reason being that verbs cannot occur without inflection. It is, therefore, not so straightforward to conclude that the bare English construction, consisting of the verb and its arguments, is intrinsically telic, rather than atelic; or in some way underspecified; or ambiguous.

However, for instance in Italian, one finds that what has been traditionally considered the progressive is anyway distinguished from the simple present. As reported by Giorgi and Pianesi (1997), the simple present of an achievement, corresponding to English *reach the top*, is anomalous, at least in the situation where Maria is merely approaching the top.

(37) *Maria raggiunge la vetta.
   Maria reach-PRES the top
   ‘Maria reaches the top.’

Now, achievements can be progressivized, as in *John is dying* ((11) above) or (38).

(38) Mary is reaching the top of the Himalayas.

What is generally taken to be the Italian progressive, namely, the gerund form with auxiliary *stare*, is likewise acceptable with achievements.

(39) Maria sta raggiungendo la vetta dell’Himalaya.
   Maria is reach-PROG the top of-the Himalaya
   ‘Maria is reaching the top of the Himalayas.’

(37) therefore contrasts with (39), something that would be unexpected if the Italian progressive added nothing to the simple present.

I will not discuss further here the various possibilities for the source of the semantic distinction for instance between English and Italian simple present; suffice it to say that the ambiguity of the Italian (36) between telic and atelic interpretations cannot be used straightforwardly in support of Parsons’s suggestion. For further crosslinguistic discussion, see Giorgi and Pianesi 1997 and section 12.11 below.

Parsons speaks as though, given an event e, we could say at once what it is for e to culminate. But consider again the early part of Mary’s flight, on a plane bound for London that is hijacked to Havana: is that an event that did not culminate (because Mary never reached London) or did culminate (because we can say that, unknownst to her, she was flying to Havana, and she really did get there)?

Or, as Zucchi (1999, 185–186) remarks: suppose that Gianni catches the train in Milan, intending to go to Florence. Unfortunately for him, there is a strike just as he reaches Piacenza, a town on the way. Now we have an event e that makes (40) true. But this same event is among those that make (41) true.
(40) Gianni went to Piacenza.

(41) Gianni was going to Florence.

Then $e$ is an event that both culminates and does not culminate, a contradiction.

Notice that Zucchi’s example is different from the hijacking case. There, we could not say that the agent was going to both places, Havana and London; but in Zucchi’s example, Piacenza being on the way to Florence, it is true at the beginning of the journey, and all the way until arrival in Piacenza, that the agent was going to both. Hence, at least from the start through the time the train stops in Piacenza, it is true to say that Gianni is going to Florence.

Now, there is an evident form of answer available to Parsons for these last issues. The notion of culmination may be interpreted, not just as a property that an event has or does not have, but as a relation between an individual event and a classification of events as one sort or another. Zucchi, taking Landman’s discussion as a point of departure, relativizes in this way Parsons’s predicates $Hold$ and $Cul$ (“culminate”), which were advanced as a simple predicates of events. Suppose, for instance, that $P$ is the property of an event’s being a street-crossing (by something or other), and that we take up reference to properties as suggested in Montague 1967. Then:

(42) $P = \lambda e (\exists x)(\exists s) [street(s) \& cross(x, s, e)]$

We could then propose that culmination is a relation $C$ between events and properties. Then Mary’s flight $e$ culminates qua flight of someone to Havana, but not qua flight of someone to London. On the other hand, if our earlier objection is correct, then $C$ must be independent of the Tense.

In Parsons’s account, existential generalization applies, even in the case of verbs of creation: it actually does follow that if John was building a house, then there is a house $x$ such that he was building $x$. To the challenge to provide the alleged house (say, in the case where the builder had done no more than lay a brick or two before abandoning the project), he responds that the house that was being built is “incomplete.” As we can say that John is building a house even when he has done no more than get the wherewithal together to commence the project, this response must be available even where there are no physical traces of house-building to be found.

There is no doubt that Parsons’s account is correct for many contexts, for we do have examples, such as Schubert’s “Unfinished” symphony and Dickens’s incomplete novel *The Mystery of Edwin Drood*. However, Zucchi (1999), citing an example due to Landman (1992), presents cases where (perhaps) a progressive construction with a verb of creation fails to imply the existence of anything at all of the kind indicated by the direct object.³ He further notes that we should be able to go from the likes of (43a) to (43b).
(43) a. John was making an apple pie.
    b. John made an apple pie.

But this is precisely the contrast, it would seem, that wants explanation. For, (43a) can be truly said when John has done no more than got out the apples, flour, and so forth, and so, it would seem, can be true even if there is no pie at all later on; and if the assembled ingredients can count as an “incomplete” pie \( a \), then in making \( a \) John made an apple pie.

I conclude this section with two further difficulties. First, in Parsons’s account, there is no explanation of why the progressive of impossible accomplishments or achievements is false. (Of course, they can’t “culminate,” but nothing follows from that.) Second, that account fails to apply to the case of what I have elsewhere (Higginbotham 2000a) called “accomplishment prepositions,” yielding telic predicates as in (44).

(44) The train was rattling into the station (when it broke down and stopped).

I return to both points below.

12.6 Counterfactuals Again: Landman 1992

In an important discussion, Landman (1992) suggested that the progressive expresses a relation between an event and a property (in Montague’s sense, that is, a function from objects and possible worlds into truth values), cashed out as a relation between an event and a possible event. Intuitively, the possible event (which must exist in some possible world) is the completion of the event in question. Naturally, much is going to depend upon how remote the possibility of the completion is. But we should note right away some problems for this view.

Although verbal heads are construed as having positions for events, in the way familiar from Davidson (and adopted here, with some modifications), no principled distinction is made in the logical forms of predicates. The consequence (a point made by Mittwoch (1988) in discussing Dowty’s original proposal, but applying equally to Landman’s view) is that examples like (45), which are evidently anomalous, should be fine.

(45) #Just as I arrived, the lake was rising ten feet.

(Suppose I arrive at 3:30, when the lake has risen five feet, and it will go on to rise by five more over the next hour; still I cannot say (45).) Another consequence is that there is no way immediately to apply the theory to achievements.

On Landman’s view, given an event \( e^* \) in the actual world \( @ \), and the question whether \( e^* \) there satisfies the progressive of the condition \( P \) on events, we are, according to Landman, to consider close possible worlds \( w \), and those events \( f \) in \( w \) such
that \( e^* \) is an initial stage of \( f \). If \( P(f) \) holds in \( w \), and \( w \) is a possible world close, or sufficiently close, to \( @ \), then \( e^* \) satisfies the progressive of \( P \) in \( @ \) (and if there is no such \( f \), then further considerations, which I pass over here, come into play). The difficulty here is that by an “initial stage” of \( f \) cannot be meant simply an initial temporal part of \( f \): my smoking one cigarette is an initial temporal part of my smoking twenty cigarettes; but when I am smoking one cigarette, I am not smoking twenty cigarettes. Conversely, suppose that John’s crossing the street halfway is the event \( e^* \). To determine whether, given \( e^* \), we are justified in saying that John is crossing the street, we need, in Landman’s terminology, to know whether there are any “close” possible worlds in which some “continuation” of \( e \) constitutes a street-crossing by John. Well, which events, if any, are continuations of \( e \)? This last problem is quite general, and it is a counterpart of the critical point for Parsons’s notion of culmination: there is simply not enough information given in \( e \) itself to determine what it is for \( f \) to be a “continuation” of \( e \), or what it is for \( e \) to “culminate.”

Toward resolving these questions, I turn now to a modification of Landman 1992 (parts of which overlap with Landman’s account, but were suggested independently in my unpublished work Higginbotham 1990; I am grateful to Landman for suggesting some years back that I need not scrap my manuscript).

### 12.7 Revision 1: Making Telicity Explicit

Our problem is twofold: (i) to solve for the logical syntax of the Progressive head (assumed now to be just -ing in view of examples above), and (ii) to interpret the nonlogical predicates that appear given (i). As in Landman 1992, I take the Progressive head to express a relation between events \( e \) and properties of events. I denote this relation by ‘\( \approx \)’. For property abstraction, it will be convenient for this exposition to follow Montague’s formulation, so that for instance the property (task, activity) of (John’s) eating chow mein is that shown in (46),

\[
(46) \quad \lambda e' \text{eat}(John, \text{chow mein}, e')
\]

and John is eating chow mein is therefore interpreted as shown in (47).

\[
(47) \quad [\exists e \sim u] e \approx \lambda e' \text{eat}(John, \text{chow mein}, e')
\]

Extending Landman’s proposal, I suggest that for accomplishment predicates (and achievement predicates for which a preliminary process is contextually supplied), the abstraction is over the ordered pair of process and telos. Thus, for John is crossing the street we have (48).

\[
(48) \quad [\exists e \sim u] e \approx \lambda(e', e'') \text{cross}(John, \text{the street}, (e', e''))
\]

(Here and below, I allow \( \lambda \)-abstraction over ordered pairs as a derived notation.)
The computation of the interpretation of *John is crossing the street* proceeds from the syntactic structure (49),

\[(\tau [\text{past}] (1, 2) [\text{Prog -ing} (3, 4) [\text{VP John cross the street} (5)]])\]

where the Progressive head *-ing* 0-marks the VP through position 4, with the interpretation shown in (50),

\[\lambda(e', e'') \text{ cross}(\text{John, the street}, (e', e''))\]

and position 3, which ranges over events, is identified with the first position of the Tense.

We must now focus upon the nature of the abstraction, and upon the relation \(\approx\). Notice, however, that the logical syntax, together with other assumptions mentioned in section 12.1 and elsewhere, already disposes of several of the more problematic issues discussed above.

First, we recognize that the bare predicate can be an accomplishment (involve a “culmination” in Parsons’s sense), although the culmination is not attained.

Second, the problem of what constitutes a “continuation” of an event disappears. A continuation of an event \(e\) such that \(e \approx \lambda(e', e'') \text{ cross}(\text{John, the street}, (e', e''))\) is an event \(e''\) such that \(e\) is an initial segment of \(e''\), \(e''\) is as small as possible space-wise, and \(e + e''\) is closer than \(e\) to the state \(e''\) of being on the other side of the street; and similarly in other cases. Thus, the notion of a continuation not only is relative to the event-type of the complement VP, but also is cashed out in terms of what state would constitute the explicitly represented telos.

Third, by breaking accomplishments down into process and telos, the account provides equipment that helps to explain why even achievement predicates should admit the progressive, and it does this by means independently wanted. Suppose we have (51).

\[(51) \text{John died in ten minutes.}\]

Examples of this sort can constitute accomplishments, because we can quantify over the process leading to death as well as the death itself (and in this case the difference between the onset of the process and the death is what the adverbial *in ten minutes* measures; see Higginbotham 1995, 2000b). With this understanding, we can interpret *John is dying*, although the lexical item *die* itself is true of achievements. (For detailed discussion of a number of cases of this phenomenon, see Rothstein 2000.)

As a corollary, the theory applies in the case of accomplishment prepositions, as in (44), repeated here.

\[(44) \text{The train was rattling into the station (when it broke down and stopped).}\]

In the root form (52), the main predicate is *into*, which carries two event positions.
The train rattle into the station.

The main verb serves merely to describe the process of getting into the station as accompanied by rattling. For the explicit semantics, see Higginbotham 2000a, Folli 2002; and for a treatment in Montague Grammar, see Dowty 1979, 207ff.

Fourth, the account answers the puzzles about what constitutes a “culmination” of an event. Events do not inherently have or lack culminations; rather, when we speak of these, as in telic predication, we conceive of a pair of events taken together, and in atelic predication we speak of them singly. As for Zucchi’s problem: it will be the ordered pair (travel to Piacenza, the onset of being in Piacenza) that makes it true that Gianni went to Piacenza, but the sum (travel to Piacenza+being in Piacenza) that makes it true that Gianni was going to Florence.

Fifth, the account can distinguish between predications licensing temporal adverbials such as in ten minutes that are truly telic, and predications that are licensed by measure phrases, as in (53).

(53) The lake rose ten feet in two hours.

I have noted Mittwoch’s example (45), repeated here.

(45) #Just as I arrived, the lake was rising ten feet.

The predicate rise in this case is not telic, so that the VP in The lake rose ten feet is just (54).

(54) rise(\text{the lake}, e) & \mu_{\text{feet}}(e) = 10

That is, $e$ is a rising of the lake whose measure in feet is ten. The temporal adverbial then measures the temporal distance between the onset of $e$ and the point at which $\mu_{\text{feet}}(e) = 10$; but this is not telic predication.

Lakes are not in the habit of getting themselves to rise, by ten feet or anything else. Predicates with measure phrases that accept the temporal adverbials characteristic of telic predication may, however, themselves be telic. Consider (55).

(55) Just as I arrived, John was running a mile.

The example is acceptable if, just as I arrived, John was engaged in the intentional project of running a mile, his having run a mile thus constituting the telos of his activity (see the related discussion in Zucchi 1999, 204). The VP in John run a mile, in this sense, is interpreted as in (56).

(56) run(\text{John}, (e,e')) & \mu_{\text{mile}}(e) = 1

In this case, the adjunct in ten minutes measures the temporal distance between the onset of $e$ and the attainment of the telos $e'$ of having run a mile. The importance of the telos, in the original Aristotelian sense of ‘that for the sake of which the thing is
done’, can be seen from the fact that (57) is acceptable only with the intentional telic interpretation, whereas (58) (because of what we know about lakes) is ridiculous.

(57) Just as I arrived, John was running a mile in ten minutes.

(58) Just as I arrived, the lake was rising ten feet in two hours.

The aim of the agent in (57) is not \textit{run a mile}, but \textit{run a mile in ten minutes}, or perhaps \textit{run a mile as fast as possible}. Thus, an example like \textit{Just as I arrived, John was proving the deduction theorem in ten minutes} is acceptable only in contexts in which John has a stake in how fast he can prove the theorem: it is not enough for him merely to have intended to prove the theorem and to have happened to take ten minutes to do so.\(^4\)

Still, what is wrong with (45), going over as it will into (59)?

(59) $\exists e < u; e \sim \text{my arrival}] e \approx \lambda e' [\text{rise(}\text{the lake, } e') \& \mu_{\text{feet}}(e') = 10]$

It would appear (as Zucchi, if I understand him correctly, suggests) that the trouble stems from the condition that $e \sim \text{my arrival}$, for there is no evidence in the local scene as of the time of $e$ that would warrant the belief that there would be a continuation $e'$ of $e$ such that $\mu_{\text{feet}}(e') = 10$. Note that this evidential condition must be peculiar to the progressive, inasmuch as (60) is fine.

(60) Just as I arrived, the lake was in the course of (what would prove to be) a ten-foot rise.

12.8 Revision II: Telics and Stages

In the last section, I scouted the prospects for a logical form for the progressive, with telicity of predication made explicit, and using the primitive relation $\approx$, informally explained. It is only through a close examination of property abstraction and the relation $\approx$ that the progressive can be further elucidated. But we may set down a few points at once.

First, we can understand the relation $e \approx \lambda e' \phi(e')$ in such a way that if $e$ really has the property in question (i.e., if $\phi(e)$), then $e \approx \lambda(e') \phi(e')$. Such an axiom accounts for the triviality of the progressive of an activity. (Note that this axiom does not allow Mittwoch’s (45), as the scene $e$ as of my arrival does not have the property that $\mu_{\text{feet}}(e) = 10$.)

Second, it is part of the game that the complement of the progressive head be of the form ‘$\lambda e \phi(e)$’ or ‘$\lambda(e, e') \phi(e, e')$’. But this can be the case only if in the logical form, nothing else takes scope between head and complement. Thus, if we start from (61),

(61) Jim smoke twenty cigarettes.
and we give the object wide scope, as in (62),

(62) \([20 \text{ cigarettes } x] \smile_e \text{ smoke}(\text{Jim, } x, e)\)

we are stuck. It therefore follows that in the progressive (63), the object must take scope outside the Progressive head, or else scope internal to the abstraction.

(63) Jim is smoking twenty cigarettes.

We may take smoke as atelic.\(^5\) Assuming with Schein (1993) that there is no prospect of taking the scope of twenty cigarettes immediately within the tacit existential quantification over events, there are two scopal possibilities for this expression, as shown in (64) and (65).

(64) \([20 \text{ cigarettes } x] [\exists e \sim u] e \equiv \smile_e \text{ smoke}(\text{Jim, } x!, e')\)

(65) \([\exists e \sim u] e \equiv \smile_e' [\exists X] [X \text{ comprises } 20 \text{ cigarettes } \& \text{ smoke}(\text{Jim, } X!, e')]\)

For (64), there must be twenty events \(e\), one for each cigarette \(x\), each of which is appropriately related to the property of being an event \(e'\) such that smoke(\text{Jim, } x, e').

This condition might conceivably be realized if Jim has lit each of twenty cigarettes and is taking puffs from each in turn. In (65), there must be a single big event, appropriately related to the smoking of each cigarette, simultaneously or sequentially (or in some combination of the two). Suppose the smoking is sequential, and recall now the problem of stages \(e\) of an event \(f\): at the time when Jim is smoking the first of the twenty cigarettes he will eventually smoke, (64) is false, and (63) is not in general true, even though smoking the first cigarette is an event \(e\) that is in fact an initial segment of an event \(f\) of smoking twenty cigarettes. If, on the other hand, Jim is embarking upon the project of smoking twenty cigarettes, then one who is aware of this can volunteer (66), and with that intention (63) as well.

(66) Now Jim is smoking his usual twenty cigarettes, one right after the other.

But this suggests that, as in the case of (55), it is the implication of an intentional project that accounts for the acceptability of the example. On the other hand, intentional agency is too strong a requirement in general, it would appear. Suppose that the morning fog is coming, and has covered half the sky. Knowing as we do that the fog will infallibly obscure the sky altogether in a few minutes, we can volunteer (67).

(67) Look! The fog is covering the sky!

It seems, then, that the presumption of causal inevitability justifies assertions like (67), and would justify Mittwoch’s (45) if it obtained.

Third, it is an old observation that quantifiers are generally confined within the progressive. Thus, there is a contrast between (68) and (69).

(68) I saw Nolan Ryan pitch two no-hitters.
I saw Nolan Ryan pitching two no-hitters.

In particular, (69) is strange, because Nolan Ryan never pitched two games simultaneously. We saw above that, despite the absence of the copula, the perception verb complement in (69) is a progressive. Assuming that the complement is a quantifier over events, rather than a clausal complement, it would appear to be a syntactic condition that favors the reading in (70) rather than that in (71).

\[(70) \exists e < u \ e \approx \lambda e' [\exists X [X \text{ comprises 2 no-hitters} \& \text{pitch}(Nolan \ Ryan, X, e')]]\]

\[(71) [2 \text{ no-hitters} \ x] \exists e < u \ e \approx \lambda e' \ \text{pitch}(Nolan \ Ryan, X, e')\]

Again, since pitching a no-hitter is not something even Nolan Ryan can intend to do, still less do at will, (69) resists the kind of telicity that can be associated with (63). Hence, for (69) we obtain as the only interpretation that in which Nolan Ryan is pitching two games at once.

The above examples serve to reinforce the thesis that the temporal stages of an event can be initial segments that fail to involve every object implicated in the abstract given by the root VP only when the construction is truly telic—that is, only when the abstract is ‘‘\(\lambda (e, e') \ \phi((e, e'))\),’’ the events in the ordered pair standing in the special relation that they have when \(e'\) is the telos or \textit{terminus ad quem} of \(e\) (for further details on this notion, see Higginbotham 2000b).

A last point for this part of the discussion. It will have been noted that in Landman’s formulation, adopted here, the norm will be a failure of existential generalization. Above, I expressed some doubts about whether this failure could be pinned on verbs of creation; but in any case the need for an opaque construal of the arguments is not best revealed by verbs of creation, but rather (as one might say) by verbs of selection. The following example, due to Angelika Kratzer, is cited by von Stechow (2001, 281):

\[(72) \text{They were picking out a pumpkin.}\]

Evidently, “they” may be in the course of picking out (or selecting, or choosing, or deciding upon, etc.) a pumpkin, without there being any pumpkin that they were in the course of picking out. Yet the past tense variant of (72)

\[(73) \text{They picked out a pumpkin.}\]

surely has existential implication (contrary to doubts expressed by von Stechow); for if anybody asserts to me (73) I can surely ask, “Which pumpkin?” The same question is absurd in the ordinary context of (72). Whatever in the end may be the truth about Parsons’s view that in the case of verbs of creation there is existential generalization, albeit over “incomplete” objects, Kratzer’s example shows that to require existential generalization is too strong.
12.9 Revision III: Defining ‘≈’ with Counterfactuals

The previous discussion has, if I am right, removed some major difficulties for Landman’s account noted in section 12.6, and it suggests a synthesis with the modified Dowty proposal of section 12.4. On that proposal, the progressive of an accomplishment predicate $\phi((e, e'))$, under a tense expressing the temporal relation $R$, is schematically as in (74),

\[
\exists e Ru\exists e'\exists w: w \text{ is inertial with respect to } (@, \tau(e')) \exists (e'', e') \tau(e) \subseteq \tau(e'') \phi((e', e'))
\]

whereas on Landman’s proposal, modified as suggested above, it is (75).

\[
\exists e'' Ru e'' \approx \lambda(e, e') \phi((e, e'))
\]

There are a number of assumptions built into Landman’s account of $\approx$ and the further additions of the last section, however, that would require to be treated in a demonstration of equivalence. However, the notion of a world inertial to $(@, \tau(e''))$ is sufficiently loose that the equivalence may be all too easy to obtain! Landman’s definition of the progressive relation is (76),

\[
\text{PROG}_w(e, P) \leftrightarrow [\exists e'] [\exists w'] (e', w') \in \text{CON}(e, w) \& P_{w'}(e')
\]

where $\text{CON}(e, w)$ is a family of ordered pairs of events and worlds determined by $e$ and $w$ (the “continuation branch” of $e$ and $w$). Under the modification suggested here, where accomplishments involve ordered pairs of events, a natural modification of (76) is first of all (77).

\[
\text{PROG}_w(e, P) \leftrightarrow [\exists (e', e'')] [\exists w'] ((e', e''), w') \in \text{CON}(e, w) \& P_{w'}((e', e''))
\]

Recalling now (i) that what it is for one event to “continue” another is obscure, to the extent that we can replace Landman’s condition

\[
((e', e''), w') \in \text{CON}(e, w)
\]

with the simple statement that $e$ is an initial segment$_{(w', e)}$ of $e'$ and $w'$ is inertial with respect to $(w, e)$, and (ii) that we can assume that for each $(w, e)$ there is a unique inertia world $w'$, the definition reduces to (78),

\[
\text{PROG}_w(e, P) \leftrightarrow \text{the world } w' \text{ that is inertial with respect to } (w, e) \text{ is such that } (\exists e'', e''') [(e', e'') \text{ is an initial segment}_{(w', e)} \text{ of } e' \& P_{w'}((e', e'''))]
\]

so that, if the position marked by ‘$P$’ is filled with a property abstract “$\lambda(e', e'') \phi(e', e'')$”, we have almost the proposal offered above as a modification of Dowty’s account (the only difference is that we have replaced inclusions of times with segments of events). Indeed, we could look upon Landman’s notion of a continuation branch as a way of delivering the relevant inertia world: it will be the closest world, if
there is one, where the telos $e''$ is to be found at the end of a process $e'$ of which $e$ is an initial segment, and therefore the actual world if the accomplishment comes off.$^9$

12.10 Revision IV: Some Influences of Context

The discussion to this point has left us with several open questions concerning the effects of context. These questions divide into two parts. First, there is the issue of spelling out what it is for $w'$ to be the inertia world for ($w, e$), as measured by some conception of “closeness” to the actual world. Second, there are the contextual issues that remain even when this notion is taken for granted. These are distinct: for any actual event $e$, nothing is closer to ($\@, e$) than the actual world $\@$ itself; but that can hardly always be the inertia world, or else every progressive would be true just in case the progressivized clause will come to be true, whereas what we want is that if the progressivized clause comes to be true, then the progressive was true, but not conversely. It must be the case that if John dies of cancer, then he was dying of cancer—and this can be so only if, John having died of cancer, we consider at an earlier point the inertia world or worlds to be just those in which he does die of cancer, or, in Landman’s formulation, we consider only those continuation branches from ($e, \@$), where $e$ is some (perhaps slender) initial segment of the process of his dying, that eventuate in his death from cancer. Now, at that initial segment, it might have been highly unlikely that John would in fact die of cancer (e.g., it was highly improbable bad luck that the appropriate therapy didn’t reach him in time); but this improbability is now irrelevant, given that he did in fact die of cancer.

All of which follows from the fact that the actual world is closer than any other to itself, for any actual event $e$. But now certain other issues arise.

Consider first the “imperfective paradox” in its simplest form. Mary is taking her flight to London, the one that will end up in Havana. At some point early on, I say (79).

(79) Mary is flying to London.

I speak truly, although, as luck will have it, the hijackers have boarded and will commandeer the aircraft. Accounts of the progressive, including those surveyed and suggested here, are all intended to allow for the truth of (79) under such circumstances. But suppose I know that the aircraft will be flown to Havana. I can then, at an early point in Mary’s flight, speak truly by saying either (80) or (81).

(80) Mary is flying to London, but she will never make it.

(81) Mary thinks she is flying to London, but in fact she is flying to Havana.

Similarly, once the hijackers have flown the aircraft to Havana, I can say truly either (82) or (83).
(82) Mary was flying to London, but she never made it.

(83) Mary thought she was flying to London, but in fact she was flying to Havana.

At no point is a true utterance of (84) possible (since, by hypothesis, neither destination is en route to the other).

(84) Mary is/was flying to London and (she is/was flying) to Havana.

The conjuncts in (84) are incompatible, even though each individually may be asserted; and, as we have seen, once we are given what happened in the actual world, then the past progressive (84) is licensed, however improbable the attainment of the telos may have been.

Parsons’s account of the progressive, at least in unadulterated form, fails to account for the possibility that both of (80)–(81), or (82)–(83), can be true assertions. On that account, (79) is fine, since we merely have a flying to London that does not culminate, and so is Mary is flying to Havana on the hijacker scenario. But then the conjunction (84) should be true, contrary to fact; and it could not be as in (83) that Mary only thinks she is flying to London.

Landman’s ingenious construction (Landman 1992, 26–28) tells us, in constructing the continuation branch of an event $e$ in a world $w$, to stick to $w$ as long as $e$ can be continued there, and to hop to another world (if possible), only if $e$ “stops.” As Landman recognizes, this condition on continuation branches will have the wanted consequence that it must be true that Mary was flying to Havana if that is where she ended up, that John was dying of cancer if that is what he eventually died of, and so on. So (83) will be true. But then how can (80) be true? For any initial segment $e$ of Mary’s flight, there is a segment $e'$ with $e < e'$ such that, in the actual world, $e'$ stops only when Mary reaches Havana. If, therefore, we are not permitted in constructing the continuation branch to leave $\@$ until $e$ stops, we will never leave it, and (80) is therefore false.

Landman discusses the issues here in terms of what he calls the “perspective” that one brings to the evaluation of the progressive. However, now that we have at our disposal the breakdown of events into process and telos, we may suggest simply that, inimaginatively or counterfactually continuing an event $e$, we follow $e$, not “until it stops” (or “until it stops being a flight to London,” for our question must be, given that it was a flight to Havana, whether it ever was a flight to London), but until it ceases to bring us closer to the telos.

Notice that universal quantification over inertia worlds as in Dowty’s original proposal does make (84) false (at the cost, noted above, of making absolutely all conjunctions of incompatibles false, a point to which I return below). But that happens just because the inertia worlds are independent of all but the world and the temporal interval under consideration, and that in turn makes it impossible for both
(82) and (83) to be true. The same defect obviously attends the revised condition (78). This circumstance, together with the suggestion above, suggests that we relativize the inertia world, not merely to \(w\) and \(e\), but also to the predicate in question. Then (78) would give way to (85).

\[(85) \text{PROG}_{w}(e, P) \leftrightarrow \text{the world } w' \text{ that is inertial with respect to } (w, e, P) \text{ is such that } (\exists (e', e'')) [e \text{ is an initial segment}_{(w', e)} \text{ of } e' \land P_{w'} ((e', e''))] \]

Under the revision suggested, (79) is true because the inertia world for \((w, e, \lambda(e', e'')) \text{ fly to London}(\text{Mary}, (e', e''))\) is the (closest) one in which there was no hijacking. And \text{Mary was flying to Havana} is true, as before, because she actually did fly there. But then (relativizing the inertia worlds to the two different properties of accomplishment predicates), (84) is true as well.

For this last, it may be suggested that, perhaps as a pragmatic matter, a single perspective or inertia world must be chosen for a single assertion. Then (84) will not be true, and the correction (81) is appropriate as well. As we will see, however, matters are not so simple.

Suppose that Mary makes it to London as scheduled, even though it was nearly certain early on that the hijackers would act (one of them had an allergic reaction to a rotten airline peanut, so they decided at the last moment to call off their attack). Then (86) is true, and (87) is false,

\[(86) \text{Mary was (then) flying to London.} \]
\[(87) \text{Mary was (then) flying to Havana.} \]

and this is the case even though it was then almost certain that Mary would never make it to London. To round out the story, we may assume that the early part of Mary’s flight, even beyond the point where the hijackers take control, would be exactly the same whether the hijackers acted or not.

The case just considered points to a general asymmetry in progressives, in that the circumstances invoked to account for the truth of the progressive of an accomplishment in the absence of the attainment of the telos do not by their absence imply the truth of the progressive of an alternative accomplishment. Thus, under the circumstances of our last example, it is simply not true that Mary was \text{ever} flying to Havana. But why not? Had it not been for the, antecedently highly unlikely, allergic reaction, Mary would have flown to Havana. Note that the following response is not available: “Well, when the aircraft, however improbably, escapes hijacking, then the early part of Mary’s flight is not a flight \(e\) that formed, as an event in @, something whose continuation in any world \(w\) was a flight to Havana.” The response is not
available, because it begs the question: in a world \( w \) in which the debilitating peanut is not consumed, isn’t \( e \) the first part of a flight to Havana by Mary? If not, why not?

Any individual example of the asymmetry in question will carry with it some substantial contextual baggage and so might be disarmed in various ways. Thus, it might be suggested that Mary’s flight was given in advance as a flight to London, not Havana, and that this colors our evaluation of the case. Anyway, let us note the asymmetry by noting the truth of (88) (where the aircraft was hijacked; call this scenario 1) and the falsehood of (89) (where the hijacking was called off; call this scenario 2).

(88) Mary was flying to London, but she flew to Havana [scenario 1].

(89) Mary was flying to Havana, but she flew to London [scenario 2].

Consider now the following case (Dowty 1977; credited to Richmond Thomason): a certain coin is tossed; while it is in the air, it is true to say The coin is landing heads or tails; and which of The coin is landing heads and The coin is landing tails is true depends only upon what actually happens (in Dowty’s original terms, this could only be because just the actual world counts as an inertia world—but then why should this not be so in every case?). Note that the progressive here is not futurate: neither the coin’s landing heads nor its landing tails is determined or on the agenda. Nor is it a matter of probabilities. Let \( c \) be a coin that is biased 99.99% in favor of tails, and let \( c \) be tossed in the air. Suppose that \( c \) lands heads on that toss. Then (as Landman’s account would predict), The coin was landing heads is true. But The coin was landing tails is false, and this fact is unexplained. In short, (90) is false when the coin lands heads, just as (91) is false when it lands tails.

(90) The coin was landing tails, but it landed heads.

(91) The coin was landing heads, but it landed tails.

Finally, there are symmetric cases—that is, cases where both progressives are assertible. Above I gave the example (25), repeated here.

(25) John is dying of cancer and heart disease, although only one of these will kill him (and it is a random matter which it is).

I believe that, where John dies in the end of cancer, (92) is assertible, and where he dies of heart disease, (93) is assertible.

(92) John was dying of heart disease, but he died in the end of cancer.

(93) John was dying of cancer, but he died in the end of heart disease.

I sketch two other, perhaps more convincing, examples of the same phenomenon.
B is a book in the Bodleian Library that is growing yellow with age. If nothing is done, it will be destroyed, having been printed on paper with acid in it. Thus, (94) is true.

(94) The oxidation of its pages is destroying B.

V is a vandal who wishes to destroy B. Having little time to act in the vicinity of B, he is ripping out pages surreptitiously, one page a day. So far, he has destroyed two. Hence:

(95) V is destroying B.

Scenario 1: The oxidation of B’s pages is proceeding so rapidly (owing to new ventilation in the library) that B crumbles to dust long before V has a chance to remove any but a few pages. On this scenario, we have (96).

(96) V was destroying B, but the oxidation of its pages destroyed it.

Scenario 2: V is able to accelerate the pace of destruction (owing to lax security in the library), so that the pages are all ripped out in a few days. Then we have (97).

(97) The oxidation of its pages was destroying B, but V destroyed it.

Similarly: Suppose that Dorothy is crossing a street whose surface is something like the Deadly Desert of the Oz books. The street, being filled with sand from the Deadly Desert, will slowly turn to sand anything in contact with it. But if one crosses fast enough, one suffers only the most superficial and harmless transformations of one’s body into sand. Scenario 1: Dorothy crosses quickly, so that (98) is true.

(98) Dorothy was turning into sand when she crossed the street (but she didn’t turn into sand).

Scenario 2: Dorothy trips and falls on the way, and turns into sand before she can recover. Then (99) is true.

(99) Dorothy was crossing the street when she turned into sand (so she never crossed the street).

In place of (98)–(99) we may (in analogy with (88)–(89)) put (100)–(101).

(100) Dorothy was turning into sand, but she didn’t, since she crossed the street quickly [scenario 1].

(101) Dorothy was crossing the street, but she didn’t cross it, because she turned into sand [scenario 2].

Our question, now, is what may account for the symmetry in (100)–(101) and the asymmetry in (88)–(89).
Dowty (1977, 58) more than hints at the asymmetry remarked upon here when he asks why, in the familiar scenario, *John is crossing the street* is true at some intervals when *John is being knocked down by a truck* is not. He resolves the question by noting that *John is being knocked down* can’t be true until John’s body has commenced to be displaced by the truck. As we have seen, however, there are examples that cannot be resolved in this way, as well as examples, like those above, where symmetry is maintained.

The symmetric examples, such as (96)–(97) or (100)–(101), allow conjunctions of progressives, as in (102)–(103).

(102) The oxidation of its pages was destroying $B$, and vandal $V$ was destroying $B$.

(103) Dorothy was turning into sand while crossing the street.

These conjunctions hold no matter what happens, so that whether $V$ or the oxidation of its pages destroys $B$, (102) is true; and whether Dorothy turns into sand before getting across the street or not, (103) is true. We therefore conclude that the contradictoriness of the conjunction (84) is not pragmatic; likewise the falsehood, say, of *The coin is landing heads and is landing tails*. It is time to think about taking further semantic steps.

First of all, note that, in the first two of the symmetric cases discussed above, there are two distinct ongoing processes, each tending to the same end (John’s death, the destruction of book $B$), which are causally independent. In the last case, there are again two independent processes, tending toward different ends, and it is just a question of who gets there first. In all symmetric cases, I suggest, such causal independence is observed, and the progressive, applied to either process, is assertible, as is the conjunction (because the conjuncts select their inertia worlds with respect to different properties $P$).

There remain the cases where there is only one causal process (say, the toss of the coin in the air) and the cases where there are two, one of which (as in the case of the hijackers commandeering Mary’s aircraft) *interferes* with the operation of the other (Mary’s flight proceeding smoothly to London). In the first case, the truth or falsehood of the progressive depends exactly and only upon what actually happens. In particular, as we have seen, probability of the outcomes is irrelevant. In the second case, where interference plays a role, we typically have asymmetry: whereas the hijackers’ act does interfere with the flight to London, their calling the whole thing off does not interfere with the (proposed) flight to Havana.

The contextually given notion of *interference*, or the *interruption* of one event by another, thus appears to play a critical role in the evaluation of progressives. But it is not reducible to simple preclusion of one event by another. $V$’s rapidly ripping the pages out of the library book did not interrupt the oxidation of those pages and thus
did not interfere with that event’s destroying the book, even though the book was not in the end thus destroyed. Dorothy’s getting across the street did not interrupt her turning into sand, although it prevented that from happening; and so on in like cases. To put it another way: when we choose the inertia world for a progressive, that world cannot be described as one in which “things go as expected,” for if that were the case, then the coin (biased 99.99% in favor of tails) would be landing tails even on tosses in which it landed heads, and Mary would be flying to Havana when, surprisingly, one of the would-be hijackers had an allergic reaction to a peanut. Rather, when the inertia world is not the actual world, and the progressive is true although the simple past will never be true, it is one in which the process tending toward the telos was, however improbably, interrupted by an event that deflected it from the attainment of the telos.

The formula (85) cannot, of itself, distinguish among the cases discussed above. Rather, the distinctions among them belong to the interpretation of the notion of an inertia world \( w' \) for \( (w, e, P) \). There being no evident context-neutral way to distinguish interference of one event by another from mere preclusion, it appears that there is an ineradicably contextual element in our evaluations of the progressive.

12.11 Crosslinguistic Questions

Historically, the origin of the English progressive is a nominal construction with a gerundive object, as in (104).

(104) John is at [PRO crossing the street].

(The relic of the preposition survives in the speech of those who say John is a’crossing.) The prepositional head at will have its own position for events \( e \) and will take the complement as an argument. We might conjecture, therefore, that the interpretation of the complement was just as in Landman’s proposal, namely

\[ \lambda(e, e') \text{ PRO cross the street}(e, e') \]

with the role of the subject of the complement, and the subject John, to be determined. If we can take the further step, in view of the fact that expletive it can be the subject of a progressive, of abstracting away from any semantic difference between the ordered pair of arguments (John, PRO crossing the street) and John crossing the street, we arrive at just the logical syntax that the analysis above would suggest: the preposition at expresses a relation between events \( e \) and properties of events \( P \). The further development of the English progressive, if this is correct, would consist in a grammatical reduction of the structure, leaving the interpretation unchanged.

In section 12.2, I sketched Parsons’s view of the English perfect, which would give for (105) the logical form (106).
(105) John has crossed the street.

(106) $[\exists e'' \sim u : e''$ is a resultant state of $(e, e')] \text{cross}(John, \text{the street}, ((e, e')))$

When we turn to the perfect progressive, as in (107), we have two interpretations.

(107) John has been crossing the street (for the last five minutes).

According to the first interpretation, John is still in the midst of crossing and has not yet made it to the other side of the street; this one is obtained by applying the perfect directly to the Progressive head. The second is the “over and over” reading: John has crossed the street several times over the last five minutes. Applying to this case the view in Higginbotham 2000b, I suppose that this reading is a consequence of what amounts to a pluralization of the event position in the Progressive head. There are, then, multiple events $e$ over the last five minutes, each of which is the resultant state of an initial segment of a crossing of the street. Formally, we have (108).

(108) $[\exists E \sim u] [\forall eE] [\exists e' : e$ is a resultant of $e'] e' \approx \lambda(e'', e'''$) $\text{cross}(John, \text{the street}, (e'', e'''$))

Since one crossing of the street cannot commence until its predecessor is concluded, the “over and over” interpretation follows. In other cases, free from such a restriction, the various initial segments of what may or may not turn out to be multiple accomplishments can be interleaved, as in (109).

(109) Mary has been writing several papers for the last hour.

I conclude that, as would be expected from both the phrasal hierarchy and the historical development of English, the perfect of a progressive takes the heads in that sequential order, and no other.

Historical inquiry about the English progressive is but one dimension of a variety of crosslinguistic work that would be required to see whether what is called “the progressive” in human languages is a unified phenomenon. The account suggested here would be supported if it were. It is striking, for instance, that the Chinese progressive (discussed for instance in Smith 1991) appears to reveal the same structure as the historical English progressive. Chinese offers examples such as (110) (where $tsai$ is the ordinary locative).

(110) Jangsan tsai chih fan.

Jangsan at eat rice

‘Jangsan is eating.’

It would be worthwhile to know whether the semantic properties scouted above carry over here—only if very different languages are thus united can we speak of the progressive. One point is clear: Chinese does not permit the progressive of an accomplishment. Examples like (111) are not possible.
(111) *Jangsan tsai sz.
    Jangsan at die
    ‘Jangsan is dying.’

What accounts for this gap remains, so far as I am aware, to be explained.

Finally, there are crosslinguistic issues in the representation and source of telicity. Throughout this discussion, I have assumed that root predicates may be telic, so that (for instance) the distinction between atelic eat apples and telic eat an apple reflects a lexical ambiguity (as in Higginbotham 2000b). But the Italian examples discussed in section 12.5, where it was observed that the simple present mangia una mela ‘eat an apple’ is not necessarily telic, are problematic for this view, as are other cases where various contrasts between English progressive and nonprogressive forms do not carry over into Italian. I do think that, contrary to Parsons’s suggestion, it won’t do to lay the emergence of telicity, or his notion of culmination, down to the influence of Tense; but it is not out of the question that telicity stems from compositional, rather than lexical, semantics. In any case, it appears that the Romance progressive (say, Italian -ndo with stare) is comparable to the English, and is to be sharply distinguished from the simple present (Giorgi and Pianesi 1997). The study of the questions here requires native judgments, and subtle ones at that. But the problems of comparative semantics will necessarily involve both syntactic and semantic unknowns.

Notes

The material in this chapter has been a long time percolating. The central hypothesis, that the progressive -ing expresses a relation between events and properties of events, formed the core of a critical paper presented at the University of Maryland, College Park, and subsequently at the Scuola Normale Superiore, Pisa, Italy, in the spring of 1990 (these presentations, and the accompanying manuscript, account for the occasional references to the paper in the literature). Besides the audiences at those presentations, I am indebted to Terence Parsons for comments upon and discussion of that paper. Seeing that my hypothesis regarding logical form was, some notation and other issues aside, independently advanced by Fred Landman in his article then to appear in Natural Language Semantics, which I reviewed for that journal’s first issue, I elected not to submit my own piece for publication anywhere. (Fred’s later kind encouragement did not change my mind.) Discussion of the progressive from the point of view developed here did, however, figure in my lectures at the University of Oxford over the years, as well as constituting part of a course I gave as Visiting Professor at Rutgers University in 1998, and of a lecture at MIT that same year. In preparing for the Paris meetings, I was struck anew by the critical analysis in Zucchi 1999. The present chapter is prompted in part by my reaction to this work; and observations by Andrea Bonomi also led me to rethink several issues.

I sent a full draft of the version of this chapter that was completed in July 2002 to several people. I am particularly indebted to David Dowty, Andrea Bonomi, and Alessandro Zucchi for comments on that version, and indebted also for comments and suggestions from my editors, the Jacquelines.
1. What we hear in hearing (3) is the result of raising the subject out of the VP; but this movement, I will assume, is semantically vacuous, and so I will simplify the syntactic exposition here and in what follows.

2. Dowty was well aware of this problem, as well as of issues concerning the status of events (see Dowty 1977, 58).

3. The example is (i).

(i) God was creating the unicorn when He changed His mind.

The thought is that (i) may be true even though no unicorn was created. If (i) is not contradictory, and it is contradictory to speak of uncreated unicorns, then existential generalization must fail. My doubts about this example stem from doubts about the second thesis. However, as noted below, existential generalization seems anyway to fail on other grounds.

4. I am indebted here to questions raised by Andrea Bonomi.

5. Naturally, a predicate such as smoke a cigarette may also be taken as telic. That is because a cigarette is consumed by smoking it, so we can say smoke a cigarette in five minutes, as well as smoke a cigarette for five minutes. The atelic construction is chosen here for simplicity.

6. Both (64) and (65) should be understood as imposing a uniqueness requirement on the object, indicated by the exclamation mark ‘!’ . Thus, (64) implies that \( x \) was the one and only cigarette involved (in the appropriate 0-role) in \( e' \). The notation

\[
\lambda e' \text{ smoke}(\text{Jim, } x!, e')
\]

is short for

\[
\lambda e' \{\text{smoke}(\text{Jim, } x, e') \& [\forall y: \text{cigarette}(y)] y = x\}
\]

and similarly for (66). See Schein 1993 for a full unpacking of the issues here.

7. As Jacqueline Guéron has pointed out to me, there are even examples where the implication that something is eventually picked out or selected is vacated: so a panel, engaged in selecting a prizewinner, may conclude that none are worthy of the prize.

8. The distinction could become important, inasmuch as events may have their temporal locations, if not their participants, only contingently.

9. I am aware that the assumption that there is at most one inertia world will be controversial; just as, in accounts of indicative conditionals, the assumption is controversial that there is at most one closest possible world in which the antecedent is true. If this assumption is vacated, then, as urged in Bonomi 1998, we could have a true disjunction of incompatible progressives, such that neither disjunct is true. The account given here admits adjustment if this is the case, however: replace the inertia world by every closest inertia world. The general method is given in Lewis 1973, 77ff.

References


13.1 Introduction

In this chapter, I present a study of the modal uses of the imperfect in both main and embedded clauses in Italian. In particular, I offer an account of imperfect conditionals, which exhibit peculiar properties that distinguish them from both indicative and subjunctive conditionals. I provide an account of the modal uses of the imperfect in main clauses based on the claim that past may not be interpreted inside the proposition where it superficially occurs. I also consider Turkish conditionals and argue that they offer syntactic and morphological support for the theory presented here.

The Italian imperfect can be described as an imperfective past. One typical use of the imperfect that brings to light both its imperfective and past components is its progressive use. In (1), the event of John’s sleeping is necessarily understood as going on in the past; that is to say, the time surrounded by the sleeping event—three o’clock—must be located in the past.

(1) Ieri/*Domani alle tre, John dormiva.
    ‘Yesterday/*Tomorrow at three, John was sleeping.’

The imperfect can be used progressively not only with activity verbs but also with accomplishments, stative predicates, and, marginally, achievements. This is shown in (2). Incidentally, notice that in the case of the achievement predicate morire ‘to die’, the Italian imperfect behaves differently from the English past progressive: the former but not the latter entails the proposition that John died.

(2) Alle tre, John cenava/guardava un film/?moriva.
    ‘At three, John was dining/watching a movie/dying.’

I will not be concerned with the progressive uses of the imperfect in this chapter.

The second use of the imperfect is modal. It can be used modally in either main or embedded clauses. I will argue that modality can be expressed by means of
aspectual heads, the modal and aspectual readings being in complementary distribution. Moreover, temporal information is not always interpreted as locating the event in the main predicate in time. If it is not, it must be interpreted as dislocational; that is to say, it shifts the evaluation time to some contextually salient time. I will show that this is the case for the past. Crucially, the imperfect instantiates both these properties.

In section 13.2, I analyze the modal uses of the imperfect. In section 13.3, I present my proposal, developed within the framework of possible-worlds semantics. In section 13.4, I investigate the interaction of the imperfect with conditionals. Finally, in section 13.5 I argue that what we have discovered about the imperfect is a mechanism available crosslinguistically, thus drawing a connection between domains previously left unrelated.

13.2 Modal Uses of the Imperfect

It has sometimes been claimed that, at least in some uses, the imperfect has the function of “distancing” or “removing” the speaker from the situation (time and place) where she is actually located (see Bertinetto 1986; Bazzanella 1990; Panzeri 2000). The label modal has thus been associated with the uses of the imperfect listed in (3).1

(3) a. Oneiric imperfect
   Sai cosa ho sognato l’altra notte a proposito del viaggio che farò il mese prossimo? Ero su un’isola deserta e camminavo in un mare di fiori. Ad un certo punto cominciavano a crescere smisuratamente . . .
   ‘Do you know what I dreamed last night about the trip that I’ll make next month? I was.IMP on a desert island and I walked.IMP in a sea of flowers. Then, they started.IMP growing out of proportion . . .’

b. Hypothetical imperfect
   Se potevo, venivo.
   ‘If I could.IMP, I came.IMP.’

c. Potential imperfect
   Vincenzo doveva essere già qui. Non capisco cosa gli sia successo.
   ‘Vincenzo should.IMP be already here. I don’t understand what happened to him.’

d. Imperfect of play
   Giochiamo ad un gioco nuovo! Io ero l’albero, tu il cavallo.
   ‘Let’s play a new game! I was.IMP the tree, you the horse.’

e. Imperfect of politeness2
   Volevo del pane, grazie.
   ‘I wanted.IMP some bread thank you’

1. Bertinetto (1986), Bazzanella (1990), and Panzeri (2000) have argued that the imperfect can express modal meanings.

2. The imperfect of politeness is typically used to express courteous or respectful actions.
f. **Epistemic-doxastic imperfect**
   Che cosa c’era domani al cinema?
   ‘What was there tomorrow at the movie theater?’

g. **Imperfect of planning**
   A: Non puoi farlo domani?
   ‘Can’t you do it tomorrow?’
   B: Domani *andavo* in biblioteca.
   ‘Tomorrow I *went* to the library.’

Leaving aside the “hypothetical” use of the imperfect—to which I will devote the main part of this chapter—I would like to suggest that examples (3a,c–g) share the following properties.

First, there is a (potential) mismatch between the past component of the imperfect and the nonpast meaning of the adverbial phrase (see, e.g., (3f,g)). This is surprising given that in its progressive uses, the imperfect necessarily has the meaning of past (analogous to the progressive uses of the past progressive in English). Indeed, in (4) the future adverb *domani* ‘tomorrow’ is incompatible with the rest of the sentence. Notice that the difference between (3g) and (4) is the position of the adverb *domani* ‘tomorrow’, which in (4), but not in (3g), is left-dislocated (as signaled by the comma).

(4) Ieri/*Domani ayeri/*tomorrow sera, John dormiva/cenava/guardava un film.
   ‘Yesterday/*tomorrow night, John was sleeping/dining/watching a movie.’

Second, these examples have a modal meaning: the proposition *p* expressed by the sentence with the imperfect is evaluated with respect to possible worlds that are in some relevant way compatible with the actual world.³ The intuition mentioned above, that the examples in (3) “remove” the speaker from the world and time of the utterance, is correct.

Third, the uses of the imperfect in (3) convey the information that at the time of the utterance, the speaker is not endorsing the proposition *p* expressed by her utterance because she at most has indirect (unreliable) evidence. Sometimes, the speaker may even have some evidence that ¬*p*; sometimes, the linguistic context may clearly convey that the speaker is not endorsing *p*, as in the case of the imperfect occurring in a report of the content of a dream. In any event, what is required is just that the speaker at most have indirect evidence that *p*. It may also be the case that, at some point in the past, the speaker must have had access to the relevant source of information—or, putting it differently, at some past time she must have been able to (potentially) endorse the proposition in question. This last point together with the previous point requires that at the utterance time the speaker does not trust or does
not have access to some piece of evidence she trusted or had access to in the past. This point does not hold for the “dream” (3a) and the “play” (3d) uses of the imperfect, where the speaker makes no claim about the reality of \( p \).

These three properties are reflected elsewhere. To see this point, consider the epistemic-doxtastic case in (3f ). The sentence is nonsense with normal interrogative intonation. It needs the echo question intonation (familiar from \( wh \)-in-situ questions in English) or explicit negation. This is shown in (5).

(5) a. *Cosa c’era domani al cinema?
   what there be.IMP tomorrow at.the movie.theater
   (*with normal interrogative intonation)
   ‘What was there tomorrow at the movie theater?’

b. Cosa hai detto che c’era al cinema domani?
   what have.you said that there be.IMP at.the movie.theater tomorrow
   ‘What did you say there was at the movie theater tomorrow?’

c. Ma non c’era un film di Fellini domani al cinema?
   but not there be.IMP a movie of Fellini tomorrow at.the movie.theater
   ‘But wasn’t there going to be a Fellini movie at the movie theater tomorrow?’

Why is the echo question intonation relevant? I do not have an answer for this, but I would like to point out that echo questions and modal imperfect sentences share the following feature: they both are appropriate when the speaker intends her interlocutor to realize that she (the speaker) does not have some piece of information that they are already supposed to share. An echo question asks for information that is supposed to be already in the context but was not grasped. Similarly, as argued above, the modal uses of the imperfect also involve the notion of information that was once believed and whose evidence has now become lost. But why would the speaker have to signal that she no longer has the knowledge she used to have? In other words, why is it necessary to signal this change? This necessity seems related to whatever principle requires that the word \( too \) occur in (6), and the word \( another \) in (7).

(6) After John left, Mary did *(too).

(7) (I have invited Mr. John over for coffee and, after offering him the first cup of coffee, I ask:)
   #Mr. John, would you like a cup of coffee?
   √Mr. John, would you like another cup of coffee?

In sum, I take the three properties above to be essential characteristics of the meaning of the imperfect. The next section is devoted to capturing this meaning.
13.3 The Proposal

As noted at the outset, the progressive uses of the imperfect show that it has both an imperfective and a past component. In (8), the relevant time (three o’clock) must be understood as past relative to the utterance time, and the sentence says that at that past time, there was an ongoing event of sleeping/dining/watching a movie by John.

(8) Alle tre, John dormiva/cenava/guardava un film.

‘At three, John was sleeping/dining/watching a movie.’

However, in modal sentences, the relevant eventuality is not necessarily understood as past.

I will not have much to say about the exact contribution of the imperfective component in the sentences investigated here, as the focus of my analysis is the contribution of past.

As for the past component, I claim that it is “real,” in that it means what it generally means in simple clauses. What is special about this past is that it does not locate an event in the past but contributes to the restriction of the accessibility relation. This means that the accessibility relation I am proposing is slightly more complex than the standard notion of an accessibility relation, which is a binary relation between possible worlds \( \langle s, \langle s, t \rangle \rangle \): the present accessibility relation is a relation between a world-time pair and a set of worlds compatible with it \( \langle s, \langle i, \langle s, t \rangle \rangle \rangle, i \in I, I = \text{the set of times} \). The evaluation world in the pair is generally the actual world; the evaluation time must be a past time. This is summarized in the informal truth-conditions for a modal sentence with the imperfect in (9). The expression \([s \ldots V.\text{imp} \ldots]\) stands for the sentence with a modal imperfect. The parameter variable \(c\) stands for the context with respect to which the sentence is evaluated: thus, \(w_c\) and \(t_c\) are the world and the time of the context, respectively. The letter \(p\) stands for the (tenseless) proposition expressed by the sentence, and \(\phi\) stands for the relevant accessibility relation.\(^7\) \(g\) and \(c\) are the two parameters for the evaluation of the sentence—that is, the assignment function and the context, respectively.

(9) \([s \ldots V.\text{imp} \ldots]^{g,c}\) is true iff

\[\forall w: \text{ is } \phi\text{-accessible to the speaker in } w_c \text{ at } t_1, t_1 < t_c \] \[p \text{ is true in } w\]

(9) says that the sentence with the imperfect is true if and only if in all the worlds \(w\) that are \(\phi\)-accessible to the speaker in the actual world at some time \(t_1\) prior to the utterance time \(t_u\), \(p\) (the proposition expressed by the sentence) is true in \(w\). Following Kratzer (1981), I will assume that universal quantification comes as a default. The variable \(t_1\) is left open: its value will be some contextually salient past time (Heim 1994).
So far, I have not said anything about the content of the accessibility relation $\phi$. First of all, recall that it is by means of the accessibility relation that the possible worlds compatible with some relevant aspect of the world (i.e., the law, the speaker’s knowledge, the relevant circumstances, etc.) are selected. For example, in epistemic sentences such as *John must be at home now*, the modal base is constituted by all those worlds compatible with what the speaker knows in the actual world; in assertions involving deontic modality, such as *You must pay your taxes*, the modal base is constituted by all those worlds compatible with the law in the actual world. As for (9), suppose that the imperfect introduces an epistemic/evidential accessibility relation. Thus, in a sentence with a modal imperfect, the proposition expressed by the tenseless sentence is evaluated in worlds that are compatible with a (relevant) kind of evidence available to the speaker at some past time salient in the context, and—following (9)—such a sentence is true just in case $p$ is true in all the $\phi$-worlds accessible from the actual world at that past time.

In order to see that the proposal in (9) adequately captures the modality of the imperfect, consider the planning use in (3g), repeated here.

(3) g. Imperfect of planning
   
   A: Non puoi farlo domani?
   ‘Can’t you do it tomorrow?’
   
   B: Domani *andavo* in biblioteca.
   ‘Tomorrow I go.to the library.’

Intuitively, B’s sentence in (3g) conveys that B had plans to go to the library tomorrow but that, in the face of A’s request that B run some errands tomorrow, B’s intention to go to the library is no longer firm, as he may now consider giving up his plans. The definition in (9) nicely captures this intuition. In (3g), the available evidence consists of B’s (the speaker’s) plans: B’s sentence is true if and only if in all those worlds $w$ compatible with B’s plans in the actual world at some past time, the proposition expressed by the (tenseless) sentence (i.e., that he goes to the library tomorrow) is true in $w$. As I noted above, $t_1$ is an open variable that refers to some contextually salient past time. What would this salient past time be? It is the time immediately before the time when A made the request that B run some errands—that is, the time when B could no longer endorse the proposition that he will go to the library tomorrow.

Consider now the epistemic-doxastic use of the imperfect in (3f), repeated here.

(3) f. Epistemic-doxastic imperfect
   
   Che cosa c’era domani al cinema?
   ‘What was there tomorrow at the movie theater?’

Intuitively, the question conveys the information that, at the time of the utterance, (i) the speaker does not know what is playing at the movie theater tomorrow and no
longer has trustworthy evidence about the answer to the question, and (ii) at some point in the past, she did have access to the relevant information. In particular, notice that the question in (3f) does not simply seek information; rather, it seeks *old* information (i.e., information that was once available).\textsuperscript{10} Assume that the relevant proposition $p$ is the expected answer to the question (e.g., *There will be a Fellini movie tomorrow*), and let us abstract away from the exact semantics for questions. In (3f), the available evidence is the movie schedule. The proposition is true if and only if in all the worlds $w$ compatible with the schedule available to the speaker at some past time, the proposition $p$ is true in $w$.

The politeness use of the imperfect follows from the definition in (9). Consider (3e), repeated here.

\begin{enumerate}
\item[(3) e. Imperfect of politeness]
\begin{quote}
*I wanted.*
\textit{IMP} del pane, grazie.
\end{quote}
\begin{quote}
I wanted some bread thank you
\end{quote}
\begin{quote}
‘I would like some bread thank you.’
\end{quote}
\end{enumerate}

This sentence is true if and only if for all the worlds $w$ compatible with some evidence available at some time $t$ earlier than the utterance time, the proposition that I want some bread is true in $w$. What is the relevant evidence available to the speaker at some past time? That she had a certain desire. In other words, according to some desire that the speaker had (and knew she had)\textsuperscript{11} at some contextually salient past time, the proposition that I want some bread is true. In this particular example, it is the lexical meaning of the verb *want* that makes the relevant evidence—the desires—contextually salient. For lack of space, I cannot go through all the examples in (3), but I believe that—modulo some differences—they would all be accounted for along the lines sketched above.\textsuperscript{12}

So far, I have talked about evidence available to the speaker at some relevant past time. But what about the utterance time? I suggest that these uses of the imperfect trigger a conversational implicature as in (10).\textsuperscript{13}

\begin{enumerate}
\item[(10) Implicature]
At $t_u$ (the utterance time), the speaker does not have direct evidence that $p$ and so is not fully endorsing $p$.
\end{enumerate}

If, talking about the present or the future, I say that in the past I believed that $p$, my interlocutor will take my utterance to implicate that now—when I speak—I no longer believe that $p$. Notice that this is generally true of the past. For example, consider the following dialogue:

\begin{enumerate}
\item[(11) A: Where is John?]
\begin{quote}
B: He \textit{was} in the office half an hour ago.
\end{quote}
\end{enumerate}
As shown by the present tense in the question, A asked B John’s location at the time of the utterance. Why did B answer by saying what John’s location was at some past time? Assume that the Maxim of Quantity holds (e.g., Grice 1975; Matsumoto 1995): if he had known John’s location at the time of the utterance, he would have said so. He didn’t; hence, it must be the case that he wasn’t in a position to say so without violating the Maxim of Quality, which requires the speaker to say what is (believed to be) true. Person A will then conclude that B didn’t know John’s location at the time of the utterance.

All the properties of the modal uses of the imperfect presented above are thus accounted for. To summarize the results of this section:

• The past component contributes a presupposition of anteriority restricting the modal base (evidence available to the speaker at some past time). Because of this, I called it “real.”
• The use of the imperfect implicates that at the utterance time, the speaker has only indirect evidence that the proposition is true and is not endorsing it.
• The sentence with the imperfect is tenseless, if by tenseless we mean that the clause contains no tense information that locates the event. Hence, the event can be located in the past or in the future. Extra information (e.g., adverbs) will determine the temporal location.

13.4 The Imperfect in Conditionals

The imperfect also occurs in conditionals. Imperfect conditionals (ICs)—that is, conditionals where the imperfect occurs—have very striking properties that distinguish them from standard indicative conditionals (Stalnaker 1975), despite their being morphologically indicative conditionals. ICs are also different from subjunctive conditionals as analyzed by Lewis (1973), Stalnaker (1968), Kratzer (1991), and Iatridou (2000), among others. I will first briefly sketch the main properties of indicative and subjunctive conditionals and then introduce ICs.

13.4.1 Indicative Conditionals

The semantic analysis of conditionals proposed by Stalnaker (1975) takes the notion of possible world as a primitive notion, as developed in Kripke’s modal logic. We should think of possible worlds as properties of the actual world, ways things might have been. To use Stalnaker’s words:

Possible worlds theory, as an explanatory theory of rational activity, begins with the notion of an alternative way that things may be or might have been (which is all that a possible world is) not because it takes this notion to be unproblematic, but because it takes it to be fundamental to the different activities that a theory of rationality seeks to characterize and relate to each other. (Stalnaker 1999, 67)
This theory proposes that a conditional statement *if A, then B* asserts that the consequent is true not necessarily in the world as it is, but in the world as it would be if the antecedent were true. Formally, there will be a function $f$ (selection function) that takes a given proposition (the antecedent) and the actual world as its arguments and gives as its value the possible world in which that proposition is true. The semantic rule for a conditional sentence will be as follows: the conditional assertion *if A, then B* is true in a possible world $w$ just in case $B$ is true in possible world $f(A, w)$. Without going into the details of the analysis, one important point must be mentioned: when a speaker utters the antecedent of a conditional, he presupposes that everything that holds in the actual world holds in the hypothetical situation in which $A$ is true. This means that a constraint has to be put on the selection function. A context set $C$ is the set of possible worlds compatible with the context of the speaker, that is, with the speaker’s presuppositions. The constraint is the following: if the conditional is being evaluated at a world in the context set, then the world selected must, if possible, be within the context set too ($C$ being the context set, if $w \in C$ then $f(A, w) \in C$).

This is Stalnaker’s general semantic theory of indicative conditionals. According to the proposal, it is appropriate to assert an indicative conditional only in a context that is compatible with the antecedent.

(12) a. If John goes to Dallas tomorrow, he will meet Mary.
   b. If John went to Dallas yesterday, he (must have) met Mary.

This seems indeed correct: the sentences in (13) are deviant, and they owe their deviance to the fact that their antecedent is incompatible with the presupposition of the context.

(13) a. #John is dead. If he goes to Dallas tomorrow, he will meet Mary.
   b. #John died a week ago. If he went to Dallas yesterday, he (must have) met Mary.

From the constraint on indicative conditionals, it follows that counterfactual conditionals must use the subjunctive, which Stalnaker takes as a conventional device to indicate that the selection function reaches outside the context set. In the next section, I will present the basic features of subjunctive conditionals. In section 13.4.3, I will discuss ICs.

### 13.4.2 Subjunctive Conditionals

Subjunctive conditionals talk about the present/future—(14)—or about the past—(15). First of all, notice that, as the Italian sentences show, subjunctive conditionals have mood: specifically, subjunctive mood in the antecedent and conditional mood in the consequent. The difference between Italian and English is a morphological difference; that is, the former has morphological mood, the latter does not.
Subjunctive conditionals: nonpast

Se Mary andasse a Dallas domani, incontrerebbe JR.

if Mary go_IMP SUBJ to Dallas tomorrow she meet_PRES_COND JR
‘If Mary went to Dallas tomorrow, she would meet JR.’

Subjunctive conditionals: past

Se Mary fosse andata a Dallas ieri, avrebbe incontrato JR.

if Mary be_IMP SUBJ gone to Dallas yesterday she have_PRES_COND met JR.
‘If Mary had gone to Dallas yesterday, she would have met JR.’

Second, there is a correlation between having two layers of past tense morphology in the antecedent and being a past counterfactual, that is, talking about a past possibility. This correlation has been pointed out and analyzed by Iatridou (2000). The background for her proposal is Stalnaker’s (1975) suggestion that the selection function will reach inside the context set if possible (i.e., if the proposition added to the actual world (the antecedent) is consistent with the speaker’s presupposition), and it will reach outside the context set if the antecedent of the conditional is incompatible with the speaker’s presupposition. The subjunctive mood is a conventional device for indicating that presuppositions are being suspended, that is, when the selection function reaches outside the context set (Stalnaker 1968, 1975). Let us see what Iatridou suggests in more detail. Consider the English pair in (16): whereas (16a) talks about a future possibility, (16b) talks about a past possibility. Call the former a nonpast counterfactual, the latter a past counterfactual.

(16) a. If Mary went to Dallas tomorrow, she would meet JR.
   b. If Mary had gone to Dallas yesterday, she would have met JR.

This difference is mirrored in the morphology: the expression of a past counterfactual requires an extra layer of past (this is why the pluperfect is obligatory). Iatridou (2000) proposes that the past tense be analyzed as the exclusion feature interpreted as in (17), where $T(x)$ stands for Topic $x$ and $C(x)$ stands for the $x$ of the speaker ($C$ stands for context).

(17) $T(x)$ excludes $C(x)$.

The variable $x$ ranges either over times or over worlds. If $x$ ranges over times, then (17) says that the topic time (the time we are talking about) excludes the utterance time; if $x$ ranges over worlds, then (17) says that the topic worlds (the worlds we are talking about) exclude the actual world. A simple sentence like (18) is interpreted as talking about the past. The conditional if in (16a) will force the modal reading of (17); that is, it will force the variable $x$ to range over worlds rather than times.
Mary went to Dallas.

Because past counterfactuals talk about past possibilities, they will then have to contain two layers of past, one interpreted as excluding the actual world (capturing the conditional meaning), the other as excluding the utterance time (capturing the past meaning). Hence the necessity of a pluperfect in the antecedent (16b). I will not address Iatridou’s proposal directly here, and more generally I will not discuss standard subjunctive conditionals.

ICs look like indicative conditionals. I will compare them with the kind of indicative conditionals described in section 13.4.1. This comparison will turn out to play a crucial role not only in the analysis of the properties of ICs but also in understanding the speaker’s knowledge and use of language. In other words, we will discover that some of the properties of ICs derive from their standing in a particular relation to standard indicative conditionals.

13.4.3 Imperfect Conditionals

In Italian imperfect conditionals (ICs), the imperfect indicative occurs in both the antecedent and the consequent. The symbol ≈ indicates that although the English paraphrase is very close to the meaning of the original sentence, there are important differences that will be discussed later.

(19) Se *arrivavi* *prima*, *vedevi* il *film* dall’inizio.

≈ ‘If you had arrived earlier, you would have seen the movie from the beginning.’

In section 13.4.3.1, I will discuss what I call the “temporal flexibility property” of ICs. In section 13.4.3.2, I will show that ICs differ from both indicative conditionals and subjunctive conditionals: ICs carry a “noncancelable” implicature that the antecedent is false.16

13.4.3.1 The Temporal Flexibility of Imperfect Conditionals  As shown above, the conditional in (19) can be paraphrased ‘If you had arrived earlier, you would have seen the movie from the beginning’. ICs can be modified by a past adverbial.

(20) Se *arrivavi* *ieri* sera, *incontravi* mia sorella.

≈ ‘If you had arrived yesterday night, you would have met my sister.’

But the paraphrase given above should not mislead the reader into thinking that ICs are subjunctive past counterfactuals *tout court* (for more on this subject, see sections 13.4.3.2 and 13.4.3.3). ICs can also be modified by future adverbials, such as *tomorrow*. 
(21) Se partivi domani, incontravi mia sorella.
if you leave.IMP tomorrow you meet.IMP my sister
≈ ‘If you left tomorrow, you would meet my sister.’

If there are two layers of past morphology in an IC, then the eventuality must be located in the past.

Let me clarify a little more. When the past perfect (pluperfect) occurs in the antecedent of a subjunctive past counterfactual (see (15) and (16b)), it is understood not as a perfect tense but as a simple past. In Iatridou 2000, this is so because one layer of past is interpreted not temporally but modally (i.e., the exclusion feature in (17) is interpreted as a function ranging over worlds, not times). Only one layer of past is interpreted temporally (i.e., the exclusion feature being a function ranging over times); hence, in a past subjunctive counterfactual, the past perfect is temporally interpreted as a simple past. Above, I claimed that when an IC is used to express past counterfactuality, no extra layer of past occurs in the antecedent (see (20)). This does not mean that a past perfect (pluperfect) cannot occur in the antecedent. What it does mean is that if a past perfect occurs in the antecedent of an IC, the second layer of past morphology must be interpreted aspectually. This is illustrated in (22). As the adverb già ‘already’ indicates, the past participle below the imperfect auxiliary contributes what it generally does in perfect tenses, namely, perfectivity. On the other hand, as in the IC case presented above, the imperfect (indicative) auxiliary does not have to be interpreted as past and can be modified by future adverbials, as shown in (22b).

(22) a. Se ora John era già arrivato, andavamo al cinema tutti
if now John be.IMP already arrived we go.IMP to.the movie theater all
insieme.
together
‘If John had already arrived, we would go to the movie theater all together.’

b. Se domani alle sette eri già arrivato, ti facevo
if tomorrow at seven you be.IMP already arrived you I make.IMP
provare la mia nuova macchina.
try the my new car
‘If tomorrow at seven you had already arrived, I would have you try my
new car.’

The temporal flexibility of ICs also distinguishes them from standard indicative conditionals, where the presence of a past adverb requires the presence of a past tense and the presence of a future adverb requires the presence of a nonpast tense (either present or future). This is shown in the indicative conditionals in (23a,b), the Italian counterparts of the English examples in (12).
(23) a. Se John va/andra/*è andato a Dallas domani, incontrerà Mary.
   ‘If John goes to Dallas tomorrow, he will meet Mary.’

b. Se John è andato/*va/*andra a Dallas ieri, ha incontrato Mary.
   ‘If John went to Dallas yesterday, he met Mary.’

To sum up, the counterfactual eventuality described in the antecedent of an IC can be located either in the past or in the future (depending on which adverb occurs). Extra past tense morphology (like the extra layer of past of a pluperfect) can only be interpreted aspectually. Temporal flexibility distinguishes ICs from subjunctive and indicative conditionals.  

13.4.3.2 The Noncancelability Property

As I noted earlier, Stalnaker’s semantic theory holds that counterfactual conditionals—which must be expressed in the subjunctive—are characterized by the fact that the selection function reaches outside the context set, since typically the proposition expressed by the antecedent is incompatible with the presupposition of the context. But this is not always the case. To accommodate examples such as those in (24) and (25), the counterfactuality of conditionals has been argued to be conversationally implicated and, therefore, not asserted (e.g., Anderson 1951; Stalnaker 1975). Because the falsity of the antecedent is not asserted but only conversationally implicated, the implicature can be drawn without redundancy (as in (24) from Stalnaker 1975) or canceled (as in (25) from Anderson 1951).

(24) The murderer used an ice pick. But if the butler had done it, he wouldn’t have used an ice pick. So the murderer must have been someone else.

(25) If the butler had done it, we would have found just the clues which we in fact found. So, the butler must have done it.

The cancelability of the implicature that the antecedent is false seems to be a property only of standard subjunctive conditionals. Indeed, ICs implicate the falsity of the antecedent, and such an implicature resists cancelability. For example, the IC in (20)—repeated in (26a)—can be paraphrased as ‘If you left tomorrow, you would meet my sister, but you won’t’. The IC in (26a) is radically different from its subjunctive counterpart in (26b), which behaves as normal counterfactuals do: whereas the latter can talk about a future possibility, the former talks about a future impossibility.

(26) a. Se partivi domani, incontravi mia sorella.
   ‘If you leave.imp tomorrow you meet.imp my sister
   ≈ ‘If you left tomorrow, you would meet my sister.’
b. Se partissi domani, incontreresti mia sorella.

\[\text{if you leave.IMP SUBJ tomorrow you meet.PRES COND my sister}\]

‘If you left tomorrow, you would meet my sister.’

We can indeed strengthen this intuition. The IC in (27) is felicitous only if the proposition expressed by the antecedent is believed to be false by the speaker. Notice the contrast with the full acceptability of (28).

(27) *Imperfect*

\#Ho regalato il biglietto del concerto a Gianni, ma non so

I have given the ticket of the concert to Gianni but not I know

ancora se verrà. Se veniva, si divertirebbe da morire.

yet if he will come if he com.IMP himself enjoy.IMP a lot

‘I gave the concert ticket to Gianni, but I don’t know yet whether he will come. If he came, he would have a lot of fun (\textit{but he won’t}).’

(28) *Subjunctive*

Ho regalato il biglietto del concerto a Gianni, ma non so

I have given the ticket of the concert to Gianni but not I know

ancora se verrà. Se venisse, si divertirebbe da morire.

yet if he will come if he come.IMP SUBJ himself enjoy.IMP SUBJ a lot

‘I gave the concert ticket to Gianni, but I don’t know yet whether he will come. If he came, he would have a lot of fun.’

The contrast with respect to the cancelability of the implicature that the antecedent is false holds between ICs and subjunctive past counterfactuals as well (cf. (29) and (30)).

(29) *Imperfect*

\#Se Gianni prendeva quel farmaco, gli venivano proprio questi sintomi.

‘#If Gianni had taken that drug, he would have these very symptoms (\textit{but he didn’t}). Therefore, he took it.’

(30) *Subjunctive*

Se Gianni avesse preso quel farmaco, gli sarebbero venuti

‘If Gianni had taken that drug, he would have these very symptoms. Therefore, he took it.’
The conclusion seems to be that in ICs, the implicature that the antecedent is false resists cancelability in Anderson-type sentences.

There is another kind of conditional that differs from ICs even more: the indicative conditional discussed in section 13.4.1. The Italian counterparts to the English data in (12) and (13) yield the same effects, as shown in (31).

(31) a. #John è morto. Se va/andrà a Dallas domani, John is dead if he go.pres ind/fut ind to Dallas tomorrow incontrerà Mary.
   he meet.fut ind Mary
   ‘#John is dead. If he goes to Dallas tomorrow, he will meet Mary.’

b. #John è morto un mese fa. Se è andato a Dallas ieri, ha incontrato Mary.
   John is die.past part a month ago if he is go.past part to Dallas yesterday he has meet.past part Mary
   ‘#John died a month ago. If he went to Dallas yesterday, he met Mary.’

This is expected given the theory of indicative conditionals given above: the indicative mood (the absence of the subjunctive) tells us that the selection function reaches inside the context set or, in other words, that the antecedent is compatible with the presuppositions of the context. Therefore, in indicative conditionals there is no implicature that the antecedent is false, not even a cancelable one. Hence the deviance of (31).

The conclusion we can draw at this point is that ICs differ from both kinds of conditionals accounted for by the semantic theory of conditionals proposed by Stalnaker (1968) and presented above. With respect to their implicature that the antecedent is false, ICs differ from both standard indicative conditionals and subjunctive conditionals. They differ from standard indicative conditionals because the latter do not carry an implicature of falsity. They differ from subjunctive conditionals because the latter carry a cancelable implicature of falsity: as we saw above, the implicature of falsity carried by ICs strongly resists cancelability.

This last point raises a question. I referred to the falsity of the antecedent as an implicature—in particular, a noncancelable implicature. Recall my hypothesis: that the use of the imperfect in conditionals (ICs) falls into the same class as the modal uses I analyzed in section 13.3. There, I showed that a simple sentence with the imperfect does not carry the meaning that the speaker believes that the proposition expressed is false; rather, it means only that the speaker does not know that \( p \) (and is not (fully) endorsing it). Since my aim is to provide a single analysis for (most of) the modal uses of the imperfect, I will argue that the extra meaning component found in conditionals—namely, that the speaker believes that \( \neg p \)—should be derived.
How? I suggest that deriving the meaning that the speaker believes that \( \neg p \) from her not knowing that \( p \) is an instance of the mechanism that generates scalar implicatures. Of course, something needs to be said about this particular implicature because implicatures are cancelable by definition. As I argue elsewhere, the falsity of the antecedent is an implicature and, as such, is indeed cancelable under appropriate circumstances (see Ippolito 2003). In other words, it can be shown that, under special circumstances, the implicature does not arise. The objective of this chapter is to account for the fact that, unless these very special circumstances arise, the implicature cannot be cancelable.

13.4.3.3 Explaining the Noncancelability Property of Imperfect Conditionals

How can we derive the meaning that the speaker believes that a certain proposition is false, found in ICs, from the meaning that the speaker does not fully endorse that proposition, found in simple clauses with the imperfect? Above, I sketched my answer: this extra meaning is a Gricean scalar implicature. I propose that the relevant Gricean competition occurs between ICs and indicative conditionals. More generally, I would like to claim that imperfect indicative conditionals cannot compete with subjunctive conditionals because the two kinds are fundamentally different. What does this difference consist in? A possible answer—which will become more transparent in what follows—is that indicative but not subjunctive conditionals have an epistemic/evidential character.

Consider the pair in (32). From now on, the reader should keep in mind that whenever I use the label indicative I refer to all indicative conditionals except imperfect conditionals.

(32) a. Imperfect
   Se John arrivava domani mattina, incontrava Mary.
   if John arrive.IMP tomorrow morning he meet.IMP Mary
   ‘If John arrived tomorrow morning, he would meet Mary (but he won’t).’

   b. Indicative
   Se John arriva/arriverà domani mattina, incontrerà Mary.
   if John arrive.PRES/FUT IND tomorrow morning he meet.FUT IND Mary
   ‘If John arrives tomorrow morning, he will meet Mary.’

Following the definition of the imperfect given in (9), the proposition expressed by the antecedent of the IC in (32a) (that John arrives tomorrow morning) is evaluated in all those worlds \( w \) compatible with some (relevant) evidence available to the speaker in the actual world at some time before the utterance time \( t_u \). Informally, (32a) is true if and only if in all the worlds \( w \) compatible with some evidence available to the speaker in the actual world at some time before \( t_u \), and such that it is true that John arrives tomorrow, it is also true that he meets Mary. As for the
indicative conditional in (32b), we saw above that the proposition expressed by the
antecedent must be compatible with the presupposition of the context; in other
words, when the speaker utters (32b), he must believe that the possibility expressed
by the antecedent is still open at the utterance time.19

I propose that the following felicity condition holds for both (32a) and (32b): at
the time of evaluation the speaker must not know that the proposition expressed by
the antecedent is false. In other words, at the time of evaluation the speaker must not
know that $\neg p$ is true (i.e., that $p$, the proposition expressed by the antecedent, is
false).

(33) General felicity condition: $\neg (\text{know } (\neg p))$

At $x$ ($x =$ the time of evaluation), the speaker does not know that $\neg p$ is true.

The value of $x$ will depend on the tense of the conditional: the indicative will assign $x$
the utterance time; the imperfect will assign $x$ some contextually salient past time.
The result in the latter case is that the evaluation time is shifted to the past. After
giving a value to it, (33) will be realized as shown in (34a) and (34b).

(34) a. Felicity condition for the IC (32a)

At $x$ ($x =$ some past time), the speaker does not know that $p$, the
proposition expressed by the antecedent, is false.

b. Felicity condition for the IC (32b)

At $x$ ($x =$ the utterance time), the speaker does not know that $p$, the
proposition expressed by the antecedent, is false.

Summing up, the felicity condition for (32a) requires that at some (contextually
salient) past time, the speaker did not know that $\neg p$ was true; the felicity condition
for (32b) requires that at the utterance time, the speaker does not know that $\neg p$ is
true.

Not knowing that $\neg p$ is true at $t_u$ entails not knowing that $\neg p$ is true at any time
$t_i < t_u$, because we can assume that knowledge only grows over time and never
shrinks. But not vice versa: that is, $\neg \text{know}(\neg p)$ at $t_i$ does not entail $\neg \text{know}(\neg p)$ at
$t_u$, $t_i < t_u$. This is because at any time $t_j$ later than $t_i$ but earlier than $t_u$, something
could have happened that caused the speaker to shift from $\neg \text{know}(\neg p)$ to know
$(\neg p)$.20

Traditionally, Gricean implicatures involve a competition between two assertions
in a relation of asymmetric entailment: the Gricean implicature kicks in when the
speaker chooses to utter $A$ rather than $B$, where $B$ entails (“is stronger than”) $A$.
Here I am proposing that the competition that generates the Gricean implicature
that the antecedent is false in (32a) does not occur between the two conditional
statements (32a) and (32b); instead, it occurs between their felicity (appropriateness)
conditions, which differ in what the time of evaluation is. In other words, the Gricean
competition occurs at the level of the presuppositions. What the felicity condition in (33) requires is that the speaker not know that $\neg p$ is true. $\neg \text{know} (\neg p)$ is different from $\text{know} p$ because the former only requires that $x$ know that $p$ is possible, whereas the latter requires that $x$ know that $p$ is true. Moreover, given the assumption made above, if $x$ does not know that $\neg p$ is true at $t_u$, then $x$ did not know that $\neg p$ was true at any $t_t < t_u$.

Suppose $x$ utters (32a). The implicature that $x$ knows that $p$ is false ($p$ being the proposition expressed by the antecedent) will be generated in Gricean fashion: $x$ said that he did not know that $\neg p$ at some past time. If it had been the case that $x$ did not know that $\neg p$ at the utterance time, $x$ would have said so—for example, by uttering (32b). $x$ did not say so; hence, it must be the case that at the utterance time, $x \neg (\neg \text{know} (\neg p))$—that is, $\text{know} (\neg p)$.

In other words, in my account the noncancelability of the implicature that the antecedent is false is a Gricean scalar implicature: the speaker could have presupposed that she does not know that $p$ is false; instead, she only presupposed that she didn’t know that. Hence, she must know that $p$ is false.

So far I have derived the noncancelable implicature for ICs that compete with nonpast subjunctive counterfactuals. But above we also saw that ICs can talk about counterfactual past eventualities. How do we derive the noncancelable implicature that the antecedent is false in this case? Here is where it is clear that ICs cannot compete with past subjunctive counterfactuals because it is not true that they are felicitous only when the speaker does not know that the possibility described in the antecedent is foreclosed: a past subjunctive counterfactual can be uttered even if the speaker’s presuppositions are incompatible with the antecedent (or, in Stalnaker’s terms, even if the selection function reaches outside the context set).

(35) John left a week ago. If he had come to the party last night, you would have met him.

13.4.4 Past Imperfect Conditionals
We can derive the noncancelability property of past ICs just as we derived the noncancelability of nonpast ICs. The Gricean competition will occur again between a past IC—like (36a)—and a standard past indicative conditional—like (36b).

(36) a. Se John arrivava ieri sera, incontrava Mary.
   if John arrive.imp yesterday night he meet.imp Mary
   ‘If John had arrived last night, he would have met Mary (but he didn’t).’

b. Se John è arrivato ieri sera, ha incontrato Mary.
   if John arrive.past yesterday night he meet.past Mary
   ‘If John arrived last night, he (must have) met Mary.’
According to the definition of the imperfect given in (9), (36a) is true if and only if in all the possible worlds $w$ compatible with some relevant kind of evidence in the actual world at some contextually salient past time $t_1$ and such that the proposition that John arrived yesterday night is true in $w$, the proposition that John met Mary is true in $w$. This past time is the time at which the speaker did not know that the proposition $p$ expressed by the antecedent was false (i.e., when she believed that $p$ was possible), and it is also the time at which the speaker acquired some new piece of information, thus going from $\neg \text{know} (\neg p)$ to $\text{know} (\neg p)$. As it did above, the past shifts the evaluation time by removing the speaker from the actual time and displacing her in the past. Notice that it is not surprising that, whereas the evaluation time is located in the past (last night in (36a)), the indexical is (necessarily) evaluated with respect to the utterance time. It is well known that an indexical that appears in the complement of an attitude verb is not interpreted as part of the content that is attributed to the subject of the attitude verb. For example, in (37) the indexical tomorrow cannot have been part of the content of what John said (i.e., he couldn’t have said, “Mary will arrive tomorrow”) because his tomorrow is clearly different from the speaker’s tomorrow. There is a fundamental asymmetry between tense and adverbs in (37): the tense is evaluated with respect to John’s original utterance, the indexical is evaluated with respect to the speaker.

(37) A week ago John said that Mary would arrive tomorrow.

What is important for our purposes is the realization that indexicals (necessarily evaluated with respect to the speaker’s time) are allowed to occur even if the tense is not evaluated with respect to the speaker’s time.

Let us go back to the pair in (36). Whereas (36a) presupposes that at some past time, the speaker did not know that the proposition that Abelard arrived yesterday night was false, (36b) presupposes that she does not know that that proposition is false now. Now we are in a position to apply the same reasoning that we used for nonpast ICs. (36b)’s presupposition entails (36a)’s presupposition, and the Gricean mechanism kicks in. The speaker did not say that she does not know that $p$ is false at the utterance time, even though that would have been more informative. This must be because it is not the case that she does not know that $p$ is false at the utterance time; in other words, it must be the case that she knows that $p$ is false.

Notice that this analysis agrees with another aspect of the standard indicative conditional in (36b), namely, its epistemic/evidential nature. Given this epistemic character, it does not come as a surprise that (36b) would actually enter into a Gricean competition with the IC in (36a), which I have argued is epistemic/evidential too. In what follows, I will discuss (i) how my proposal accounts for what in section 13.4.3.1 I labeled the temporal flexibility property of ICs, and (ii) crosslinguistic evidence that the above analysis is correct.
The temporal flexibility of ICs (i.e., the possible co-occurrence of the imperfect with either past or future adverbs) is explained as follows. Because the past component shifts the evaluation time to the past (or, in other words, it is interpreted outside the scope of the modal operator), the proposition is tenseless in the sense that the clause contains no tense information that locates the event in time.

My proposal claims that ICs compete with (standard) indicative conditionals in virtue of (i) sharing the same mood and (ii) being epistemic/evidential in nature. Turkish conditionals strongly support my analysis. To form conditional sentences, Turkish employs two morphemes: one past, the other conditional. The basic order of these morphemes is [[V-past]-cond]. These morphemes can also occur in the opposite order: [[V-cond]-past]. Crucially, when the order is [[V-cond]-past], the conditional carries the noncancelable implicature that the antecedent is false. (38a) is the “inverted” conditional whose antecedent must be understood as false.22

(38) a. Abelard Eloise-e dünn Çiçek ver-se-di, Eloise mutlu
   Abelard Eloise-dat yesterday flower give-COND-COP-PAST Eloise happy
   be-aorist-past
   ‘If Abelard had given flowers to Eloise yesterday, Eloise would have been happy (but he didn’t).’

b. Abelard Eloise-e dünn ciçek ver-di-y-se, Eloise mutlu
   Abelard Eloise-dat yesterday flower give-PAST-COP-COND Eloise happy
   be-perfect-cop2
   ‘If Abelard gave flowers to Eloise yesterday, Eloise must have been happy (and maybe he did).’

The regular conditional (38b) is not a subjunctive counterfactual but an indicative conditional that, exactly like the Italian (36b), is epistemic/evidential in nature. These facts follow naturally in my theory. Consider the deviance of example (39).

(39) #Abelard bir ay once öl-dü-∅. Abelard Eloise-e dünn ciçek
   Abelard one month ago die-PAST-3SG Abelard Eloise-dat yesterday flower
   ver-di-y-se, Eloise mutlu ol-mus-tur.
   give-PAST-COP-COND Eloise happy be-perfect-cop2
   ‘#Abelard died a month ago. If Abelard gave flowers to Eloise yesterday, she must have been happy.’

The deviance of (39) shows that (38b) is felicitous only when the speaker believes that the eventuality described by the antecedent may be true in the actual world. In other words, (38b) is only appropriate if the antecedent is compatible with the presuppositions of the context. The ungrammaticality of (40), where the future adverb yarin...
tomorrow’ occurs, shows that the past morpheme in the antecedent of (38b) is interpreted as locating the eventuality described in the antecedent in the past.

(40) *Abelard Eloise-e yarin çiçek ver-di-y-se, Eloise mutlu
   Abelard Eloise-DAT tomorrow flower give-PAST-COP-COND Eloise happy
   ol-mus-tur.
   be-PERFECT-COP2
   ‘If Abelard had given flowers to Eloise tomorrow, Eloise would have been happy (and maybe he will).’

This observation, together with the fact observed above that (38b) requires the antecedent to be compatible with the presuppositions of the context, indicates that (38b) is the Turkish counterpart of (36b). Indeed, like (36b), it is epistemic/evidential in nature (the consequent can only be translated in English as ‘must have been happy’ and could not be translated as a normal past subjunctive conditional ‘would have been’).

Furthermore, I would like to suggest that (38a) is the Turkish counterpart of (36a). If my hypothesis that the past is actually contributing to the restriction of the accessibility relation (see (9)) is right, we predict that the proposition should be tenseless and any adverb could in principle occur. This is correct: the variant of (38a) with yarin ‘tomorrow’ is also grammatical.

(41) Abelard Eloise-e yarin çiçek ver-se-y-di, Eloise mutlu
   Abelard Eloise-DAT tomorrow flower give-COND-COP-PAST Eloise happy
   ol-ur-du.
   be-AORIST-PAST
   ‘If Abelard gave flowers to Eloise tomorrow, she would be happy (but he didn’t).’

If (38a) is like (36a) and if we take the order of the morphemes in Turkish to indicate the structural position of the heads to which they correspond, we also capture and extend the observation made above that in ICs, past is interpreted outside the scope of the modal operators.

Having shown that (38a) is like the IC in (36a) and (38b) is like the indicative conditional in (36b), and following the proposal developed in this chapter, I can claim that (38b) is stronger (more informative) than (38a). Consequently, I am in a position to explain the (noncancelable) implicature that the antecedent is false in (38a) as a scalar implicature, exactly as I did for the Italian pair in (36).

13.5 Temporal Mismatches in Conditionals

In a theory of conditionals where past counterfactuals talk about past possibilities, the acceptability of (42a) comes as a surprise. The examples in (42) are adapted from Ogihara, to appear.23
(42) a. If John had given flowers to Mary tomorrow, she would have been happy. 
   b. If John had given flowers to Mary yesterday, she would have been happy.

First, notice that (42a) does not talk about what the past could have looked like; rather, it talks about what the future could have looked like. Second, there is an implicature that the antecedent is false: for (42a) to be true, it must be the case that something happened in the past that foreclosed the option expressed by the antecedent. Let’s call (42a) a future counterfactual.

Examples such as (42a) raise important questions. First, how can we account for the mismatch between the temporal information in T (past) and the future-oriented adverbial tomorrow? Second, where does the implicature that \( p \) is false come from? Third, why is this implicature noncancelable? There is a clear analogy with the properties of ICs.

Recall what I suggested above: two conditional sentences (or, precisely, their presuppositions) compete and generate a Gricean implicature, if they share the same mood. Hence, the counterfactual in (42a) will have to compete with a different kind of subjunctive conditional. The intuition that I will try to capture is that future counterfactuals do not talk about the past but instead talk about the future from a past perspective. My proposal is that (42a) is like the nonpast subjunctive counterfactual If John gave flowers to Mary tomorrow, she would be happy uttered at some time before \( t_u \). This past time is contextually salient and is the time at which something happened that foreclosed the possibility that John will give flowers to Mary tomorrow.

Unlike what happens in normal past counterfactuals—(42b)—but like what happens in ICs, in future counterfactuals the past component of the tense does not locate the event talked about in the past but it shifts the evaluation time by restricting the accessibility relation. The truth-conditions for (42a) will be as shown in (43).

\[
(43) \text{(42a) is true iff for all the worlds } w \text{ accessible to } w_{@} \text{ at some time } t_1 < t_u, \text{ such that John will give flowers to Mary tomorrow is true in } w, \text{ Mary will be happy is true in } w.
\]

Notice that the same mechanism that accounts for the modal uses of the imperfect and ICs also accounts for the “special” use of the past in future counterfactuals. Indeed, in future counterfactuals too there is a noncancelable implicature that the antecedent is false. I suggest that the Gricean explanation must be extended to these cases too. Specifically, I propose that (42a) competes with its subjunctive nonpast counterpart in (44).

\[
(44) \text{If John gave flowers to Mary tomorrow, she would be happy.}
\]

But the Gricean competition will be possible only if (44) can be shown to entail (42a). Can we show that?
I will only sketch the beginning of a new analysis of conditionals, and, the discussion is not meant to be exhaustive. The traditional way to think about nonpast subjunctive conditionals as carrying the implicature that the antecedent is false is incorrect. I propose that the condition in (45) holds for nonpast subjunctive conditionals such as (44).

(45) *Condition for the felicitous use of a nonpast subjunctive conditional*
At $t_u$ (the utterance time), the speaker does not know that $\neg p$ is true.

This is supported by the deviance of example (46).\(^{25}\) If the speaker knows that $\neg p$, then the nonpast subjunctive conditional is infelicitous.

(46) #John is dead. If he came to the party, he would have fun.

As in the discussion of ICs in section 13.4.3.3, we could formulate the felicity condition in more general terms so as to satisfy both (42a) and (44).

(47) *General condition for the felicity of a nonpast subjunctive conditional*
At $x$ ($x = \text{the time of evaluation}$), the speaker does not know that $\neg p$ is true.

One layer of past in (42a) is interpreted outside the scope of the modal operator and shifts the evaluation time to the past by replacing $x$ in (47) with some contextually salient past time. In (44), on the other hand, $x$ is interpreted as $t_u$. Therefore, (44)’s presupposition will entail (42a)’s presupposition because saying that somebody does not know that $p$ is false at the utterance time is more informative than saying that somebody did not know that $p$ is false at some past time.

We can follow our reasoning backward: if a conditional triggers the noncancelable implicature of falsity, it is because one layer of past shifts the evaluation time to the past—that is, the past is interpreted outside the scope of the modal operator.

Interestingly, another kind of conditional has been observed to carry the noncancelable implicature that the antecedent is false: the *inverted conditional*.\(^{26}\) The contrast in (48) shows this point.

(48) a. #Had John come down with the flu, he would have exactly the symptoms he has now. I conclude, therefore, that John has the flu.

b. If John had come down with the flu, he would have exactly the symptoms he has now. I conclude, therefore, that John has the flu.

The expectation is that inverted conditionals should then be the preferred way to express future counterfactuality, on a par with ICs. The native speakers I have consulted confirm this point.

(49) Had John given flowers to Mary tomorrow, she would have been happy.

We would like to be able to say *when* a certain interpretation will arise—that is, what syntactic configuration must hold for a certain interpretation to be possible. It is
plausible to hypothesize that the noncancelability of the falsity implicature is related to the T-to-C movement that has been argued to occur overtly in inverted conditionals (see note 26). We would thus incorporate the Turkish facts discussed above, where again the noncancelability of the falsity implicature correlates with a morpheme order where the past tense occurs in an outer position.

This is only a sketch of an analysis of temporal mismatches in English. The proper treatment of these cases will have to involve a general reassessment of the semantics and pragmatics of conditionals in general. For a thorough discussion and a proposal, see Ippolito 2002, 2003.

13.6 Conclusion and Remaining Issues

The most general conclusion arising from the discussion in this chapter is that tense is not always interpreted as locating events in time. Sometimes, it contributes to the restriction of the accessibility relation or, in other words, it is interpreted outside the scope of the modal. This is the case for the past component of the imperfect when a mismatch occurs with some temporal adverb occurring in the sentence. Hopefully, future research will identify the syntactic conditions that determine one interpretation or the other. My proposal accounts for the modal uses of the Italian imperfect in both main and embedded clauses and for the examples of temporal mismatches in conditionals, in Italian as well as in other languages. In this chapter, I have analyzed the correlation between the “dislocational” role of past (its contribution to the restriction of the accessibility relation) and the falsity implicature, and I have offered a pragmatic account based on the notion of Gricean competition. This analysis sheds new light on standard future subjunctive conditionals and suggests a revision of the traditional view. The crosslinguistic perspective taken here raises the question of whether T-to-C movement is one of the conditions alluded to above. The question is relevant for inverted conditionals—for which T has been argued to overtly raise to C—and subjunctive conditionals with temporal mismatches (what I called “future counterfactuals”). Less transparently, the question arises whether the modal imperfect too involves T-to-C movement. Still, at the moment, I have no argument to support the claim that this is the case.

Notes

This chapter was initially presented at the International Round Table on the Syntax of Tense and Aspect held at the Université Paris 7, November 2000. The ideas discussed here mark the beginning of my work on modal and conditional sentences. Since then, I have pursued this topic further in Ippolito 2002, 2003. I would like to thank the Round Table participants for their comments and encouragement. This chapter has benefited greatly from discussions with Irene Heim, Sabine Iatridou, and David Pesetsky. Many thanks to all the speakers (colleagues and friends) who gave me their careful judgments. Mistakes and omissions are mine.
1. These examples are drawn and modified from Bazzanella 1990.

2. The modal is not necessary in the “politeness” example, even though it is preferred. The discourse in (i) is also quite acceptable: as B’s response indicates, the imperfect occurs on the lexical verb prendere ‘take’. Crucially, the example has the same politeness flavor as its modal counterpart in the text.

(i) A: Cosa desidera?
   what you desire
   ‘What would you like?’

   B: Prendevo un caffè, grazie.
   I take.IMP a coffee thank you
   ‘I would like a coffee.’

3. One question is what the proposition $p$ expressed by (3f) is, given that (3f) is a question. As a first approximation, let $p$ be the expected answer to the question.

4. The crucial role played by negation in (5c) is very puzzling and intriguing. However, any discussion and analysis of this use of negation here would take us too far afield.

5. See Pesetsky 2000, where (6) and (7) are credited to Irene Heim.

6. I will not discuss here what the correct analysis of past is: whether past is analyzed as a predicate expressing the relation earlier than (as in Stowell 1993) or as a presupposition (as suggested in Heim 1994) is not directly relevant to my proposal. Thus, for the sake of simplicity I will assume that past is a predicate of times.

7. For expository reasons, I am simplifying what the structure of a modal sentence is by ignoring further restrictions of the modal base—for example, what Kratzer (1981) calls “ordering sources.”

8. Here I will use the term modal base with the meaning of a function of type $h_s$, $t_i$ but—to be precise—in Kratzer’s work on modality, modal bases are functions from worlds to sets of propositions ($\langle s, t, \rangle$).

9. I use that-clauses to refer to propositions. Technically, I assume that a proposition is a function from possible worlds to truth values.

10. To see this point, consider the following scenario. My sister and I want to go to the movies tomorrow, but we don’t know what’s playing then. So we call the movie theater to find out. In this scenario, I cannot use the question in (3f); I would have to use a “normal” question with a present tense, as shown in (i).

   (i) Cosa c’è domani al cinema?
      what there is tomorrow at.the movie.theater
      ‘What is there going to be at the movie theater tomorrow?’

The kind of scenario where (3f) is appropriate is the following. My sister and I went out for dinner together last night, and on the way home we walked by our favorite movie theater. We stopped briefly to have a look at the schedule and see what would be playing in the next couple of days. Today I called her up, and we decided to go to the movies tomorrow. Unfortunately, I can no longer remember what I read last night and, because I know that the relevant evidence (the schedule) was available to my sister last night as well (indirect evidence), I seek the necessary information by asking my sister (3f).
11. This is not meant to be absolutely true. It should be read as ‘In all the relevant cases of having some desire \( x \), this is a case of knowing that you have \( x' \). This is just to exclude the possibility of unconscious desires, which clearly do not involve the knowledge of having them.

12. As I noted earlier, I take the accessibility relation to be epistemic/evidential; that is to say, I leave open the possibility that it involves knowledge rather than simple evidence, the difference being that knowledge that \( p \) entails \( p \), whereas evidence that \( p \) does not. The importance of this distinction and the relevance of the epistemic component, rather than the evidential one, will be clear when I discuss the imperfect conditional in section 13.4.3. Notice that if in our explanation of the modal uses in (3), we opt for an accessibility relation that is only epistemic, the oneiric imperfect and the imperfect of play in (3a) and (3d), respectively, cannot be accounted for along the same lines as the uses of the imperfect in (3b,c,e,f,g). This would not be a completely unwelcome result, though, as the oneiric imperfect and the imperfect of play seem to differ in other respects as well (see Giorgi and Pianesi 2001 for an analysis of the oneiric imperfect).

13. If the accessibility relation were merely epistemic, we could reformulate the implicature in (10) as follows:

(i) **Implicature**

At \( t_0 \) (the utterance time), the speaker does not know that \( p \) and so is not fully endorsing \( p \).

14. In this theory, a proposition is function from possible worlds to truth values. Since there are only two truth values, a proposition is a way to divide the set of possible worlds into those for which the function yields the value true (worlds in which the proposition is true) and those for which the function yields the value false (worlds in which the proposition is false).

15. Stalnaker’s semantic theory suggests that counterfactual conditionals should be expressed in the subjunctive, but it does not force subjunctive conditionals to be counterfactuals. In other words, the falsity of the antecedent seems to be only implicated and, as such, cancelable. See section 13.4.3.2 for the relevant examples.

16. Properly speaking, the implicature is cancelable, as expected from the theory of implicatures. Nevertheless, the implicature that arises with ICs is much harder to cancel than it is standard to assume in a theory of conditionals after the appearance of Anderson 1951 and Stalnaker 1975. Here, I will use the term noncancelable to emphasize this contrast. Also see note 18.

17. The aspectual properties of ICs are not explained by Iatridou’s (2000) proposal. I leave to the future a deeper investigation of these facts.

18. In the context of a broader discussion of conditionals (Ippolito 2003), I argue that the falsity of the proposition expressed by the antecedent is a Gricean implicature, thus providing an account for (i) the strong feeling of noncancelability in the contexts discussed above or, in other words, the difference between normal subjunctive conditionals and ICs; (ii) examples of cases where the falsity implicature is indeed canceled, as expected in the Gricean theory of implicatures. See note 15 as well.

19. A weaker variant of this requirement holds for nonpast subjunctive conditionals. This point will be discussed in section 13.5.

I am assuming that if-clauses supply restrictions to independent operators (Kratzer 1986, 1991). This means that in ICs, the modal operator and the accessibility relation described in (9) are supplied by the imperfect in the consequent clause of the conditional.
20. For a discussion of possible counterexamples to the claim that knowledge can only grow, see Ippolito 2003.

21. When the proposition is *tensed*, as in the case of the past indicative conditional we are considering now, saying that the speaker must believe that the possibility expressed by the antecedent is open at the utterance time means that the speaker must believe that the past could have been that way (i.e., that the proposition was true at some past time).

22. I would like to thank Meltem Kelepir for the Turkish data.

23. Ogihara tries to account for these examples by claiming that focus plays a crucial role. I will not discuss his proposal here, but let me just mention that focus does not seem to be a necessary condition for the grammaticality of the examples in question (either in English or in Italian). For a full analysis of Ogihara’s proposal and of the facts presented here, see Ippolito 2003.

24. Note 19 will extend to the English cases too.

25. Consider the contrast between (i) and (ii).

(i) John is not drunk. If he were drunk, he would tell you the truth.
(ii) #John is dead. If he were drunk, he would tell you the truth.

The acceptability of (i) would seem to contradict condition (45) in that the speaker knows the antecedent of the conditional to be false. This incompatibility between (i) and condition (45) is only apparent, though, and disappears once we provide a more precise definition of “open option.” The key to the correct definition is provided by the contrast between (i) and (ii): superficially, the deviant example (ii) is such that what is presupposed by the antecedent of the conditional—namely, that John is alive—is *inconsistent* with what is asserted before the conditional and constitutes the presuppositions of the context (“John is dead”). On the other hand, in the acceptable (i), the antecedent directly modifies the context where the conditional is evaluated, by replacing the presupposition “John is not drunk” with the new proposition “John is drunk.” In other words, what causes the deviance of (ii) is the *inconsistency* between the presuppositions in the context and the presuppositions of the conditional. Hence, condition (45) should be understood as in (iii).

(iii) The presuppositions of the (antecedent of the) conditional must be consistent with the presuppositions already in the context (i.e., with the context itself).

Notice that the new condition in (iii) is not a general condition on the utterability of an arbitrary sentence, as shown by the fact that past counterfactuals do not obey the same restriction.

(iv) John died last Monday. What a shame! If he had come to yesterday’s party, he’d have seen Mary again.

Notice that (iii) unifies present counterfactuals like (i) and future counterfactuals like those I have been considering in the text.

(v) Gianni will not come to the party but if he came, he would have fun.
(vi) #Gianni is dead but if he came to the party, he would have fun.

26. The syntax of inverted conditionals is discussed in Pesetsky 1989 and Iatridou and Embick 1994. In the latter work, the noncancelability issue is also mentioned.

27. The role of C in the interpretation of tense has already been pointed out in the literature (see, e.g., Enç 1987; Stowell 1998).
28. Aygen (1999) suggests that in Turkish conditionals where the order of morphemes is [[V]-cond]-past], the past tense has raised to C. Also, the relevance of the complementizer in achieving the (noncancelable) falsity implicature would be supported if we found a language where this property overtly correlates with the choice of the complementizer, along the lines of what has been argued for Irish in the domain of \(wh\)-movement, where \(wh\)-movement is accompanied by a change in the form of the complementizer. In current work, I suggest that Slovenian may be such a language (see Marvin 1999 for some relevant data on conditionals in Slovenian).

References


Marvin, T. 1999. The complementizer *DA* in counterfactuals. Manuscript, MIT.


14.1 Introduction

The link between telicity and accusative case has inspired much syntactic work and is also well documented in the semantic literature. Gillian Ramchand made the case for Scottish Gaelic, for example, and Paul Kiparsky for Finnish (Ramchand 1997; Kiparsky 1998). In this chapter, I will suggest that the same connection between telicity and accusative case can be detected in German, and probably in English as well. I will start out by presenting a syntactic and semantic analysis of the telicity effects associated with accusative in Finnish. Using Finnish as a guide, I will then introduce techniques for observing the same effects in German, where they are hidden and easy to overlook, since the language has no systematic choices for how it case-marks direct objects.

According to Kiparsky (1998), case for direct objects in Finnish is determined at the VP level. Direct objects have partitive case if their VP is “unbounded” and accusative case if their VP is “bounded.”

1

(1) a. Ammu-i-n karhu-a. Partitive
    shoot-PAST-1SG bear-PART
    ‘I shot a bear.’
    ‘I shot at the bear.’
  b. Ammu-i-n karhu-n. Accusative
    shoot-PAST-1SG bear-ACC
    ‘I shot the bear.’
    ‘I shot a bear.’

(2) a. Ammu-i-n karhu-j-a. Partitive
    shoot-PAST-1SG bear-PL-PART
    ‘I shot bears.’
    ‘I shot at bears.’
b. Ammu-i-n karhu-t. Accusative
   shoot-PAST-1SG bear-PL ACC
   ‘I shot the bears.’

(3) a. Ammu-i-n kah-ta karhu-a. Partitive
   shoot-PAST-1SG two-PART bear-PART
   ‘I shot at two bears.’
   ‘I shot at the two bears.’

b. Ammu-i-n kaksi karhu-a. Accusative
   shoot-PAST-1SG two-ACC bear-PART
   ‘I shot two bears.’
   ‘I shot the two bears.’

Why should there be a connection between a semantic property of VPs and case morphology on direct objects? Where in the grammar could the link between, say, boundedness and accusative case even be stated? I will explore the idea that the connection between case and telicity might be provided by minimalist views on interpretable and uninterpretable features: verbal inflectional features might be the interpretable counterparts of uninterpretable case features (Chomsky 1995, 2001; Pesetsky and Torrego 2001). If there are verbal inflectional heads corresponding to telicity, the relation between objective case and telicity is agreement. An uninterpretable feature [acc] on DPs agrees with its interpretable counterpart, a verbal inflectional feature linked to telicity. A major consequence of this proposal is that the telicity of a large class of verbs is now syntactically constructed. While differing in detail, the analysis proposed here builds on and confirms an important insight that Ramchand (1997) reached on the basis of Scottish Gaelic. According to Ramchand, the “claim here is that the notion of ‘verb’ is not a unified one, but consists of two logically separate constituents: a substantive core and an aspectual head” (p. 169).

14.2 What an Interpretable [acc] Feature Could Do: A Proposal

While syntacticians might not think twice about positing an interpretable feature [acc] that is identical to [telic], such an assumption causes considerable headaches for semanticists. They are expected to come up with a hypothesis about what that feature is supposed to do. They have to put a proposal on the table about the semantic division of labor between bare verb stems and an inflectional head linked to telicity, and they face Zucchi’s problem of indirect access at that point (Zucchi 1999). Take accomplishment verbs. Suppose they are built from stems that have event arguments ranging over activities and processes. But in addition to describing those activities as, say, climbs or moves, they might also tell us something about where those events are headed. A climb, for example, may aim for the top of Mount Monadnock. Using
terminology from Parsons 1990, the stems of accomplishment verbs might determine the culmination conditions for the events they describe. I suggest we distinguish between culmination conditions and culmination requirements. Determining the conditions for culmination does not yet imply culmination. The conditions merely state what has to be the case if the events in question culminate. The feature [telic] could now invariably add the requirement that culmination occur. For illustration, here are two sample entries for accomplishment stems and a possible denotation for interpretable [acc] (= [telic]):

(4) shoot- \( \lambda x \lambda e [\text{shoot-at}(x)(e) \& [\text{culminate}(x)(e) \leftrightarrow \text{hit}(x)(e)]] \)

climb- \( \lambda x \lambda e [\text{climb-up}(x)(e) \& [\text{culminate}(x)(e) \leftrightarrow \text{climb-to}(\text{top-of } x)(e)]] \)

[telic] \( \lambda R \lambda x \lambda e [R(x)(e) \& \text{culminate}(x)(e)] \)

Following Marantz (1984), Kratzer (1996), and Pylkkänen (2002), I do not take external arguments to be arguments of their verbs in (4). Transitive verbs express relations between individuals and events. In the case of climb, for example, the relation holds between an individual \( x \) and an event \( e \) just in case \( e \) is an event of climbing up \( x \). The culmination condition for climb says that the event \( e \) culminates with respect to \( x \) just in case \( e \) is an event in which the top of \( x \) is reached. The denotation of [telic] is a function that can apply to the denotations of verbs like climb. Its only job is to require that the events described by the verb culminate with respect to the referent of the direct object argument. Applied to the denotation of shoot, for example, the function yields a relation that can only hold between \( x \) and \( e \) if \( x \) is hit in \( e \).

The predicate ‘culminate’ in the logical-conceptual representations of (4) is a two-place predicate, and this distinguishes it from Parsons’s notion of culmination. For Parsons, culmination is a mere property of events. As pointed out in Zucchi 1999, the problem with Parsons’s proposal is that events never culminate per se. A particular cleaning event, for example, might culminate as an event of cleaning my kitchen, but might not reach culmination with respect to cleaning my house. To account for the relativity of culmination, the logical-conceptual predicate ‘culminate’ in (4) is relativized to the direct object argument. Such an analysis implies a claim about the role of the direct object argument for the culmination condition. Only direct objects participate in defining culmination. This is one way of accounting for Tenny’s generalization that only direct internal arguments can “measure out” the events described by a verb (Tenny 1987, 1994). The proposal is also in the spirit of Ramchand 1997 in that it allows [telic] to flesh out the role the referents of direct objects play in their respective events.

The account of telicity in (4) consists of a lexically determined condition on culmination that interacts with an inflectional head imposing culmination. It contrasts with the purely algebraic accounts of telicity adopted by many researchers in the field, following Krifka (1989, 1992). Algebraic accounts use properties like
quantization to capture semantic properties such as telicity. A property of events is quantized if whenever it is true of an event, it is not true of any of its proper sub-events. One of the properties traditionally used to diagnose telic VPs is incompatibility with durational adverbials. While algebraic accounts have been successful in picking out VPs that are or are not compatible with durational adverbials, they do not quite give us the notion of telicity we need. Compare (5a) with its conative alternant (5b).

(5) a. Sie hat tagelang Fausthandschuhe gestrickt.
   she has for-days mittens-ACC knit
   ‘She knit mittens for days.’

   b. Sie hat tagelang an Fausthandschuhen gestrickt.
      she has for-days at mittens-DAT knit
      ‘She was knitting mittens for days.’

Conative alternations have properties similar to the Finnish alternations we looked at earlier. A case alternation correlates with an aktionsart difference. The crucial observation is that (5a) implies that there were mittens that she knit. The event culminated in that sense. In contrast, (5b) does not have that implication. No mittens need to have come into existence. In order to account for the essential properties of the conative alternation, then, we have to be able to talk about whether or not the events described are complete in the sense of satisfying the culmination condition determined by the VP. Incompatibility with durational adverbials is not a test for telicity when bare plural objects are involved. Both (5a) and (5b) are compatible with a durational phrase. A similar point can be made with respect to another widely used tool for diagnosing telicity: modifiers like in less than three days. Those do seem to pick out telic VPs in the sense we are after, but that only shows that algebraic properties like quantization do not. Neither one of the italicized VPs in (6a) and (6b) expresses a quantized property of events, for example.?

(6) a. Sie kann in weniger als drei Tagen wunderschöne Fausthandschuhe
      she can in less than three days wonderful mittens-ACC
      stricken. knit
      ‘She can knit wonderful mittens in less than three days.’

   b. *Sie kann in weniger als drei Tagen an wunderschönen Fausthandschuhen
      she can in less than three days at wonderful mittens-DAT
      stricken. knit

While telicity in the sense needed here cannot seem to be defined in terms of properties like quantization, algebraic properties might still be successful in defining cul-
mination. They might give us an operator that can turn atelic verb stems of all kinds into telic ones, thus possibly constructing telic predicates, rather than merely selecting them. Algebraic properties related to Krifka’s Mapping to Events are promising here. Mapping to Events links the progress of the events a transitive verb describes to the part structure of its direct object referent. We could say, then, that those events culminate when the activity described by the verb has affected all relevant parts of the direct object referent. Here is a more technical way of saying this. Suppose $R$ is the relation denoted by some transitive verb and $R$ holds between an individual $x$ and an event $e$. The event $e$ culminates with respect to $x$ just in case for every part $x'$ of $x$ there is a part $e'$ of $e$ such that $R$ holds between $x'$ and $e'$. As emphasized in Schwarzschild 2002, the part structures relevant for measurement are often given by convention and can vary from one context to the next. When it comes to climbing mountains, for example, bands of equal elevation seem to determine the units for the relevant part structure, cutting up the mountain into horizontal slices resembling those seen in pictures illustrating different climate zones on a mountain. It is now legitimate to say that an event of climbing up Mount Monadnock, for example, culminates with respect to Mount Monadnock, if every relevant part of that mountain has been climbed up. Among the relevant parts is the top part, of course, and assuming a sufficiently fine-grained part structure, having climbed up all parts of the mountain means that the top of the mountain has been reached. The mountain, then, literally becomes a measuring tool for the success of the climb. It provides a suitable part structure, as well as an upper bound for a corresponding scale. If all verbs were like *climb*, we could drop the culmination conditions in the meaning assignments for individual verbs and let [telic] impose a uniform culmination condition as in (7).

\[
\text{climb-} \lambda x\lambda e \text{ climb-up}(x)(e)
\]

\[
\text{[telic]} \quad \lambda R \lambda x \lambda e \left[ R(x)(e) \land \forall x' \left[ x' \leq x \implies \exists e' \left[ e' \leq e \land R(x')(e') \right] \right] \right]
\]

If the denotation of [telic] was as in (7), we would be able to derive some good consequences for Finnish. As pointed out in Kiparsky 1998, the Finnish counterparts of English verbs like *own* or *know* take accusative direct objects, even though they are compatible with durative adverbials. Interestingly, the denotations of those verbs all satisfy Mapping to Events, hence would automatically satisfy the conditions imposed by [telic] on the present approach. If you own a house, that ownership includes ownership of the parts of the house. If you know your field, that knowledge includes knowledge of its subfields. In contrast, loving your neighbor doesn’t include loving his relevant parts. Finnish reflects that difference. *Love* takes partitive objects, along with *hate*, *admire*, and so on.

Not all verb stems that should be able to combine with [telic] readily suggest a nontrivial part structure for the referents of their direct objects, however. A case in
question is the denotation I posited for the stem of the verb *shoot*. If you shoot at a bear, it’s not the bear himself, but possible paths leading from your gun to the animal that provide measures for success. You shoot the bear, it seems, just in case you shoot at all parts of some path leading to him. We could now try to adjust the denotation of [telic] by allowing not only the direct object referents themselves but also possible paths leading to them and other related entities to serve as “measuring rods” for the success of the events described by the verb. This gives us lexical denotations of the kind illustrated in (8).

(8)  
\[climb- \quad \lambda x\lambda e \text{climb-up}(x)(e)\]
\[shoot- \quad \lambda x\lambda e \text{shoot-at}(x)(e)\]
\[[\text{telic}] \quad \lambda R\lambda x\lambda e \quad [R(x)(e) \& \exists f \text{[measure}(f) \& \forall x' [x' \leq f(x) \rightarrow \exists e' [e' \leq e \& R(x')(e')]]}]\]

The feature [telic] turns originally atelic stems like *climb-* or *shoot-* into telics. The main burden of the analysis is now carried by the assumption that there is some general cognitive mechanism that determines a range of functions that map the referents of certain direct objects into concrete or abstract “measuring rods” that are associated with those referents in some way or other. We would want to include the identity function as one possibility here, of course, as well as functions mapping individuals into some path leading to them, and hopefully not too many other kinds. A likely constraint is that direct object referents provide upper bounds for the relevant scales. If the assumption of such a general cognitive mechanism could be maintained, the format for lexical representations in (4) could be replaced by the one in (8), which has a more elegant division of labor between verb stem and [telic] and avoids the redundancies implicit in (4).

The approach to telicity exemplified by (8) is very much in the spirit of Hay, Kennedy, and Levin (1999), who emphasize that linguistic and contextual factors interact to create the phenomenon of telicity. I have to add a qualification, though. Hay, Kennedy, and Levin argue that the notion “incremental theme” in Dowty’s (1991) sense should be construed as a measure of some property of a verb argument, rather than as that argument itself. With respect to Dowty’s *mow the lawn*, for example, they propose that the true incremental theme is not the lawn itself, but its area, a property of the lawn. However, if [telic] is to play the role it plays in (8), we do not want to exclude concrete objects like lawns or apples from being incremental themes. A uniform notion of culmination can only work along the lines of (8) if we are able to say, for example, that my eating the apple was successful just in case I ate from every part of it. We do not eat abstract properties of apples like their volume, for example. We can agree with Hay, Kennedy, and Levin’s claim that incremental themes are scales associated with direct object referents, however, if we are willing to
entertain the idea that a mountain with a suitable part structure might be a scale. Why not?

Not all transitive verbs in Finnish alternate between accusative and partitive direct objects. In particular, there are transitive verbs that require accusative objects.\textsuperscript{12} Achievement verbs like those corresponding to \textit{win} or \textit{lose} are in this group. The stems of those verbs seem to have telic denotations from the very start.\textsuperscript{13} Consequently, they do not need [telic] to become telic. [Telic] still needs to be there, however, for direct objects to check their accusative case features. Once present, [telic] imposes a semantic requirement that \textit{win} and \textit{lose} have to satisfy, like all other stems that combine with [telic]. Take \textit{lose} as in \textit{lose your hat}. The VP \textit{lose your hat} describes instantaneous events, and that means that it describes events that have no proper subevents that are also losing events. When \textit{lose your hat} combines with [telic], then, and we talk about a single event, the requirement is that your whole hat be lost in that one instantaneous event. A parallel account can be given to \textit{win} as in \textit{win the race}. If \textit{win the race}, too, describes instantaneous events, those events cannot be the sum of proper subevents in which parts of the race are won. The whole race must have been won in one instantaneous win. The trivial part structure of the events described by achievement verbs, then, forces a trivial part structure for the referents of their direct objects.

Suppose (8) represented the general way accomplishment verbs are built in some language. That language would then have only two kinds of eventive verb stems: telic ones, which already imply culmination, and atelic ones, which do not. The first class would include the stems for verbs that are traditionally labeled \textquotedblleft achievement verbs.	extquotedblright\ Crucially, there would be no verb stems that merely characterize a culmination condition without already implying culmination. Culmination conditions for verbs built from atelic stems could be inferred using general cognitive principles, rather than relying on knowledge of lexical meanings as in (4). Any transitive process or activity verb in such a language would be expected to combine with [telic], as long as suitable measures for the success of the events described could be associated with the verb's direct object, often in interaction with contextually provided information. In a language of this kind, we would expect to find a large class of transitive verbs that alternate between telic and atelic uses. We would also expect to find a class of verbs that only have telic uses. And verbs like \textit{love, admire, hate, enjoy}, and so on, should be unambiguously atelic. Those verbs describe processes or states that do not affect the referents of their direct objects directly. It is therefore hard to see how those referents could provide bounds for scales measuring the success of the events described.

Are there languages that have only two kinds of eventive verb stems? Finnish might be one. German or English, might be, too. Maybe there is no language that
has the kind of accomplishment stems posited in (4). Here is a fact that bears on the issue, at least for English and German. English and German each have a large class of transitive verbs that show telic as well as atelic behavior according to the standard tests.  

(9) a. The doctor examined the patient in/for an hour.
   b. We cooked the egg in/for five minutes.
   c. We milked the cow in/for ten minutes.
   d. She cleaned the house in/for two hours.

The list of English verbs that alternate in this way is very long and includes the following, for example:

(10) read, examine, analyze, barbecue, roast, iron, bathe, massage, wash, comb,
    brush, fry, polish, explain, confuse, pollute, control, cover, insulate, test,
    decorate, describe, drain, mop, survey, check, . . .

Alternating verbs like those in (9) are typologically not uncommon. McClure (1994) reports that in Japanese, every activity verb can have a telic interpretation under the right circumstances. The existence of alternations like the ones in (9) is an expected consequence of (8). Turning atelics into telics, possibly with the help of contextual information, would be the normal job of [telic]. However, there is one crucial fact that we would not expect under the analysis illustrated in (8). Why is it that in English or German we still find accusative objects with the atelic alternants in (9) or (10)? I will come back to this important difference between German and English, on the one hand, and Finnish, on the other, in section 14.5. In the meantime, let us tentatively assume that the account illustrated in (8) is on the right track and explore what the consequences are.

The denotations for the stems for accomplishment verbs assumed here share with both Parsons’s and Zucchi’s denotations that they describe events that might or might not have culminated. It is that property that generates systematic telic/atelic alternations. Zucchi (1999) considers the possibility that the atelic portions of the denotations of accomplishment stems might not be there from the very start, as assumed here, but might be “generated” from telic denotations by the same operation that derives progressives in English. This proposal cannot easily accommodate the fact that the atelic meanings we find in conative alternations are not always exactly the same as the corresponding progressive meanings. Here are some examples illustrating subtle differences. Imagine a herd of buffaloes that is running toward you. You fire a shot to make them turn around and run in the opposite direction. In such a situation, (11a), which has a progressive verb form, is false, but (11b), which has the atelic alternant of the shoot/shoot at conative alternation, is true.
(11) a. I was shooting the buffaloes.
    b. I shot at the buffaloes.

The meanings of (12a) and (12b) also differ in a subtle way.

(12) a. Nina was knitting a mitten.
    b. Nina has at a-DAT mitten knit

Suppose Nina was in the process of knitting an incomplete mitten as a prop for a movie. Since an incomplete mitten was needed for that particular movie, the mitten was never meant to be completed. Another example was given to me by Roger Schwartzschild (personal communication), who thought about a Mr. Caliendo, who accidentally assigned his math class a homework problem that couldn’t be solved. To describe Jack’s attempts at the homework, (13a) is more appropriate than (13b).

(13) a. Jack worked on a solution to the homework problem.
    b. Jack was solving the homework problem.

(13b) is false because the progressive claims that there are accessible worlds where the homework problem is solved. (13a), on the other hand, can be true even though the events described cannot possibly culminate. I conclude that we have to distinguish between the atelic denotations found in conative alternations and those produced by operators like the progressive operator in English. The atelic meaning components of accomplishment verb stems, then, might very well be basic.

To summarize, I have proposed that the telicity of accomplishment verbs might be constructed from atelic verb stems in interaction with an inflectional head that imposes culmination, possibly in interaction with contextually provided information. I argued that telicity as a property of predicates cannot be characterized via algebraic properties like quantization, as proposed by Manfred Krifka and much recent work, but considered the possibility that the notion of culmination itself might be characterized algebraically using a property closely related to Krifka’s Mapping to Events. The strategy was to think of [telic] as an operator that can construct telic predicates in interaction with the lexical meanings of verb stems, rather than merely selecting predicates that are already telic. By granting the direct object argument an essential role in defining culmination, it became possible to account for Tenny’s generalization that direct object arguments measure out the events a verb describes, and to do justice to Ramchand’s insight that [telic] affects the very way the referents of direct objects relate to their events. I also considered and rejected Zucchi’s proposal to use existing theories of the progressive to link the telic and atelic components in the denotations of stems for accomplishment verbs.

Turning to the syntax of telicity, (14) gives an example of a structure built from the transitive verb stem *climb*, the inflectional head [telic], and the DP *the Matterhorn*.16
The DP *the Matterhorn* has the uninterpretable feature [acc], which forces it to enter an agreement relation with the verbal inflectional feature [acc] (= [telic]). In this particular configuration, establishment of an agreement relation between the DP *the Matterhorn* and [telic] must be followed by displacement of that DP. If *the Matterhorn* was interpreted within its VP, the VP [telic] operates over would denote a mere property of events rather than the required relation between individuals and events.

What is it that could force the DP *the Matterhorn* to leave its VP? If it stayed put, the semantic interpretation procedure would crash because of a semantic type mismatch. But how should a DP sitting in the wrong place know about that? Suppose, then, that [telic] possesses a feature that allows it to attract a DP. Following Chomsky 1995, Collins 1997, and later work within the Minimalist Program, such a feature might be called an “EPP” or “D”-feature. What are EPP or D-features? I propose to identify them with indices, with the special provision that indices are now taken to be features, too, rather than some special breed of syntactic objects. We have index features, then. An immediate consequence of this proposal is that in order to enter an agreement relation with each other, [telic] (= verbal [acc]) and the DP *the Matterhorn* have to be coindexed. In drawing this conclusion, I am assuming that if there are such things as index features, then DPs would be the kind of category that can have them. Consequently, agreement between *the Matterhorn* and verbal [acc]₁ has to include agreement with respect to the index 1. Instead of the structure in (14), we would now start out with the one in (15).

(15)

If EPP or D-features are identified with indices, we expect that identification to literally derive the fact that such features can force displacement. To see that it does, we have to think about the interpretation of indices. Indices are never PF legible. Let us assume that they have to be LF legible. Following Heim and Kratzer (1998), let us suppose furthermore that indices can be interpreted at LF as either binder indices (λ-operators) or variables, depending on their syntactic position. In the structure of
(15), the index on [telic] can be parsed as a separate head and can then be interpreted as a binder index (\(\lambda\)-operator). What about the index of the DP *the Matterhorn*? If indices are features, the index of a DP has to be projected from the index of the D that heads it via the usual process of feature percolation. Indices can no longer be assigned to whole DPs by some special indexing mechanism. They must originate with lexical items—determiners in our case. But indices that are bundled with determiners are not interpretable; that is, they are not LF legible. It seems, then, that this situation forces displacement of DPs. The DP moves, leaving a part of its determiner (the index and possibly other features) behind. If we assume a copy theory of movement, displacement has the effect that the lexical and feature content of a DP is distributed over two positions. In a first step, the DP is copied into the higher position. In a second step, parts of the original and/or the copy are deleted. In our case, LF legibility for the index feature of the DP *the Matterhorn* forces that feature to be left behind in the base position, where it can be interpreted as a “trace”; see (16). Trace theory, then, falls out from the copy theory of movement.

(16)

```
(16)

The
Matterhorn
[acc]     [acc]_1
         VP
           1 climb-
```

After deletion of the uninterpretable nominal [acc] feature via agreement, the result is the structure in (17), which can be interpreted with standard techniques.

(17)

```
(17)

The
Matterhorn
[acc]_1
           VP
             1
```

Being a binder index, the index of [acc] in (17) binds the index left in the base position of the direct object. As desired, the structure in (17) is a constituent that denotes a relation between individuals and events. In our example, that relation is identical to the denotation of *climb*.

We have now seen how the semantic requirement that [telic] operate over a constituent denoting a relation between individuals and events can be syntactically encoded by the presence of an index feature that comes with [telic]. This is one way
of saying that [telic] has an EPP feature or a D-feature. Presence of an index feature on [telic] forces the presence of a matching index feature on any DP that wants to agree with it. For that last feature to be LF legible, however, the DP that carries it has to split in two, leaving the index feature (and possibly other features of its determiner) behind.

After going through this derivation of the LF representation in (17), we might wonder whether optimal design considerations might not favor a simpler derivation that directly starts out with the structure in (16). In (16), the object position of the verb is saturated with an index feature and possibly other agreement features. Technically, what we have done, then, is fill the verb’s argument position with what looks just like object agreement morphology. This is the minimal way of realizing an argument, hence the minimal way of satisfying the thematic requirements of a verb.\textsuperscript{18} The full DP the Matterhorn could now be placed directly into the specifier position of verbal [acc] (= [telic]). No copy or deletion operations would be necessary. I will have to leave serious exploration of this possibility for future work.

In this section, we have seen evidence that the syntactic construction of telicity is not only desirable, but—even more importantly—also feasible, both syntactically and semantically. An uninterpretable nominal feature [acc] can be checked (hence “licensed”) by a matching interpretable verbal feature that requires the events described to culminate with respect to the direct object referent. We are now ready to return to the alternations in Finnish that were the main motivation for the analysis presented in this section. I will pursue the consequences of my analysis for German (and to a limited extent for English) in sections 14.4 and 14.5.

14.3 Reanalyzing Finnish

When taking a second look at the Finnish alternations, I suggest we separate out the NP-related cases of partitive case, which means giving up Kiparsky’s unified account of partitive direct objects. There are a number of reasons for such a move. In Finnish, bare indefinite plural and mass objects always have partitive case, regardless of the verb. Kiparsky subsumed those occurrences of partitive under the semantic property of unboundedness of the relevant VP. However, Kiparsky’s unification is not without problems. Many languages, including earlier stages of Finnish, only have the NP-related partitive (Kiparsky 1998). Moreover, partitive case in Finnish is generally used for the objects of prepositions (Vainikka 1989) and in some other environments. Finally, Finnish partitive shows up DP-internally, as in (3b), repeated here.

\begin{enumerate}
\item[3b.] Ammu-i-n \quad kaksi \quad karhu-a.
\begin{verbatim}
shoot-PAST-1SG two-ACC bear-PART
\end{verbatim}
\end{enumerate}

‘I shot two bears.’
‘I shot the two bears.’
Not all occurrences of partitive can be straightforwardly subsumed under the VP-unboundedness account, then. Since partitive occurs DP-internally as in (3b), it is plausible to assume that NP-related partitive is in fact an instance of a DP-internal partitive. There would then be an unpronounced D bearing either partitive or accusative case, you can’t see which. DPs with unpronounced Ds are known to be restricted to governed positions in Romance. Finnish NP-related partitives are confined to VP-internal positions according to Kiparsky (1998), a generalization that is likely to be covered by whatever explanation is given to the distribution of Romance bare nouns. The presence of an unpronounced D would also explain the otherwise odd fact that in (18), an accusative DP seems to be conjoined with a partitive one.

(18) Ost-i-n lehde-n ja kirjo-j-a.
\[\text{buy-PAST-1SG newspaper-SG } \text{ACC and book-PL-PART}\]
‘I bought the/a newspaper and books.’
(Kiparsky 1998, 275)

After discarding the NP-related partitive, we can see the link between case and aktionsart more clearly: roughly, telic verbs take accusative objects, and atelic verbs take partitive objects.

(19) Telic


Atelic


(Kiparsky 1998, 281)

Many Finnish transitive verbs can have accusative or partitive direct objects, though, with a slight change in meaning. The alternation between (3a) and (3b), repeated here, is representative of this phenomenon.

(3) a. Ammu-i-n kah-ta karhu-a. Partitive
\[\text{shoot-PAST-1SG two-PART bear-PART}\]
‘I shot at two bears.’
‘I shot the two bears.’

b. Ammu-i-n kaksi karhu-a. Accusative
\[\text{shoot-PAST-1SG two-ACC bear-PART}\]
‘I shot two bears.’
‘I shot the two bears.’
Cases like (3) were the main motivation for the denotations of stems for accomplishment verbs I proposed earlier. Apart from alternations that look like typical conative alternations, we also find resultative alternations, as in (20), and the use of partitive to induce an ongoing event interpretation, as in (21).

(20) a. Jussi maalas-i talo-n (punaise-ksi).
   Jussi-NOM paint-PAST(3SG) house-ACC (red-TRANSL)
   ‘Jussi painted the (a) [whole] house (red).’

   Jussi-NOM paint-PAST(3SG) house-PART (red-TRANSL)
   ‘Jussi was painting the (a) house (red).’
   (Kiparsky 1998, 292)

(21) a. Tapo-i-n juuri karhu-a.
   kill-PAST-1SG just bear-PART
   ‘I was just killing the bear.’

b. Matti ost-i (juuri) auto-a, (kun . . .)
   Matti buy-PAST(3SG) (just) car-SG(PART) (when . . .)
   ‘Matti was (just) buying a car, (when . . .)’
   (Kiparsky 1998, 289)

The alternations in (20) and (21) are expected under the current perspective. They are no longer cases of “coercion.”

When the direct object of a verb is an indefinite “bare” plural or mass NP, we cannot tell whether it has accusative or partitive case, assuming that there is an unpronounced determiner. In (22), for example, that determiner would have accusative case for reading (a), and partitive case for readings (b) and (c).

(22) Hän kirjoitt-i kirje-i-tä.
   he/she write-PAST(3SG) letter-PL-PART
   a. ‘He wrote letters (. . . and left).’
   b. ‘He was writing letters (. . . when I came).’
   c. ‘He was writing the letters (. . . when I came).’
   (Kiparsky 1998, 272)

Vainikka (1989) characterizes accusative in Finnish as a case that “has a very narrow distribution” (p. 147). It only occurs with telic verbs. For Vainikka, accusative case “is literally assigned by a specific head (or feature)” (p. 156). This limited distribution is explained if [acc] on nouns is in fact the uninterpretable version of [telic]. While a semantic interpretation for DP-internal partitive in terms of ‘part of’ is conceivable, it is hard to see how all occurrences of partitive could be given a common interpretation. Vainikka thus considers partitive case a structural “default” case. Within the current framework, this would mean that Finnish [part] is unin-
interpretable. Like [acc], [part] would be both a verbal and a nominal inflec-
tional feature participating in agreement relations between nouns and verbs.

To prevent partitive from taking over as the only objective case, a principle along
the lines of (23) would have to be posited.

(23) Maximize Interpretability.

Suppose (23) is interpreted in such a way that it forces speakers of Finnish to pick
accusative case for the direct object, unless the resulting interpretation would clash
with what they intend to say. Partitive should now be used whenever a commitment
to culmination is to be avoided. With verb stems that already imply culmination,
accusative should be obligatory. There is no way of avoiding a commitment to cul-
mination with those verbs. According to Kiparsky, the Finnish counterpart of an
achievement verb like *win* cannot take partitive direct objects.\(^{19}\)

(24) #Matti voitt-i kilpajuoksu-a.
   Matti win-past(3sg) race-part
   ‘Matti was winning the race.’
   (Kiparsky 1998, 290)

If there is a principle like (23), it should not be a principle that merely holds for
Finnish. In the best of all possible worlds, it would be a universal principle. Suitably
interpreted, we expect it to play a role in language acquisition. Granting (23) a role
in acquisition generates predictions about languages that, unlike Finnish, do not
have two structural objective cases. In the remainder of this chapter, I will investigate
some of those predictions for German, keeping in mind the English situation as well.

### 14.4 German Is Not Russian

A child learning German will only encounter a single structural objective case. His
first task is to identify the case he finds. Suppose the child is equipped with a univer-
sal set of possible case meanings: a few linked to particular thematic relations like
beneficiary, possessor, and so on; one related to telicity; and possibly some others.
Direct objects do not have a common thematic role in German.\(^{20}\) The nominal ac-
cusative feature should be uninterpretable, then. Since uninterpretable features must
be checked, a matching verbal feature is required. This feature could in principle be
interpretable or uninterpretable. What role might Maximize Interpretability play in
guiding a child toward one or the other option? Suppose Maximize Interpretability
forces a child to pick [telic], rather than uninterpretable verbal [acc], unless he finds
evidence that is incompatible with such a choice, assuming general principles of syn-
tactic organization he brings to the task. To see what relevant counterevidence might
look like, let’s switch to Russian.
A child learning Russian will find out before long that the telicity of Russian verbs is predictably linked to a set of prefixes. Verbs without such prefixes are typically atelic. He will also notice that the difference in telicity does not affect the case choice for direct objects. Accusative case appears with objects of telic and atelic verbs alike. Moreover, as in German, nominal accusative does not seem to be linked to any particular thematic role in Russian, hence should be uninterpretable. Suppose now that general principles of grammar construction tell the child to look for a verbal feature that can check instances of nominal [acc], preferably in a uniform way. Suppose he picks [telic]. That feature is compatible with prefixed transitive verbs in Russian, just as it is compatible with Finnish achievement verbs. It is redundant, but doesn’t create trouble. When combined with prefixless transitive verbs, however, [telic] would immediately render them telic, contrary to what the child observes. He should therefore pick uninterpretable verbal [acc] to check the uninterpretable case feature of direct objects. We will see shortly that, in spite of superficial similarities between Russian and German verbs, the German child finds himself in a very different situation. As a result, he will be pushed to choose the Finnish option for checking the case of direct objects.

At first glance, German verbs do not look too different from their Russian counterparts. As in Russian, simplex verbs often have atelic uses and usually come with a large number of different prefixes. The prefixes often render the verb transitive and telic. Consider schreiben ‘write’.

(25) a. Das Blatt beschreiben.
   ‘Cover the page with writing.’
   the page be-write

b. Die Tinte verschreiben.
   ‘Use up the ink by writing.’
   the ink ver-write

c. Die Eltern anschreiben.
   ‘Write to the parents.’
   the parents an-write

d. Den Aufsatz abschreiben.
   ‘Copy the article.’
   the article ab-write

e. Die Abkürzungen ausschreiben.
   ‘Write out the abbreviations.’
   the abbreviations out-write

The superficial impression that German and Russian are alike in the way they use prefixation to mark telicity is elusive, however. The very same prefixes we see in (25) also appear with atelic verbs.
(26) *Beobachten* ‘observe’, *beinflussen* ‘influence’, *behindern* ‘disable’,
    *vernachlässigen* ‘neglect’, *verschonen* ‘spare’, *verneinen* ‘deny’, *anbeten* ‘adore’,
    *anschreien* ‘yell at’, *anlocken* ‘attract’, *abschrecken* ‘deter’, *sich abquälen* ‘struggle (with something)’,
    *abschweifen* ‘digress’, *aushalten* ‘endure’, *sich ausdehnen* ‘expand’, *ausstehügen* ‘be posted’,

The verbs in (26) are no lonely exceptions. Even though there are some German prefixes that are linked to telicity, there is no strong correlation between telicity and verb prefixation once we look at the class of German verbs as a whole. In contrast to his Russian cousin, then, a German child does not find systematic overt carriers of telicity in the data he hears. So far so good, but does this difference help us with our search for a verbal head that could check nominal [acc]? Not yet. Suppose the German child picks [telic]. We would then seem to predict that all transitive verbs should end up telic in German, and this prediction looks as wrong for German as it was for Russian.

There is another difference between Russian and German, however, that we have to pay attention to when thinking about the kind of data that a German child is likely to encounter. As illustrated by (27c), Russian has a compositional suffix (*yv*) any,

(27) a. *pis-a-t’* ‘to write’
    b. *pere-pis-a-t’* ‘to write over, copy’
    c. *pere-pis-tyva-t’* ‘to write over, copy’

(28) (Smith 1991, 299)

In (27c), the imperfective operator carried by the suffix (*yv*) any could “neutralize” the culmination implication of a predicate with a telic prefix when it takes scope over it. When we claim that Bartelby is copying a legal brief, for example, we say that there will be a complete copy at some point—not necessarily in the actual world, but at least in a range of reasonably close possible worlds. Filip (2000) argues that the Russian imperfective suffix (*yv*) any is a piece of inflectional morphology, whereas the prefixes linked to telicity are derivational. This automatically places the imperfective operator in a higher position. Higher imperfective operators, then, can take telic predicates and map them into predicates that closely mimic the behavior of atelic ones.

Imagine now a language with the following properties: In contrast to Russian, it doesn’t have any systematic overt markers of telicity. Like Russian, it has a higher imperfective operator, but unlike its Russian counterpart, that operator is nonovert. A child who is exposed to such a language should be able to pick [telic], hence interpretable verbal [acc], to check the nominal [acc] feature of direct objects without encountering obviously conflicting evidence. The fact that not all verbs behave like
telics is no longer a problem. Since the child has an unpronounced higher imperfective operator in his toolkit, he merely has to posit such an operator to instantly undo the effect of a lower [telic] and thus achieve a close enough (not necessarily perfect) match with the facts he observes. I want to argue that German might very well be a language of this kind.

We have already seen that, as a class, German verbs are not overtly marked for telicity in any systematic way. Our next task is to find evidence that German does in fact have an unpronounced higher imperfective operator. This is not too hard to do. First, look at (28a–c).

(28) a. Er soll morgen einen Berg besteigen.
   he should tomorrow a mountain climb
   ‘He is supposed to climb a mountain tomorrow.’

b. Sie soll heute Handschuhe stricken.
   she should today mittens knit
   ‘She is supposed to knit mittens today.’

c. Du sollst heute Abend einen Hummer verspeisen.
   you should today evening a lobster consume
   ‘You are supposed to consume a lobster tonight.’

The verbs in (28) are typical accomplishment verbs. Copying a technique from Streitberg 1891, I embedded those verbs under a root modal. This makes it possible to avoid the possible impact of higher inflectional operators that might obscure the properties of the verbs and verbal [acc]. Each verb is also accompanied by a temporal adverbial that gives us a reference time. The embedded infinitival clauses in (28) all imply culmination of the activities described by the verb during the time picked out by the temporal adverbial. The man in (28a) doesn’t do what he is supposed to do if he doesn’t get anywhere near the top of a mountain tomorrow. The woman in (28b) doesn’t do her duty if, by the end of the day, there aren’t any mittens she has knit; and if you want to obey (28c), you can’t save half of your lobster for lunch tomorrow. The verbs in (28), then, cannot get an ongoing event interpretation with respect to the respective reference times.

The verbs in (28) are part of bare infinitival complements, hence do not project a full hierarchy of inflectional heads. As soon as we examine finite clauses, we can detect the possible presence of a nonovert imperfective operator. Here is an illustration:

(29) Bilingual cell phone conversation

   You: What are you doing (right now)?
   I: Ich besteige (gerade) den Mount Monadnock.
      I climb (right now) the Mount Monadnock
      ‘I am climbing Mount Monadnock (right now).’
In (29), the reference time for my utterance is the time of your question. What I am saying in my reply to you is that I am climbing Mount Monadnock; that is, an event of climbing Mount Monadnock by me is in progress at the reference time. The event described by the verb in (29), then, is allowed to be in progress at the reference time.

To have a concrete proposal, a possible denotation for the German nonovert imperfective aspect operator would look as follows:\textsuperscript{24}

\[(30) \lambda P. \exists e [P(e) \& t \subseteq \tau(e)] \quad \text{Imperfective (viewpoint) aspect}\]

Here is the effect of (30) on my reply in (29). The operator in (30) creates a property that is true of any time \(t\) just in case \(t\) is properly contained in the time of a successful climb of Mount Monadnock by me. This property is then applied to the reference time for (29), which is thereby required to be a proper part of my climb. As a result, my climb is represented as an ongoing event.

According to (30), the imperfective operator should not successfully combine with achievement verbs that describe instantaneous events. There is no way for those events to be in progress. By the time one talks about them, they are already a matter of the past. This seems to explain the anomaly of (31).

\[(31) \text{Sie können jetzt nicht mit Goethe sprechen. #Er stirbt.} \]
\[\text{‘You can’t talk to Goethe right now. He is dying.’}\]

(30) correctly predicts that speakers of German are still committed to culmination when using nonovert imperfective operators with accomplishment verbs. The crucial point is that while culmination \textit{at some time} is implied in (29), culmination does not have to occur during the reference time. To see this more clearly, we have to examine past tense cases. You will not call me a liar if, in spite of good intentions, I did not manage to reach the summit of Mount Monadnock after having said what (29) reports. Somehow, such cases never go to trial. Consider the following example, then:

\[(32) a. \text{Wieland saß damals (gerade) im Gasthaus und verspeiste einen Hummer.} \]
\[\text{‘Wieland was sitting in the pub then and was consuming a lobster.’}\]

\[b. \text{#Er hätte bestimmt mehr als nur ein paar Bissen gegessen, wenn ihm ein übereifriger Kellner nicht den Teller weggenommen hätte.} \]
\[\text{‘He would certainly have eaten more than a few bites if an overzealous waiter hadn’t taken his plate away.’}\]
Sentence (32a) zooms in on a particular contextually salient past situation: Wieland is sitting in a pub, consuming a lobster. Wieland’s action is still in progress at the time we are looking at, which can be emphasized by the use of gerade, which forces the presence of the imperfective operator. Sentence (32b) fills the reader in on what happened in the end. The lobster wasn’t consumed. As a continuation of (32a), (32b) sounds slightly odd and seems to be not quite in line with what was said before. Knowing what happened, the writer should have used a phrase corresponding to wanted to consume a lobster. The implicit imperfective operator that seems to be available in German, then, is different from the English progressive operator, which is a modal operator, allowing the events described to develop and culminate in merely possible worlds (Dowty 1979). It is conceivable that the overtness of the English imperfective operator allows it to include a modal component.

I conclude that there is a nonovert imperfective operator in German. We have learned moreover that that operator must be located above the verbal [acc] head, since, as shown by the embedded infinitives in (28), accomplishment verbs can project verbal [acc] without allowing an ongoing event interpretation. Once a full hierarchy of inflectional heads is projected, an accomplishment verb can always get an ongoing event interpretation in German. German, then, is a language that has an unpronounced imperfective operator that is located above verbal [acc] (= [telic]). Given that it is also a language where, as a class, verbs are not overtly and consistently marked for telicity, a German child is expected to pick [telic], rather than the uninterpretable version of verbal [acc]. Maximize Interpretability would force that choice since it would not conflict with the evidence the child encounters. Non-overt higher imperfect operators operating over [telic] could instantly create predicates that closely mimic the properties of initially atelic VPs. The following section will argue that the picture I painted in this section is not just a possibility. There is direct evidence that verbal [acc] is in fact interpretable in German, hence identical to [telic]. As in Finnish, then, the telicity of German accomplishment verbs is syntactically constructed with the help of unpronounced [telic]. The connection between telicity and accusative is as tight in German as it is in Finnish. It’s not as visible, though.

14.5 German as Finnish without Partitive

A major prediction of the claim that the telicity of German accomplishment verbs is syntactically constructed with the help of unpronounced [telic] is that the culmination requirement enforced by [telic] should be absent if we manage to catch an accomplishment stem below the point where [telic] can appear. Suppose [telic] is an inflectional head right above VP. A good way of testing the hypothesis that German accomplishment verbs are not telic from the start would be to examine compositional
verbal compounds that involve Vs that have not been able to project beyond VP. Compounds with the prefix *weiter* seem to provide the right test cases. They attach to stems that do not yet have whatever it takes to license an accusative direct object. This is shown by the existence of nominalizations like *das langsamer Weiterbesteigen des Berges* ‘the slow on-climbing of the mountain’. In these nominalizations, the direct object of the verb *besteigen* ‘climb’ can only have genitive case, indicating that whatever verbal inflectional head licenses (and forces) accusative case for direct objects is not yet available when *weiter* enters the derivation. Consider now the following examples:

(33) a. Wir konnten den Berg *weiter*besteigen.
   we could the mountain on-climb
   ‘We could continue to climb up the mountain.’

b. Wir konnten die Strasse *weiter*überqueren.
   we could the street on-cross
   ‘We could continue to cross over the street.’

c. Wir konnten das Geschenk *weiter*auspacken.
   we could the gift on-unwrap
   ‘We could continue to unwrap the gift.’

d. Hans konnte die Suppe *weiter*essen.
   Hans could the soup on-eat
   ‘Hans could continue to eat the soup.’

The effect of the prefix *weiter* is to state that the activity described by the verb it operates over continued. The VP *die Suppe weiteressen*, for example, describes eating events that are continuations of earlier nonculminating eating events, that is, events in which the soup was not yet consumed. The embedded verbs in (33a–d) are all typical accomplishment verbs. The traditional tests classify them all as prototypical cases of telics.25

(34) a. #Wir haben den Berg *tagelang* bestiegen.
    we have the mountain for-days climbed
    ‘We climbed the mountain for days.’

b. #Wir haben die Strasse *stundenlang* überquert.
    we have the street for-hours crossed
    ‘We crossed the street for hours.’

c. #Wir haben das Geschenk *stundenlang* ausgepackt.
    we have the gift for-hours unwrapped
    ‘We unwrapped the gift for hours.’

d. #Hans hat die Suppe *stundenlang* gegessen.
   Hans has the soup for-hours eaten
   ‘Hans ate the soup for hours.’
In (34a–d), the presence of a durational adverb produces an interpretation where repeated *culminated* actions are being described. In the case of (34d) in particular, the actions thus described may be a bit unusual; hence, the sentences might feel slightly deviant.

If the culmination condition was already imposed at the point where *weiter* enters the derivation, it is hard to see why, say, *den Berg weiterbesteigen* means ‘to continue to climb up the mountain’. The culmination requirement, then, is not there in those cases. Its absence cannot be explained by the presence of infinitival morphology, since infinitival morphology all by itself does not affect the culmination requirement, as shown by (28a–c).\(^\text{26}\) If the stems accomplishment verbs are built from only imply culmination after [telic] has been attached, the facts in (33) are as they should be.

In compounds with *weiter*, typical accomplishment verbs behave exactly like activity or process verbs.

you can the parking area on-guard
‘You can continue to guard the parking area.’
b. Du kannst mich weiteranschreien.
you can me on-at-yell
‘You can continue to yell at me.’

On the other hand, achievement verbs cannot combine with *weiter*, as illustrated in (36).\(^\text{27}\) They yield a deviant interpretation when *weiter* is attached.

(36) a. *Wir müssen die Suppe weiteraufessen.
we must the soup on-up-eat
‘We must continue to eat up the soup.’
b. *Wir müssen das Buch weiterauslesen.
we must the book on-finish-read
‘We must continue to finish reading the book.’
c. *Wir müssen das Spiel weitergewinnen.
we must the game on-win
‘We must continue to win the game.’

If achievement verbs are built from stems that already imply culmination, it’s expected that they shouldn’t be able to combine with *weiter*. You cannot continue activities that are already completed.

We have now seen some evidence confirming that German accomplishment verbs do not start out as telic. They are born as atelics. In contrast to achievement verbs, their telicity is syntactically constructed. The *weiter + verb* compounds we encountered above continue to behave like process/activity verbs after *weiter* has been attached, and that means that the accusative case of their direct objects has to be
licensed in whatever way the accusative case of other transitive process/activity verbs is licensed. Our account so far says that if verbs have accusative objects, there must be [telic], and consequently, a culmination requirement is eventually imposed. This allows [telic] to combine with a large class of VPs. There is still a large class of verbs, however, that cannot seem to combine with [telic] on the current account.

Consider the VP *schlep your suitcase*. When you schlep a suitcase, the part structure of the suitcase does not provide a suitable measure for the success of your action. More importantly, suitcases that are being schlepped do not provide bounds for whatever possible measures of success there are, like the paths traveled or the schlepping times. Bounds for those measures have to be expressed by separate measure phrases, as in *schlep your suitcase fifty yards* or *schlep your baby for two hours*. Let us investigate, then, what happens when transitive process or activity verbs appear with a durational adverbial, as in (37).

(37) Ich muss einen Tag (lang) deinen Koffer schleppen.
    I had to one-acc day (long) your-acc suitcase schlep
    ‘I had to schlep your suitcase for one day.’

If a verb is modified by a measure or degree phrase, it is that very phrase that provides the measure for the success of the event. (37) as a whole, then, is a telic construction where the phrase that provides the upper bound for the relevant scale is a measure phrase, rather than the direct object. Wechsler and Lee (1996) speak of “situation delimiters” in those cases. As Wechsler and Lee emphasize, it cannot be an accident that many languages use accusative case for measure and degree phrases, but not for other kinds of adjuncts.

When degree or measure phrases modify a VP in German, the whole construction becomes a multiple object construction. Unlike in English, the syntax of measure phrases and other circumstantial adverbials is fairly straightforward in German. Scope relations are transparently reflected in the surface lineup. This is shown by the following example:

(38) Ich musste einen Monat lang jeden Tag eine Stunde Koffer schlepappend.
    I had to one-acc month long every day one hour one-acc suitcases schlep
    ‘I had to schlep suitcases for one hour every day for one month.’

In (38), the order of circumstantial adverbials is fixed with respect to each other, and with respect to this kind of direct object, which is a weak indefinite. Any other order is unacceptable. The order we find in German is the one we expect from the point of view of LF legibility. The English order needs to be explained—a project I cannot pursue here.

We can now tentatively posit the structure in (39) for the lower portion of sentence (37).
The structure in (39) is a two-headed shell structure. The direct object *deinen Koffer* ‘your suitcase’ is in the specifier position of the verb *schleppen*. Following Morzycki’s program of Mediated Modification (2001, in preparation), the measure phrase *einen Tag* ‘one day’ is placed in the specifier position of a functional head, which I assume to carry the interpretable feature [durative].

The measure phrase itself is assumed to carry the uninterpretable version of the same feature, which might stay unpronounced or might be spelled out as the postposition *lang* (literally ‘long’) under conditions that do not have to concern us here. The fact that measure phrases are accusative marked in many languages suggests that their case is a candidate for nominal interpretable [acc]. German inherently delimiting DPs would then carry semantic case. That they do is shown by the fact that they remain accusative marked in passive and unaccusative constructions.

Agreement with the accusative measure phrase in its specifier position makes it possible for the durative head to carry an instance of uninterpretable [acc] in addition to [durative]. The direct object *deinen Koffer* can now in turn enter an agreement relationship with that head. I am assuming that DPs that are not durational phrases are not the kind of category that can have the feature [durative]; hence, agreement between the durative head and the direct object *deinen Koffer* can be established on the basis of [acc] alone. The checking relations are now as follows: uninterpretable [acc] on the direct object *deinen Koffer* can be checked via agreement with uninterpretable [acc] on the durative head, and that feature in turn can be checked via agreement with the interpretable [acc] feature of the measure phrase. We have a phenomenon of ‘telic concord,’ then, that looks very much like the more familiar phenomenon of negative concord.

After deletion of all uninterpretable features, the meaning of the relevant part of sentence (37) can be derived as follows:

(40)  
\[
\text{deinen Koffer schleppen} \quad \lambda e \text{schlep(your suitcase)(e)}
\]

\[
\lambda P \lambda e \left[ P(e) \land e = \sigma e' \left[ P(e') \land e' < e \right] \right]
\]

\[
\lambda e \left[ \text{schlep(your suitcase)(e)} \right] \land e = \sigma e' \left[ \text{schlep(your suitcase)(e')} \land e' < e \right]
\]
Subevents of an event $e$ cannot last longer than $e$ itself, and that means that duration is monotonic with respect to the part-whole structure of events generated by $\leq$. Following the reasoning in Schwarzschild 2002, this monotonicity property is what seems to force modification of VPs by durational phrases to be mediated by inflectional heads that eliminate atomic events from the original VP denotation. Applied to the VP in our example, the feature [durative] creates a property that is true of any event that is a schlepping of your suitcase and is made up of proper subevents of the same kind. The denotation of the durational phrase in (37) can be computed as follows:

\[
(41) \quad \text{1 day} \quad \lambda t \text{1day}(t)
\]

\[
\begin{align*}
\text{[acc]} &= \lambda Q \text{Q}\text{e}(\tau(e)) \\
\text{[acc]} &= \text{1day}(\text{e}(\tau(e)))
\end{align*}
\]

1 day denotes a property of times that is true of any time interval just in case it lasts for one day. The nominal interpretable feature [acc] applies to properties of times and produces a property of events that last one day. Putting all the pieces together, the structure in (39) describes events of schlepping your suitcase that last one day.

An interesting consequence of the account of durational adverbials adopted here is that it does not prevent those adverbials from operating over telic VPs, as long as those VPs do not denote quantized properties of events. We therefore expect VPs that are built from a telic verb and a bare plural accusative object to be compatible with higher durational adverbials, while at the same time implying culmination. Example (5a) has already shown that this expectation is borne out.

(5) a. Sie hat tagelang Fausthandschuhe gestrickt.
   ′She knit mittens for days.′

Even though it implies culmination, the constituent consisting of [telic] and the VP ‘knit mittens’ denotes a nonquantized property of events, hence can in turn combine with [durative].

What the VP ‘knit mittens’ cannot do, however, is use [durative] to license the accusative case of its direct object, thus getting around the culmination requirement. Quite generally, the direct objects of certain initially atelic VPs cannot have their [acc] feature checked by any other head but [telic]. VPs headed by verbs of creation are in this category, for example, but so are VPs like climb Mount Monadnock. Those VPs cannot choose to stay atelic by skipping [telic] and picking [durative] instead. Why is that? We cannot simply invoke Maximize Interpretability as we did for Finnish. For speakers of German or English, too, the wish to avoid a commitment to culmination should be a legitimate reason to pick uninterpretable [acc] over [telic] to license the accusative of a direct object. There is a difference between the Finnish and the German or English situation, however. Suppose a minimal VP corresponding to
climb Mount Monadnock is being built. As soon as the direct object has been introduced, the question of how its case feature is to be checked comes up. Speakers of Finnish have a choice between [telic] and uninterpretable [partitive] at that point. The choice has an impact on interpretation, but the impact is local and only affects the meaning of the VP that has just been built. If speakers of German or English chose uninterpretable [acc] to check the accusative case feature of the DP Mount Monadnock in the VP climb Mount Monadnock, they would have to commit themselves to introducing a durational phrase, too, assuming, as we have, that the uninterpretable [acc] feature on [durative] must be checked by the interpretable [acc] feature of a durational phrase. In German or English, then, choosing uninterpretable [acc] to check accusative on a direct object carries a commitment to a future phase in the derivation. If we assume that that kind of look-ahead is dispreferred and only allowed as a last resort, it follows that in German or English, [telic] must be used to check accusative case features of direct objects whenever possible. We now correctly predict that climb Mount Monadnock for ten years describes pluralities of culminated events of climbing Mount Monadock.

There is still a problem, however. Look at the difference between (42a) and (42b).

(42) a. He climbed Mount Monadnock for ten years.
   b. He examined the patient for thirty minutes.

Why can (42a) only describe pluralities of culminated events of climbing Mount Monadnock, whereas (42b) can also describe a single, possibly incomplete, physical exam? The behavior of examine we see in (42b) is shared by all verbs listed earlier in (10). We have, for example:

(43) a. He roasted the pig for five hours.
   b. I cleaned the house for five hours.
   c. You explained the painting to us for five hours.

Sentences (43a–c) can all be true of singular actions that lasted for five hours and might not have culminated. There is a difference between verbs like examine, roast, clean, explain, then, and verbs like climb, eat, cross, knit, whose transitive uses imply culmination. Where could that difference come from if both types of verbs are built from atelic stems?

The difference seems to boil down to the fact that the direct object referents of examine-type verbs do not provide upper bounds for whatever scales might be associated with them. When doctors examine patients, the patients’ bodies, say, do not define what it means to complete the job. The doctors might have to take a closer look at an ear, listen one more time to a heartbeat, or perform yet another battery of tests. When you clean a house, completion is again not necessarily a matter of cleaning all of its parts. The degree of cleanliness may play a role, too. When a museum guide explains a painting, there is more to it than covering all of its relevant
parts. And when a pig is being roasted, there isn’t an obvious final stage it has to reach. Examine-type verbs cannot combine with [telic], then. They are in the same situation as run-of-the-mill atelic verbs in that respect. They must find an alternative way of checking the uninterpretable case feature of their direct objects. Nonovert measure or degree phrases are obvious solutions, since they have to be posited in other areas of the grammar, too. The projections of gradable adjectives like tall, for example, are usually assumed to contain a possibly nonovert degree phrase providing a standard value for tallness. On the current account, nonovert measure or degree phrases would be necessary whenever transitive verbs are not delimited by their direct object or an overt measure or degree phrase. In the absence of contextual information providing a standard value, an indefinite degree or measure phrase would have to be posited, requiring no more than some amount of schlepping your suitcase for the VP schlep your suitcase, for example. Like durational adverbials, nonovert measure or degree phrases carry interpretable accusative case features and can thus participate in telic concord and help with checking the uninterpretable [acc] feature of nondelimiting direct objects of transitive verbs.

According to the analysis I am proposing, then, all events that are describable by the lower portions of a transitive verb’s extended projection have to be delimited overtly or covertly in German, since accusative is the only objective case in the language. An important consequence of having obligatory delimiters is that their presence seems to exclude talk about ongoing events at that stage of the syntactic derivation. As has often been observed, atelic VPs like schlep your suitcase resemble mass nouns in that whenever they are true of an event, they are also true of all of its subevents. Those VPs have the subevent property, then. The introduction of a delimiter creates a predicate that no longer has the subevent property. Interestingly, and for reasons I cannot go into here (see Zucchi and White 2001), the subevent property does not survive even if the delimiting phrase is an indefinite like some time, some distance, some amount, a little bit, or the like. There is something wrong with the sentence I played the violin a little bit for five months, for example. As soon as initially atelic VPs are delimited, then, they seem to describe maximal, hence completed, events of the relevant kind. To represent events as only partially realized—and thus still in progress during the reference time—an imperfective operator has to be introduced in the next phase of the derivation. If that operator was overt in German, we would actually see that run-of-the-mill atelic VPs come with possibly nonovert delimiters. Luckily, English happens to be a language that has an overt imperfective operator. For the following sentences, imagine again a cell phone conversation.

(44) a. What are you doing? I am schlepping your suitcase.
   b. *What are you doing? I schlep your suitcase.
Given that an atelic bare VP like *schlep your suitcase* has the subevent property, it is in fact quite surprising that we have to use the progressive when talking about ongoing schlepping actions. If the VP *schlep your suitcase* needs a measure or degree phrase to check the case of its object, we have a possible explanation for why (44b) is deviant.40 (44b) attempts to say that there is a maximal, hence completed, event of schlepping your suitcase at the utterance time. But then that schlepping event cannot possibly be an ongoing event. To talk about ongoing events, speakers of English must use the progressive, then, even if those events are activities or processes.

The analysis I proposed makes a rather strong prediction for unaccusatives in the relevant languages. There shouldn’t be any telic ones that are built from atelic stems. As for German, the actual prediction is that we shouldn’t find any unaccusatives that are compatible with *weiter*, but come out as unambiguously telic in the standard tests. The prediction seems to be borne out. McClure (1994) has already argued that unaccusatives in Italian are either statives or achievement verbs (see also Van Valin 1990). German unaccusatives also include verbs describing activities like *marschieren* ‘march’, *fliegen* ‘fly’, or *gleiten* ‘glide’.41 In addition, there is a large number of unaccusatives that are “degree achievement verbs” in Dowty’s (1979) terminology, a misnomer, as Hay, Kennedy, and Levin (1999) point out. Examples of degree achievement verbs are *wachsen* ‘grow’ and *fallen* ‘fall’. Degree achievement verbs combine with degree and measure phrases, of course (*grow two inches, fall ninety yards*) (see Hay, Kennedy, and Levin 1999), and are thus process/activity verbs on the present account. They are not classified as unambiguously telic by the standard tests. If they seem to imply culmination, that impression is due to the implicit presence of a degree or measure phrase specifying a standard value. The remaining German unaccusatives are statives (e.g., *bleiben* ‘stay’) or verbs built from stems that already imply culmination. That last group of verbs can be easily identified since they do not combine with *weiter*, as shown by (45a–d).

(45) a. *Sie ist weiterverreist.*
   she is on-went-on a trip
   ‘She continued to go on a trip.’

b. *Hans ist weiteraufgewacht.*
   Hans is on-woken-up
   ‘Hans continued to wake up.’

c. *Maria ist weiterertrunken.*
   Maria is on-drowned
   ‘Maria continued to drown.’

d. *Das Schiff ist weiteruntergegangen.*
   the ship is on-under-went
   ‘The ship continued to go under.’
It is time to draw this chapter to a conclusion. While many important questions remain, I have presented some rather subtle facts suggesting that the visible connection between telicity and accusative case found in Finnish might also exist in German and English. I speculated about how a German child might build a grammar that has a single objective case, and in the course of that investigation, I was able to connect a number of apparently unrelated phenomena in the area of aktionsarten, case, and viewpoint aspect. The proposal I made about the connection between telicity and accusative case in German and English generates strong predictions that I hope will inspire typological and acquisition studies even if the actual expectations should eventually be disconfirmed. Minimally, I designed a hypothetical scenario showing how superficially very different representations of case and aspect can be constructed by the minds of children working with the same grammar extraction kits.

Notes

1. (1) to (3) are from Kiparsky 1998, 267, but are arranged differently.
2. Semantic types: individuals $e$, propositions $t$, eventualities $s$, times $i$. Variables: $x_e$, $x'_e$, $e_s$, $e'_s$, $t_i$, $P_{(s,t)}$, $Q_{(i,t)}$, $R_{(e, (s,t))}$. Stems that can produce “target state adjectival passives” (Kratzer 2000) would have a state argument in addition to the event argument, and the characterization of the meaning of those verbs would have to include a target state description. I will neglect this issue here for convenience. For reasons of space, I will also not be able to go into the semantics of verbs of creation, even though verbs of creation provide the best illustrations for conative alternations in German. See Zucchi 1999 for what the major issues are and Zimmermann 1995 for a general discussion of verbs with opaque object positions.
3. Our verb denotations do not satisfy Krifka’s Uniqueness of Objects or Uniqueness of Participants, then (Krifka 1989, 1992, 1998).
4. The generalization will eventually have to be qualified in light of the discussion of measure and degree phrases below.
5. In contrast to Ramchand’s (1997) proposal, this one does not require neo-Davidsonian association of the direct object argument. See Kratzer, to appear, for discussion of this issue.
6. Terminology is confusing in the area of aktionsarten and aspect. Streitberg (1891) distinguishes between imperfective (or durative or continuitive) and perfective (or resultative) aktionsart. He argues for two types of perfective verbs: instantaneous and durative perfectives. Streitberg’s instantaneous perfectives correspond to achievement verbs, and his durative
perfectives correspond to accomplishment verbs in the now common English classification. I will use the pair telic/atelic to mark aktionsart differences—that is, differences that have to do with whether or not culmination is implied. I will reserve the pair perfective/imperfective to mark differences brought about by compositional higher aspectual operators. Those differences have to do with what I would like to call viewpoint aspect, following Smith (1991). According to the terminology I adopted, “perfective” and “imperfective” operators relate event times to the time we are talking about, the reference time. In this sense, they relate to the way events are “viewed.” See also Filip 2000 for a detailed argument in favor of drawing this kind of distinction for Slavic.

7. The modal and the position of the object make sure that the indefinite is not “specific.” Thanks to Roger Schwarzschild for pointing out the need to exclude a specific interpretation.

8. The following attempt to eliminate ‘culminate’ as a primitive was prompted by comments I received from Roger Schwarzschild rightly questioning the role the notion ‘culminate’ plays in (4).

9. The most extensive linguistic discussion of the flexibility of part-whole structures in a variety of domains is Moltmann 1997.

10. Since there is contextual flexibility with respect to part structures, it is in principle possible for you to climb up all relevant parts of a mountain without reaching the top. You could have a sufficiently big top part, for example. You could climb up that part without climbing all the way up it. The smaller a part, the harder it gets to not climb all the way up it when climbing up that part. The predicted consequences of part structure flexibility are welcome. It’s not a contradiction to claim that I climbed Mount Monadnock, but didn’t quite make it to the summit. On the approach illustrated in (8), we would attribute this judgment to a relatively coarse part structure. The volatility of part structures matches the volatility of judgments. A pedant can always push for a more fine-grained part structure, as in “No, if she didn’t reach the summit, she didn’t climb Mount Monadnock.” Flexibility in part structure only allows a little bit of tolerance with respect to the completion requirement, however, and cannot be pushed to the point where Singh’s I ate my cake today and will eat the remaining part tomorrow is accepted as noncontradictory in English (Singh 1998). The fact that corresponding perfective Hindi sentences are not contradictory suggests that [telic] may not be present in those sentences. Interestingly, perfective sentences follow an ergative case-marking pattern in Hindi, and all depends now on the status of objective case in those sentences, a very relevant issue that I unfortunately cannot pursue further within the limits of this chapter.

11. Except with indefinite bare plural or mass noun objects. See section 14.3.

12. Exceptions are indefinite bare plural and mass noun objects, of course. See section 14.3.

13. In contrast to simple accomplishment verbs, the Hindi counterparts of win and lose imply completion according to Singh (1998), along with other achievement verbs and complex accomplishment verbs.

14. See Levin 2000 for more relevant examples and discussion, and Hay, Kennedy, and Levin 1999 for a detailed examination of telic/atelic alternations with so-called degree achievement verbs. The examples in (9) do not have bare plural objects; hence, the objections to the standard tests for telicity I raised earlier do not apply here.

15. Like stricken an ‘knit at’ in (12b), work on in (13a) is a verb of creation, hence has an opaque object position. Working on a solution does not imply that there is a solution. See note 2.
16. I am neglecting at this point the possibility that verbs might enter the syntactic derivation fully inflected. If they do, those pieces of inflection would be meaningless and would have to be matched by possibly meaningful inflectional features heading their own projections within the hierarchy of inflectional heads. The essence of my account would not be affected by that possibility.

17. As usual with identifications, we do not expect index features to cover exactly the range of functions that EPP or D-features are assumed to have in the literature. They cover a large chunk of cases, though.

18. I am assuming that the thematic requirements of lexical elements have to be satisfied within their projections, and that, consequently, the lexical requirements of verbs have to be satisfied within their VPs. Otherwise, verbs and [telic] could be combined before processing direct objects, of course.

19. Maximize Interpretability is satisfied when the stems of achievement verbs combine with [telic]. It comes at the price of semantic redundancy, however, as Roger Schwarzschild (personal communication) points out. Semantic redundancy is the signature of agreement phenomena, so there must be a benefit to redundancy. In our case, the gain is that telicity is now very consistently and visibly associated with accusative in Finnish, which should help children pick up the connection.

20. See Kratzer, to appear, for arguments against a thematic role “theme.”

21. That telicity is predictably linked to a class of prefixes in Slavic does not imply that those prefixes have a compositional (i.e., predictable) semantics. See Filip 2000. If telicity is linked to prefixes in Russian, verb stems with those prefixes do not merely determine a culmination condition; they imply culmination. Russian verbs with those prefixes are then expected to behave like German achievement verbs in tests like the weiter test discussed below. After this chapter went into production, Hana Filip informed me (personal communication) that the connection between telicity and verb prefixation in Russian is not nearly as tight as the literature on Slavic suggests. If Filip is right, the actual Russian learning scenario might be not unlike the German one, except that Russian has an overt higher imperfective operator. My Russian child, then, might be a merely hypothetical child, the Emile of Slavic linguistics.

22. See Smith 1991, Filip 2000. When talking about Slavic, terminology is particularly difficult. For consistency with the terminology of this chapter, I am using the telic/atelic pair for the distinction that is marked in Russian by the presence versus absence of the relevant class of prefixes. I will label the compositional higher aspectual operator (yv)aj an imperfective operator. Implicit in this terminology is the claim that the presence versus absence of the relevant prefixes affects the culmination implication, whereas the presence versus absence of the higher imperfective operator affects the relation between event time and reference time, hence viewpoint aspect in the sense of Smith 1991. Unfortunately, this assessment of the Russian facts does not seem to be entirely compatible with the discussion of Russian in Smith 1991. I believe that the apparent conflict might be resolved, however, once we look more closely at the connection between the presence or absence of a culmination implication and the way event times are related to reference times. I will not be able to pursue this issue here.

23. In contrast to Finnish, there is a culmination implication here, even though the direct object is a bare plural. This is expected, since even if bare plurals have empty determiners in German, too, those determiners would have to carry accusative in our example. In Finnish, on the other hand, that determiner could carry partitive or accusative, hence the difference with respect to the culmination requirement.
24. The denotation (29) is modeled after Bennett and Partee 1978. The variable $t$ ranges over intervals of times, and $\tau$ is a trace function assigning to events in its domain their running time.

25. Since the direct objects are definite, the traditional telicity tests are reliable for picking out telicity.

26. Once a culmination requirement has been imposed, modalization seems to be needed to divert its impact on claims about the actual world. The to in English infinitives has a modal component (as in *the man to fix the sink*), which seems to make it possible for *He continued to climb Mount Monadnock* to produce the same kinds of meanings as prefixation of *weiter* to bare verb stems. English progressive -ing seems to exploit the same technique.

27. There is also an adverb *weiterhin*, which is acceptable with achievement verbs, but will then yield an iterative interpretation, as in *John will continue to wake up at five in the morning*. The events that are being iterated in this case are the culminated ones. According to the present account, *weiterhin* would be expected to occupy a higher position in phrase structure, so that it can affect verbs after [telic] has been attached. The usual positional tests show that *weiterhin* does indeed occupy a higher position than *weiter*.

28. Thanks to Min-Joo Kim for alerting me to Wechsler and Lee's paper.

29. See Cinque 1999, sec. 1.5, for discussion of this point. See also the remarks in Chomsky 1995, 333.

30. Morzycki uses the interpretable feature [+homogeneous], which has a slightly different denotation than my feature [durative], but the particular division of labor between functional head and measure phrase I am pursuing here was first proposed and defended in his work from a semantic point of view, following the syntactic lead of Cinque (1999).

31. As discussed by Wechsler and Lee (1996), the situation in Korean is more complicated. There are some durative adverbials that have inherent accusative. But generally, situation-delimiting adverbials show up with nominative case in passive constructions, suggesting that a verbal inflectional head is involved.

32. No displacement of the direct object is necessary in this case. It can be interpreted in situ. This consequence should in principle be detectable. Under the right conditions, the direct objects of process and activity verbs should appear lower in the tree than the direct objects of accomplishment and achievement verbs. Direct confirmation of this prediction is difficult in German; Scottish Gaelic might be a more suitable language to look at. See Ramchand 1997.

33. I am assuming that verb denotations are cumulative from the very start (Landman 2000; Kratzer, to appear). Consequently, the VP denotation $\lambda e \text{climb}(\text{Mount Monadnock})(e)$, for example, can be true of singular and plural events of climbing Mount Monadnock. Since all verb denotations start out cumulative, no *-operator is necessary to indicate initial cumulativity. The feature [durative] maps the original VP denotation into one that can only be true of plural climbs of Mount Monadnock.

34. Krifka (1998) makes related observations. However, rather than monotonicity, Krifka takes the fact that measure phrases like *two pounds* denote extensive measure functions to be the relevant property that distinguishes between *two pounds of meat* and *two carats of gold* or *two pounds of baby*.

35. The function $\tau$ is a temporal trace function that assigns to any event that has a temporal extension its temporal extension, a time interval. The metalanguage predicate ‘1day’ denotes a property of time intervals that is true of any time interval just in case it is a one-day interval.
See Schwarzschild 2002 for how to generalize this kind of denotation to other types of measure phrases.

36. The approach to telicity advocated here also seems to help with the Slavic quantization puzzles presented in Filip 2000. Since telicity itself is not necessarily linked to quantization on the present proposal, the durative head is expected to be able to operate over telic VPs that do not denote quantized properties of events.


38. According to Kennedy (1999), degree phrases are introduced by functional heads that are part of the adjective’s extended projection. Morzycki’s analysis of measure phrases is in the same spirit. According to Morzycki, measure phrases are introduced by functional heads that are part of the extended projection of verbs.

39. If the context of use provides a standard value, modification with phrases like in five hours seems to become possible, as in He roasted the pig in five hours or I cleaned the house in two days. More research is needed to figure out the exact semantics of phrases like in five hours.

40. The progressive must be used to describe ongoing events even when there is no accusative direct object. It seems, then, that an implicit delimiter has to be present in those cases, too.

41. Standard German differs from both Italian and Dutch in using the auxiliary sein ‘to be’ even in constructions like Er ist stundenlang im Kreis herummarschiert ‘He marched around in circles for hours’. The existence of the past participle construction die stundenlang im Kreis herummarschieren Soldaten ‘the for hours in circles marched around soldiers’ (meaning ‘the soldiers who marched around in circles for hours’) shows that this is not merely an idiosyncrasy of auxiliary selection. Other examples: Er ist im Wald spazierengegangen ‘He walked in the wood’, Sie ist auf und ab gesprungen ‘She jumped up and down’, Er ist hin und her geflogen ‘He flew back and forth’, Er ist stundenlang über das Eis geglitten ‘He glided over the ice for hours’. That unaccusativity is not universally linked to telicity is documented in Mithun 1991.

42. I have not addressed what happens when accomplishment verbs are passivized. While there is no overt DP that carries accusative case in English passives, accusative case might nevertheless be present, as argued by Baker, Johnson, and Roberts (1989). This would still not explain why it isn’t the delimiting argument that carries accusative case in English passives. A detailed morphological analysis of past participles is necessary to answer this question, which I have to leave open here. See Kratzer, to appear. Another important question I will have to leave for further research is what happens under negation. The objects of negated verbs have obligatory partitive case in Finnish.

References


15.1 Introduction

The Romance languages exhibit a variety of constructions comprising an infinitive or gerund as “main predicator” and a higher verb (or verb idiom) that are, in very general terms, linked to the expression of time-related notions. The higher verb is either an “aspectualizer” (i.e., a superlexical verb denoting not an eventuality but a part of the temporal structure of any eventuality, such as ‘begin’, ‘finish’; see Smith 1991 on the notion of superlexical verb) or a verb of motion or location (such as ‘go’, ‘follow’, ‘return’). Such constructions, traditionally classified as “aspectual periphrases,” are to a certain extent recursive, so that more than one higher verb can be associated with a single main predicator.¹

(1) a. Les cloches venaient de cesser de sonner. (F)
   the bells came.IMPF of cease of ring
   ‘The bells had just stopped ringing.’

   b. Torna a cominciare a cantare. (I)
      returns to begin to sing
      ‘He/She begins to sing again.’

   c. Estaba por seguir cantando. (S)
      was by follow singing
      ‘He/She was about to continue/resume singing.’

In this chapter, I will argue that periphrases distribute over at least two different levels of structure, a lower “lexical” level at which the temporal structure of the eventuality is modified (lexical or situation aspect, aktionsart) and a higher “functional” level at which nondeictic temporal relations are expressed (syntactic aspect). The evidence for this comes mainly from the relative order of periphrases and from the different nature of the constraints governing their combination. This evidence will be shown to correlate with the semantic contribution and the combinatorial behavior of the periphrases as regards the aspectual class of the main predicator, on the one hand, and tense morphology, on the other.
Though admittedly not homogeneous, the behavior of Romance periphrases differs from that of typical biclausal constructions containing an embedded or adjunct nonfinite clause on several counts. The higher/finite verb seems to be semantically defective, so that the whole construction inherits the argument structure and selectional restrictions of the main predicator. Furthermore, anaphorization patterns for the main predicator and its arguments/adjuncts are variable, and they do not coincide with those of infinitival or gerundive clauses. Some periphrastic constructions allow for “null complement” anaphora (2a); others are compatible only with ‘do it’ anaphora (2b); and still others allow for anaphoric substitution by adverbial clitics (Cat. hi, Fr. y, It. ci/vi), though only marginally so (2c). On the other hand, none of them allow for the anaphoric substitution by neutral pronouns that characterizes propositional (CP) anaphora ((2d) vs. (2e)).

(2) a. Il doit parler, mais il n’a pas encore commencé (à le faire). (F) he must speak but he not has PAS still begun (to it do) ‘He has to speak, but he hasn’t begun yet.’
   b. Il doit parler, et il va *(le faire). he must speak and he goes *(it do) ‘He has to speak and he’s going to do it.’
   c. Il devait travailler, et il s’y est mis de bonne heure. he must.IMPf work and he REFLECT Y is put of good hour ‘He had to work, and he started early.’
   d. Il voulait travailler pour vous. Il a toujours aspiré à cela. he wanted.IMPf work for you he has always aspired to that ‘He wanted to work for you. He’s always aspired to that.’
   e. *Et voilà qu’il commence/va/se met à cela. and behold that he begins/goes/REFL put to that ‘And he is starting/going to/setting out to do it.’

Most importantly, aspectual periphrases are one of the main domains for restructuring effects such as clitic climbing (3a), object agreement with mediopassives (3b), and auxiliary switch (3c).

(3) a. Lo terminaré de leer hoy. (S) it I.will.finish to read today ‘I’ll finish reading it today.’
   b. Se empiezan a conocer los detalles del accidente. REFLECT begin.PL to know the details of the accident ‘The details of the accident are beginning to be known.’
c. Ha cominciato/E cominciata a cadere la pioggia.
   has begun/ is begun to fall the rain
   ‘The rain has started to fall.’

Both syntactic restructuring and semantic transparency effects suggest that these combinations involve a monoclusal structure built around a single full lexical predicate, the main predicator. In recent years, a wealth of evidence has accumulated in favor of the monoclusal hypothesis, tending to show that restructuring phenomena are linked to the deficiency of the projection of the main predicator, which apparently lacks both a CP and a TP layer (Wurmbrand 1998). This raises the issue of the syntactic and semantic status of the higher/finite verbs in such constructions.

In recent work, Cinque (1999, 2000, 2001) proposes an answer to this much-debated question in which constraints on the relative order of periphrases play a major role. Cinque argues for a crosslinguistically invariant, highly articulated hierarchy of functional projections. The higher/finite verbs in periphrastic constructions are, according to his proposal, “functional” verbs that lexicalize a functional (aspectual or modal) head and take as arguments either lower functional projections or a VP projection. Monoclusalality is thus modeled as a single lexical projection embedded under a possibly very complex functional architecture. Relying on the widely held assumption that functional structure is rigid, the rigid order effects that seem to obtain crosslinguistically for aspectual particles and affixes, as well as for adverbials, are taken as evidence for the assumed hierarchy of functional projections. Parallel rigid order effects in the case of restructuring constructions should follow naturally, if the higher verbs of such constructions are directly inserted into the corresponding functional heads.

The proposed tentative hierarchy is reproduced in (4).


Even setting entirely aside the question of the theoretical or conceptual desirability of such a proliferation of functional heads, Cinque’s hierarchy does not provide a
satisfactory answer to the related questions of the status of periphrastic verbs and their configurational position. Indeed, the hierarchy can be shown to be descriptively inadequate, and this for reasons that deprive it of much of its purported explanatory value.

First, obvious cases of acceptable alternative orderings exist, such as those illustrated in (5) and (6).

(5)  a. Torna a stare per piangere.  
    returns to be for cry  
    ‘He/She’s again on the brink of tears.’

   b. Sta per tornare a piangere.  
    is for return to cry  
    ‘He/She’s about to cry again.’

(6)  a. Los amigos empezaron a dejar de venir.  
    the friends began to leave of come  
    ‘Friends were gradually ceasing to come by.’

   b. Dejaron de empezar a trabajar al alba.  
    left of begin to work at dawn  
    ‘They ceased to start working at dawn.’

Some of the cases of apparently nonrigid order are accommodated in the hierarchy by positing two different aspectual heads with the same expression and roughly the same content, but occupying different positions: a “higher” and a “lower” repetitive head (respectively, Asp repetitive (I) and Asp repetitive (II)), a “higher” and a “lower” inceptive head, and so on. This strategy seems to be ad hoc, and applying it repeatedly deprives the hierarchy of much of its initial attractiveness. Alternative orderings exist, they are semantically relevant, and semantic differences among them boil down to what may be expected from composition, as in the case of “normal” embedding constructions.

Second, the hierarchy is not sufficiently restrictive, since it fails to rule out a host of unacceptable combinations. Some are exemplified in (7).

(7)  a. ??Finisce di cominciare a cantare. [completive (I) > inceptive (II)]  
    finishes of begin to sing  
    ‘He/She is finishing to begin to sing.’

   b. ??Torna a stare cantando. [repetitive (I) > progressive]  
    returns to be singing  
    ‘He/She is again singing.’

   c. *Suele acabar de salir. [habitual > retrospective]  
    uses finish of go.out  
    ‘Usually, he has just gone out.’
d. *Il continue de venir de sortir. [continuative > retrospective]
   he follows of come of go.out
   ‘He continues having just gone out.’

These descriptive inadequacies are not of the sort that could be corrected with minor adjustments to the tentative version of the hierarchy given in (4). In fact, its explanatory value is undermined by the conspiracy of two factors: (i) putative aspectual heads should have to be partially ordered, so as to account for ordering options; (ii) factors alien to functional structure will have to be invoked in order to rule out combinations such as those in (7). A more satisfactory approach should be able to capture the partial ordering effects that do obtain.

15.3 Two Layers of Aspectual Periphrases

15.3.1 Rigid versus Semantically Constrained Order

The basic analogy on which the present proposal is built comes from the realm of morphology, where comparably complex patterns involving partial ordering effects are well known. The proposal comprises the two following hypotheses:

1. The relative order of aspectual periphrases is in some cases rigid and in other cases semantically constrained, thus manifesting the same difference in ordering principles that distinguishes inflectional and derivational morphology.
2. The rigidly ordered domain corresponds to syntactic aspect, and therefore to functional architecture, whereas the semantically constrained domain corresponds to eventuality modification (lexical aspect).

The distinction between rigid and potentially free ordering of affixes is traditionally viewed as one of the subsidiary criteria for distinguishing between syntactic morphology (inflection) and lexical morphology (derivation) (see Scalise 1988; Anderson 1992). The ordering of inflectional affixes is fixed and/or semantically irrelevant: it can be assumed to mirror the ordering of functional categories in the architecture of the projection. In contrast, the relative order of derivational affixes is potentially free and semantically relevant. It reflects the order of derivational operations on a base, even if a host of factors conspire to make alternative orderings in derivational morphology extremely rare. Derivational affixes and/or the semantic operations of which they are an exponent impose a number of constraints on their bases, so that the exclusion of a given ordering can be explained by the intrinsic properties of the elements involved, in particular by the properties of categorial and semantic selection that prevent them from combining with certain bases (together with a number of much more complex factors restricting lexical productivity).

Furthermore, it is well known that inflectional affixes are peripheral (farther from the root) in comparison with derivational affixes (see, among many others, Anderson
1992, 126 and passim). This characteristic ordering, often alluded to as the “inflection outside derivation” universal, is actually a consequence of the fact that functional projections are external with respect to the lexical items they associate with.

A closer look at the ordering possibilities of aspectual periphrases reveals a parallel split between a more peripheral domain of rigidly ordered elements and a less peripheral domain in which their relative order is semantically relevant and semantically constrained. The periphrases listed in table 15.1 belong to the first domain, those listed in table 15.2 to the second.

<table>
<thead>
<tr>
<th>Language</th>
<th>Habitual</th>
<th>Prospective</th>
<th>Retrospective</th>
<th>Progressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td>aller+INF</td>
<td>venir de+INF</td>
<td>[être en train de+INF]</td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td>solere+INF</td>
<td>stare+GER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catalan</td>
<td>soler+INF</td>
<td>acabar de+INF2</td>
<td>estar+GER</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>soler+INF</td>
<td>acabar de+INF2</td>
<td>estar+GER</td>
<td></td>
</tr>
<tr>
<td>Portuguese</td>
<td>costumar+INF</td>
<td>acabar de+INF2</td>
<td>estar+GER/a+INF</td>
<td></td>
</tr>
</tbody>
</table>

The periphrases in table 15.1 can precede those in table 15.2, as shown in (8), but cannot be preceded by them, as shown in (9).

(8) a. Il vient de [se mettre à/arrêter de/finir de] corriger les épreuves. *He has just started/stopped/finished correcting the proofs.*

b. Sta [tornando a/cominciando a/finendo di] riparare la macchina. *He/She is repairing again/starting to/stopping to repair the car.*

c. Va a [volver a/estar por/dejar de] corregir las pruebas. *He/She is going to correct again/be about to correct/stop correcting the proofs.*

d. El soroll sol [anar/seguir] augmentant durant la nit. *The noise uses go/follow] increasing during the night ‘The noise usually increases gradually/keeps increasing during the night.’

(9) a. *Il se met à/arrête de/finit de* venir de corriger les épreuves. *He comes of put to/stop of/finish of} correct the proofs*

b. *Torna a/Comincia a/Finisce di* stare riparando la macchina. *Returns to/begins to/finishes of} repairing the car*

c. *Vuelve a/Esta por/Deja de* ir a corregir las pruebas. *Returns to/be by/leave of} go to correct the proofs*
<table>
<thead>
<tr>
<th>Eventuality modification periphrases</th>
<th>French</th>
<th>Catalan</th>
<th>Spanish</th>
<th>Portuguese</th>
<th>Italian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive/restitutive</td>
<td>continuer à+INF</td>
<td>tornar a+INF</td>
<td>volver a+INF</td>
<td>voltar a+INF</td>
<td>tornare a+INF</td>
</tr>
<tr>
<td>Intransformative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gradual accomplishment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imminential (preliminary stages)</td>
<td>être sur le point de+INF</td>
<td>anar+GER, estar a punt de+INF</td>
<td>empezar a+INF, posar-se a+INF</td>
<td>empezar a+INF, pôr-se a+INF</td>
<td>cominciare a+INF, mettersi a+INF</td>
</tr>
<tr>
<td>Inceptive (initial phase)</td>
<td>commencer à+INF, se mettre à+INF</td>
<td>començar a/de+INF, parar de+INF</td>
<td>empezar a+INF, ponerse a+INF</td>
<td>começar a+INF, parar de+INF</td>
<td>cominciare a+INF, mettersi a+INF</td>
</tr>
<tr>
<td>Terminate</td>
<td>cesser de+INF, arrêter de+INF</td>
<td>deixar de+INF, parar de+INF</td>
<td>deixar de+INF, parar de+INF</td>
<td>smettere di+INF, cessare di+INF</td>
<td></td>
</tr>
<tr>
<td>Completive</td>
<td>finir de+INF</td>
<td>acabar de+INF1</td>
<td>acabar de+INF1, terminar de+INF</td>
<td>acabar de+INF1, terminar de+INF</td>
<td>finire di+INF</td>
</tr>
</tbody>
</table>
Furthermore, the co-occurrence possibilities of the periphrases in table 15.1 are severely restricted. Either they are in complementary distribution with one another, or they exhibit rigid ordering. Thus, habitual, prospective, and retrospective periphrases are mutually exclusive (10). They can be followed, but never preceded, by the progressive periphrasis, whereby the combinations habitual+progressive and retrospective+progressive are acceptable (and marginally so) only in Catalan and Spanish (11).

(10) a. #Il vient d’aller parler avec Pierre.
   *RETROSP+PROSP talk with Pierre  ‘He has just gone to talk with Pierre.’
b. Il va venir de parler avec Pierre.
   *PROSP+RETROSP talk with Pierre
c. *Suele ir a salir.
   *HAB+PROSP go.out
d. *Va a soler salir.
   *PROSP+HAB go.out
e. *Suele acabar de salir.
   *HAB+RETROSP go.out
f. *Acaba de soler salir.
   *RETROSP+HAB go.out

(11) a. Suele estar leyendo.
   HAB+PROG read  ‘He/She is usually reading.’
b. *Está soliendo leer.
   *PROG+HAB read
c. Va a estar trabajando.
   PROSP+PROG work  ‘He/She’s going to be working.’
d. #Está yendo a trabajar.
   *PROG+PROSP work  ‘He/She’s on his/her way to work.’

The periphrases listed in table 15.2, which occupy more internal positions, frequently exhibit alternative ordering possibilities, as illustrated in (12) (see also examples (6) and (7)).

(12) a. Los amigos fueron dejando de venir.
   the friends went leaving of come  ‘The friends gradually ceased to come by.’
b. Dejó de ir archivando la correspondencia a medida que llegaba.  
‘He/She ceased to file the mail as it arrived.’

c. Estuvo por seguir cantando.  
‘He/She had been about to continue/resume singing.’

d. Sigue estando por cantar.  
‘He/She is still about to sing.’

Furthermore, such co-occurrence restrictions as the periphrases in table 15.2 are subject to (for an example, see (7a)) can be accounted for on semantic grounds. They stem for the most part from an incompatibility between the selectional restrictions of the higher periphrasis and the temporal structure determined by the lower periphrasis, both being factors that can be established independently. Before this point can be illustrated, though, it is necessary to turn to the semantic contribution of periphrases.

15.3.2 Lexical versus Syntactic Aspect

Although the distinction between lexical aspect (aktionsart) and syntactic aspect has long been taken for granted, it is neither universally accepted nor uniformly interpreted by those who accept it. The reasons for this lie in the manifold interferences between the two categories, in the elusive nature of syntactic aspect, and in the superficial attractiveness of proposals that treat syntactic aspect as some sort of eventuality modification (see Kamp and Reyle 1993 and de Swart 1998 on perfect and progressive in English, and Giorgi and Pianesi 1997, 169–172, on the progressive).

Eventuality modification (the mapping of an eventuality with a given temporal structure onto an eventuality with a possibly different temporal structure) is clearly distinguished from syntactic aspect in the two-component approach to aspect developed by Smith (1991). Smith distinguishes between “situation aspect,” which is lexically determined and corresponds to the temporal structure of eventualities, and “viewpoint aspect,” which is grammatically determined and corresponds formally to a relationship between an eventuality and a designated interval of “visibility,” this interval being what is actually accessible to temporal location (see in particular Smith 1991, 146ff.).

While situation aspect is often a covert semantic category, languages also have devices for eventuality modification that overtly determine it. These comprise “light” verbs, affixes or particles that derive eventualities corresponding to temporal sectors of basic eventualities or impose a given temporal structure on an otherwise underdetermined verb. The semantic contribution of the periphrases listed in table 15.2 fits exactly into this description. Thus, inceptive, terminative, and completive periphrases
have as their output eventualities corresponding to the initial or (arbitrary or natural) final endpoints of the “basic” eventuality description. More interestingly, repetitive/restitutive, intransformative, and gradual accomplishment periphrases derive eventualities with very specific temporal structures that also characterize certain lexical verbs. Repetitive/restitutive periphrases presuppose that an instantiation of the same type of eventuality has previously obtained, which corresponds roughly to the temporal structure of a verb like replace. Intransformative periphrases presuppose that a subpart of the same eventuality has previously obtained, which corresponds roughly to the temporal structure of a verb like remain. Finally, gradual accomplishment periphrases impose an incremental temporal structure analogous to that of degree predicates such as widen.

Most incompatibilities among the periphrases in table 15.2 are grounded in their semantics. Thus, (13a) is excluded because the lower inceptive periphrasis returns an achievement, which is incompatible with the selectional restrictions of the higher verb (i.e., for the same reasons that render The train finished arriving semantically deviant). Analogously, the sequence in (13b) is excluded for the same reasons that render Peter ceased to remain at the party bizarre.

(13) a. ??Finisce di cominciare a cantare. finishes of begin to sing
   b. ??Dejó de seguir cantando. leave of follow singing

Note, furthermore, that semantic incompatibilities can in principle be circumvented by contextual reinterpretation (see in particular de Swart 1998 on coercion effects), so that some apparently excluded combinations among eventuality modification periphrases could turn out to be possible. But no amount of contextual reinterpretation can salvage the excluded orders in (9)–(11).

### 15.3.3 Syntactic Aspect

Building on Smith 1991 and on the notion of aspect as a temporal relation suggested by Klein (1995), Demirdache and Uribe-Etxebarria (1997, 2002) develop a full-fledged model of temporal relations in which aspetual heads are conceived of as two-place predicates expressing topological relations between two intervals, the interval of the eventuality (ev-t) and the interval accessible to temporal location, or interval to which the assertion is confined (ast-t). Under their account, only three topological relations are possible: ast-t can be located before, after, or inside ev-t. Now, the semantics of three of the four periphrases listed in table 15.1 can be accurately described by assuming that they express precisely such relations, prospective corresponding to [ast-t before ev-t], retrospective to [ast-t after ev-t], and progressive to [ast-t inside ev-t]. The habitual periphrasis, however, does not corre-
spond to viewpoint aspect, but is an overt expression of generic quantification, whose semantics matches closely that of frequency adverbs. We are thus led to the assumption that the higher, functional layer of aspectual periphrases expresses either time-relational aspect or generic quantification. These periphrases occupy an intermediate position between the full VP projection associated with an eventuality description (possibly comprising one or more layers of eventuality modifiers) and the temporal head responsible for establishing deictic or anaphoric temporal relations, as illustrated in (14).

(14) \[TP \text{[AspP \text{[event. descr \text{VP_{event. modifier} [\text{VP_{event. modifier} [\text{VP_{main predicator}}]]]}]}]}\]

Syntactic aspect periphrases impose only very general conditions on the eventual-ity descriptions they take as arguments. As an expression of generic quantification, the habitual periphrasis requires several possible instantiations of the eventuality, thus excluding once-only events and individual-level states (15a). The retrospective periphrasis requires eventualities that are conceived of as having endpoints, thus excluding individual-level states (15b). The progressive periphrasis shows much the same profile as its English counterpart, giving rise to preliminary-stage interpretations with achievements (15c) and to dynamic or temporary interpretations with habits (15d).

(15) a. #Soleva essere biondo. used.IMPF be blond ‘He was in the habit of being blond.’
b. #Il venait d’être blond. he came.IMPF of be blond ‘He came from being blond.’
c. Estaba llegando el tren. was.IMPF arriving the train ‘The train was arriving.’
d. Estan pagant lloguers molt alts. are paying rents very high ‘They are paying very high rents.’

On the other hand, syntactic aspect periphrases are severely restricted with regard to the tenses they can combine with. In this, they clearly differ from the periphrases in table 15.2, which can appear in all tenses. Habitual soler(e) is a defective verb, having only those forms corresponding to the present and the imperfective past. Retrospective periphrases are only possible with the present, with the imperfective past and (somewhat marginally) with the future. The same holds of the Italian progressive periphrasis. As for the prospective periphrases, they suffer major changes when they appear in tenses other than the present and the imperfective past (see Olbertz 1998;
In particular, they lose the ability to take states and habits as arguments and to precede a number of eventuality modification periphrases.

(16) a. La película le iba a/*fue a gustar.  
    the movie to.him went.IMPF/went to please  
    ‘He would like the movie.’

b. Iba a/*Fue a dejar de llover.  
    went.IMPF/went to leave of rain  
    ‘It was going to stop raining.’

These changes indicate that prospective aspect surfaces only in the present and imperfective past, whereas in other tenses, the corresponding form so to speak slides down into the eventuality modification domain. It functions as a particular sort of imminential periphrasis, requiring agentivity and/or temporal contiguity, and patterns like the periphrases in table 15.2.

Comparably radical changes arise when the Ibero-Romance progressive periphrases appear in the perfective past or in perfect tenses (Laca 2002a). Thus, for instance, estar+gerund in the simple (perfective) past cannot precede other periphrases (17a); nor can it combine with “gradual accomplishment” predicates (17b), or with predicates overtly marked as telic by adverbs (17c) or by the reflexive clitic (17d; on the reflexive as a telicity marker, see Nishida 1994, Barra-Jover 1996).

(17) a. Estaba/??Estuvo empezando a/dejando de llover.  
    was.IMPF/??was.SP beginning to/ceasing of rain  
    ‘It was beginning/ceasing to rain.’

b. Los precios estaban/??estuvieron aumentando poco a poco.  
    the prices were.IMPF/??were.SP rising little by little  
    ‘Prices were rising little by little.’

c. Estaban/??Estuvieron destruyendo totalmente la casa.  
    were.IMPF/??were.SP destroying completely the house  
    ‘They were completely destroying the house.’

d. Se estaba/??estuvo comiendo toda la comida.  
    refl was.IMPF/??was.SP eating all the food  
    ‘He/She was eating up all the food.’

This suggests that estar+gerund in Ibero-Romance can also oscillate between a time-relational (progressive) and an eventuality modification status (with activities or temporary states as output) according to the tense involved (see also Squartini 1998).

The curious tense restrictions affecting syntactic aspect periphrases seem to point in the same direction as a hypothesis put forth by Rivero (1994), according to which functional (as opposed to lexical) auxiliaries are characterized by defective morphology. But it might be possible to discover a deeper rationale for these restrictions, a
rationale involving the nonrecursivity of syntactic aspect and the aspectual peculiarities of the Romance tense system. Recursive time-relational aspect, as assumed by Demirdache and Uribe-Etxebarria (1997, 2002), poses no fewer conceptual problems than recursive temporal location, so that a solution involving a single functional aspectual projection per clause should be strived for. Such a solution could capitalize on the intermediate structural position of syntactic aspect between eventuality modification and temporal location and on the possibility for some periphrastic constructions to function at more than one level of structure, a possibility that is presupposed in formal accounts of grammaticization processes (see, e.g., Roberts 1992; D’hulst 2002).

### 15.4 Concluding Remarks

I have tried to show that the relative order of Romance “aspectual” periphrases does not provide evidence for the existence of a hierarchy of functional aspectual heads; rather, it supports the existence of two different domains, a lower domain at which eventuality modification is expressed and a higher domain of functional or “syntactic” aspect. Eventuality modification periphrases are freely ordered, but they impose various selectional restrictions on the eventualities they apply to. They have specific temporal structures as their output, and show no tense restrictions. “Syntactic” aspect periphrases have much wider combinatorial possibilities with regard to the eventualities they may apply to, but are rigidly ordered. They express nondeictic temporal relations or generic quantification and either show defective tense morphology or are subject to major combinatorial and semantic changes when occurring in some tenses, a property that calls for further research.

### Notes

I’d like to thank audiences at Université Paris 7 (International Round Table on the Syntax of Tense and Aspect, 2000), The Bosphorus University in Istanbul (Word Order Colloquium, 2001), Universidad Menéndez y Pelayo in Santander, and the Langues & Grammaire seminar of Université Paris 8 for valuable remarks and suggestions. I’m particularly indebted to Jacqueline Guéron, Jacqueline Lecarme, and Jean Lowenstamm for comments, judgments, and suggestions. For more detailed discussion of a number of issues that cannot be developed in this chapter, see Laca 2002a,b, in preparation. The literature on Romance aspectual periphrases is abundant. For the most recent and detailed descriptions, see among others Barroso 1994, Bertinetto 1990, Gavarró and Laca 2002, and particularly Olbertz 1998 and Squartini 1998.

1. Capitals are used throughout to identify the languages of the examples: C(atalan), F(rench), I(talian), P(ortuguese), S(panish).
2. While the list in table 15.1 is exhaustive, table 15.2 contains only the most characteristic or frequently occurring constructions.
3. For reasons of space, I only illustrate some of the combinations. For the full pattern of Spanish, see Laca 2002b.

4. # before unacceptable combinations signals the unavailability of the pertinent reading. Since aller/ir a+infinitive also exhibits a reading as a movement verb + directional/final infinitive, and acabar de+infinitive also has a completive reading (acabar de+infinitive 1 ‘finish doing something’), some sequences are grammatical, but not with the meanings under discussion.

5. The following informal characterizations of the semantic contribution of eventuality modification periphrases are phrased as if the whole construction expressed an operator mapping eventualities onto (temporal sectors or structures) of eventualities. This does not preclude the possibility of more compositional analyses, possibly along the lines suggested by Butt and Ramchand (2001).

6. AST-T can be conceived of as a “conflation” of Smith’s designated interval of visibility and the Reichenbachian reference time. It can, like the latter, precede or follow EV-T, but it can also be properly included in or be coextensive with EV-T, as is the case with Smith’s “imperfective” (or rather, “progressive”) and “perfective” viewpoints, respectively.

7. As pointed out in Laca 2002a, these tense restrictions exclude first and foremost the simple (perfective) past, which happens to be the only simple tense whose aspectual contribution is uncontroversial (something that definitely does not apply to the “imperfective past”). It can thus be hypothesized that all simple tenses in Romance, with the exception of the simple (perfective) past, are aspectually unmarked and do not project their own aspectual head. Note that the tense restrictions affecting syntactic aspect periphrases also hold to a large extent in the case of so-called compound tenses (HABERE-TENERE-ESSE:+past participle), which can be interpreted as expressions of perfect aspect (see Demirdache and Uribe-Etxebarria 2002). While Portuguese does not allow for the auxiliary in the perfective past in compound tenses (*teve comido ‘(he/she) had.sp eaten’; see Giorgi and Pianesi 1997, 51), the corresponding combinations in the other Romance languages (passé antérieur, trapassato remoto, etc.) are severely restricted and show aktionsart peculiarities that are not shared by the other compound tenses. In fact, grammars often describe passé antérieur, trapassato remoto, and so on, as a completive form specifying telicity rather than mere relative anteriority. This suggests that combinations such as It. fu partito, Sp. hubo salido ‘(he/she) was.sp/had.sp gone out’ belong to the realm of eventuality modification.

References


Laca, B. In preparation. Periphrastic aspect and the aspectual profile of Romance tenses.


Chapter 16

Tense in Nominals

Jacqueline Lecarme

16.1 Introduction

In recent work, Pesetsky and Torrego (2001; henceforth, P&T) propose a new approach to the theory of abstract case. The key to this proposal is that nominative case on DP is actually an uninterpretable variant of a tense feature (henceforth, uT). An instance of D that bears uT (i.e., D that heads a structurally case-marked DP) cannot be marked for uT deletion on the DP cycle: the DP is therefore attracted to Spec,TP by finite T, driven by uninterpretable φ-features on T. Unlike DPs, CPs are “self-sufficient” categories with regard to tense: since C takes T as its complement, uT on C is deleted within the CP cycle (e.g., by raising a tensed auxiliary verb form to C). This hypothesis provides a unified explanation for many observed asymmetries in the distributional freedom of argument CPs and DPs. The proposal is also conceptually attractive, since it would eliminate structural case, the only example of a purely uninterpretable formal feature. Given the theory of movement and case assumed within the current version of the Minimalist Program (Chomsky 2000, 2001a,b), structural case correlates with agreement and is only indirectly “valued” by the interpretable functional categories T and v*. It is also not clear how structural genitive fits into the Case-Agree relation, that is, how D (or Num) is a “case-checking” head for genitive case, since the φ-features of the functional heads D/Num that combine with N in the Merge-Agree relation do not reflect the φ-features of the “possessor” DP, but those of the noun itself, that is, its “denotational” argument.

The apparent problem with the uT-based approach to the nature of structural case is that common nouns clearly are interpretable temporally (Enç 1987; Musan 1995), a property that arguably rests on their inherent tense/event structure (Higginbotham 1985, 1987; Larson 1998). This assumption is forced on empirical grounds by the existence of languages that explicitly encode temporal information on noun phrases.\(^1\) In earlier work (Lecarme 1996, 1999b), I provided evidence that Somali DPs build the nominal equivalent of verbal “tense chains,” a constructed interpretive device.
in the sense of Géron and Hoekstra (1988, 1994). Assuming that the LF-external system of interpretation is essentially language-independent, “tense chains” must be available in all languages, not only those where such processes are visible—a conclusion that seems empirically well grounded, given the existence of so-called aspectual or tenseless languages. The real focus is therefore on showing how the hypothesis that D is endowed with an “unvalued” tense feature in fact correlates with the time-sensitivity of nominals.

In this chapter, I discuss the Somali facts in relation to P&T’s hypothesis and provide a detailed syntactic account of the relation between tense morphology and temporal interpretation. I begin with “tensed” adjectival modification phenomena that furnish the first piece of evidence for the use of tense as a feature of agreement in the Somali DP. I also show that inflected adjectives and predicative nouns in modifier position both differ from relative clauses, whose temporal structure is independent from that of the modified DP.

The most obvious task is to explain the role of tense in genitive constructions. Adopting the Distributed Morphology view that nouns and verbs are morphosyntactic categories created by the syntax, and that argument roles are mapped from “bottom to top” according to the compositionality of event structure, I suggest that the “possessor” argument is introduced by an Applicative head (Appl), like the benefactive/dative of English double object constructions (Marantz 1993; Pylkkänen 2000). This proposal is motivated by language-internal evidence: in Somali applicative constructions, the “higher” applied object argument (the pronominal argument that is linearly expressed closest to the verb) comes from the possessive pronoun paradigm. This analysis accounts for the fact that alienable possessors and inalienable possessors in Somali behave differently with regard to tense marking. If, as I will argue, structural genitive is contingent on the presence of UAppl on Appl, where Appl is interpreted as the 0-relation that holds between its complement NP and its specifier position, then we can explain the observed fact that this relation can be temporally located. Thus, the “applicative” analysis approach to structural (and inherent) genitive case may allow us to further generalize P&T’s overall proposal.

The proposal that structural case is associated with an occurrence of T has consequences for other phenomena outside the domain of facts investigated by P&T, with which I will conclude the chapter. Unlike English DPs, Somali DPs solve the “tense problem” of D by attracting T in D, thus marking the U feature of D for deletion internal to DP. As a consequence, DPs and argument CPs have the same distribution. This accounts for the basic properties of the language, which falls under the “pronominal argument” typology (Jelinek 1984). If this correlation were to hold crosslinguistically, then P&T’s hypothesis would provide a simple and elegant account of the configurational properties of languages.
16.2 Nominal Tense: Overview

16.2.1 The Somali Determiner System

Among Cushitic languages, Somali has a particularly rich and detailed system of spatial and temporal reference.\(^2\) A striking feature of this system is that space and time are separately encoded. Besides the near/far demonstrative enclitics -án, -áas, -éer, -óo (a four-way proximity contrast), a specific -ií morphology, which I will refer to as past morphology, is used to set up purely temporal oppositions. Both the demonstrative morphemes and the tense/case morphemes are preceded by the gender markers -k- (masculine) and -t- (feminine), which agree with the noun.

(1) Demonstratives

- k/t-án ‘this, these’
- k/t-áas ‘that, those’
- k/t-éer ‘that, those’ (far away)
- k/t-óo ‘that, those’ (very far away) (see Andrzejewski 1964, 119)

Descriptively, the tense endings are u and a in the present tense, -ií and -ií in the past tense.\(^3\)

(2) Tense

\[\begin{array}{ll}
\text{[+past]} & \text{[+past]} \\
\text{[+nom]} & \text{-k/t-u} \quad \text{k/t-ií} \\
\text{[-nom]} & \text{-k/t-a} \quad \text{k/t-ií}
\end{array}\]

I will assume here that the basic opposition is a/i, clearly reflecting the vowel alternation a/i for nonpast/past in Afroasiatic. I further assume that Somali D is \(\emptyset\) with gender agreement and tense incorporated to D (T-to-D). There is no indefinite article in the language. Indefinite articles then are \(\emptyset\) with covert gender agreement (which in some cases surfaces overtly, as we will see in section 16.4.2).

The tense and demonstrative enclitics are in complementary distribution, but still cannot be considered as belonging to the same category. Tense morphemes can be used deictically (speaker-oriented visibility/invisibility, including invisible distance,\(^4\) as in (3a)). Somali demonstratives cannot be used temporally (grammatical location in time) (3b).

(3) a. Gabdhì-hií aawéen?
girls-detM[+past] where.are
‘Where are the girls?’
b. tuulá-doo horé
village-detF.dem before
‘that village yonder’
This is expected, given that a special, time-specific morpheme exists in the language. Besides this, near/far morphology is purely deictic, that is, is always interpretable. Although spatial morphology across languages can be used in the expression of time reference, it is well known that spatial features are not used in the computational system of grammar in the same way as tense features are. Demonstratives are purely referential categories, with an invariant, indexical construal. Plainly, this is true neither of present nor of past.

16.2.2 Case versus Tense

Somali is a nominative/accusative language, in the sense that the subject of both transitive and intransitive verbs is marked [nominative] (the term absolutive sometimes used in the literature is therefore avoided here). The relevant opposition is operative only in adjunct (and prosodically independent) positions. Morphological case is marked not on the Noun, not even on the DP, but at the end of a “nominal cluster” (Andrzejewski 1960), in my terms, a DP or CP constituent. Although both tense and case morphologies tabulated in (2) appear as suffixes, they do not have the same distribution. Tense is a c-commanding element in the DP: in genitive constructions, the past tense of a locally dependent DP must be deleted, as (4b) clearly shows; morphological case (e.g., the -u nominative case suffix in (4a,b)) is marked on the rightmost constituent.

(4) a. Dhibaata-da Khalii-ku weli way taagăn tahay.
    problem-detF Gulf-detM[+nom] still F.3FS permanent is
    ‘The Gulf crisis still persists.’

     b. Dhibaata-dii Khalii-ku wày dhammaatay.
    ‘The Gulf crisis ended.’

16.2.3 Nominal versus Verbal Tense and Agreement

Intuitively, the -ii morpheme is the locus of tense meaning, expressing the same [+/-past] opposition as verbal tense (there is no future tense in the language). Is this morpheme the nominal equivalent of a past tense morpheme? As I mentioned in the preceding paragraphs, the [+/-past] opposition in nominals clearly reflects the Afroasiatic a/i nonpast/past vowel alternation. Further parallels exist in the language between verbal and nominal morphology, as shown in (5). Here again, there is a parallelism between the gender morphology that agrees with the referent of the noun and the gender morphology that agrees with the subject of a verb (-t- in both cases), supporting the idea that the two are structurally parallel.

    woman-f[+past] town-detF[+past] F.2FS go.to-f-[+past]
    ‘The woman went to town.’
b. Naag-t-u guri-ga way joog-t-aa.

woman-f[+nom] home-detM[+acc] F.2FS stay-f[−past]

‘The woman is at home.’

Assuming that both gender and tense are realized in D, nominal and verbal tense and agreement can be thought of in a parallel fashion: N incorporates to D, allowing the uninterpretable φ-features in D to agree with the “subject” of the NP predicate, that is, its denotational argument.

16.2.4 Uninterpretable Tense

Although clear morphosyntactic parallels can be drawn between nominal and verbal tense, the Somali evidence clearly shows that these domains are syntactically and semantically independent. Nominal tense need not “agree” or even be compatible with the tense of the main (i.e., verbal) predicate; the tense of a relative clause need not coincide with the tense of its definite head (for detailed examples, see Lecarme 1996, 1999b). In languages that have temporal systems, tenses are well known to behave sometimes as if they were not interpreted: [+past] does not always mean PAST, or does not contribute any meaning of anteriority. Likewise, in some of its uses, past tense in nominals is clearly uninterpretable, a fact that makes sense only if it is used as a formal feature of the computational system. The sharpest data from Somali involve the past tense used to “exclude” a DP from the habitual or generic present tense interpretation in the clause. In (6a), in which the present tense locates the habit of eating, the past tense indicates that the DP that serves as a “topic time” may not be interpreted as a specific reference time. A sentence such as (6b) can be paraphrased not as ‘it is generally true of children that they play football at school every evening’ but as ‘it is generally true of a familiar set of children that . . .’. As for (6c), a generic sentence expressing a quantification over all men who want to do everything perfectly (excluding the interpretation ‘that man who presently wants . . .’), the past tense is used to place ‘the man’ outside the scope of the main predicate’s tense operator.

(6) Habitual/generic sentences

a. (Weligay) duhur-kii baan wax cunaa.
   (always) noon-detM[+past] F.1S thing eat[−past]
   ‘I (always) eat at noon.’

b. Galab walba carruur-tii kubbad-da cag-ta dugsi-ga bey
every evening every children-detF[+past] ball-detF foot-detF school-detM F.3P
   kú cayaaraan.
at play[−past]
   ‘Every evening the children play football at school.’
In Lecarme 2003, I argue that all these “fake” past morphologies that receive a nonpast interpretation are further examples of the interaction of the past tense with the modal domains (conditional, hypothetical clauses), for which wide crosslinguistic evidence exists (see Iatridou 2000).

There are, then, fairly solid grounds for assuming that a purely nominal temporal system is empirically attested. Tense in nominals, like tense in the clause, can be deictic, with modal interventions (see note 4). Tenses also can be uninterpretable semantically, mere morphological reflexes of structurally higher, interpretable instances of temporal features. This is clearly the case in Somali, where tense is used as a feature of agreement in DP modification, as discussed in greater detail below.

16.3 The Temporal Structure of Noun Phrases

16.3.1 Explaining Nominal Tense: Previous Attempts

Most of the arguments in the literature for a referential versus a quantificational approach to tense theory crucially involve the temporal interpretation of noun phrases. The ability of nominals to “float out of the scope” of tense operators has led Enç (1987) to posit time variables inside nominal expressions. This has been used as evidence to support a system such as Kamp’s Discourse Representation Theory, in which the temporal interpretation of nominals is determined only by the context of utterance. It was clear at the outset that this formulation is oversimplified in crucial respects: the time of a nominal could be any time, so long as the interpretation is what the context wants. This is because the contextual approach is sensitive only to factors outside the syntax of the nominal phrase. In fact, as discussed by Musan (1995), Enç’s generalization holds only for noun phrases that can be restrictive (some of the congressmen). The temporal interpretation of cardinal NPs (Some congressmen left) is in most cases dependent on the interpretation of the verb. In Musan’s theory, the freedom of interpretation of presuppositional noun phrases is explained as a consequence of analyzing determiner quantification as quantification over stages of individuals (Kratzer 1995), rather than individuals in their whole temporal extendedness. This approach is taken by Demirdache (1997) in her analysis of nominal tense morphology in Salish.
Although the stage semantics approach is a significant move toward a more explicit account of the syntactic basis of the temporal interpretation of noun phrases, this approach, by itself, has nothing to say about the main empirical problem: given the undeniable existence of “nominal tensed” languages, the postulation of a time variable in nominals is more than a kind of conceptual necessity. Although it is difficult to explain why languages have a productive use of nominal tense features, their existence is a fact. In Somali, tense is a feature of any (common) noun, not only nouns that are said to include an event as part of their lexical semantics. Some occurrences of the past tense morpheme are semantically active; others are uninterpretable, mere agreement reflexes of other elements. These facts are of a syntactic nature and cannot plausibly be determined by the semantic properties of the determiners. The problem of accounting for the distribution of tense morphology in some principled way remains open. We must then conclude that nominal tense, a universally available option of natural language, cannot be explained in the way that Enç and Musan have suggested.

16.3.2 A Syntactic Approach

In recent work, I explicitly attempted to formulate an alternative to the standard semantic approaches, asking how nominal tense can be simultaneously grammatical (computational) and context sensitive. My proposal (Lecarme 1996, 1999b) was that the temporal structure of nominal phrases is strongly parallel to that of clauses (i.e., CPs), with a category D formally parallel to a C. This proposal includes the following (conventional or more controversial) assumptions:

- Determiners, like proper names or connectives, have the same extension at every point in time: it is then T, not D, that is the element responsible for the “time sensitivity” of noun phrases.
- Time reference (C or D selecting T) is a universal property of language, independent of whether a given language has grammatical tense morphemes or not. Feature selection (a grammar selecting [T] as a formal feature for use in the computational system) is the locus of parametric variation.
- DPs can introduce tense operators. The temporal interpretation of noun phrases is syntactically construed as the creation of a “tense chain” (Guéron and Hoekstra 1994), in which a tense operator in Spec,DP binds the variable e-position. I use e in (7) in the more general sense to cover the denotations of both (kinds of lexical) nominal and verbal “entities.”
The tense/event structure of nominals and clauses does not differ: a chain \((O_{p_i}, T_i, e_i)\) is the interpretive process that brings together C-T-V and D-T-N to form “propositional” categories (like Event or Thing) at the semantic interface. There is, however, a real syntactic sense in which a nominal is smaller than a clause: the latter includes “verbal environment” heads lacking in the former, such as \(v\), the “light verb” head of transitive constructions (Chomsky 2000) or the “cause” head projecting syntactic agents (Marantz 1997).

16.3.3 Events and Other Entities in Time

In the literature, the entities to which verbs refer are usually called “events” (Davidson 1967). As Higginbotham (1987) observes, an additional clause “\(e\) occurred at \(t\)” is needed to link the entity with its time of occurrence. These variables cannot be introduced by the predicates, since there is no one-to-one correspondence between the Davidsonian event arguments and the syntactic variables bound by tense (obviously, there is no problem with temporally locating stative verbs or predicate adjectives). If tense must bind a variable syntactically even when there is no Davidsonian argument, then it is plausible to assume that the time variable is somehow introduced by \(T\) (or the tense morphology in \(T\)).

Intuitively, the system we use to describe events or objects in time should not differ: nouns, like verbs, describe properties, events, or states that can be truly predicated of individuals at certain times. Events can be located in time, but also individuated and counted, and we expect to find some grammatical reflection of this in the verbal domain too: this is the case in most Afroasiatic languages (including Somali) where the property of countability is realized in the verbal domain by morphological processes similar to those found with nominals—for example, reduplication (including gemination), internal \(-\alpha\)-, or lengthening. As plurality and tense apply inside both the nominal and verbal domains in Afroasiatic, independent morphological arguments can be derived for the semantic parallelism of clauses and nominals.
Larson (1983, 1995) and Higginbotham (1985, 1987) appeal to event variables in nominals to allow for the temporal modification of common nouns. However, since nominal tense in Somali is a property of any DP (common nouns), not only nouns like ‘dancer’ or ‘president’, the time variable cannot be equated with the $e$-variable of those nouns that include an event as part of their lexical semantics: there is a proper distinction between an event interpretation made available semantically from the noun’s meaning and the time interpretation constructed by the Noun. I will then assume that nouns (like verbs) denote or name pairs that consist of a time and an abstract position in the object denotation. In what follows, that will be represented as $\langle e, x \rangle$, where $e$ stands for the (time-sensitive) “entity” variable (corresponding to Williams’s (1981) “R(eferential)” non-θ argument), and $x$ is a placeholder for the $\phi$-features of a noun. The time variable, as usual, will not be represented. In a system in which categorial features are eliminated from roots (see Marantz 1997), the entity named by the noun is syntactically an nP, with $n$ hosting the associated $[\phi]$ and $[\nu T]$ features.

I have been arguing that the verbal and nominal domains are parallel with respect to tense/event structure. In the following subsections, I want to look more closely at how exact this parallelism is.

16.3.4 Time Modifiers

In Somali, a $[+/-\text{past}]$ nominal tense and a temporal modifier must not conflict. As seen in (8a) and (8b), lack of agreement leads to ungrammaticality.

(8) a. sánnad-ka/*-ii dambe
   year-detM[−past]/[+past] next
   ‘next year’

b. sánnad-ki/*-a hore
   year-detM[+past]/[−past] before
   ‘last year’

c. tuulá-doo hore
   village-detF.dem before
   ‘that village yonder/#previously mentioned or former village’

It might be objected that in itself, (8b) does not show that the element -ii is tense.\footnote{It is still possible that what we have here is “concord” in deixis between a time adjective and what I call a tense morpheme. But as (3b), repeated here as (8c), clearly shows, the attributive adjectives dambé/horé ‘before’/’after’ do not have intrinsic temporal value. I will thus assume that the temporal value comes from the tensed DP.

In a nominal T-chain as in a verbal T-chain, different positions are available for the attachment of temporal modifiers. Definite temporal adverbials like $shálay$}
'yesterday' and *usbúucii hore* ‘last week’ provide "topic times" to both nominal and verbal predicates: in such examples, the time of *e* must be interpreted with respect to the contextually determined reference time.

(9) a. qabqabashá-di`ii shálay  
    arrests-detF[+past] yesterday  
    ‘yesterday’s arrests’

b. qabqabashá-di`ii usbúuc-`ii  
    arrests-detF[+past] week-detM[+past] before  
    ‘last week’s arrests’

c. bállan-k-áy-gii  
    habeen hore  
    promise-m-Poss1S-detM[+past] evening before  
    ‘my yesterday evening’s promise’

Possessive constructions supply a rich array of data that add crucial insight into the study of nominal tense (Lecarme 1996, 1999b). It is a well-known semantic fact (discussed most clearly, for example, by Larson (1998) and by Larson and Cho (1999)) that the possession relation can be independently modified temporally. As the examples in (10) show, the time adjective *horé* ‘former, ex-’ can modify either a noun (former student) or the possession relation (former student of mine).

(10) a. árday-gii  
    hore, wasaari-hii  
    hore  
    student-detM[+past] before minister-detM[+past] before  
    ‘the former student, the former prime minister’

b. Ardáy-d-áy-da  
    dhammáan-t-ood (waa ilá soo xariiran).  
    students-f-Poss1S-detF entirety-f-Poss3P (are in contact with me)  
    ‘All my students (are in contact with me).’

c. Ardáy-d-áy-di`ii  
    hore dhammáan-t-ood  
    students-f-Poss1S-detF[+past] before entirety-f-Poss3P  
    (waa ilá soo xariiran).  
    (are in contact with me)  
    ‘All my ex-students (are in contact with me).’

Note that ‘my ex-students’ (10c) has a narrower interpretation than ‘the persons who were students/my students’ (D-modification): the former, but not the latter, excludes the possibility that the individuals are still students/my students at the time of the utterance. Three different positions, then, must be available in a nominal T-chain for the merging of temporal modifiers as N-modifiers, D-modifiers, and ?-modifiers, another time variable position available in between. These positions are shown in (11).
I put this aside temporarily, for ease of exposition, and leave further specification of the internal structure of DP to section 16.4.

16.3.5 Adjectives

Somali adjectives must agree with a definite head noun in gender and tense.\(^{11}\) Tense/agreement morphology can be attached to adjectives, unlike in English.

(12) a. xaashı́ yar oo cấd
   paper small and white
   ‘a small white sheet of paper’

b. Xaashi-diay ee cấd (buu keénayaa).
   paper-detF small and white (he is bringing)
   ‘(He is bringing) the small white sheet of paper.’

c. Xaashi-dií yaraayd ee caddayd (buú keenay).
   paper-detF[+past] small[+past].f and white[+past].f (he brought)
   ‘(He brought) the small white sheet of paper.’

Because of these inflectional properties, adjectives are traditionally understood as subject relative clauses.\(^{12}\) The most relevant descriptive fact is that all modification is postnominal in Somali. Since subject relative clauses, like adjectives, are expressed in postnominal position and do not have an overt complementizer or an overt subject either, adjectives and subject relative clauses look formally similar. Also, there is no positional difference between adjectival phrases, depending on whether they are used attributively or predicatively, as in English, where the postnominal adjective has an implicit relative reading (see, e.g., Larson 1998). The relevant contrast is then not one of linear order, but one of relative closeness to the noun: attributive adjectives occur between the noun and a genitive DP, unlike what is found in relative clauses.

The idea that adjectives in Somali are verblike is all the more intuitively plausible because of the well-known observation that they are inflected for tense. On the other hand, one may hardly claim that spatiotemporal adjectives like *horé* and *dambé* are
also underlying relatives, since they do not agree for tense or \( \phi \)-features and cannot be used in predicative environments.\(^{13} \) Moreover, there are a number of well-known linguistic properties that distinguish adjectival predicates (\textit{white}) from stative verbs (\textit{be white}). A stative eventuality can be given a temporal location, while a state cannot be temporally located. Intuitively, adjectives in their attributive uses in (12) are direct noun modifiers with an “individual-level” flavor (‘the intrinsically small and white’) and do not have inherent tense value: what is predicated of the noun is not a temporary, stage-level property, but a stable state of whiteness and smallness. If this is correct, then tense on attributive adjectives is uninterpretable (as bare APs cannot be temporally located), whereas (reduced) relative clauses are C-T configurations in which T has the properties of true tense.

I will therefore assume that Somali inflected adjectives have both attributive and predicative uses, and that the ambiguity between direct modifier reading (‘small and white’) and implicit relative reading (‘who was small and white’) rests on a structural difference. The difference is subtle but clear when we compare inflected adjectives in their nominal versus verbal environments. I assume that adjectives are the complement of little \( v \), a defective (\( \phi \)-incomplete) head that does not project an external argument. Inflected adjectives in their attributive uses can be represented as in (13): at the point in the derivation where the \( \alpha \) subtree is pair-merged in the structure of the DP, the NP and Adj predicates compose under Agree, valuing the \( u\phi \) on Adj. \( uT \) on Adj is eliminated by interpretable tense on D.

(13) \textit{Inflected adjectives in a nominal environment}

\begin{itemize}
  \item \textit{a.} árday-ga wanaagsan
  \hspace{1cm} student-detM good
  \hspace{1cm} ‘the good student’
  \item \textit{b.} árday-gi\textit{i} wanaagsanaa
  \hspace{1cm} student-detM[+past] good[+past]
  \hspace{1cm} ‘The good student (went).’
\end{itemize}

\begin{itemize}
  \item \textit{c.}

\begin{center}
\begin{tikzpicture}
  \node (v1) at (0,0) {$v_1$};
  \node (a) at (0,-1) {$\alpha$};
  \node (adj) at (0,-2) {Adj};
  \node (f) at (0,-3) {\textit{[−person]}};
  \node (t) at (0,-4) {\textit{[uϕ]}};
  \node (tt) at (0,-5) {\textit{[uT]}};
  \draw (v1) -- (a);
  \draw (v1) -- (adj);
  \draw (a) -- (f);
  \draw (a) -- (t);
  \draw (a) -- (tt);
\end{tikzpicture}
\end{center}
\end{itemize}

In their predicative uses, adjectives involve the structure (14), in which the functional head \( v_2 \), a \( \phi \)-complete functional head, projects an external argument and creates a
verbal environment (see Kratzer 1994; Marantz 1997). The time variable of the adjective is bound in the C-T complex. The nominal (DP) tense and verbal (CP) tense domains then are in a semantic agreement (or concord) relation.

(14) *Adjectives in a verbal environment*

a. Árday-gu wuu waanaagsán yahay.
   student-detM[+nom] F.3MS good 3m.is
   ‘The student is good.’

b. Árday-gii wuu wanaagsanaa.
   student-detM[+past] F.3MS good[+past]
   ‘The student was good (on Monday).’

c. Thus, both predicative and attributive modification exists in Somali. Temporal adjectives like *hore* and *dambe*, which do not agree for either tense or φ-features (and perhaps have only spatiotemporal features) have no little v (pure e-modification). They do not form a small clause with an external argument and are never intersectively interpreted. As we will see, more evidence can be adduced to support these conclusions.

16.3.6 Tense and Definiteness Agreement

Let us now turn our attention to “definiteness,” another grammatical feature involved in Somali nominal modification.14 Assuming that [def] is a feature of D, predicative nouns in modifier position in Somali must take a (semantically empty) definite article (udef) if and only if the head noun is (morphologically and semantically) definite. We can see both the tense and definiteness factors at work in (15), where, along the same line of analysis as in (14), a light verb (-ah- ‘be’, leh ‘have’, . . .) is inserted into the v node, so as to support uT and uφ.

(15) a. ardayád soomaali ah
   student.f Somali.f be
   ‘a Somali student(f)’

b. ardayád-da soomaali-da ah
   student.f-detF Somali-detF be
   ‘the Somali student(f)’
As shown in (16) and (17) as well as (15), these contrasts are grammatically robust with individual-level predicates such as ‘Somali’, ‘famous’, and even proper names.

(16) Individual-level predicates
a. nın cáan ah  
   man fame be  
   ‘a famous man’

b. nín-ka cáan-ka ah  
   man-detM fame-detM be  
   ‘the famous man’

c. nín-kii cáan-ka ahaa  
   man-detM[+past] fame-detM be[+past]  
   ‘the famous man’

(17) Proper names
a. dúq Warsáme  
   old.man Warsame  
   ‘Old Warsame’

b. dúq-ii Warsamé ahaa  
   old.man-detM[+past] Warsame be[+past]  
   ‘(All day long he looked for) the old Warsame.’

As Kratzer (1995) has noted, past tense exploiting individual-level predicates, in contrast to stage-level predicates, imposes restrictions on the time-life of their subjects. Somali individual-level predicates and proper names in the context of a past tense never trigger “lifetime effects” (Musan 1995, 1997), as they would if the past tense on the light verb were a true (i.e., semantic) tense (‘the old man who was Warsame’). Idioms provide a further piece of evidence that definiteness and tense agreement are semantically empty: in fact, the paradigm illustrated in (18) can hardly be explained if this conclusion is not assumed, as idioms in general do not yield compositional meanings.
(18) Idioms
a. dád fará badan
   people fingers many
   ‘many people’
b. dád-*ka fará-*ha badan
   people-detM fingers-detM many
   ‘the numerous people’
c. dád-kií fará-*ha badn*aa
   people-detM[+past] fingers-detM many[+past]
   ‘the numerous people (#the people who had/were the numerous fingers)’

Clearly, these structures are licensed by the syntax of the language, where definiteness and tense agreement consist of uninterpretable elements.

16.3.7 Relative Clauses
As I argued in earlier work (Lecarme 1996, 1999b), there are further differences between inflected adjectives/predicative nouns and (reduced) relative clauses. Relative clauses are “closed” temporal domains. The tense specification of a relative clause is independent of the (in)definite value of the head noun (19a,b). Past tense on attributive adjectives (19b) and predicative nouns in modifier position (20b), in contrast, is contingent on the presence of the head noun’s [+past] definite article.

(19) a. dhibaatóoyin adag/*adk*aa [CP oo ká taagn*aa
   problems difficult/difficult[+past] and from arose[+past]
   Soomaáaliya]
   Somalia
   ‘serious problems that arose in (lit. from) Somalia’
b. dhibaatóoyin-kií adkaa [CP ee ká taagn*aa
   problems-detM[+past] difficult[+past] and from arose[+past]
   Soomaáaliya]
   Somalia
   ‘the serious problems that arose in Somalia’

(20) a. ardayád soomaali ah/*ahaa [CP oo telefoón kúu soo
   student(f) Somali be/be[+past] and telephone you.to here
dirtay]
   sent.fs[+past]
   ‘a Somali student who phoned you’
b. ardayád-kií soomaali-da ahaa [CP oo telefoón kúu soo
   student-detF[+past] Somali-detF be[+past] and telephone you.to here
dirtay]
   sent.fs[+past]
   ‘the Somali student who phoned you’
It must be noted that definiteness agreement extends to all subject relative clauses. As the contrast between (21a) and (21b) shows, the DP complement of V in a relative clause headed by an overtly definite DP must bear a (semantically vacuous) definite article.

(21) a. (Wúxuu ahaa) nín gaaban [CP oo ookiyaaló qabay].
expl.F.3MS was man small and spectacles had[+past]
‘(He was) a small man with spectacles.’

b. nín-kií gaabnaa [CP oo ookiyaalá-ha/*ookiyaaló
man-detM[+past] small[+past] and spectacles-detM/*spectacles
qabay]
had[+past]
‘the small man with (the) spectacles’

I interpret these facts as evidence that syntactic definiteness and tense agreement are determined by independent mechanisms. The syntactic domain of [T] (interpretable tense on D) includes the modifiers, but excludes the relative clause. The syntactic domain of [def] includes the relative clause, as the feature content of D is crucially involved in how a relative clause is construed.

16.4 Genitive Case

16.4.1 Tense and the “Possessive” Relation

Given their tense properties, the Somali genitive constructions are an important source of insight into the nature of genitive case in general, and even more importantly, into the mechanisms introducing “additional” arguments via functional heads in the syntax. My discussion here is an elaboration of previous remarks (Lecarme 1996, 1999b) and will lead to a new syntactic proposal that flows from the results reported by P&T.

I start by examining the set of structural genitive constructions (22a,b). The first strategy is reminiscent of the “construct state” found in the Semitic languages, in that it involves (linear) adjacency of two DPs without preposition or case (recall that the complex DP as a whole is independently marked for case, which may show up on the rightmost constituent). Note that adjacency in Somali, unlike in Semitic, cannot be defined in prosodic terms: each DP is a prosodic word (22a). The licensing of a “possessor” DP to the left of the head noun (absent in Semitic) is contingent upon the presence of an agreeing genitive pronoun enclitic on D (22b). I assume that this pronoun is the “true” argument in a genitive construction, conforming to the overall syntax of the language. A genitive clitic can be interpreted anaphorically or referentially, depending on the presence or absence of an A-binder in Spec,DP.
(22) *Structural genitives*

a. búugu-gii 
   book-detM[+past] Maryan
   ‘the book of Maryan’

b. (Maryan) búugu-g-teed
   Maryan book-m-Poss3F-detM[+past]
   ‘Maryan’s book/her book’

In both (22a) and (22b), tense is marked on the head of the construction: there is a syntactic rule that deletes the [past] tense morpheme on a locally dependent DP. This suggests that the genitive DP is licensed in the structure only when in the c-command domain of another occurrence of T, much as a CP headed by *that* in English is licensed in the c-command domain of another T. A plausible analysis of (22a) is that the (right-iterative) postnominal DP is a complement to N, much in the same way a dependent CP is a complement to V.\(^{17}\) The fact that the complement of a noun may be a bare DP in Somali, unlike in English, is directly explained as a consequence of the fact that the Somali DP is “self-sufficient” with respect to \(uT\) on D (see P&T, this volume). One argument for this view is that interrogative DPs, which do not host an instance of T in D, are not acceptable in postnominal constructions (*búuggii qoraagée ‘the book of which author?’*).

In Somali, unlike in Semitic, there are no PP constituents, as discussed in greater detail below.\(^{18}\) Adjectives and modifying expressions typically follow genitive pronouns, but precede full genitive DPs. As (23a) shows, an attributive adjective and a following genitive DP are syntactically treated as asymmetric conjuncts: I assume that both asymmetric conjunctions *ee* \([+\text{def}]\) and *oo* \([-\text{def}]\) ‘and’ involve coordinate structures below shared functional nodes (such as D and T).\(^{19}\)

(23) a. búugu-gii 
   yaraa 
   ee Maryan
   book-detM[+past] small[+past] and Maryan
   ‘the small book of Maryan’

b. Maryan walaal-k-teed 
   búugu-giiis-ii 
   yaraa
   Maryan brother-detM-Poss3F book-m-Poss3M-detM[+past] small[+past]
   ‘Mary’s brother’s small book’

As in any language, genitive case has a purely structural meaning. In example (24) (a book title), there is no possible reading yielding the interpretation that Death enters into a possessive relation with the beach, presumably because *Geerida* ‘Death’ does not satisfy the selectional restrictions for possession; crucially, the prenominal construction involving a possessive pronoun is not possible either.

(24) a. Xeëb-tii 
   Geeri-da
   beach-detF[+past] death-detF
   ‘*The Beach of Death*’ (book title)
b. *Geeri-da Xeēb-t-éed-ii
   death-detF beach-f-Poss3F-detF[+past]
   ‘*The Death’s Beach’

The only possible reading, yielding the interpretation that the beach was the locus of some killing event in the past, needs some kind of contextual specification in order to make (24a) fully interpretable. Intuitively, the genitive DP here functions essentially as a temporal modifier: the “possessor” plays the same role as the time adverbials in (9), that of temporally locating the genitive relation. The alternation in (23) as well as “nonpossessive” cases like those in (24) pose a number of related questions concerning the internal structure of the DP in similar examples across languages. One question concerns the source of case for the genitive DPs. Another concerns distribution contrasts between the “possessive pronoun” variant and the DP DP variant. I believe that these questions can be answered only by investigating the role of temporal location in these constructions. What Somali does is to present the genitive relation from a temporal perspective. The crucial extra property in Somali is that the temporal relations that hold covertly in constructions with the possessive meaning in other languages (or are “metaphorically” expressed by means of a spatial feature) hold explicitly in the syntax.

What, then, is the relation between the morphology we see and the interpretation we get? The generalization I attempted to formulate in Lecarme 1999b is that a genitive construction relates the individual referred to by the DP to another individual and a temporal location.

(25) the_{x,t} [(book (x,t) & small (x,t) & R_{t} (x, Mary)]

What the structure in (25) is intended to capture is, as mentioned in section 16.3.4., that past tense on D can unambiguously locate the possession relation.\(^2\) In the semantic representation, the contextually relevant relation \(R\) (see Partee 1983; Higginbotham 1983) supplies a free time variable that must be interpreted in association with the [+/−past] tensed definite determiner.

Two problems arise with this proposal, though. First, if the time variable is introduced in the representation in association with the contextual \(R\) relation, then its value must be provided by the context. We might, then, expect that the tense marked in Somali genitive constructions should be purely indexical. Yet, as I discuss in section 16.4.3.2, this is not always the case. A second, and more important, issue is that according to (25), the genitive relation is a modification relation, treating “free \(R\)” possessives as (intersective) modifiers. What the representation shows is that genitives are very similar to adjectives in that the \(R\) phrases indeed have the form of a reduced relative clause. This only provides the interpretation of “modifier” genitives, including genitives with a nonpossessive meaning, such as (24a); it does not explain why
(24b) is impossible. There must be a distinct syntactic source for “argument” genitives: (25) leaves open the question of what it might be.

I will argue that there is a distinction to be made between argument and modifier genitive constructions. To show this, I first need to look at some crucial properties of indefinite possessives, which are indeed construed as modifiers and reduced relative clauses.

16.4.2 “Possessive” DPs versus Possessive Sentences: Indefinites

As noted earlier, Somali indefinite nouns have no (overt) article and no tense. Like definite phrases, they allow both postnominal and prenominal NP “possessors” (26a,b).

(26) a. waanó waayeel
    advice wise.man
    ‘a piece of advice of a wise man’

b. *(waayeel) waaná-d-ıís
    wise.man advice-f-3MS
    ‘a wise man’s piece of advice’

c. (waayeel) waaná-d-ıís-ıı
    wise.man advice-f-3MS-past
    ‘the piece of advice of a wise man/his piece of advice’

Observe, however, that the prenominal NP in (26b), unlike the one in (26c), is not optional (cf. also (22b)). The possessive morpheme in indefinite constructions therefore is not the possessive pronoun, but “agreement,” in that it cannot get independent reference. Assuming that the presence versus absence of tense makes the crucial difference, I take both constructions (26a) and (26b) to involve inherent or, in terms of the present study, “tenseless” genitive case.21

Crucially, only a definite noun can license a “possessor” DP. When a noun is indefinite, alienable possession can only be expressed in a relative clause that explicitly spells out the possession relation (root leh ‘have’).

(27) a. búug arday-eed
    book student-eed
    ‘a student book (= a textbook)’

b. *búug Máryan
    book Maryan
    ‘a book of Maryan’s’

c. búug Máryan Ø leédahay
    book Maryan (it) has
    ‘a book of Maryan’s (lit. (a) book (that) Maryan has)’
This extends to other, nonpossessive relations, such as partitive relations (28) and kinship relations (29).

(28) a. cu´tub-ka saddexaad ee búug-gan
    chapter-detM third and book-detM.dem
    ‘the third chapter of this book’
b. *cú’tub búug-gan
    chapter book-detM.dem
    ‘a chapter of this book’
c. cu´tub ká míd ah búug-gan
    chapter from one ‘be’ book-detM.dem
    ‘a chapter of this book (lit. (a) chapter which is one from this book)’

(29) a. gabádh-dha yar ee Dirir
    girl-detF small and Dirir
    ‘Dirir’s small girl’
b. gabádh yar oo Dirir Ø dhalay
    girl small and Dirir (her) begat
    ‘a small girl of Dirir’s (lit. (a) small girl and Dirir gave birth to (her))’

Why should this be? The answer seems to lie in some properties of the Somali determiners. It is well known that possessive nominals are definite descriptions (Barwise and Cooper 1981) and that structural genitive involves a “strong” reading of the determiner (e.g., Milner 1978). Unlike French indefinites, however, Somali indefinites cannot have a “strong” interpretation. The universal reading is not available for bare plurals, which must be interpreted existentially.

    elephant-detM[+nom]/elephants(f) F mammal
    ‘The elephant is (a) mammal.’
b. Maroodı ´-gu wuxuú ká míd yahay naasleý-da.
    elephant-detM expl.F.3MS from one is mammal-detF
    ‘The elephant is a mammal (lit. is one from the mammal).’

The answer I have suggested is that genitive constructions universally involve a form of quantification, but the conditions of use of quantified expressions vary among languages in the choice of the features that are used by the computational system. Given the derivational nature of pluralization in Somali, the [pl] feature plays virtually no role in the syntactic computation: there is no syntactic plural agreement in the DP, no determiner quantifiers (i.e., quantifiers that behave like determiners, such as every, all (D+Num)). Tense morphology then plays the same role as number morphology in the functional domain of nominals.
Still, the contrast between (28b) and (28c) is sharp and needs to be explained. Intuitively, Somali indefinites have no structural possessor in their representations, because the rest of the structure (D+T) is lacking. What we have here is indeed a conjunction of predicates, a modification relation. Structural genitive on the other hand is a reflex of the D-T relation, just as nominative case, according to P&T, is a reflex of the C-T relation. But for this to be a solution of any interest, there must be a distinct representation for structural genitive. If it is not modification, what is it? If these questions have no answer, the suggested explanation is no more than an observation.

Clearly, we want to keep the idea that the “possessor” is a purely structural role, with no inherent semantic value. At the same time, we do not want to abandon Benveniste’s (1960) insight that possessive constructions contain a “disguised” locative (i.e., be + locative preposition; see Guéron 1995). Kayne (1993) and Larson and Cho (1999), among many others, argue for a derivational view of this relation, but I will not rehearse these analyses here. Instead, I want to suggest an alternative based on Marantz’s (1993) analysis of double object constructions. The analysis explains the relevant facts, preserves DP as a nonverbal (and nonclausal) syntactic and semantic category, and also captures the “uT on D” view of structural case in the nominal domain.

16.4.3 The Applicative Analysis

There is another way of thinking about the relation between nouns and their “possessors.” According to this approach, the genitive is not a predicate (or an argument inside a predicate phrase acting as an intersective modifier), but an “applied” argument in a complex predicate construction (Larson 1988), like the higher object in English double object constructions (Marantz 1993 and much related recent work). On Marantz’s assumption that argument roles are mapped from “bottom to top” according to the compositionality of event structure, such constructions are “hidden” applicatives in which the benefactive/recipient is licensed in the specifier of the higher V, a null applicative morpheme. Likewise, possessive constructions can be viewed as the nominal equivalent of double object constructions. Plainly, the genitive argument is not a “true” argument of the noun. The “possessor” is actually an “affected object” introduced by an Appl(licative) head, interpreted as the θ-relaiton that holds between an individual that is merged in its specifier position and the individual described by its complement NP. In other words, a structure for possessive constructions may look like (31), where alienable “possessors” are merged in Spec,Appl, and Appl semantically constructs e₂ by taking e₁ as complement in a complex predicate construction.
Marantz’s account of double object constructions relies on the idea that such structures are not derived (contrary to Larson’s (1988) account). Likewise, I assume that the possessor is introduced by Merge (unlike Larson and Cho (1999), who propose that obliques are converted into objects marked with genitive case). This assumption is supported independently by the fact that Somali does not have PPs or obliquely case-marked constituents. Before turning to the more complicated facets of the Somali applicative system, I will briefly mention some tense properties of inalienable possession and predicative genitive constructions that supply converging evidence for the analysis just sketched.

16.4.3.1 Inalienable/Alienable Possession As I have noted elsewhere (Lecarme 1996), the distribution of tense morphemes in relational nouns in Somali (kinship terms, body part nouns, part-whole expressions) is restricted in a way not observed in other DPs. As (32a) shows, nouns like ‘mother’ never inflect for tense. A past tense marked on habártoo ‘mother’ would trigger, not the so-called ‘deceased’ reading, but the awkward interpretation ‘ex-mother’, clearly indicating that the tense so marked unambiguously would locate the (atemporal) kinship relation. Likewise, inalienably possessed DPs never are marked with [past]. In (32b), the past tense marked on the inalienable possessor cu núggi ‘the child’ matches that of the matrix verb (as nominal tense and verbal tense generally overlap or “agree” in the unmarked case), but the inalienably possessed DP gacánta ‘the hand’ is obligatorily nonpast.

(32) a. macallimád-ood-ii iyo habár-too/*-ii
teacher.f-detF.poss3P-[+past] and mother-detF.poss3P/-[+past]
‘their teacher(f) and their mother’
b. Gacán-ta/*-ii ayaan cúñug-gii ká qabtay.
   hand-detF/[-+past] F.1S child-detM[+past] from took[+past]
   ‘I took the child by the hand.’

On Marantz’s (1993) analysis of double object constructions, alienable possessors are compositionally outside the event \( e_1 \) constructed by the verb. While the benefactive is always located in \( e_2 \) outside the event affecting the theme, inalienable possession is taken to occur within the same \( e \) as that affecting the theme. Transposing these relations in the noun phrase, the “applied” possessor involves an individual \( e_2 \) separate from \( e_1 \) in the representation. The tense value assigned to the possessor and the tense value assigned to the inalienably possessed cannot differ, given that they cannot be located independently; in other words, the location of the former necessarily includes the location of the latter.

16.4.3.2 Predicative Genitives  The distribution of tense morphology in Somali predicative genitives also provides evidence for the proposed analysis. In the context of nominal predication, and more generally in the present tense, predicative posses-
sives exhibit an exceptional pattern in that the alienably possessed DP must be marked [+past], as evidenced by the following examples:\(^{23}\)

(33) a. Búug-gani waa búug-gii Maryan.
   ‘This book is Maryan’s book.’

b. Búug-gan waa búug-g-áy-g-ii/waa k-áy-gii.
   book-detM.dem F book-m-Poss1S-m[+past]/F m-Poss1S-detM[+past]
   ‘This book is my book/is mine.’

c. Adí-gu xáas-k-áy-gii baad tahay.
   thou-detM[+nom] wife-m-Poss1S-detM[+past] F.2S fs.is
   ‘You are my wife.’

Why must there be [past] morphology on the DP predicate? It is well known that the kind of possession involved here is not so-called inalienable, individual-level posses-
sion, but temporary, stage-level possession. There is reason to think that PAST does not bind \( e_1 \): although the DP is definite, it lacks the discourse properties of definite DP arguments, as well as the uniqueness property of definite DP predicates. If “free \( R \)” were involved in the interpretation of predicate possessives, then the time of the predicate possessive would be determined by context. We would not expect a past tense to obligatorily appear in these constructions. Thus, the only viable proposal is that PAST binds \( e_2 \), conveying the interpretation that the possession relation holds before the time of utterance.
16.4.3.3 The Somali Applicative Constructions  The most remarkable descriptive fact about the parallelism between genitive and double object structures is that in the Somali applicative constructions, the “applied” genitive pronoun comes from the possessive pronoun paradigm; see table 16.1.24 (Note that third person referential object pronouns are null morphemes in Somali.) This morphological parallelism provides strong empirical evidence for the proposed analysis. To show this fully, it is necessary to describe the main properties of the Somali applicative constructions, concentrating on those that are of interest to the problem at hand.

Somali exhibits a particular type of the applicative constructions originally best known from Bantu languages, but now recognized in a number of languages since Marantz 1993 and much related recent work. As in Bantu, the Somali applicative constructions arise from an “extended” verb form that introduces the arguments that in many languages are expressed as obliques (adpositions or semantic cases). The Somali applied morphemes indicate a wide range of semantic roles, depending on the meaning of the verb.25 Their more common meanings are $u$ = allative (dative)/benefactive, $k\ddot{u}$ = locative/instrumental, $k\dot{a}$ = ablative, $l\ddot{a}$ = comitative. They do not have independent lexical content (e.g., $u$ may mark both the allative and the benefactive, $k\ddot{u}$ may mark both the instrumental and the locative, and the two may co-occur in the same sentence). The applied form is the only grammatical means for adding these semantic arguments to the verb, as there are no prepositional or obliquely case-marked phrases in the language.26 Also, the applied morpheme may appear as part of the lexical representation of the verb, as it also appears in compositions, and quite a number of applied verbs do not exist as independent forms. This distribution is hardly consistent with a preposition-based account (e.g., Baker 1988), according to which the applied morpheme must be adjoined material that starts out subordinate to the matrix verb. This approach also would prove inadequate on grounds of learnability, given the lack of positive evidence available to the child acquiring the relevant structures.

<table>
<thead>
<tr>
<th>Genitive pronouns</th>
<th>“Possessive” pronouns</th>
<th>“Applied” object pronouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(-t/k)-åy-</td>
<td>k-åy</td>
</tr>
<tr>
<td>2</td>
<td>(-t/k)-åa-</td>
<td>k-åa</td>
</tr>
<tr>
<td>3m</td>
<td>(-t/k)-îis-</td>
<td>$\emptyset$</td>
</tr>
<tr>
<td>3f</td>
<td>(-t/k)-éed-</td>
<td>$\emptyset$</td>
</tr>
<tr>
<td>1Pexcl.</td>
<td>(-t/k)-ayô-</td>
<td>k-ayô</td>
</tr>
<tr>
<td>1Pincl.</td>
<td>(-t/k)-ëen-</td>
<td>k-ëen</td>
</tr>
<tr>
<td>2P</td>
<td>(-t/k)-îin-</td>
<td>k-îin</td>
</tr>
<tr>
<td>3P</td>
<td>(-t/k)-ôod-</td>
<td>$\emptyset$</td>
</tr>
</tbody>
</table>

24 Jacqueline Lecarme

Table 16.1
Genitive pronouns
Somali instead follows the Indo-European pattern of applicative constructions; that is, the preverb + verb compositions indeed constitute a “single semantic word” comparable to simple lexical verbs, yet they permit tmesis, or syntactic separation. While in Bantu languages the applied morpheme is incorporated into the verb, the Somali applied morphemes ū, kū, kā, lā are not suffixes or prefixes, but independent, inherently accented words (the complex preverb-verb does not correspond to either a morphological or a phonological unit). Unlike an affix, a preverb can be separated from the verb by a number of elements, including the sentence negation má and the enclitic conjunction -na ‘and’. As seen in (34), the applied genitive clitic also occurs in between, and appears adjacent to the verb (and must remain in the same phonological phrase as the verb). This gives rise to the linear organization of the preverbal elements in (34), where the ellipses can be filled by nonclitic elements.27

(34) **Order of the preverbal elements in (35)**

subject clitic . . . object clitic + “applicative” preverbs28 . . . applied object – verb

Given that the third person referential object pronoun is a null morpheme in Somali, only first and second person pronouns (inherently associated with animacy) surface in a double object construction. The verbs that participate in these constructions fall into the same broad semantic class as the English double object construction verbs. Simple ditransitive verb roots also exist (e.g., sii ‘give’, bar ‘teach’); these will be assumed to involve a null applicative morpheme as in languages like English (see Marantz 1993; Pesetsky 1995). The double object construction can be illustrated by the examples in (35).

(35) a. Warqád ma iigú kāa dhiibay?
   letter Q me.to.for Poss2S gave
   ‘Did he give you a letter for me?’

b. Is shéeg!
   refl say
   ‘Introduce yourself!’

c. Is kū káy shéeg!
   refl to Poss1S say
   ‘Introduce yourself to me!’

d. Waan is kíin baray.
   F+1S refl Poss2P teach
   ‘I introduced you to each other (lit. I taught you(pl) you(refl)).’

A “templatic” view of the (summary description of the) distributional facts in (34) is generally assumed in the literature.29 On this view, there is no syntactic source for the genitive clitic, the possessive form instead resulting from some morphophonono-
logical “strategy” (a nonthird person object pronoun occupies the one clitic object slot and prevents another nonthird person object pronoun from occupying the same slot). But the “slots” clearly are associated with the features (e.g., structural case) that are expressed by morphemes in those slots: crucially, the relative position of the nominative, accusative, and genitive clitics in Somali does not vary.

The analysis I am proposing does not contain any correlate to any notion of templates or slots. Instead, I assume that the pattern of argument clitics in (34) is isomorphic to the syntactic argument structure in a way easily captured by Marantz’s theory of double object constructions. This pattern is crucially sensitive to hierarchical relations among overt pronouns. Even though many of the other possible symptoms of c-command are untestable for independent reasons (because full DPs do not surface in argument position), Somali still shows the characteristic asymmetries of double object constructions identified by Barss and Lasnik (1986). On the assumption that the clitics are merged as arguments in a “stacked VP” structure similar to that proposed by Larson (1988), the genitive clitic in a double object construction is in a structurally higher VP than the accusative clitic. The data in (35b,c) and (35d), where the reflexive clitic is is bound by the subject or is bound by the genitive clitic, show that the surface order of objects—namely, accusative-genitive—does not affect c-command relations: the genitive clitic still asymmetrically c-commands the accusative clitic (35d).

Although the Somali facts are complex and of an unfamiliar type, the morphological parallelism shown in table 16.1 is not as uncommon as one might think. There is also morphosyntactic evidence for this parallelism in other languages (e.g., Hungarian, where the dative case suffix may mark not only the indirect object but also the possessor), suggesting that it does not hold in Somali only, but uniformly from a crosslinguistic perspective, and arguably in Romance as well (cf. Italian loro, French leur ‘their’). Of course, the “applicative” analysis of both genitive and double object constructions is more complex than I have indicated so far; and space constraints preclude further discussion. The important point is that the Somali pattern of argument clitics provides a crucial clue to the problem of what correspondence actually exists between “external” arguments in the nominal and verbal domains.

16.4.4 Structural Genitive Case on Pesetsky and Torrego’s Approach: Discussion

Assuming, following P&T, that $uT$ on D is the proper characterization of structural case, how does structural genitive fit into the hypothesis? An important point must be made here. Baker (1996, 260) has suggested that there is an analogy between nouns and unaccusative verbs, which do not assign structural case and have no “true” external argument. Therefore, there is at most one structural case-assigning head in a nominal construction, which Baker assumes to be D, parallel to tensed I. On this account, possessors in DPs are essentially parallel to goals in unaccusative construc-
tions, “where D corresponds to I, the R argument of N corresponds to the Theme argument of V, and the possessive argument of V corresponds to the goal argument of V.” If this is correct, how does the structural parallel obtain between structural genitive and double object constructions, which crucially involve transitive verbs?

I want to argue that precisely because nouns are not verbs, even unaccusative verbs, adding a structural “possessor” in nouns is different from adding a goal argument. Crucially, the ū-dative/benefactive applicative constructions are possible with nouns in Somali (e.g., waa noô dagáal ‘it is war for us’ (noô = /na + ū/ ‘us-for’)), introducing arguments that are not genitive arguments. What I want to suggest is that, even though nouns do not assign case, there exists some reflex of Burzio’s generalization in the realization of the structural genitive. The null Appl head actually has the property described by Burzio in that it merges with an applied argument and enters into an Agree relation with a lower argument already merged in the structure, that is, the noun itself, corresponding to the theme in a double object construction. If correct, this suggestion might help to solve a problem inherent to most accounts of genitive case, namely, the fact that the φ-features in Appl (morphologically expressed in some languages, as is clear from the overt gender feature in Somali in (11) and (31)) are the features of the head noun, not the genitive argument.30 Since this problem is also inherent to P&T’s account of genitive case, I will address it briefly.

P&T assume a syntactic parallelism between C and D: C, like D, turns a proposition into something that can act as an argument (Szabolcsi 1987). On their account, English that is not C, but an instance of T that has moved to C. Likewise, ‘s, the, a are not the highest head of DP, but belong to the category R (“article”). RP is the complement of D, which is null in English. On this account, the possessor is attracted to ‘s by some feature on ‘s with the EPP property. If uF were uT, P&T argue, uT on ‘s would be marked for deletion within DP by the raising of the possessor; then DP would not be able to be merged into a higher structure where uT on D can be deleted. The feature driving movement (or direct merger) of the possessor therefore is not uT, but uF, some other feature on ‘s with the EPP property.

(36) P&T 2001, (97a)
[DP[D, uT[−EPP], φ]]RP[DP Mary, uT, F], [R ‘s, uF[+EPP]][NP t; criticism [of Sue]]]

If we suppose that uF is uφ, then uφ matches the interpretable φ of the possessor, not the larger DP. On a “bottom-to-top” view of DP building, ‘s agreeing with the possessor must not be merged with NP. A second, and more important, issue is that genitive case is not captured in P&T’s generalization that structural case is uT on D.

In the analysis developed here, possessive ‘s does not belong to the same category as the and a: like that and for, the and a do not create a specifier and are introduced in the relation Merge-Agree (select). This accords with the fact that the, a, and ‘s are not in complementary distribution (a children’s book). Suppose ‘s to be an instance of
Appl. Then $uT$ on Poss enters a relation with $uT$ in Appl with an EPP property, and $uT$ on D (structural genitive) is marked for deletion on the DP cycle. This can be represented as in (37), where the time-sensitive $e$-variables correspond to $uT$, and $x$ and $y$ to the $\phi$-features of the associated DPs.

(37)

The larger (English) DP still retains an instance of $uT$ on D once the DP cycle is finished, and is able to be merged into a higher structure where $uT$ on D can be deleted. The Somali DP is “self-sufficient” with respect to $uT$, since D in this language contains both the (phonologically null) D that bears $uT$ and a moved instance of T.

16.5 $uT$ on D: Further Consequences

On the basis of Somali facts, I have argued that structural case in the nominal domain involves a kind of applicative construction, that is, a temporally located domain of predication created by adding an “applied” argument to the NP predicate. On this view, “structural genitive” is the name for $uT$ on D in the D-T environment. Inherent case might involve a “lower” applicative construction, that is, a nontemporally located thematic relation between two individuals. This only distantly reflects the distinction between “high” and “low” applicatives (Pylkkänen 2000 and related works), which I do not explicitly discuss here, as it arose specifically to address aspects of asymmetries that cannot be tested in Somali for independent reasons. Interestingly, P&T’s hypothesis leads us immediately to an understanding of the main configurational properties of the language. Somali is a “pronominal argument” language in that only the pronominal clitics (universally $uT$-on-D categories) are in argument position and enter a syntactic relation with $u\phi$ on finite T. DPs and CPs (complement clauses introduced by $m$) are XP adjuncts and share the same syntactic distribution. Further properties of this kind of syntax follow: there is no “case-driven” A-movement of DPs in the language (e.g., absence of syntactic passivization,
absence of raising and control structures), properties also shared by the languages of the Salishan group (Jelinek 1984; Wiltschko 2001). It can also be observed that the distribution of nonreferential nominals (nonspecifics, quantified noun phrases such as _nobody, what book . . ._), which do not contain an instance of T, is restricted in a way not observed with “tensed” DPs. Such nominals must somehow enter a syntactic relation with a “verbal” T-chain; that is, they must occur in Spec,CP or in strictly preverbal position. A telling example involves the implicit object _wax_ ‘thing’ required in the intransitive use of “indefinite object deletion verbs” (_eat, write, cook, . . ._), since a zero third-person object pronoun is a discourse referent in Somali.

(38) a. _Wax_ búu akhriyay.
   thing F.3MS read
   ‘(What did he do today?) He read (lit. he read thing).’

b. Xee‘b-ta ba‘an _wax_ kú soo akhrisánayaa.
   beach-detF F.1S thing at (deict.) am.reading
   ‘I am going to read on the beach (lit. read thing).’

I conclude that beyond its role in explaining a wide range of other phenomena, P&T’s hypothesis provides a general theory of the relation between tense and the configurationality of languages into which the Somali data fall neatly.

Notes

This chapter is based on material presented at the International Workshop on the Syntax and Semantics Interface (MIT, May 1998), and the International Round Table on the Syntax of Tense and Aspect (Université Paris 7, November 2000). I wish to thank the participants at both events. I am most grateful to Jacqueline Guéron and Richard Larson for oral and written comments on this or earlier versions and for important questions and suggestions, even though they would not agree with all my ideas.

1. Nominal tense morphology is found not only throughout the East Cushitic languages, but also in totally unrelated languages, among them St’at’imcets, Halkomelem (Salishan—see Demirdache 1997; Burton 1997; Wiltschko 2001), Kayardild, Jingulu (Australian—see Evans 1995; Pensalfini 1997), and many others. A wide-ranging survey of languages where the phenomenon occurs can be found in Nordlinger and Sadler, in preparation.

2. This system seems to be found only in the East Cushitic languages closely related to Somali (see Heine 1978, 27). Among the four demonstrative morphemes, only the first two can also be used in an abstract sense, like their English translations; -éer and -óo are used (in some parts of the Somali-speaking area) to encode far but visible distance. For phonological reasons that are not all well understood, /k/ may surface as /h/ or /q/, and /t/ may surface as /d/ or /sh/.

3. The complex morpheme -kii/-tii is referred to as the “definite article of the remote type” (Andrzejewski 1964, 119).

4. In Cushitic as in other languages, there is a connection between the past tense and the category of evidentiality. In Lecarmé, 2003, I argue that the evidential character (nonvisible) is a particular instance of a modal use of the past tense.
5. Other manifestations of nominative case include the -i morphology that appears as a suffix on indefinite nouns or larger “nominal clusters,” depending on their phonological shape. Prosodic factors also are relevant (see Andrzejewski 1964).

6. The examples in the text follow the national orthography (a Roman (adapted) writing system introduced in 1972) with small modifications: the main tonal accent of a prosodic word is noted with an acute accent; hyphens are added for morpheme separation.

   Key to Somali gloss: F = “focus marker” (I analyze the baa/waa morpheme as the declarative root C complementizer; see Lecarme 1991, 1999a), detF/M = definite feminine/masculine article, dem = demonstrative, neg = negation. Pronominal clitics are identified by their person, number, and gender features (uppercase). Lowercase = agreement features. Referential third person object pronouns are $∅$ in Somali.

7. The tense system seems to exclude abstract nouns and names, as expected.

8. In Guéron and Hoekstra’s analysis, the temporal interpretation of a finite clause is syntactically construed as the creation of an extended chain (Op, Ti, Vi(ei)), which links the T/V complex to the C domain. The $e$-time represented in T is fixed relative to the speech time, which is itself represented in the C domain—for example, in the form of a deictic operator. Following an initial suggestion by Guglielmo Cinque (personal communication), I assume throughout this chapter that in Somali, T is syncretic with Det; that is, in the present framework, what is pronounced as -kii/-ti is T morphologically merged in D (D itself, I assume, is null in Somali).

9. This phenomenon is known as “pluractionality” (Newman 1990; see also Fassi Fehri 2003). Pluractional verbs in Somali (transitive and unergative), depending on their meaning, are ambiguous between an intensive, repetitive, or inchoative reading (the “plurality of event” reading), and a quantitative subject (or object) reading. On nominal pluralization processes, see Lecarme 2002.

10. I owe this objection to Richard Larson.

11. Number agreement of the English or Romance type does not exist in Somali (see Lecarme 2002 for discussion). Reduplication in adjectives indicates agreement (concord) with plural subjects. This of course strongly recalls the “pluractionality” facts mentioned in note 9. As adjectives typically are stative, no “plurality of event” reading is available. A quantitative subject reading is therefore necessarily obtained.

12. Adjectives have been called “hybrid verbs” (Andrzejewski 1969) and are classed on a par with the verb ‘to be’ (root -ah-), a highly irregular verb with which they share the same morphological tense endings. A most remarkable fact is that the tense vowels marking the nonpast/past alternation (a/i) are the “polar opposites” of the tense vowels of the other verbs (i/a). Since the phenomenon more generally concerns stative verbs (such as ‘remain’ and ‘know’), it would be interesting to relate the a/i versus i/a “polarity” to the tense/aspect system, as Hetzron has suggested (1980, 106).

13. Note, however, that adjectives of this class can be extraposed and syntactically conjoined with other adjectives, even though they are semantically nonintersective.

14. According to Vergnaud (1985, 301), [definite] can function as a formal feature. As Borer (1996) has argued, some evidence that [definite] is indeed a feature in Semitic comes from the presence of definite concord on adjectives.
15. I will put aside the most clearly modifier-like genitives that occur in compounds: inherent genitive case morphology is an invariable -eed (aad|ood|ə, depending on the noun stem). These nonspecific NPs cannot pluralize or be modified. Inherent genitive case does not depend on whether the head noun is definite or indefinite, and it always occurs postnominally.

(i) **Inherent genitive case**
   a. dhibaatooyin farsamo iyo cilmiy-eed
      problems(m) economics(f) and culture(m)-eed
      ‘economic and cultural problems’
   b. haléeel-ka maskax-eed
      activity-detM brain(f)-eed
      ‘the brain’s activity’
   c. haleel maskax-éeed-ka
      activity(m) brain(f)-eed-detM
      ‘the cerebral activity’

16. As I have discussed elsewhere (e.g., Lecarme 1999a), Somali DPs are licensed either in adjunct positions, where a binary morphological case system [+/-nominative] is operative (A-adjunction), or in Spec,CP or Spec,DP, where they are marked uniformly with the default accusative (nonnominative) case (A-adjunction). There is further evidence in the language that the whole DP functions as a domain for pronoun and anaphor binding; for example, a genitive pronoun may not c-command a coreferential DP in postnominal position.

17. This assumption departs slightly from the proposals offered in Lecarme 1996, 1999b, where postnominal genitive DPs were assumed to stay “in situ” in a Spec,NP position.

18. The well-known exception is the preposition ilää ‘until, as far as’, borrowed from Arabic. Place locatives like ‘above’, ‘below’, ‘inside’, ‘outside’, and so on, as in many languages, are nominal expressions that take the form of a genitive construction.

19. Note that the symmetric conjunction (coordination) of NP/DP constituents must be realized by another conjunction: iyo.

20. In Halkomelem, a Salishan language, the past tense morpheme attached to nominals may ambiguously locate either the nominal or the possession relation (see Burton 1997). The reason the ‘deceased’, ‘destroyed’, and ‘loss of possession’ readings are available in Halkomelem but not in Somali might be that the Halkomelem -lh morpheme is not quite a tense morpheme (D-T); rather, it is some kind of adjectival/adverbial time word, with some inherent lexical semantics that allows it to apply naturally to either kind of entity, event/state or nonevent individuals.

21. See note 15. However (26b) is to be analyzed, I assume that the syntactic structure is mediated by the “little n” hosting the gender feature of a noun or stem (see Lecarme 2002).

22. Somali marks a “unique”/“nonunique” distinction among kinship relations. Tense on nouns like ‘son’ or ‘brother’ is possible, unambiguously locating the time of the individual.

23. Identity sentences such as (33a) and (33b), where both nominals are referential, illustrate the use of waa as a copula and lack all verbal morphology such as tense, aspect, or voice (see Lecarme 1999a).

24. Elsewhere (Lecarme 1991, 1999a), I have used the term **oblique object pronouns** to refer to “applied” genitive pronouns; Saeed (1999, 73) calls them **second series object pronouns**. I take the initial element /k/ to represent [masculine] (i.e., lack of [feminine]) realized in D, assuming
that clitic pronominals can be formally defined as the tenseless (more generally, I-less) version of a DP.

25. Other terms used for them include prepositional particles (Andrzejewski 1960), preverbal case markers (Hetzron 1980), adpositions (Saeed 1999), and prepositional preverbs (Lecarme 1999a). Note that adposition suggests that the preverb forms a syntactic and semantic unit with its complement, which clearly is not the case in Somali.

26. See note 18. The situation described here is peculiar to the subgroup of languages called Omo-Tana (Somali, Rendille, Boni, Dasenech, etc.). A postpositional system is found elsewhere in Cushitic. See Hetzron 1980 for arguments from a comparative and historical perspective, showing that the preverb system must be considered an original feature of Proto-Cushitic.

27. See Saeed 1999, 164, for a more detailed description.

28. The preverbs must occur in the fixed order ùkùkàìà (Andrzejewski 1960), and the first three are able to occur twice. They combine to form a phonological unit, the proper domain of a particular set of phonological rules (e.g., an initial /k/ is realized as [g] by a general rule of intervocalic voicing), the rightmost preverb keeping its accent. Hetzron (1977, 199) has summed up the essence of the entire system: (i) noninitial ù becomes /gu/; (ii) when two /k/-initial preverbs are combined, the result is always kagà. As a result of these rules, ugu may stand for /ù+ù/ or /ù+kù/; kagà for /kù+kù/, /kù+kà/, or /kà+kà/; ugagà for /ù/ + any of these combinations; kagalà for any of these + /là/. More complex outputs are obtained when the impersonal subject la or the nonthird person object (accusative) clitics are prefixed to the phonological unit (see Andrzejewski 1960).

29. See Hetzron 1977, where interesting parallels with the Romance languages are also to be found. As Hetzron observes, “functional ambiguity” may arise in these constructions, with two possible readings (as in Spanish Te me presento ‘He introduced you to me/me to you’). This suggests, in terms of the present analysis, that the linking patterns (i.e., the relation between the 0-roles of a predicate’s arguments and their syntactic positions) is not fully predictable under the Uniformity of 0-Assignment Hypothesis (UTAH; Baker 1988, 46).

30. See Baker 1996, 260, for a related discussion.

References


Kratzer, Angelika. 1994. The event argument and the semantics of voice. Manuscript, University of Massachusetts, Amherst.


Wiltschko, Martina. 2001. Tense on D and (the lack of) nominative case. In Min-joo Kim and Uri Strauss, eds., *NELS 31*. Amherst: University of Massachusetts, GLSA.
17.1 The Appeal of Aspectual Determinants of Argument Expression

In recent literature, argument expression is often taken to be most immediately determined by aspectual properties. This idea is reflected in statements as strong as Tenny’s Aspectual Interface Hypothesis that “Only the aspectual part of thematic structure is visible to the universal linking principles” (1994, 2) and in Van Hout’s (1996) proposal that many argument expression alternations are instances of event type-shifting—that is, aspectual reclassification. It is also implicit in Verkuyl’s (1993, 20) Plus Principle, a compositionality principle that requires objects to contribute to bounding an event, preventing push and other basically atelic transitive verbs from being analyzed as true transitives (pp. 329–349). The most frequently cited aspectual semantic determinants include predicate-related (or event-related) notions such as telicity and boundedness and NP-related (or entity-related) notions such as incremental theme (Dowty 1991), measure (Tenny 1987, 1992, 1994), delimiter (Borer 1994; Ritter and Rosen 1998; Tenny 1987, 1992, 1994), and subject of result (Borer 1998). Researchers crucially tie these aspectual notions to the transitivity of the predicate and to the direct objecthood of the relevant NPs.

In this chapter, we argue that the impact of traditionally recognized aspectual properties—particularly the notions just cited—on argument expression has been overestimated (see also Reinhart 2000). Notions such as telicity have been implicated in certain well-known accusative/oblique morphological case alternations (Ackerman and Moore 1999, 2001; Arad 1998; Borer 1994, 1998; Filip 1989; Ritter and Rosen 1998; Tenny 1987, 1992, 1994), and incremental themehood may be one of the factors influencing direct object choice (Dowty 1991; Tenny 1994); however, they are not the only semantic determinants of argument expression and perhaps not even the major ones.

In this chapter, we propose that another event-based semantic notion, event complexity, should be included among the factors that determine argument expression. We delineate the notion of event complexity and then explicate the relationship
between it and more traditional aspeccal notions, arguing that event complexity should not be equated with any traditional aspeccal notions. In particular, the notion “complex event” should not be equated with either “telse event” or “accomplishment.” The empirical basis of our argument is provided by one of the best-known diagnostics for unaccusativity in English: the resultative construction. The connection between unaccusativity and telicity was first pointed out by L. Levin (1986) and by Van Valin (1990), who draws on the work of Centineo (1986, 1996). Telicity has subsequently been taken to be the crucial semantic factor distinguishing unaccusative from unergative verbs in several papers by Borer (1994, 1998) and Hoekstra (1988, 1992), even though we had already pointed out (see Levin and Rappaport Hovav (L&RH) 1992) that not all unaccusative verbs are telic; in fact, more recently, Reinhart (2000) argues forcefully against relating unaccusativity and telicity.

We too focus on telicity and related notions and their role in determining whether a verb is found in the unaccusative syntactic configuration. English intransitive verbs enter into the resultative construction in two different syntactic frames, and the distinct syntax of the frames has been attributed to whether the verb in the frame is unaccusative or unergative. The question we address is what semantic property distinguishes between the two patterns and how this feature can be tied to the difference in syntax. We show that an account in which the distribution of verbs in the different resultative patterns is determined by aspeccal notions such as incremental theme, measure, or telicity does not make the appropriate distinctions, while one that appeals to event complexity as we define it does. The event complexity account was introduced in L&RH 1999 and in Rappaport Hovav and Levin (RH&L) 2001; here we briefly review it and then focus on its ramifications for the nature of the semantic determinants of argument expression.

17.2 The Challenge of English Intransitive-Based Resultatives

Previous studies of the resultative construction have uncovered a striking generalization: intransitive verbs combine with resultative XPs in two different ways (Hoekstra 1988; L&RH 1995; Simpson 1983). They may have result XPs predicated of their subjects directly, as in (1), in what we call the bare XP pattern; alternatively, they may have result XPs predicated of their subjects via the mediation of a “fake” reflexive object, as in (2), in what we call the reflexive pattern.

(1) a. The clothes steamed dry on the radiator.
   b. The kettle boiled dry.

(2) a. The fans screamed themselves hoarse.
   b. The tourists walked themselves tired.
Any theory of argument expression must explain the distribution of intransitive verbs in the resultative construction. One common proposal is that unaccusative verbs enter into the bare XP pattern, while unergative verbs enter into the reflexive pattern. The difference in resultative patterns is attributed to the different syntactic configurations that the two types of verbs are found in (Hoekstra 1988; L&RH 1995; Rothstein 1992). That is, assuming that there is a syntactic restriction that the result XP must be predicated of a deep object (what we have called the “direct object restriction”; see L&RH 1995), then it follows that unaccusative verbs can have a result XP predicated directly of their derived subjects, whereas unergative verbs cannot have a result XP predicated directly of their underived subjects. However, if, as is usually assumed, argument expression is semantically determined, then we must ask what semantic property distinguishes between the verbs in the two patterns. The semantic property should then correlate with whatever semantic property distinguishes between unaccusative and unergative verbs.¹

As mentioned, the semantic properties that are usually claimed to determine the unaccusative or unergative status of an intransitive verb are telicity, a property of predicates, and measure or incremental theme, both properties of NPs. Although incremental theme and measure are not defined in precisely the same way, they reflect comparable insights into what is important to characterizing the time course of an event and they overlap significantly, so in what follows we do not distinguish between them. There are two ways, in principle, that these notions might figure in predictions concerning the distribution of verbs in the resultative construction; we consider both to see if either makes the correct prediction. One possibility is that the status of a verb in isolation is evaluated with respect to one of these notions, and this determines how it enters into the resultative construction; the other is that the resultative construction with the verb already integrated into it is evaluated to determine whether semantic differences are observed between the two resultative patterns. The second approach also requires an explanation of why different classes of verbs give rise to a semantic difference when entering into the construction.

As we now show, neither telicity nor incremental theme or measure makes the right predictions, whether with respect to the verb or the construction. Consider first the NP-related notions “measure” and “incremental theme.” When used in isolation, none of the verbs found in (1)–(2) take arguments that are incremental themes or measures in the traditional sense of providing a homomorphism between the denotations of the argument and the event (Dowty 1991; Krifka 1989, 1992, 1998; Tenny 1992, 1994). In isolation, these verbs are atelic, and their single argument does not undergo any kind of scalar change. On the other hand, when found in the resultative construction, the single argument of all these verbs is a measure or an incremental theme in that the entity it denotes undergoes a change that measures the temporal extent of the event.² Therefore, the notions “incremental theme” and “measure” do
not distinguish between the verbs that enter into the bare XP pattern and those that enter into the reflexive pattern.

We now move on to the predicate-related notion “telicity.” All the verbs in (1)–(2) are atelic in isolation, as shown in (3)–(4), yet some enter into one form of the resultative construction, as in (1), and some into the other, as in (2). Nevertheless, both types of resultative constructions are telic, as shown in (5)–(6).

(3) a. The clothes steamed on the radiator for half an hour/*in half an hour.
   b. The kettle boiled for half an hour/*in half an hour.

(4) a. The tourists screamed for an hour/*in an hour.
   b. The tourists walked for two hours/*in two hours.

(5) a. The clothes steamed dry in ten minutes.
   b. The kettle boiled dry in ten minutes.

(6) a. The fans screamed themselves hoarse in no time.
   b. The tourists walked themselves tired in two hours.

Once again, the verbs in isolation are alike with respect to telicity, as are the resultative constructions containing them. Therefore, this notion does not provide an explanation for the distinct intransitive-based resultative patterns.

We therefore seek an alternative semantic difference between the two resultative patterns that can also be tied to the difference in their syntax. Following our earlier work (L&RH 1999; RH&L 2001), we suggest that the difference lies in the complexity of the events denoted by the two resultative patterns. This proposal reflects an assumption that a simple versus complex event distinction is crucial to argument expression, a proposal that is implicit in RH&L 1998 and made explicit in Levin 2000. In section 17.4, we argue that the notion “complex event” should not be identified with the aspectual notions “accomplishment” and “telic event” that have been previously suggested as controlling argument expression.

17.3 Event Complexity and Resultative Constructions

The linguistic representations of events can be characterized according to whether they are complex, consisting of two subevents, each of which is a well-formed and potentially independently occurring event, or simple, consisting of a single subevent. The distinction has consequences for argument realization via the Argument-per-Subevent Condition (L&RH 1999, 202; RH&L 2001, 779), a condition that follows from our Argument Realization Conditions (RH&L 1998, 112–113) and that has analogues in the work of Grimshaw and Vikner (1993), Van Hout (1996), and Kaufmann and Wunderlich (1998).
The Argument-per-Subevent Condition

There must be at least one argument XP in the syntax per subevent in the event structure.

As a consequence of this condition, argument realization patterns reflect event complexity, with simple and complex events having distinct argument expression options, which are tied to their differing event structures. In previous work, we accounted for the difference between the argument expression possibilities of various semantic classes of verbs by invoking principles that associate event structures of specific types with the components of meaning lexicalized by verbs; see Levin 1999 and RH&L 1998 for further discussion. Here, we review the results of L&RH 1999 and RH&L 2001, showing how the distinction in event types provides the foundation for explaining the need for a reflexive pronoun in some intransitive-based resultatives.

If we could show that reflexive resultatives have a complex event structure, then it would follow that such resultatives must include an object—the so-called fake reflexive pronoun—to meet the Argument-per-Subevent Condition, which requires two arguments to be realized since complex events have two subevents (L&RH 1999, 203–204; RH&L 2001, 780). In L&RH 1999, 207–211, and RH&L 2001, 775–777, we argue that reflexive resultatives indeed have a complex event structure, basing our claim on the lack of “temporal dependence” between the subevents in the events denoted by such resultatives, a property shared with lexical causatives, which are uncontroversially taken to denote complex events (Dowty 1979, 91–94; L&RH 1995, 83; McCawley 1971; Parsons 1990, 109–111). By lack of temporal dependence between the subevents, we mean that the two subevents need not necessarily unfold together temporally, with the result that a fair amount of flexibility is expected in the temporal relation between them. Temporal independence is illustrated for reflexive resultatives in (8), where the singing does not immediately result in hoarseness. Lack of temporal dependence also holds of lexical causatives, as illustrated by the examples in (9). In (9a), the act of putting arsenic in the coffee does not extend to the point of death; and in (9b), the banging may have been protracted, but the breaking is punctual.

(8) Sam sang enthusiastically during the class play. He woke up hoarse the next day and said, “Well, I guess I’ve sung myself hoarse.”

(9) a. The widow murdered the old man by putting arsenic in his coffee.

b. Casey’s persistent banging broke the window.

In L&RH 1999, we take lack of temporal dependence between the events in a single clause to be the criterial property of a complex event. If so, lack of temporal dependence between events dictates a complex event structure, which itself dictates the reflexive resultative pattern.
Bare XP resultatives are also often analyzed as being complex events (Carrier and Randall 1989; Croft 1991; Foley and Van Valin 1984; Pustejovsky 1991; Van Valin 1990). In some instances, this analysis appears to be particularly appropriate since the event represented by the result XP is not entailed by the verb. For instance, in the examples in (5) neither the steaming nor the boiling need entail a resulting state of dryness. However, the syntax of bare XP resultatives suggests a simple event analysis, since a complex event analysis would require a second argument by the Argument-per-Subevent Condition. The key to understanding the appropriate analysis of these bare XP resultatives lies in understanding the temporal relations between their purported subevents. Consider *Kim danced to the other side of the stage*, where there are events of dancing and of going across the stage. In this example, the dancing must continue until Kim reaches the other side of the stage. Thus, in contrast to reflexive resultatives, bare XP resultatives have subevents that are necessarily temporally dependent in that they must unfold together. As a consequence, both subevents, as well as the event as a whole, must have the same duration. Thus, the temporal contour of the event denoted by a bare XP resultative necessarily depends on that of the event denoted by the verb that heads it, as we discuss in L&RH 1999, 208–209, and RH&L 2001, 775–776. For example, the verb *bang* in isolation denotes a punctual event, and when it is found in the bare XP pattern *The gate banged shut*, the event as a whole is also interpreted as punctual; the verb *rumble* denotes a durative event, and when it is used in the bare XP pattern *The gate rumbled shut*, the event as a whole is also interpreted as durative. In contrast, as expected given that the subevents in a reflexive resultative are not necessarily temporally dependent, the temporal contour of the event introduced by the verb can differ from that of the event introduced by the result XP. In L&RH 1999, 209, we illustrate this property with (10). Here the use of the matrix verb *wait* asserts that the event described by the reflexive resultative is durative, forcing an iterated interpretation of the semelfactive verb *cough*. Yet (10) allows an interpretation in which, following a series of coughs, the car came to life with a sudden start; thus, the achievement of the result state is punctual, even if the event as a whole is durative.

(10) ... I waited for the Jetta to cough itself awake. (V. Wilson Wesley, *No hiding place*, G. P. Putnam’s Sons, New York, 1997, 171)

Given the necessary temporal dependence of subevents that characterizes bare XP resultatives, we argue in L&RH 1999 that a simple event analysis is justified for such resultatives, even though two subevents are often discernible. Specifically, we propose that the subevents constitute a single event in event structure terms even if they are distinct events in conceptual structure terms. To justify the single event analysis, we show that the subevents satisfy conditions on event identity, such as being necessarily temporally dependent, allowing them to be “coidentified.” We suggest that
coidentified events can be seen as properties lexicalized in different predicates, but predicated of the same event variable. Evidence for such an analysis comes from adverbial modification (L&RH 1999, 207–209; RH&L 2001, 776–777). A rate adverbial inserted into a bare XP resultative is understood as modifying both events. For instance, *Tracy quickly ran to the library* entails both that Tracy got to the library quickly and that she ran quickly. If the two subevents described in this sentence were not necessarily temporally dependent, then *quickly* should be able to modify the running event, while a second temporal phrase should be able to independently specify the amount of time it takes to reach the destination. However, (11), which represents an attempt to do this, is judged to be a contradiction. The adverbial *quickly*, then, modifies both the traversal of the path and the manner of movement, suggesting that they are indeed predicated of the same event variable.

(11) Tracy ran quickly to the library, but it took her a long time to get there since she took a circuitous route.

Event complexity makes the right cut with respect to the intransitive-based resultative examples in (1) and (2), repeated here as (12) and (13). The subevents denoted by the bare XP resultatives in (12) are necessarily temporally dependent: the steaming and the boiling must both be temporally coextensive with the becoming dry. In contrast, the subevents in the reflexive resultatives in (13) need not be necessarily temporally dependent: the screaming and the walking do not necessarily have to be coextensive with the becoming hoarse or becoming tired.

(12) a. The clothes steamed dry on the radiator.
   b. The kettle boiled dry.

(13) a. The fans screamed themselves hoarse.
   b. The tourists walked themselves tired.

Thus, the notion of event complexity, grounded in temporal dependence, appears to succeed precisely where the notions of telicity and incremental themehood fail.

What determines whether or not the two events denoted in a resultative construction are temporally dependent? Temporal dependence appears to be based on people’s knowledge of the world, on the nature of the events denoted by the verbs and represented by the result XPs, and on the interdependence between them. As a consequence, in some instances the very same action can be associated with the bringing about of a particular change in either a temporally dependent or a temporally independent way. In such instances, our approach predicts that the same verb and the same XP can appear in both the bare XP pattern and the reflexive pattern. As discussed in L&RH 1999, 210–211, and RH&L 2001, 777–778, the examples in (14)–(16) of bare XP and reflexive resultatives that share both the same verb and the same result XP illustrate this phenomenon.
(14) a. ... a man grabbed and groped her and tried to get under her clothing, but she kicked free and fled. (The Courier-Journal, 4/21/1998, 05B)
b. “Laughing uproariously, Beckett lunged around the office with one leg of his pants on fire, trying to kick himself free....” (The Washington Post, 8/9/1998, F01)

(15) a. One woman gets up to leave, but Red-Eyes grabs her roughly by the arm and pulls her into his lap. She wriggles free, but remains seated obediently beside him. (The Ottawa Citizen, 11/30/1997, D10)
b. “Mr Duggan became alarmed about being caught in the door of a lift which was about to begin its descent and wriggled himself free.” (The Irish Times, 12/2/1994, 4)

(16) a. ... one of his race cars wiggled loose inside the transporter and caused damage to both of his cars. (Kansas City Star, 8/1/1997, D11)
b. “I had it [= the snake] pinned and when I lifted it up into the bag, it wiggled itself loose and just sank its fangs on my knuckle....” (The Washington Post, 7/11/1998, C03)

In these pairs, the choice of resultative pattern cannot be attributed to either the verb or the result XP. Furthermore, it is difficult to think of an explanation for the existence of such minimal pairs based on telicity, incremental themehood, or any other semantic notion usually tied to unaccusativity, such as agentivity. This pattern is duplicated with verbs of exerting force such as jerk, pull, tug, and yank. When these verbs are combined with APs such as loose or free, they give rise to pairs such as The child jerked free of his mother’s grasp/The child jerked himself free of his mother’s grasp. These verbs also are atelic in isolation, and both bare XP and reflexive resultatives with these verbs are telic. It is difficult, once again, to imagine an account of such minimal pairs that is based solely on telicity and that makes no appeal to a notion of temporal dependence.

17.4 What Is a Complex Event?

Although we have grounded the notion “complex event” in a property reflecting an event’s internal temporal constitution, this notion is not simply a recharacterization of familiar aspectual notions. The notions “accomplishment” and “telic event” are often taken to describe events comprising two subevents and, hence, are equated with the notion “complex event.” In this section, we show that these aspectual notions are not equivalent to the more specific notion “complex event” that we showed in the previous section to be relevant to argument expression: an event comprising two subevents that are not necessarily temporally dependent. Some event types fall
together under the rubrics “accomplishment” and “telic event,” while others fall together under the rubric “complex event”; and these two sets are not the same.

We have proposed that the notion of a complex event with temporally independent subevents enters into grammatically relevant generalizations, in that the argument expression options of such events are constrained in a certain way. This notion was shown to be relevant to accounting for the distribution of verbs in the two intransitive-based resultative patterns, as well as to the argument expression alternations available to particular verbs, as elaborated in Levin 1999 and RH&L 1998, 2002. But the set of events that qualify as complex is not identical with the set of events that qualify as accomplishments or telic events. Accomplishments and telic events are characterized by a different set of properties that are more semantic in nature than the argument expression properties that typify complex events; these involve the distribution of temporal adverbials and temporal entailments, such as the entailment from the progressive to the perfect.

If the notion “accomplishment” is taken to be temporally defined, as Vendler (1957) intended, then an accomplishment is an event with a duration and an endpoint, a definition that makes no mention of event complexity. The class of accomplishments is linguistically significant because accomplishments share a number of properties, perhaps the most widely cited among them being their ability to take in x time adverbials. Most of the diagnostics that single out accomplishments are semantic in nature because they pick up on an essential property of accomplishments: they are events that lack the subinterval property in Dowty’s (1979) sense. That is, accomplishments have the property that no proper subpart of the event is an instance of the event itself, a property that arises because accomplishments are defined by having a particular endpoint. They contrast in this respect with activities, which do show the subinterval property. Consequently, accomplishments when used in the progressive do not show the same entailments that activities do, as illustrated in (17) and (18).4

(17) a. Sasha is melting the butter. \(\not\rightarrow\) Sasha has melted the butter.
   b. Sasha is running to the store. \(\not\rightarrow\) Sasha has run to the store.

(18) a. Sasha is running. \(\Rightarrow\) Sasha has run.
   b. The dog is barking. \(\Rightarrow\) The dog has barked.

In contrast, the notion of a complex event as we have defined it is insensitive to whether an event has an endpoint, a criterial property not only of accomplishments, but of telic events in general; rather, it is associated with the semantic property of lack of necessary temporal dependence of subevents and the syntactic property of requiring an argument XP for each subevent.

The equation of the notions “accomplishment” and “complex event” seems to have come about via the identification of accomplishments with causative events.
Since causative events, being composed of a causing and a caused subevent, are necessarily complex events, accomplishments too, then, are taken to be complex events. The identification of accomplishments with causatives has its roots in Dowty’s (1979) attempt to represent Vendler’s (1957) aspectual classes using lexical decompositions inspired by work in Generative Semantics. Generative semanticists proposed a bieventive (actually a bisentential) analysis for lexical causatives (Lakoff 1970; McCawley 1968, 1971), and Dowty extends this analysis to accomplishments more generally.

The motivation for the decompositional complex event analysis of causatives comes from triads based on adjectives and verbs with a shared name. These triads are exemplified by the adjective cool, which describes an entity in a state, the intransitive verb cool, which is an inchoative verb describing the attainment of this state by an entity, and the transitive verb cool, which is a causative verb describing a causer bringing about this state in an entity. These three uses of cool, which all have meanings built on the state they take their name from, are exemplified in (19). The existence of relations between these three uses of cool has been demonstrated by pointing to the shared selectional restrictions on their theme arguments and to the entailment relations between the sentences in (19) (Lakoff 1970).

(19) a. The soup was cool.
    b. The soup cooled.
    c. Alex cooled the soup.

It is the association of a result state with lexical causatives and inchoatives that is largely responsible for the equation of accomplishments with causatives, as well as the equation of achievements—the second type of telic event, which is typified by having an endpoint, but no duration—with inchoatives. Dowty (1979, 77–78), following an earlier suggestion of Kenny’s quoted in (20), proposes that the endpoints of accomplishments and achievements define result states, hence capturing their telicity.

(20) But every performance must be ultimately the bringing about of a state or of an activity. . . . One performance differs from another in accordance with the differences between states of affairs brought about: performances are specified by their ends. (Kenny 1963, 178)

There is, then, another way in which the notions “accomplishment” and “lexical causative” converge. Not only are result states important to the characterization of accomplishments, but many lexical causatives, including deadjectival verbs such as cool, are also built on result states. Since lexical causatives more often than not are accomplishments aspectually, it is easy to see, then, why accomplishments, being associated with a result state, might be taken to be causative events, and, since causative events are necessarily complex events, accomplishments too are taken to be complex events. Many researchers have adopted the causative analysis of accom-
plishments presented in chapter 2 of Dowty 1979, including Erteschik-Shir and Rapoport (this volume), Slabakova (1997), Sybesma (1992), and Van Valin and colleagues (Foley and Van Valin 1984; Van Valin 1990, 1993; but see Van Valin and LaPolla 1997). Such analyses persist even though what essentially emerges from chapter 3 of Dowty 1979 is that the classes of events that are defined by the lexical decompositions he proposes do not have uniform temporal properties. In this chapter, Dowty himself shows that the two notions “accomplishment” and “causative” cannot be so easily equated, and further studies affirm their independence (Hay, Kennedy, and Levin 1999; Levin 2000; Pustejovsky 1991; Van Valin and LaPolla 1997). Once the link between the notions “accomplishment” and “causative” is weakened, so is the link between the notions “accomplishment” and “complex event.”

We now review evidence that there are complex events that are not accomplishments and accomplishments that are not complex events; this discussion draws once more on our previous work (Levin 2000, 416–418; L&RH 1999, 205–207; RH&L 2001, 780–782, 2002). First, not all complex events, as we have defined them, are accomplishments. Assuming that lexical causatives are uncontroversially complex events, then it is telling that there are causative predicates in every aspectual class (McCawley 1976; Van Valin and LaPolla 1997). Specifically, causatives of certain atelic non-change-of-state verbs are themselves atelic.

(21) a. Robin flew a kite for an hour/ in an hour.
    b. Pat bounced the ball for ten minutes/ in ten minutes.

Second, not all accomplishments are complex events in the sense of having two subevents that are not necessarily temporally dependent. Consider a bare XP resultative such as Kim danced onto the stage. In terms of its temporal contour, it denotes a telic event, specifically an accomplishment, since the event has a duration and a set terminal point. In this respect, bare XP resultatives do not necessarily differ from reflexive resultatives. However, we have argued that their properties are not explained by their telic aspectual classification, but by assigning them a simple event structure. There have been claims that such resultatives, particularly those based on manner-of-motion verbs, should receive a causative analysis because they are accomplishments (Van Valin 1990, 224; see also Croft 1991, 160).

(22) Susan ran to the house.
    [run(Susan)] cause [become be-at(’house, Susan)]
    (Van Valin 1990, 224, (3d))

But we have already shown that the syntax of these sentences is best accounted for if these resultatives are not given a complex event analysis. For further arguments against a complex event analysis, see also L&RH 1999, 205–207; RH&L 2001, 780–782; and Van Valin and LaPolla 1997, 101.
Another set of accomplishments that are not complex events involves verbs of consumption. As is well known, such verbs are telic when found with a quantized object (e.g., *Pat has eaten a nectarine*), and, in fact, Jackendoff (1990) has proposed that such verbs generally should receive a causative analysis, as in (23).

(23) \[\text{CAUSE}([\text{Thing }]^{a}A, [\text{GO}([\text{Thing } ]^{<}A>, [\text{TO} [\text{IN} [\text{MOUTH-OF } [a]]]])])\]

(Jackendoff 1990, 253, (20a))

If Jackendoff is correct in attributing a causative analysis to verbs of consumption and if causatives are taken to be complex events (even if Jackendoff’s own analysis of causatives is not bieventive), then the complex event–accomplishment connection would receive further support. If verbs of consumption indeed denote complex events, then they should pattern with lexical causatives—that is, transitive change-of-state verbs—with respect to argument realization, yet they do not. For instance, transitive change-of-state verbs are not found in nonsubcategorized NP resultatives, as shown in (24), a property that we earlier (RH&L 1998) linked to our complex event analysis, while verbs of consumption are found in such resultatives, as shown in (25), suggesting a simple event analysis for these verbs in isolation.

(24) a. *The puppy broke his owner to distraction.
   b. *The stagehand dimmed the scene dark.

(25) a. They [the grasshoppers] ate the whole prairie bare and brown.
   b. . . . a mother accused of trying to drink her unborn child to death.

More generally, verbs of consumption are more flexible in their argument expression options than change-of-state verbs, as we delineate in RH&L 2002. The argument that represents the stuff consumed need not be expressed; this property is manifested in the nonsubcategorized NP resultatives in (25), but is reflected more generally in unspecified object uses of these verbs, as in (26). Furthermore, when expressed, this same argument need not be the direct object, as in (27).

(26) Dana ate.

(27) Dana ate (from/of) the apple.

In contrast, change-of-state verbs are never found in syntactic frames without their patient argument. They are not found in nonsubcategorized NP resultatives, as shown in (24), and they are also not found with unspecified objects, as in (28). Furthermore, the patient must be expressed as the direct object and, as also noted by Tenny (1994), it cannot be expressed as an oblique, as shown in (29).
Thus, the behavior of verbs of consumption is strikingly different from that of change-of-state verbs—a set of verbs that clearly have a complex event structure when transitive. Even if an event of eating involves two subevents conceptually (e.g., an event of ingesting and an event of the food disappearing), these subevents would be temporally dependent, and on our approach the event that encompasses them would not receive a complex event analysis. (The temporal dependence of the ingesting and the disappearance of the food is what is behind the existence of an incremental theme for these verbs, and this, in turn, is responsible for their classification as accomplishments when they take quantized objects.)

It seems best, then, to assign manner-of-motion verbs and verbs of consumption a simple event structure when they are used telically. For verbs of consumption, boundedness of the event is determined by boundedness of the direct object—or more accurately, a spatial property of the object—and for manner-of-motion verbs, it is determined by boundedness of their argument’s path (Hay, Kennedy, and Levin 1999; Krifka 1998; Ramchand 1997; Tenny 1992, 1994). There is no reason for a causative analysis, as also argued for both types of predicates by Van Valin and LaPolla (1997), and, thus, no independent justification for a complex event analysis.

There is yet another set of accomplishments that do not seem amenable to a complex event analysis. These are verbs with what Dowty (1991, 569–570) calls “representation-source theme” objects, such as read, copy, memorize, and translate, as well as similar verbs such as study, recite, and perform (see also Dowty 1979, 69–70). The object of read is not in any way affected by the reading: the text—the representation source—is internalized by the reader, who forms a mental representation of this text. Like the verbs of consumption, these verbs have incremental theme objects: they are telic when they are found with quantized NP objects. The events they denote could be said to involve two subevents conceptually; for the verb read, for example, an event of scanning the text and an event of forming a mental representation of it. Yet these subevents would be temporally dependent; in reading, for example, the mental representation is formed as the text is scanned. Thus, the events that these verbs denote would not be considered complex events.

Consistent with a simple event analysis, these verbs appear to pattern like verbs of consumption, rather than like change-of-state verbs. The argument that qualifies as the incremental theme need not be expressed, as shown in (30); in addition, as shown in (31), this argument need not be expressed as the direct object, though it is no longer the incremental theme when it is no longer the direct object.6
(30) a. Kelly read/studied.
   b. Kelly read/studied herself into wakefulness.

(31) Kelly read/studied from the textbook.

Once again, it appears that a subset of accomplishments pattern together for purposes of argument realization and that this specific subset is identified by the lack of necessary temporal dependence of subevents. From the perspective of argument realization, the entire class of accomplishments—that is, the set of predicates characterized temporally by having duration and a fixed endpoint—does not pattern homogeneously, a point further illustrated in RH&L 2002, suggesting that this notion is not relevant to argument realization.

17.5 Conclusion

Although we have argued that certain much-used and traditionally recognized aspectual notions and their relatives are not implicated in the argument expression phenomena discussed here, aspectual notions broadly construed are still relevant. As discussed in section 17.3, the criterion for determining that an event with two conceptually identifiable subevents is a complex event rests on the temporal relation between its subevents: these subevents cannot be necessarily temporally dependent. Since by the Argument-per-Subevent Condition, the simple versus complex event distinction has repercussions for argument expression in the strong sense of grammatical function, certain aspects of the internal temporal constitution of an event are still relevant to argument expression.

We are not, however, suggesting that traditional aspectual notions be abandoned. We acknowledge their importance, but propose that their primary usefulness is semantic. For example, under a particular understanding of the notion of incremental theme, this term is of great use since it allows a unified account of the different sources of telicity, which are important in determining the sets of entailments for sentences. Nevertheless, traditional aspectual notions seem to have a part to play in some facets of argument expression. In some languages, telicity appears to influence morphological case assignment, via alternations in the morphological case of an argument bearing a particular grammatical relation. In Finnish, for example, certain arguments may bear either accusative or partitive case depending on aspectual considerations, though their grammatical relation remains unchanged (Kiparsky 2001).

The question that emerges is whether it is possible to determine which facets of argument expression follow from which kinds of semantic information. That is, why are case alternations sensitive to telicity, while grammatical functions are sensitive to event complexity? We leave this as a puzzle that might lead to profitable future explorations of argument expression.
Notes

We thank audiences at the International Round Table on the Syntax of Tense and Aspect for their questions and comments. This work was supported in part by US NSF grant SBC-0096036 to Levin and by Israel Science Foundation grant 832-00 to Rappaport Hovav.

1. Of course, if there is more than one semantic determinant of unaccusativity, it may be that a more complex combination of semantic properties distinguishes between the two patterns. In fact, agentivity, a nonaspectual property, is often suggested as being another determinant of unaccusativity (Dowty 1991; Van Valin 1990; Zaenen 1993). What emerges from our study, however, is that no combination of agentivity and traditional aspectual notions on their own fully determines the distribution of the two intransitive resultative patterns. In this section, we show that atelic verbs may be found in both resultative patterns; furthermore, a number of agentive atelic verbs, including verbs of manner of motion, may be found in both patterns. So the choice of pattern needs to be explained by another property; in section 17.3, we propose that this property is temporal dependence between subevents.

2. Dowty’s notion of incremental theme needs some refinement to handle changes in properties that are not reflected bit by bit through the physical extent of an entity; see Hay, Kennedy, and Levin 1999 and Ramchand 1997 for discussion.

3. Although the reflexive resultative examples that are typically cited in the literature have animate agentive subjects, such resultatives do not require agentive subjects. We have found reflexive resultatives with inanimate subjects, such as (10) and . . . the splendid Tacoma Narrows Bridge . . . bounced itself to bits on Nov. 7 . . . (The New York Times Book Review, 7/5/1992, 5).

4. All telic events, whether accomplishments or achievements, lack the subinterval property; therefore, telic events form a linguistically significant class. Whether or not the distinction between the two types of telic events is linguistically significant is a matter of debate, which is not relevant to our discussion; see Mittwoch 1991 and Verkuyl 1989, 1993, for representative discussion of the two positions on this issue. In the remainder of this section, we focus on accomplishments because the issue of event complexity has been raised primarily with respect to them.

5. But see Pustejovsky 1991 and Van Hout 1996 for an alternative analysis of telic predicates that does not refer to causation: telic predicates are defined as transitions from one event to a second, often a transition from an atelic process to a result state. On this analysis, all telic events—whether achievements or accomplishments—are complex events; however, since telicity does not seem to account for many basic facets of argument expression (see Levin 2000; RH&L 2002; also see this section), this approach does not provide an appropriate basis for a theory of argument realization.

6. Some of the verbs that take incremental theme objects but lack result states are not as readily found without their objects, particularly without being placed in a more elaborated context. This property most likely reflects the recoverability condition on the use of unspecified object forms; see Brisson 1994, RH&L 1998, and Resnik 1993, among others, for discussion.

References


18.1 Introduction

This chapter proposes an explanation for the complementation patterns of verbs, nouns, and adjectives in languages like English. We focus on those properties often taken to follow from the theory of case, and add to the picture new observations about the distribution of clausal complements.

Our results build on proposals made in Pesetsky and Torrego 2001 (henceforth, P&T 2001). There, we argued that several distinct syntactic phenomena result from interactions between tense-motivated movement into the C system and nominative case on the subject. We attempted to unite a number of strands of research that had generally been pursued separately. In particular, our results suggested that work on the syntax of tense illuminates the theory of case. The distribution of tense inside arguments turned out to interact strongly with the external distribution of these arguments. Here, we suggest a broader unification of these research strands with recent work on the nature of syntactic categories.

The chapter is organized as follows. We begin by summarizing the results of P&T 2001. Next, we extend these results, offering a general theory of complementation patterns. This theory, in turn, will reveal a previously hidden complementarity in the distribution of arguments. Finally, we suggest that this “hidden complementarity” provides support for approaches that view the distinctions among lexical categories as contextually determined.

The phenomena investigated in P&T 2001 included the distribution of that and for in embedded CPs, as well as the distribution of auxiliary fronting in interrogative and other clause types. Our proposal supported the following hypothesis concerning the nature of nominative case:¹

(1) The nature of nominative case

Nominative case is an instance of an uninterpretable Tense feature ($\mu T$) on D.

The hypothesis in (1) entails that the relationship between a nominative subject and T is symmetrical. Subject agreement on T reflects a set of φ-features on T ($\mu \phi$) that
have no semantic interpretation as part of TP, but would receive an interpretation if they were part of a nominal. Hypothesis (1) amounts to the claim that nominative case on a subject reflects T-features on D that have no semantic interpretation as part of DP but would receive an interpretation if they were part of T. We sketch the arguments for this approach in the next section.

Hypothesis (1) led us in turn to a more general speculation about the nature of grammatical features. In standard views, the features of a lexical item L may belong to any of the following three types:

A. features that have a semantic value on L (interpretable features of L);
B. features that have a semantic value on some other lexical item L', but have no value on L (uninterpretable instances of interpretable features); and
C. features that have no semantic value on any lexical item, including L (purely formal uninterpretable features of L).

Most features seem to belong to categories A and B. Structural case is a salient exception: a seeming instance of category C. Hypothesis (1) amounts to the claim that nominative case, at least, is actually an instance of category B, and immediately suggests the more general hypothesis that category C does not exist at all—in other words, that all grammatical features have some potential semantic value. If this is so, then we must adopt a view like (1) not only for nominative, but also for other instances of structural case. In this chapter, we argue that not only nominative, but all instances of structural case are actually instances of $uT$ on D. This proposal suggests an analysis of clause structure that offers a new perspective on the overlapping yet diverse complementation properties of the categories V, N, and A. As a result, many of the phenomena discussed under the rubric of “case theory” (along with others not normally considered case-related) can receive a unified explanation in a framework without type C features—a framework in which the notion “structural case feature” is not an independent concept.

In particular, we will argue for a proposal about accusative case that parallels (1).

(2) **The nature of accusative case**

Accusative case (like nominative) is an instance of $uT$ on D.

If hypothesis (2) is correct, we must ask what category enters an Agree relation with “accusative” $uT$ and allows it to delete (as is required of uninterpretable features). We will argue that $uT$ on a complement of V enters an Agree relation with an instance of T that is structurally lower than the main tense of the sentence. Contrasts in the complementation properties of V, N, and A will turn out to stem from differences in the presence and nature of this lower T. That conclusion will lead us to a proposal with which we will conclude the chapter: that apparent distinctions among V, N, and A actually reflect distinctions in this lower T—a proposal with potentially far-reaching consequences for the theory of syntactic categorization.
18.2 Nominative Case

In this section, we offer a brief review of the results of P&T 2001 that support hypothesis (1). In that paper, we sought an account of the paradigm in (3). When \(wh\)-movement takes place in a matrix clause of Standard English, and the \(wh\)-phrase is not a nominative subject, T-to-C movement is also observed, as in the interrogative (3b). T-to-C movement may also fail to apply, as in (3a). (Failure of T-to-C movement yields an exclamative rather than interrogative interpretation, a fact discussed in P&T 2001 that we will ignore here.)

Crucially, when a nominative \(wh\)-phrase undergoes local \(wh\)-movement, T-to-C movement is never observed, as seen in (3c,d).

(3) T-to-C asymmetry in matrix questions (Koopman 1983)

- [nonsubject \(wh \rightarrow \) “optional” T-to-C movement]
  - a. What a nice book Mary read ____!
  - b. What did Mary read ____?

- [subject \(wh \rightarrow \) no T-to-C movement]
  - c. Who ____ read the book?
  - d. *Who did ____ read the book?/*What a nice person did ____ read the book!

Our approach relied on the resources of the theory of movement developed by Chomsky (1995, 2000, 2001) according to which the first ingredient of movement is an Agree relation established between an uninterpretable feature \(uF\) of a probe category H and a corresponding feature of a goal category G. The second ingredient is movement itself, triggered by an EPP subfeature of \(uF\) on H. We argued that T-to-C movement in (3b) is a response to an Agree relation established between \(uT\) on C and TP. (In P&T 2001, we proposed that when a head H bears the feature \([uF, +EPP]\), and when this feature probes a goal GP that is the complement of H, it is head movement of G to H that satisfies EPP—a generalization of Travis’s (1984) Head Movement Constraint.) If C bears \([uT, +EPP]\), then (3a) and (3c) are surprising, since no T-to-C movement is observed in these examples. It was to explain these cases that we first offered the hypothesis in (1). If nominative case is actually a T-feature, then in principle a nominative subject can serve as a goal for \(uT\) on C just as well as TP itself can. Since neither the nominative subject nor TP c-commands the other, both thus count as bearers of T-features that are equally close to C. We thus proposed that Mary in (3a) is an inner specifier of CP, moved there in response to \([uT, +EPP]\) on C, just as T itself is moved in (3b).

In all the examples of (3), C bears not only \([uT, +EPP]\), but also \([uWh, +EPP]\) (where \(uWh\) is an uninterpretable \(wh\)-feature). Because in (3a,b), the closest bearer of \(wh\) within the clause is not also the closest bearer of \(uT\), we observe two instances of movement triggered by C: T-movement triggered by \([uT, +EPP]\) on C,
and \textit{wh}-movement triggered by \([u\text{Wh}, +\EPP]\). In (3c), the nominative subject of the clause is also a \textit{wh}-phrase. Thus, the closest bearer of \(uT\) is also the closest bearer of \(\textit{wh}\). It is thus not surprising that only one instance of movement is observed. The nominative \textit{wh}-phrase can serve as a goal for both \([uT, +\EPP]\) and \([u\text{Wh}, +\EPP]\) on C, and one instance of movement can satisfy the EPP subproperties of both features on C.

What accounts for the unacceptability of (3d)? This example is identical to (3c)—a situation in which a single instance of movement can satisfy two properties of C—except that these two properties are here satisfied by two distinct instances of movement: T-to-C movement satisfying \(uT\) on C, and \textit{wh}-movement satisfying \(u\text{Wh}\). To account for the unacceptability of (3d), we proposed in P&T 2001 that unnecessary movement operations (e.g., T-to-C movement in (3d)) are forbidden by the general economy condition in (4).

(4) \textit{Economy of movement}

The EPP properties of \(uF\) on a head H are satisfied by the smallest possible number of movement operations.

The paradigm seen in the interrogatives and exclamatives of (3) is also observed in embedded declarative clauses in the Belfast dialect of English, so long as successive-cyclic \textit{wh}-movement has applied from within the clause. On the assumption that the embedded declarative clause bears \([uT, +\EPP]\) and \([u\text{Wh}, +\EPP]\), these facts are explained exactly like the facts in (3).

(5) \textit{Belfast English: T-to-C asymmetry in embedded declaratives} (Henry 1995, personal communication)

\begin{quote}
[nonsubject \textit{wh} \rightarrow \text{(optional) T-to-C movement}]

a. Who did John say [did Mary claim [had John feared [would Bill attack \text{____}]]]?  

[nonsubject \textit{wh} \rightarrow \text{no T-to-C movement}]

b. Who did John say [\text{____} went to school]?  

c. *Who did John say [did \text{____} go to school]? (bad unless \textit{do} is emphatic)
\end{quote}

The facts of embedded declarative clauses in Belfast English, we suggested, strongly resemble the well-known paradigm of the \textit{that}-trace effect. The conditions on the presence and absence of the word \textit{that} in C of Standard English embedded declarative clauses appear to mirror quite faithfully the conditions on \textit{do} moved to C in (3) and (5).

(6) \textit{That-trace effect} (Perlmutter 1971)

\begin{quote}
[nonsubject \textit{wh} \rightarrow \text{optional \textit{that}}]

a. What do you think [Mary read \text{____}]?  

b. What do you think [that Mary read \text{____}]?
\end{quote}
c. Who do you think [_____ read the book]?

d. *Who do you think [that _____ read the book]?

In P&T 2001, we suggested (adapting an idea in Koopman 1983) that the resemblance is not accidental. In particular, we made the proposal in (7).

(7) Nature of English that

That is not C, but a particular realization of T moved to C.

English C itself, according to this proposal, is phonologically null. On this view, the that-trace effect in (6d) does not merely resemble the “did-trace” effect in (3d) and (5d); it is, in fact, the same effect. The that-trace/did-trace effect thus provided one argument for the hypothesis about nominative case in (1).

The idea about that in (7) offers an immediate analysis of the more general omissibility of that in English. The [uT, +EPP] feature of C can in principle trigger either T-to-C movement or subject movement to Spec,CP. The that-trace effect and related phenomena arise when both C and the subject bear a wh-feature. The economy condition in (4) thus favors subject movement over T-to-C movement, as just discussed. When the subject (or C) does not bear a wh-feature, both types of movement are equally costly; therefore, both types of movement are possible. That is why (3a) and (3b) are both possible, and also why (8a) and (8b) (which involve no wh-movement whatsoever) are both possible.

(8) Apparent optionality of that in complement CP

a. Mary expects [CP[T that]j+[C, uT] [TP Sue will buy the book]].

“... that Sue will buy the book ...”

b. Mary expects [CP[Sue, uT]j[C, uT] [TP t-Sue, [T will]] buy the book]].

“... Sue will buy the book ...”

The apparent optionality of that in C of an embedded declarative thus reflects the choice between T-to-C movement (that) and subject movement to Spec,CP (no that) as ways of satisfying the [uT, +EPP] property of C.

On this view, the well-known observation that that is not omissible in subject CPs (Chomsky and Lasnik 1977; Stowell 1981; Kayne 1980) amounts to the claim that only CPs in which T has moved to C are acceptable as subjects of a higher clause.

(9) That-omission asymmetry

[nonsubject CP → optional that]

a. Mary thinks [that Sue left].

b. Mary thinks [Sue left].

[subject CP → obligatory that]

c. [That Sue left] is obvious.

d. *[Sue left] is obvious.
The paradigm in (9) can be immediately understood once we remember that instances of uninterpretable T are deleted at some point after they enter an Agree relation with a distinct instance of T. If this deletion operation must apply in an embedded CP before that CP moves to form a subject of a higher clause, as in (9c,d), only a CP introduced by the word *that*—an instance of interpretable (nondeletable) T moved to C—will continue to have an instance of T in C after deletion applies. In P&T 2001, we suggested that T of the higher clause accepts as its subject specifier only a category that itself has an instance of T in its head. We identified this as a consequence of a general “Match Condition” on EPP satisfaction; but for present purposes, we can simply view this as the familiar requirement that the subject of a finite clause in English must be nominative—that is, must have a T-feature on its head. This idea rests on a natural generalization of our hypotheses in (1) and (2) that would identify as case-marked not only a category with *uT in its head, but also a category with *iT in its head. Thus, after instances of *uT in C that have entered an Agree relation have been deleted, finite clauses introduced by *that*—but not finite clauses without *that*—count as “nominative.” The *that*-omission asymmetry thus provides a second argument in favor of the identification of nominative case with T. Nonfinite clauses in English have an obvious counterpart to *that* when the subject of the clause is overt. This is the clause-introducing element *for* (in Standard English), which we also identify as an instance of T moved to C. Evidence for this analysis includes the existence of “*for*-trace effects” and a “*for*-omission asymmetry” parallel to the *that*-omission asymmetry seen in (9).

(10) The *for*-trace effect

*Who would you prefer [for ____ to buy the book]?

(11) For-*omission asymmetry*

[nonsubject CP → optional *for*]

a. Mary would prefer [for Sue to leave].
b. Mary would prefer [Sue to leave].

[subject CP → obligatory *for*]

c. [For Sue to leave] would be desirable.
d. *[Sue to leave] would be desirable.

Finally, as noted in P&T 2001, a counterpart to the *for*-omission asymmetry can be detected with nonfinite clauses whose subject is PRO. Bresnan (1972), Carstairs (1973), Pesetsky (1989), and others have observed that infinitives introduced by *for* have a characteristic semantics: most often irrealis, but also generic. Stowell (1982) and Pesetsky (1989) added to this the discovery that this type of semantics also characterizes infinitives with PRO when these infinitives occur as subjects of a higher clause. Thus, while complement infinitives with PRO may be realis (factive or impli-
cative) or irrealis/generic, depending on semantic properties of the higher clause, subject infinitives are limited to irrealis/generic semantics.

(12) **Realis infinitive asymmetry**

[nonsubject CP → realis or irrealis infinitive]

a. Mary wanted [PRO to learn the election results]. [irrealis]
   Mary would hate [PRO to lose the game].
   Mary hates [PRO to lose games]. [generic]

b. Mary hated [PRO to learn the election results]. [realis: factive]
   Mary managed [PRO to lose the game]. [realis: implicative]

[subject CP → only irrealis/generic infinitive]

c. [PRO to learn the election results] would shock me. [irrealis]
   [PRO to lose the game] would prove they are idiots.
   [PRO to learn election results early] is a crime. [generic]
   [PRO to lose games like this] annoys the public.

d. ??[PRO to learn the election results] shocked me. [realis: factive]
   ??[PRO to lose the game] proved they were idiots.
   *[PRO to lose the game] was managed by the team. [realis: implicative]

We suggest that this is simply the *for*-omission asymmetry of (11) in disguise. It appears to be a fact about Standard English that T moved to C of an infinitival clause is spelled out as a null morpheme when T agrees with PRO and is spelled out as *for* otherwise. We thus detect T moved to C in an infinitive with PRO by inspecting its semantics, rather than its phonological form, since an infinitive in which T moved to C is a null morpheme will be homophonous with an infinitive in which PRO has moved to Spec,CP and T has not moved at all. These observations will be quite important in section 18.6.

18.3 **Accusative Case**

The explanation offered in P&T 2001 for the phenomena discussed in the previous section, if correct, provides support for the hypothesis that structural case features are actually T-features. Our discussion so far has established this for nominative case. In this section, we begin our presentation of new material and take up the question of accusative case.

If structural case in general is T, then the “Case Filter” of Government-Binding Theory (Chomsky 1981) can be understood as the Argument Tense Condition in (13).

(13) **Argument Tense Condition (Case Filter)**

An argument must bear T (uT or iT).
We will discuss the rationale for (13) below. For now, we will assume that it is true, and discuss some of its consequences.

In English, at least, instances of D and C come from the lexicon bearing $uT$, not $iT$. Because CP contains TP, $uT$ on C has the ability to satisfy its requirements internal to its maximal projection, as discussed in the preceding section. CPs are thus self-sufficient with respect to $uT$. English DP (with qualifications noted below) does not contain TP and thus does not have a comparable ability to satisfy its requirements internally. In this sense, DPs are not self-sufficient. DP, unlike CP, is dependent on the external environment to satisfy its $uT$ property. This is the traditional observation that DPs must search for case, unlike CPs.

Our discussion will take the following form. Consider the hypothesis in (2): that our conclusions about nominative case extend to accusative. When we combine this hypothesis with the observation that DPs are not self-sufficient with respect to $uT$, we conclude that there must be some occurrence of T in a transitive clause that is responsible for licensing accusative case. We will show that once the properties of this occurrence of T are understood correctly, the overall distribution of complements across categories is explained as well. This result in turn provides support for our initial hypothesis.

We argue first that the most conservative proposal along these lines—a proposal suggested in P&T 2001, 366–367—is not correct (at least for languages like English). This proposal would identify the T responsible for accusative case with the T responsible for nominative case—that is, the main T of the sentence.

Consider the complementation properties of clauses whose main predicate is an AP. As is well known, a DP in English may not serve as the complement to A, but a CP may.

(14) \textit{DP complement to A: impossible}

*Bill was afraid the storm.

(15) \textit{CP complement to A: possible}\footnote{We will indicate this with a superscript.}

a. Bill was afraid that the storm will be destructive.

b. Bill was afraid the storm will be destructive.

c. John was eager to read the instructions.

d. John was careful to read the instructions.

We observe that the complement position in AP may be occupied by a self-sufficient argument, but not by an argument that is not self-sufficient. This makes sense, if clauses whose main predicate is AP contain no category capable of deleting $uT$ on a complement DP. Crucially, however, the main clauses of (14) and (15) do contain an occurrence of T that deletes $uT$ on a nominative subject. Clearly, this instance of T does not also delete $uT$ on an accusative object. This is true either because this instance of T can Agree only with one DP or because it is structurally too far away from the complement of A.
All things being equal, we expect T in a clause whose predicate is verbal to have fundamentally the same properties as the corresponding T in a clause whose predicate is adjectival. This means that we must attribute the availability of accusative case for objects of V (and its unavailability for objects of A) to some factor other than the main T of the sentence. We suggest that verbal predication structures differ from their adjectival counterparts in the presence of a second occurrence of T—closer to the complement of V than the main occurrence of T, and close enough to enter an Agree relation with uT on a DP complement. We will use the label $T_o$ for this lower occurrence of T, and $T_s$ for the main T of the sentence.

$T_o$, like $T_s$, bears uninterpretable φ-features that act as a probe seeking a goal in its domain—a goal that also bears φ-features. Except for possible differences in EPP properties, the subscripts $o$ and $s$ may be regarded for present purposes as nothing more than a notation for keeping track of which T is under discussion. We will refine this proposal as we proceed, and we leave open the possibility of other (perhaps semantic) differences between the two occurrences of T.

In many instances, the semantic function of $T_o$ is apparent. A particularly clear example is provided by telic verbs (e.g., *read*), whose meaning involves two distinct subevents. The first subevent is a process (a predicate with an agent argument, in the case of *read*). The second subevent is the completion of the process (a predicate with an additional argument, namely, the thing read). Following Hale and Keyser (1993) and Chomsky (1995, chap. 4), we propose that the predicate of each subevent is a distinct lexical item. In the case of a verbal predicate like *read*, the predicate that assigns the agent role can be called (for convenience) $v$, and the lower predicate, $V$.

Tense heads quite generally have the property of ordering pairs of times, as argued by Klein (1994), Zagona (1990), Stowell (1996), and others. Our hypothesized $T_o$ has the clear function of relating the time of the $vP$-subevent to the time of the $VP$-subevent. If this view is correct, $T_o$ is located below $v$ and above VP. Thus, the architecture for clauses whose main predicate is verbal must be (16) (omitting the base position of the external argument, which is Spec,$vP$ for all but unaccusative clauses).

(16) **Verbal predication structure**

\[
\text{Subj} \ T_s \ [vP \ v \ T_o \ [VP \ V \ Obj]]
\]

The structure in (16) strongly resembles proposals advanced in much recent work. Kratzer (1996) and Travis (1992) suggest the existence of an aspectual head located in the position of our $T_o$. Torrego (1999/2002) proposes the same structure and argues further that this aspectual head belongs to the category P, an idea that will become important shortly. Lasnik and Saito (1991), Koizumi (1993, 1995), and Lasnik (1999) join Kratzer, Travis, and Torrego in providing other evidence (from binding theory, scope, and word order) that the head in question licenses accusative case (see also Johnson 1991).
Although the semantic contribution of $T_o$ is clearest in clauses that denote two temporally distinct subevents, $T_o$ must be present even in clauses where temporally distinct subevents cannot be identified—for instance, stative clauses like *Mary owns a car*—since even stative clauses (in English at least) allow accusative DP complements. We would not be surprised, however, to see the actual shape of object case on DP reflecting differences in the aspectual semantics of the clause in which they occur. This situation is found in Spanish. Animate accusative DPs in Spanish surface in two forms: as bare DPs or as DPs introduced by the preposition *a*. The choice depends in part on the aspectual properties of the predicate, as observed by Torrego (1998). The verb *tapar* ‘cover, block the view of’, for example, has both a stative and a nonstative use. When the object of *tapar* is animate, the preposition *a* marks nonstativity.11

(17) **Spanish a marks nonstativity:** *tapar*

a. La policía tapaba los oradores.
   the police blocked-the-view-of the speakers
   ‘The police blocked the view of the speakers.’ [stative only]

b. La policía tapaba *a* los oradores.
   the police blocked-the-view-of to the speakers
   ‘The police moved so as to block the view of the speakers.’ [nonstative only]

A similar effect is observed with *conocer*, which may mean either ‘know’ (stative) or ‘get to know’ (nonstative). With an animate object, the two readings are disambiguated by *a*.

(18) **Spanish a marks nonstativity:** *conocer*

a. Conoce bien un vecino suyo.
   they-know well a neighbor of-theirs
   ‘They know a neighbor of theirs well.’

b. Conoce bien *a* un vecino suyo.
   they-know well to a neighbor of-theirs
   ‘They got to know a neighbor of theirs well.’

Not surprisingly, the imperative (which disambiguates in favor of nonstativity) is unacceptable with an animate object unless the object is preceded by *a*.

(19) **Spanish a obligatory in imperative**

¡Conoce *(a)* tu vecino!
know (to) your neighbor
‘Get to know your neighbor.’

[vs. ¡Conoce la ciudad! ‘Get to know the city.’]

(Torrego 1998, 32)
The phenomenon is quite general. An achievement predicate, even one without a stative alternant, takes a DP complement with a when the complement is animate.

(20) Spanish a with achievement predicates

a. La policía detuvo *(a) un ladrón.
   the police detained (to) a thief
   *The police detained a thief.’

b. La lluvia empapó *(a) muchos turistas.
   the rain soaked (to) many tourists
   ‘The rain soaked many tourists.’

(Torrego 1998, 30)

Similar correlations between aspect and the form of objective case have been observed in other languages—for example, by Kiparsky (1998) for the accusative/partitive alternation in Finnish and by Svenonius (2001) for a dative/accusative alternation in Icelandic. It is our hope that correlations of this sort can be related to a general theory of instantiations of T₀.

Adjectival clauses differ crucially from verbal clauses. The structure we suggest for adjectival clauses is (21). We have included a distinction between little a and A, modeled on the distinction between little v and V, but nothing in this chapter hinges on this. What is crucial is the absence of T₀.

(21) Adjectival predication structure

Subj Tₛ [ʌp a [AP A Obj]]

In addition to modeling the distinction in complementation possibilities between verbal and adjectival clauses, the structures in (16) and (21) predict that adjectives denoting temporally distinct subevents should not exist. This prediction appears to be correct. Adjectival clauses may be individual-level (e.g., altruistic) or stage-level (drunk), may denote a process (busy) or the result of a process (destroyed); but there appear to be no adjectives that denote two-part events with different times associated with the two parts. Thus, for instance, it is impossible to say #The woman very angry in three minutes was Mary, where very makes it clear that angry is an adjective, and in three minutes diagnoses telicity (i.e., a process followed by an end-state). The intended meaning would be something like ‘The woman who moved from a state of nonanger to a state of extreme anger in three minutes was Mary’, yet adjectival constructions with this sort of meaning do not exist. We attribute this to the inability of adjectives to distinguish the times of two subevents, a consequence of the absence of T₀.
18.4 Prepositional Phrases

Adjectives in languages like English may, of course, take PPs as complements.

(22) PP complement to A

Bill was afraid of the storm.

If the Argument Tense Condition in (13) is correct, then the head of the complement to A in examples such as (22) bears a T-feature. If the structure in (21) is correct, a PP complement to A must be “self-sufficient,” just as CP is. In fact, there is evidence that the category P is actually a kind of T. This T occupies a position within certain DPs that is quite analogous to the position occupied by T within CP. Thus, PP is not just self-sufficient, but is actually a special self-sufficient type of DP. One argument for this view comes from a surprising “P-trace” effect discovered by Kayne (1984, 28).

When an English gerund is the object of V, either the subject or object of the gerund may be extracted by A-movement, as seen in the (a) and (b) examples of (23)–(25). When the same gerund is the object of a preposition, however, subject extraction is noticeably worse than object extraction. Judgments concerning the strength of the effect vary somewhat, but the contrast is clear to most speakers.

*The P-trace effect*

(23) a. the unpublished paper that he resented [the student reading ____]
   b. the student that he resented [____ reading his unpublished paper]
   c. the unpublished paper that I apologized [for the student reading ____]
   d. *the student that he apologized [for ____ reading your unpublished paper]

(24) a. How much attention do you remember [John and Mary paying ____ to this]?
   b. How much attention do you remember [____ being paid to this by John and Mary]?
   c. How much attention did you talk about [Bill paying ____ to John and Mary]?
   d. *How much attention did you talk [about ____ being paid to John and Mary]?

(25) a. Which tunnel did she endorse [the government constructing ____ with public money]?
   b. Which company did she endorse [____ constructing this tunnel with public money]?
   c. Which tunnel did she argue against [the government constructing ____ with public money]?
d. *Which company did she argue [against ____ constructing this tunnel with public money]?

Kayne (1984) conjectured that this effect has the same source as the *that*-trace effect. If this is so, then our analysis of the *that*-trace effect can extend to the *P*-trace effect. Crucially, we must assume that the prepositions in the (c) and (d) examples of (23)–(25) are instances of *T* within the gerund. These instances of *T* may serve as goals for *uT* on *C/D* of the gerund, as shown in (26).12

(26) *P as *T* within a gerund*

\[
\text{talk} \quad \text{CP/DP} \quad \text{C/D [uT, +EPP]} \quad \text{TP} \quad \text{DP} \quad \text{T'} \\
\quad \text{attention} \quad \text{T} \quad \text{VP} \quad \text{about} \quad \text{being paid} \ldots
\]

As in nongerunds, when *C/D* also bears *uWh* and the subject is a nominative *wh*-phrase, it will be more economical for the [*uT, +EPP*] feature of *C/D* to be satisfied by Agree and by movement of the subject than by distinct operations involving both the subject and the head of *TP*. In other clause types, the result would be an acceptable output in which *T* fails to raise to *C/D* (perhaps remaining unpronounced, like unraised *that*)—for instance, outputs like those in (27). In these examples, however, failure of the preposition (i.e., *T*) to move to *C* leads to a configuration in which the selectional properties of the higher verb are not satisfied. The verbs *apologize*, *talk*, and *argue* each need a complement whose head contains an appropriate, selected preposition (*for*, *about*, and *against* in the present case).13

(27) *Failure to move *P* to *C/D* violates selectional requirements*

a. *the student that he apologized [____ (for) reading your unpublished paper]*

b. *How much attention did you talk [____ (about) being paid to John and Mary]*?

c. *Which company did she argue [____ (against) building this tunnel with public money]?*
The similarity between a gerund introduced by a preposition and the CPs that we have discussed so far makes it clear why these types of gerunds, at least, may occur as complements to A.

(28) *P-introduced gerund as complement of A*

Anne is afraid [of Mary winning the prize].

The uT feature on C/D of the gerund enters an Agree relation with the preposition (an instance of T) and thus does not need an external T_o to satisfy its requirements.

We turn now to an obvious objection to this analysis: the derived constituent structure of PPs. If the derived structure for PPs were identical to the derived structure of that-clauses and for-clauses, they would show a bimorphemic head consisting of C/D and the moved preposition. The sister of this bimorphemic head would be the gerundive TP. Such an analysis would fly in the face of the fact that movement of the gerund may strand the preposition—an option not available to finite and infinitival TP complements of C.

(29) Constituency of P+gerund versus that/for+TP

a. [The student reading your unpublished paper] we have already apologized [for ____].

b. *[The student read your unpublished paper] we have already said [that ____].

c. *[The student to read your unpublished paper] we would prefer [for ____].

This is an important issue that we do not have space to discuss fully here. However, we will briefly sketch an answer to this question, inspired by ideas of Matushansky (2002); and we will address the topic in greater detail in a fuller presentation of this material.

Both T-to-C movement in finite and nonfinite clauses and the prepositional version of T-to-C movement in gerunds are instances of head movement. T-to-C movement in finite clauses and infinitives yields a structure familiar from work on head movement by Travis (1984) and Baker (1988), in which the moved head morphologically adjoins to the head whose features trigger the movement. Our results as a whole argue strongly that head movement belongs to the same system as phrasal movement. This leads one naturally to wonder why the derived constituent structure after head movement should involve morphological adjunction, rather than specifier formation, as is the case with phrasal movement. Matushansky suggests that head movement does in fact form a specifier, just like phrasal movement (in agreement with Fukui and Takano (1998, 44–51); see also Toyoshima 2001). Matushansky proposes in addition that the familiar morphologically adjoined structure is the result of a second, “follow-up” process, triggered by some heads but not by others, that “morphologically merges” a nonbranching Spec,H with H itself. The two processes, head movement and morphological merger, are sketched in (30).
(30) Matushansky’s (2002) analysis of Travis-Baker head movement

If it is a fact that bare TPs do not undergo movement such as topicalization, the constituency indicated by the facts in (29) teaches us that head movement of a prepositional T to C/D of a gerund is not followed by morphological merger of the moved preposition with C/D. By contrast, head movement of T to C of a finite clause or infinitive is followed by morphological merger of T with C. If the topicalized constituent in (29a) is a maximal projection, then one further option besides the option of morphological merger must be allowed: it must be the case in (29a) that the moved element (the preposition) projects, forming a TP (= PP) rather than a CP/DP. This is illustrated in (31).

(31) \( P + \text{gerund} \)

Much the same analysis can now be posited for nongerund DPs introduced by a preposition, as illustrated in (32). Here too, we would argue that the preposition is actually a species of T merged below D and above NP (actually above nP, as discussed below). Here too, for English at least, we propose that the preposition undergoes head movement triggered by \( \nu T \) on D, and that this head movement is not followed up by morphological merger. As before, the possibility of stranding the preposition under movement indicates the possibility of projecting the moved preposition, rather than the D whose features triggered movement.
The idea that prepositions are a species of $T$ is not as exotic as it might seem. It is a common observation that elements of the prepositional vocabulary are found in the $T$ position of a variety of clause types across languages. Familiar examples from standard English include (33a,b).

(33) **Prepositional clausal $T$**

a. John considers [there to be many reasons for this].

b. Mary kept [there from being a riot].

It is also a common observation that elements of the prepositional vocabulary are found in $C$. This led Emonds (1985, chap. 7) to suggest that the category $C$ be understood as a species of $P$. Our treatment of English *for*, however, suggests that such elements are actually instances of $T$ whose presence in $C$ is due to movement—a hypothesis that might be plausibly extended to similar phenomena in other languages.\(^{16}\)

What common property unites members of the supercategory that contains both prepositions and traditional instances of $T$? We suggest, though we will not press the point, that this supercategory unites those predicates that situate events and individuals in time and space. It is a commonplace that the same vocabulary is often used for spatial and temporal location and direction (*before*, *after*, *within*, etc.), and for both spatial and temporal ordering. For prepositions that are not in any clear sense spatial or temporal, one can imagine a view of $\theta$-role assignment that identifies such prepositions with positions in an abstract space in which a given state or scene takes place. The specific suggestion that prepositions and traditional instances of $T$ may belong to the same category has been argued for by Torrego (1999/2002) (who focuses on Spanish *a* as a predicate of both temporal and spatial ordering) and by Demirdache and Uribe-Etxebarria (2000) (who provide a general framework in which spatial and temporal predicates receive a similar syntax).
18.5 Properties of Verbal $T_o$

We have offered a proposal concerning the complementation properties of V and A. We will shortly be focusing on N, whose complementation properties will turn out to be systematically and interestingly different. These differences will lead us to the proposal concerning the nature of syntactic categories with which we will end this chapter. We begin by observing a special property of $T_o$ in clauses whose main predicate is verbal. This property will be central to the distinction between verbal and nominal constructions discussed in the next section.

The observation that an adjective like afraid allows (and, because of the absence of $T_o$, requires) a PP complement headed by of immediately raises the question of why a corresponding verb (e.g., fear) does not also allow a PP complement headed by of—as an option, in addition to the possibility of a bare DP complement.

(34) No optional P in VP
   a. John is afraid of the dark.
   b. John fears (*of) the dark.

If we are correct in analyzing PP as a species of TP (and in concluding that, although the preposition has moved from inside DP, it forms the head of the construction after movement), the facts in (34) may be taken to indicate that (35) holds. A preposition is an instance of $iT$ in our analysis, not $uT$. The qualification verbal in (35) is a preparation for the discussion in the next section, where we contrast verbal $T$ with a nominal counterpart.

(35) Special property of (verbal) $T$
   The goal of $uϕ$ on verbal $T$ must bear $uT$.

The observation in (35) appears to be a property not only of $T_o$, but also of $T_s$ (setting aside possible exceptions such as locative inversion), which is why we have not limited (35) to $T_o$.

The statement in (35) raises two obvious questions. The first concerns VPs that appear to contain no DP complement whatsoever and thus potentially no instance of $uT$. The second concerns VPs that appear to contain a selected PP complement and thus call into question the requirement for verbal $T_o$ to probe $uT$. We will briefly discuss each of these questions before proceeding further.

We focus first on the VP of sentences like those in (36) that lack an overt DP complement.

(36) VPs without any overt DP complement
   a. Mary arrived.
   b. The boat sank.
c. A bell sounded.
d. The dog barked.
e. They worked hard.
f. The victim screamed.

If the sentences in (36) conform to the architecture of (16), and if \( T_o \) in these structures has the property in (35), then we must ask how \( T_o \) satisfies its needs here. These include the need for a goal bearing \( \phi \)-features, in addition to the more specific need in (35). The problem arises, however, only if we analyze the VPs in (36) as lacking a DP complement. We suggest that this is not the case, and that each of these examples contains a phonologically null DP complement.

The verbs in (36a–c) are probably unaccusative, which means that the VPs in these examples do contain DP complements. We propose that unaccusative (and, presumably, passive) clauses contain \( T_o \), just like active transitive clauses. The \( T_o \) of an unaccusative or passive clause, however, differs from the \( T_o \) of an active transitive clause in the same way that \( T_s \) of an infinitival complement to a raising verb like \textit{seem} differs from other instances of \( T_s \). A \( T \) of this sort has the property that Chomsky (2000) calls “defective.” Chomsky suggests that defective \( T \) contains only a proper subset of the \( \phi \)-features of nondefective \( T \) and that this has a crucial consequence. A defective, “\( \phi \)-incomplete” \( T \) acts as a probe, just like nondefective \( T \), triggering agreement and potentially movement, but it fails to mark uninterpretable features of its goal for deletion. This means that a DP in an Agree relation with a defective \( T \) still needs to agree with some other category, in order for \( uT \) (case) on DP to be marked for deletion (and eventually erased). That is why the DP in a simple unaccusative clause ends up in an Agree relation with \( T_s \).

\begin{equation}
(37) \text{Structure of unaccusative clauses}
\end{equation}

\[ \text{Mary} \; T_s [\_ \; \text{arrived}] \; [T_o, u\phi; \text{defective}] \; [\text{VP} \; V \; [t_i, uT, i\phi]]. \]

No problem arises if we assume that defective \( T_o \) in structures like (37) has the property in (35) as well (and likewise for defective \( T_s \)).

The verbs in (36d–f) are probably unergative. This means that the surface subject is not an underlying complement to V. Nonetheless, following Hale and Keyser (1993) (see also Chomsky 1995, chap. 4), we suggest that the V in an unergative VP does have a null DP complement, boldfaced in (38).

\begin{equation}
(38) \text{Structure of unergative clauses}
\end{equation}

\[ \text{The dog} \; T_s [\_ \; \text{barked}] \; [T_o, u\phi] \; [\text{VP} \; V \; [\text{DP} \; \text{[e]}, uT, i\phi]]. \]

The null DP may be taken to be an expression whose meaning is provided by the verb, and which—if it were phonologically expressed—would be the DP found in cognate object and light verb constructions such as those in (39).
(39) **Cognate object and light verb constructions**
   a. The dog barked a loud bark./The dog gave a bark.
   b. They did good work.
   c. The victim screamed a loud scream./The victim gave a scream.

   We turn now to the second obvious question raised by (35): how is it that apparent PP complements of verbs do not violate (35)? Consider first PPs that function as second objects of verbs.

(40) **PP complements as second objects**
   a. Mary returned the book to Bill.
   b. The government provided the town with water.

If a second object is structurally lower than the first (perhaps because of a “shell” configuration of the sort proposed by Larson (1988) to explain facts discovered by Barss and Lasnik (1986)), then the PP in examples like those in (40) will not function as a goal for T₀ and will raise no problems for (35).

Some VPs in which a PP complement appears to be a first object may have a similar structure, if the verb is unaccusative, as it probably is in examples like those in (41). If an unaccusative analysis of verbs like *matter*, *arrive*, and *smell* (in the relevant sense) is correct, then the PPs in (41) are really second objects and pose no problem to the generalization in (35).

(41) **PP complements as second objects of unaccusative verbs**
   a. This issue matters to Sue.
   b. The train arrived at the station.
   c. The room smells of formaldehyde.

Other examples, however, superficially similar to those in (41), contain verbs that are clearly not unaccusative.

(42) **PP complements of non-unaccusative verbs**
   a. The dogs barked at the mailman.
   b. Mary worked for the government.
   c. John shouted to the bus driver.
   d. Sue argued against that view.
   e. We spoke to the president.
   f. Bill looked at the statue.

Some of the examples in (42a–f) may well have an analysis like that proposed for unergative verbs—as a comparison of (42a,b) with (36d,e) immediately suggests. If these examples contain a phonologically null DP complement, as we suggested in (38) for standard unergative constructions, then the PP in these examples is once
again a second object. This removes the possible objection to (35). Alternatively, if it should turn out that some PPs are genuine first objects of verbs, we might propose that satisfaction of the selectional properties of a verb takes priority over satisfaction of (35)—in other words, that a violation of (35) by a goal that bears iT for selectional reasons is permitted.\(^{17,18}\)

Let us therefore assume that (35) is a correct generalization and begin to investigate its consequences. In this chapter, we have discussed four argument types in English:

1. “bare” DP,
2. CP not introduced by that or for,
3. CP introduced by that or for, and
4. PP.

We will now examine how each of these argument types fares when merged as a complement to V and probed by verbal To with the property in (35). We will see that a technical question concerning the timing of feature deletion needs to be resolved in a particular manner if we are to account correctly for the interaction of both To and Ts with these four clause types. This demonstration will put us in a good position to understand the distinctions between verbal and nominal complementation in the next section.

The most straightforward case is the first: a “bare” DP (i.e., a DP that does not contain a prepositional T).\(^{19}\)

(43) **Argument type 1: To probing DP**

```
  T_o
    VP
      [uϕ, −EPP]
        V
          DP
            D
            NP
              uT
              iϕ
```

The uϕ features on T o probe the iϕ features on DP. Since the head of DP contains uT, condition (35) is satisfied.

Consider next a finite CP complement to V that is not introduced by that (or for; the same analysis will extend to a realis infinitive functioning as the complement of V).
Argument type 2: To probing CP not introduced by that

Here the $u\phi$ features on To probe the $i\phi$ features on CP. As long as $uT$ on C is undeleted at the stage in the derivation at which $u\phi$ on To acts as a probe, (35) is satisfied. This is an important point. In P&T 2001, the fact that $uT$ on C deletes after entering an Agree relation with $uT$ on a subject DP provided an explanation for the that-omission asymmetry in (9). We claimed that once an uninterpretable feature has been “marked for deletion” by entering an Agree relation, it deletes quite soon. In the case at hand, we claimed that $uT$ on C deletes once its maximal projection (CP) has been fully formed. In essence, this amounted to the proposal that, as suggested by Chomsky (2000), features marked for deletion disappear at the end of the next phase.

This proposal is incompatible with (35), and it is (35) that we will defend at length shortly. In (44), the $uT$ feature on C, marked for deletion by the nominative DP that moves to Spec,CP, must still be present at the point in the derivation at which $u\phi$ on To probes the CP complement of V. On the other hand, if our account of the that-omission asymmetry is to be maintained, when such a CP is probed by a T that has an EPP property (Ts in the case of the that-omission asymmetry), a $uT$ feature on the head of that CP must delete before the CP moves to Spec,TP. That was the engine of our explanation for the that-omission asymmetry. Thus, the timing of deletion of uninterpretable features is important. One can imagine a number of different approaches to the issue. We will present one possibility.

Compare the structure in (44) with a structure in which exactly the same type of clause is an external argument of v that has not yet moved to Spec,TPs. Such a structure is given in (45), which ultimately yields an unacceptable output.
(45) *Ts probing CP not introduced by that* (argument type 2)

An uninterpretable feature marked for deletion, such as $\mathbf{uT}$ in (44) and (45), when present on a maximal projection $a$ (CP), must be allowed to survive past the point at which other heads are merged and form their own maximal projections. Thus, $\mathbf{uT}$ on $C$ must still be present after the construction of VP and the merger of $T_o$ in (44), since $T_o$ (if (35) is true) still sees $uT$ on CP. The structure in (45) shows that $\mathbf{uT}$ on $C$ must also survive the completion of the phase boundary vP, since $uT$ on $T_s$ is capable of probing CP in this structure and, if (35) is true, still “sees” $uT$ on CP. On the other hand, $\mathbf{uT}$ must delete once and for all in (45) before the EPP property of $uT$ on $T_s$ is satisfied—since it is the deletion of $uT$ on $C$ in such structures that creates a violation of the requirement that subjects be “nominative” (the Match Condition of P&T 2001) and thus rules out finite subject CPs not introduced by *that*. We summarize this proposal in (46).

(46) **Timing of deletion of uninterpretable features**

An uninterpretable feature $\mathbf{uF}$ marked for deletion within a completed phase $\Pi$ is deleted the moment a new head $\sigma$ is merged to $\Pi$.

We assume that the establishment of an Agree relation between the uninterpretable features of $\sigma$ and any goals within phase $\Pi$ is part of the process of merging $\sigma$ with $\Pi$. The satisfaction of EPP properties of these features (the formation of specifiers of $\sigma$) involves one or more further instances of Merge and thus is not simultaneous with the merger of $\sigma$ and $\Pi$. Note also the crucial reference to “$\mathbf{uF}$ marked for deletion within a completed phase $\Pi$.” The $uT$ feature of the DP external argument in (43) enters an Agree relation and is marked for deletion by $T_s$, but this relation is not established inside vP; therefore, $uT$ on DP does not delete before DP becomes the subject of $T_s$.

Let us now turn to the third argument type whose interaction with $T_o$ we will be discussing: a complement CP introduced by *that* (or *for*), as seen in (47). In such a
CP, T (iT) has moved to C, forming a specifier of CP that undergoes morphological merger with C (following the ideas of Matushansky 2002, discussed above). The result is a familiar Travis-Baker structure in which C contains both the (phonologically null) complementizer that bears #T and the moved instance of iT. Given our proposal concerning the timing of deletion, when To is merged with a VP containing such a CP, #T is still present on the head of CP, thus satisfying the requirements of verbal To given in (35).

(47) Argument type 3: To probing CP introduced by that

\[
\begin{array}{c}
\text{T}o \\
\underline{w\phi} \\
\text{VP} \\
\text{V} \\
\text{CP} \\
\text{C} \\
\underline{\#T} \\
\underline{\text{that}} \\
\underline{\text{iT}} \\
\text{TP}
\end{array}
\]

It is important to note that (35) states that the goal of verbal To in a structure like (47) must bear wT—not that it must fail to bear iT. The goal of verbal To in (47) in fact bears both. It is its role as bearer of wT that allows it to satisfy (35). This observation will be of the utmost importance in the next section.

Note also that our proposals about timing also permit a CP introduced by that to function as the subject of a sentence, probed by Ts. This structure is represented by the tree in (48). The #T feature of C is not yet deleted when the wφ features of Ts probe a CP introduced by that in Spec,vP. This satisfies (35) for Ts. As we just noted when considering argument type 2 as a sentential subject, #T on C will delete before CP moves to satisfy the EPP requirement of Ts. A CP introduced by that, unlike a CP of argument type 2, still retains an instance of T in C after #T is deleted—namely, the instance of iT that moved to C and morphologically merged with it. Thus, a CP of type 3, unlike a CP of type 2, satisfies the Match Condition and can be a specifier of Ts.
Finally, we note once more that argument type 4, a TP whose head is prepositional (i.e., a PP) differs from a CP introduced by *that* or *for* in bearing only *iT*, and not *uT*, in its head. This situation is diagrammed in (49). For this reason, such an argument may not be the goal probed by T₀ (or by Tₐ, for which we omit the tree).

18.6 Properties of Nominal T₀

We have shown that the goal of verbal T₀ (as well as the goal of Tₐ) bears *uT*. This observation straightforwardly explained the acceptability of bare DPs, CPs introduced by *that* or *for*, and CPs not introduced by *that* or *for* in this context. It also explained the impossibility of a PP as a goal of verbal T₀. A PP, if we are correct, is actually a TP—that is, a category headed by an instance of *iT*. Its head contains no instance of *uT*. In this respect, a PP contrasts with a *that*-clause (or *for*-clause), whose head does contain an instance of *uT*. More specifically, the head of a *that*-clause or

\[
\text{(48) } T_s \text{ probing CP introduced by that (argument type 3)}
\]

\[
\begin{array}{c}
T_s \\
[uφ, +EPP] \\
\end{array} \quad \begin{array}{c}
\text{vP} \\
\end{array} \\
\begin{array}{c}
\text{CP} \\
\end{array} \quad \begin{array}{c}
v' \\
\end{array} \\
\begin{array}{c}
\left[ \begin{array}{c}
\text{C} \\
\#T
\end{array} \right] + \begin{array}{c}
\text{that} \\
iT
\end{array} \\
\end{array} \quad \begin{array}{c}
\text{TP} \\
v \\
\end{array} \quad \begin{array}{c}
\ldots
\end{array}
\]

\[
\text{(49) Argument type 4: T₀ probing TP}_{\text{prep}} \ (= \text{PP}) \ [\text{violates (35)}]
\]

\[
\begin{array}{c}
T_o \\
uφ \\
\end{array} \quad \begin{array}{c}
\text{VP} \\
\end{array} \\
\begin{array}{c}
\text{V} \\
\end{array} \quad \begin{array}{c}
\text{TP}_{\text{prep}} \ (= \text{PP}) \\
\end{array} \\
\begin{array}{c}
\text{T}_{\text{prep}} \\
\text{DP} \\
\end{array} \\
\begin{array}{c}
\text{D} \\
\text{TP}_{\text{prep}} \\
\end{array} \\
\begin{array}{c}
\text{t}_{\text{TP}_{\text{prep}}} \\
\text{nP}
\end{array}
\]
for-clause contains both \(iT\) and \(uT\), and it is the presence of \(uT\) that allows (35) to be satisfied.

Recall that the complementation patterns of verbs differ from the complementation patterns of adjectives. Adjectives are indifferent to the presence or absence of \(uT\) on the head of their complement. So long as the complement is self-sufficient (i.e., not in need of any \(T_o\) whatsoever), the result will be acceptable. This fact entails the impossibility of a bare DP complement to A and the possibility of a PP complement to A. This pattern is the opposite of that observed with complements of V. On the other hand, adjectives and verbs are similar in both allowing a full array of CP complements, as seen in (15), repeated here as (50).

(50) **CP complement to A: all types possible**
    a. Bill was afraid [that the storm will be destructive].  
    b. Bill was afraid [the storm will be destructive].  
    c. Bill was eager [to read the instructions].  
    d. Bill was careful [to read the instructions].

As we noted earlier, the behavior of complements to A is what we expect if \(T_o\) is absent from structures of adjectival predication. The behavior of complements to V, by contrast, is what we expect if structures of verbal predication contain a \(T_o\) that seeks \(uT\), as stated in (35).

We now turn to the complementation properties of nouns. At first sight, nouns appear to behave like adjectives. As is the case with A, the complement of N may not be a bare DP, but may be a PP.

(51) **DP complement to N: impossible**
    *Bill’s fear the storm

(52) **PP complement to N: possible**
    Bill’s fear of the storm

Work in Government-Binding Theory took the similarity between the complementation properties of N and A to be complete. Thus, for instance, Chomsky (1980, 1981), developing an unpublished suggestion by Jean-Roger Vergnaud, suggested that neither NP nor AP contains a structural case assigner for the complement. PP and CP, in turn, were taken to have no case need. Consequently, both PP and CP were predicted to be acceptable as complements of N and A—in contrast to DP. In later work, Chomsky (1986) suggested that N and A do assign case after all, but that this type of case is “inherent” and is “realized” as a preposition in languages like English. Crucially, neither of these proposals posited a case-theoretic difference between nominal and adjectival complementation structures. In our framework, such proposals could be translated straightforwardly into a hypothesis that N, like A, is not associated with \(T_o\).
We will argue, however, that this approach is wrong. The complementation properties of N and A, though similar with respect to DP and PP complements, are not identical. In particular, N and A behave quite differently with respect to CP complements.

As (50a,b) show, the presence of *that* is optional in finite CP complements to A. Finite CP complements to N, however, behave differently, as observed by Stowell (1981, 1982). Though judgments occasionally waver, the presence of *that* appears to be obligatory in a finite CP complement to N in English.22

(53) That obligatory in finite CP complement of N (Stowell 1981, 1982)
   a. I liked your proof [that Mary could not have committed the crime].
   b. *I liked your proof [Mary could not have committed the crime].
   c. My demonstration [that Sue was insane] was accepted by the court.
   d. *My demonstration [Sue was insane] was accepted by the court.

Strikingly similar facts can be observed in the domain of infinitival complementation. Recall our discussion of the distribution of infinitives in section 18.2. In that section, we observed (following Stowell 1981, 1982) that an irrealis infinitival CP may function as the subject of a higher clause, just like a finite clause introduced by *that*. In contrast, a realis infinitival CP may not serve as the subject of a higher clause—just like a finite clause that is not introduced by *that*.

Exactly the same pattern can be observed in the complement position of nominals. The English verbs that select infinitival complements can be sorted into those whose complements are irrealis and those whose complements are realis.23 If we examine the subset of these verbs that have nominalizations, we observe a remarkable correlation.24 Only a verb that takes an irrealis infinitival complement continues to permit infinitival complementation when it is nominalized. A verb whose infinitival complement is realis, by contrast, excludes infinitival complementation when nominalized. This generalization appears to be quite robust, as (54) and (55) exemplify.25

(54) Realis infinitival complementation to N: impossible
   *Mary’s hate/hatred to ride in the car   *John’s dislike to hear rumors about them
   *Sue’s love to solve problems       *Harry’s bother to check the facts
   *Bill’s luckiness to win a prize   *Bill’s condescension to speak with us
   *Mary’s dare to defy the government  *Mary’s disdain to ride in the elevator
   *Bill’s help to understand things  *John’s management to find a plumber
   *John’s neglect to turn off the light  *Sue’s omission to mention this
   *Mary’s venture to ring the doorbell  *Bill’s scorn to answer the letter
Irrealis infinitival complementation to N: possible

- Mary’s desire to win
- Bill’s agreement to ride in the car
- John’s wish to win a prize
- Sue’s attempt to defy the government
- Mary’s consent to undergo the operation
- Bill’s demand to be taken to the king
- John’s hope to understand things
- John’s learning to play the piano
- Sue’s plan to leave
- Bill’s promise to turn off the light
- Bill’s refusal to ring the doorbell
- Sue’s resolution to make the call
- John’s undertaking to pay the bill

- Harry’s need to be accepted
- Bill’s arrangement to take the next flight
- Sue’s eagerness to win the prize
- John’s choice to stay late
- Bill’s decision to ride in the elevator
- Mary’s endeavor(s) to find a plumber
- Sue’s intention to answer the letter
- Bill’s offer to speak with us
- John’s preparation(s) to take the plane
- Mary’s proposal to start the meeting
- Bill’s request to be allowed to leave
- Mary’s struggle to get her car to work
- John’s vow to never take the subway

Once again, the complementation properties of N contrast with those of A. Just as adjectives freely accept finite complements with or without that, so adjectives allow either irrealis or realis infinitival complements, in semantically appropriate contexts. This is demonstrated in (53c,d). In (56), we offer more contrasts between acceptable realis infinitival complements of A and unacceptable realis infinitival complements of N.

Realis infinitival complements: A (possible) versus N (impossible)

a. Mary was happy to learn the election results.
   (cf. *Mary’s happiness to learn the election results)
b. Tom was depressed to hear that he had been passed over for promotion.
   (cf. *Tom’s depression to hear that he had been passed over for promotion)
c. John was lucky to pick a topic that no one had worked on.
   (cf. *John’s luck to pick a topic that no one had worked on)26
d. Sue was very clever to figure this out.
   (cf. *Sue’s cleverness to figure this out)
e. Bill was rude to behave that way.
   (cf. *Bill’s rudeness to behave that way)
Clearly, the complementation patterns of N and A are distinct. Thus, it appears unlikely that structures of nominal predication lack To, like structures of adjectival predication.

Let us therefore start from scratch, and ask what property distinguishes acceptable from unacceptable complements of N. We suggest that the relevant property is the presence of iT on the head of the complement.

Let us begin by examining the range of possible complements to N. Consider first PP. A PP, in our approach, is headed by an instance of iT and thus conforms to the generalization that we are proposing. Consider next a finite CP introduced by that. Such a CP is also an acceptable complement to N. A finite CP introduced by that, like a PP, has an instance of iT in its head (even though the head also contains uT, as discussed above). The same is true of an irrealis infinitival CP—also acceptable as a complement to N. We argued in section 18.2 that irrealis infinitives are just like finite that-clauses in undergoing movement of T to C (with subsequent morphological merger of T with C). As a consequence, an irrealis infinitive is like a that-clause in hosting an instance of iT in C.

Let us now turn to complements of N that are not acceptable. We begin with finite CPs that are not introduced by that, and their infinitival counterpart—realis infinitives. Such CPs, according to our proposals, do not host an instance of iT in C. The fact that these CPs are not acceptable as complements of N thus conforms to our generalization. The same is true of bare DPs. A bare DP contains only uT in D; it does not contain any instance of iT in D. The fact that a bare DP is not possible as a complement of N once again supports the generalization that a complement to N is acceptable only if its head contains iT.

This generalization looks very much like a variant of the property attributed to verbal T0 in (35). We take this resemblance to be significant. In particular, we will suggest that nominal predication structures are just like their verbal counterparts—and unlike their adjectival counterparts—in containing an occurrence of T0. The T0 in nominals, however, differs from the T0 in verbal structures in seeking a goal that bears iT, rather than a goal that bears uT. We thus propose an architecture for nominal predication structures like that in (58), which is parallel to the architecture of verbal predication structures presented in (16) and repeated here as (57). Note that semantically bipartite (e.g., telic) verbs may retain this character when nominalized. If this semantic property correlates with a distinction between v and V in verbal predication structures, it probably correlates with a similar n/N distinction in nominal predication structures, as indicated in (58). We leave open the question of a possible counterpart to Ts in nominals.

(57) Verbal predication structure

Subj Ts [vp v T0v [vp V Obj]]
The key difference between T_{oV} and T_{oN} is the contrast between (35) (repeated here as (59)) and (60).

(59) **Special property of verbal T**

The goal of $u\phi$ on verbal T ($T_{oV}$) must bear $uT$.

(60) **Special property of nominal T**

The goal of $u\phi$ on nominal T ($T_{oN}$) must bear $iT$.\(^{27}\)

18.7 **The Nature of Syntactic Categories**

The statements in (59) and (60) are “technical” in that they posit a relation between two elements, a probe and its goal, that goes beyond the link between an uninterpretable feature and its interpretable counterpart that is the essence of the Agree relation. If our proposals are on the right track, we must hope that the statements in (59) and (60) will turn out to be consequences of deeper facts about the contrast between nouns and verbs. We speculate that there is a connection between the tense-seeking properties of $T_o$ and the tense properties of the category that contains $T_o$. If this speculation is correct, nominal $T_o$ seeks a goal whose tense is interpretable (in the languages we have investigated) for reasons connected to the fact that nominal phrases themselves lack the full tense system characteristic of clauses. Our general idea is that there may be an inverse relation between the richness of tense on the predicate and the richness of tense (including prepositions) on its arguments. Recent research on languages in which nominals appear to have a fuller tense system, such as Somali (Lecarme 1997, this volume) and Halkomelem Salish (Wiltschko 2001), suggests that such speculations may be warranted. In this chapter, we will not offer a concrete proposal along these lines. Instead, we will explore a different aspect of our proposal: the logic of (59) and (60). We will argue that the logical structure of our system provides a new insight into the nature of syntactic categorization—whatever the ultimate sources of the generalizations in (59) and (60).\(^{28}\)

Let us review our results so far. In the last two sections, we have developed a proposal about the complementation properties of A, V, and N. This proposal, in turn, depended on analyses of the internal structure of CP, DP, and PP presented in P&T 2001 and further developed in earlier sections of this chapter. We have argued that a VP is a complement of a T ($T_{oV}$) with uninterpretable $\phi$-features that seeks a goal that bears $uT$. NPs differ minimally. An NP is a complement of a T ($T_{oN}$) with uninterpretable $\phi$-features that seeks a goal that bears $iT$. An AP is not a complement of any sort of $T_o$.\(^{27}\)
Our proposal thus postulates correlations between syntactic categories and their complementation properties significantly different from those offered in earlier work. Proposals within the Government-Binding tradition noted the existence of such correlations, but did not assume that the relation between syntactic category and complementation properties was biunique. As we discussed above, much earlier work took the case properties of N and A to be identical (in contrast to those of V), attributing them to a feature shared by N and A (and not shared by V)—for instance, the [+N] feature proposed by Chomsky (1970).

What is new in our approach is the identification of structural case with T and the analysis of certain elements (e.g., that and for) as instances of T moved to C. These ideas provide a new perspective on the formal import of alternations in the C system. Once we view the presence or absence of words like that as an indicator of differences in the distribution of T-features in a complement CP, differences in the distribution of CP complements to N and A can be seen as part and parcel of the system traditionally called “case theory.”

The picture that emerges is quite different from the traditional one. We have reached a conclusion much stronger than the traditional view. If our suggestions are correct, the relation between the syntactic categories A, V, and N and their complementation properties is biunique after all. This biuniqueness is not readily apparent at the level of data, but only becomes clear at a more abstract level. At the level of data, the repertoire of complement types allowed by A, V, and N shows considerable overlap, as table 18.1 makes clear.

The complementation properties of A and N are indeed identical with respect to PP and DP, just as traditional proposals claimed. All three categories allow CP introduced by that or for. With respect to other CPs, A and V pattern together.

The system proposed here reveals a pattern in these overlapping properties. There are two bifurcations. The first bifurcation concerns the presence or absence of T_o.

<table>
<thead>
<tr>
<th>Table 18.1</th>
<th>Complementation properties of A, V, and N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. PP</td>
</tr>
<tr>
<td>As complement to A</td>
<td>✓</td>
</tr>
<tr>
<td>As complement to V</td>
<td>—</td>
</tr>
<tr>
<td>As complement to N</td>
<td>✓</td>
</tr>
</tbody>
</table>
Since structures of adjectival predication lack $T_o$ entirely, there is no category in such structures that cares whether the complement of $A$ bears $uT$ or $iT$. That is why all types of CP are possible as complements to $A$. What happens to $T$ within CP does not matter. On the other hand, the complement to $A$ must be self-sufficient, which is what excludes bare DPs.

For predicational structures that contain $T_o$, there is a second bifurcation. If the $T_o$ is the type that seeks $uT$ (the type we have called “verbal”), the complement may not be a PP, since the head of PP bears only $iT$, but may be a DP, which bears only $uT$.

On the other hand, if the $T_o$ is the type that seeks $iT$, the opposite pattern of complementation obtains. As expected, a CP of the type in column 3—a CP with only $uT$ on its head—has the same distribution as DPs. It is possible when $T_o$ is the type that seeks $uT$ (verbal $T_o$) but is not possible when $T_o$ is the type that seeks $iT$ (nominal $T_o$). A CP of the type in column 4 leads a double life. The reasons for this lie in our treatment of that-trace effects, the that-omission asymmetry, and similar phenomena. Because the head of a column 4 CP contains both $uT$ and $iT$, such a CP is acceptable in structures of both verbal and nominal complementation.

We thus see that a complex and overlapping pattern of data follows directly from two choices in a decision tree. $T_o$ may be present or absent, and it may seek $uT$ or $iT$. How these choices affect actual complementation patterns is explained by the interaction of these choices with independently motivated analyses of CP, PP, and DP.

The point of special interest now is the fact that each of the categories $A$, $V$, and $N$ is associated with its own unique syntactic environment. The uniqueness is not evident when we look directly at the complements of these categories, but is evident when we look “upward” to see what if any $T_o$ is associated with the category. This raises the possibility that the status of a predicate as verb, noun, or adjective is not intrinsic to the predicate. Instead, we might suppose that there is a single category $Pr$ (for predicate) whose morphological status as $A$, $V$, or $N$ is determined by rule, as in (61).

(61) Contextual determination of lexical categories

a. $Pr$ is morphologically $V$ when associated with $T_o$ that seeks $uT$.
b. $Pr$ is morphologically $N$ when associated with $T_o$ that seeks $iT$.
c. Otherwise, $Pr$ is morphologically $A$.

This proposal converges with other recent work. Marantz (1997; see also Harley and Noyer 1998) has proposed that the determination of a predicate as verb, noun, or adjective is the result of the combination of a category-neutral predicate with a higher functional head. These results dovetail in many respects with the research of Borer (1991/1993, 2000) and Fu, Roeper, and Borer (2001), who have argued for the presence of a VP or VP-like constituent in process nominals—where the nominal character of the structure as a whole results from the nominal character of the head.
that embeds the VP. In both streams of research, one finds the additional proposal that the functional heads that determine syntactic category are heads that license particular θ-roles. For example, Marantz suggests that the unavailability of a causative external argument in a nominalization like *growth—which contrasts with its availability in the corresponding verb—derives from a difference in the argument-taking potential of nominalizing and verbalizing heads. Thus, *John's growth of tomatoes (Chomsky 1970) is unacceptable because of the nonexistence of a head (v for Marantz) that simultaneously verbalizes and causativizes, while John grows tomatoes is acceptable because of the existence of a head (v for Marantz) that simultaneously verbalizes and causativizes.

The focus of these proposals differs from ours. We have suggested that the categorial status of a predicate depends, not on an argument-taking head, but on a “case-related” head (T₀) with aspectual properties. It is possible, of course, that these two approaches will turn out to be compatible, as we learn more about the relation between argument-taking and case properties of predicates.

Some subsequent literature has developed other arguments in favor of category-neutral predicates. Although couched in the framework developed by Marantz (1997), these arguments can probably be easily recast in our terms. Embick (2000), for example, in a detailed study of the Latin perfect tense, argues that the status of a predicate as verb or adjective (the category to which he assigns the perfect participle) is determined by the nature of the functional projections that surround it. In particular, a predicate’s categorial status is established as a result of calculations that take into account the properties of a voice-related phrase (v for Embick, T₀ for us) as well as the properties of an aspectual phrase (a higher T in our framework). Pylkkänen (2002) provides another type of argument for the overall proposal. She shows that a cause morpheme in Japanese and other languages may be merged in at least three different points in the syntactic derivation. These distinct sites correlate with distinct semantic properties of the clause as a whole, and also correlate with other syntactic and semantic properties. The point especially relevant here is her suggestion that the lowest position in which cause may be found lies lower than the head that provides a category-neutral root with its syntactic category. For us, this would be a position below T₀ and above Pr. When cause is merged in this lowest position, various modifiers that Pylkkänen analyzes as verb-selecting (e.g., certain adverbs) may not modify the lower predicate to the exclusion of cause.

If our proposals are on the right track, it is the combination of T₀ with Pr that determines whether the head of PrP is verbal, nominal, or adjectival. Under this view, we must also ask what, if any, contribution to syntactic categorization is made by the higher heads of the clause—those we have called little a, v, and n, as well as T₃. If A, V, and N are contextually determined names for species of Pr, it is natural to suggest that something similar is true of a, v, and n. These may simply be conve-
nient names for species of a single category, which we might call pr. If this is the case, then any differences in properties of pr that distinguish syntactic categories must result from the syntactic environment, for instance, the status of Ts. Thus, we might suppose that possessive morphology (whether genitive or dative case, PPs headed by of, or English ’s) is a product of a nominal Ts while nominative/accusative morphology on a subject is a product of a verbal Ts. The fact that subjects of adjectival phrases must be case-licensed outside of the adjectival phrase might indicate the nonexistence of an “adjectival Ts” parallel to the nonexistence of an adjectival To. Under this overall view, it is appropriate to wonder what combinations of Ts and To are possible. In the English gerund, it looks as if a nominal Ts may co-occur with a verbal To, suggesting some freedom of distribution. A verbal Ts, however, appears to require the presence of a nominal To.

(62) T_s/T_o combinations

a. [Mary’s reading of the book] surprised us. [nominal T_s/nominal or absent T_o]

b. [Mary reading the book] surprised us. [verbal T_s/verbal T_o]

c. [Mary’s reading the book] surprised us. [nominal T_s/verbal T_o]

d. *[Mary reading of the book] surprised us. [verbal T_s/nominal or absent T_o]

We leave the further investigation of this topic for future research. If our approach is correct, facts like those in (62), which appear on the surface to be facts about case, may turn out to be facts about tense and tense interpretation.

In this chapter, we have argued that the general theory that explains such facts as the that-trace effect—if extended in natural ways to explain comparable facts about PPs, and about nominal and clausal complementation—leads to a new view of the very nature of syntactic categories. This unification of research questions is possible because of the tight links among concepts and phenomena found in the overall framework that we have assumed here. At the very center of this web of connections is the syntax of tense.

Notes

We wish to thank Philip Branigan, Hamida Demirdache, Danny Fox, Jacqueline Guéron, Sabine Iatridou, Itziar Laka, Jacqueline Lecarme, Shigeru Miyagawa, Norberto Moreno, Carlos Piera, Christer Platzack, and Norvin Richards for helpful discussion. We also wish to thank our students at MIT and at the Instituto «Ortega y Gasset» (Madrid) for important questions and comments, as well as audiences at the International Round Table on the Syntax of Tense and Aspect (Paris, 2000), the Colloque de Syntaxe et Sémanitique à Paris (2001), the XII Colloquium on Generative Grammar (Lisbon, 2001), the Summer Linguistic Seminar of the Linguistic Society of Japan (Lake Shirakabako, 2002), Memorial University of Newfoundland, Stanford University, Georgetown University, and the School of Oriental and African Studies (London).
The authors are listed alphabetically.

1. This hypothesis was first suggested by Williams (1994, 11) (a fact regrettably missed in P&T 2001) and was explored independently by Haeberli (1999).

2. Our exposition is somewhat simplified and compressed for reasons of space. For a fuller exposition, see P&T 2001.

3. See also Radford 2000 for some necessary modifications of the proposals made in P&T 2001 concerning the syntax of exclamatives.

4. The idea that EPP is a subfeature of an uninterpretable feature departs slightly from the proposals offered by Chomsky in the works cited.

5. Radford (2000) offers a modification of our P&T 2001 proposals in which it is not T itself that moves to C and is pronounced as that, but a distinct “finiteness” head between T and C. This eliminates the need to identify the phonological relation between that and the tensed verb as a form of “doubling” (as in P&T 2001), but at the cost of requiring distinct explanations for the that-trace effect and the “did-trace effect”—since a different category moves in the two constructions.

6. We continue to leave open, as in P&T 2001, the nature of the mechanism that decides—apparently on a language-particular and dialect-particular basis—when T in C is spelled out as that doubling an inflected main or auxiliary verb and when it is spelled out as a displaced auxiliary verb.

7. Note that all types of CPs—finite CPs with and without that, and nonfinite CPs that are realis or irrealis/generic—are acceptable as complements of A. This fact will be important later.

8. On the assumption that the phonologically realized verb in English occupies v, it is reasonable to suppose that English particles are overt instances of T_o. The aspectual import of many particles (consider atelic Mary drank her coffee vs. telic Mary drank up her coffee) fits nicely with the discussion of the semantics of T_o below. We pursue this connection in work in progress.

9. An antecedent idea, that there is a special connection between aspect and direct objects, can be found in Tenny 1992, 1994, and references cited therein.

10. Some of this evidence suggests that the uϕ-features of the category we call T_o have the EPP property, triggering movement of the accusative DP to Spec,T_o (i.e., triggering a sort of object shift). We leave open the important question of whether this is a general property of (English) T_o or a variable property triggered, perhaps, by other factors. See Platzack 2001 for discussion of related matters.

11. As is well known, other factors play a role in the distribution of a, including (in some cases) specificity, which we will not deal with here.

12. See P&T 2001 for arguments inspired by Szabolcsi (1983, 1987) that D and C are the same category. If this view is correct, D is simply the name traditionally used when the category takes a nominal complement, while C is simply the name used with a clausal complement. Reflecting ambiguities familiar from the literature, we use the mixed term C/D for the category when it introduces a gerund, but nothing hinges on this label.

13. The logic of the situation is predicted by a bottom-to-top derivation of the sort assumed in this work: the Economy Condition applies within the gerund clause blindly and is not outranked by the subcategorization requirements of a predicate merged later.
14. When the CP/DP on the right side of (31) undergoes movement, stranding the preposition, it is an instance of “remnant movement,” in that the moved CP/DP contains a trace of the stranded preposition.

15. If, as just suggested (and contra Kayne 1994), TPs do not undergo movement—or at least do not undergo A-movement processes such as topicalization—the fact that the sequence P+DP may pied-pipe under topicalization must indicate that the projection of P, rather than D, after P-to-D movement, is optional. When pied-piping occurs, it is DP that has projected. If the choice of projecting category is made “once and for all” in a derivation, we understand why a P+DP sequence that has pied-piped to an intermediate position as part of a topicalization or wh-process may not strand the preposition in that intermediate position (Postal 1972), as in (i).

(i) *Bill, I believe [to t_{ij}] that Mary has spoken t_{ij}.

16. This rethinking of the notion “prepositional complementizer” removes, perhaps, some of the initial plausibility of proposals that prepositions originate as clause introducers. Kayne (2000, chaps. 14–15; 2001) has pursued this approach, analyzing apparent clause-internal instances of P as complementizers that come to occupy a clause-internal position (and to take a nominal complement) as a result of a series of movement operations. One might imagine a reinterpretation of Kayne’s approach to certain empirical problems in terms of prepositional T, and T_o. It could turn out that certain apparent PPs are actually composed by movement of a remote DP to the specifier of a T. We do not take up this possibility here. We suspect that it is not the correct analysis of the constructions we have discussed here, but that it might be on the right track in other domains.

17. “Pseudopassive” constructions might provide relevant evidence. Perlmutter and Postal (1984, 100–104) note that the passive construction may strand the P of a complement PP to an unergative verb. Examples (ia,b) are from Perlmutter and Postal.

(i) a. The room was exercised in by Spider-Man.
   b. This hall has been lectured in by three Nobel laureates.
   c. The mailman was barked at by the dogs.
   d. That view was argued against by Sue.
   e. The president has been spoken to.

This possibility is surprising if unergative verbs always take a null DP object, and if the PPs in examples like those in (i) are second objects. With only sporadic exceptions (The building was taken care of by the custodian), the object of PPs that function as clear second objects cannot be moved under passive.

(ii) *This village was supplied grain with.

While this contrast might be taken as an argument against the proposal that unergative verbs take a null DP complement, it is also conceivable that the null DP complement is optionally absent and that pseudopassivization is possible only when the DP option is not taken. This might help us understand non-unaccusative verbs that do not allow pseudopassivization; these might be verbs that require the null DP complement.

(iii) a. *The government was worked for by many ethnic minorities.
   b. *The bus driver was shouted to by the stranded passengers.

   (cf. The bus driver was shouted at . . .)
We would analyze the stranded preposition of a pseudopassive construction as an instance of prepositional T that is “defective” in the sense discussed in the main text. It is because the preposition is defective in a pseudopassive that its DP complement must search elsewhere for a way to mark its \( uT \) feature (its case) for deletion. If a defective preposition counts as an instance of \( iT \), then pseudopassive constructions offer a clear case in which verbal T tolerates a goal that does not bear \( uT \), indicating that (35) must be understood as outranked by selectional requirements. We consider the question open.

18. The Spanish \( a \) linked to nonstative T\( _0 \) that introduces the animate DPs discussed in the previous section cannot be an instance of \( iT \), but must be an instance of \( uT \)—that is, a case marker (as Torrego (1998) argues). If it originates inside DP, like other prepositions we have discussed, then we must ask if it yields the same structure as English prepositions—that is, if it ends up as a head of a PP. Torrego (1998) argues that this use of \( a \) does function as a head of a PP in one dialect of Spanish. If this is correct, then we must ask whether \( a \) contains any interpretable features whatsoever. It must, if Chomsky (1995, chap. 4) is correct in suggesting that the derivation cannot tolerate a head all of whose features are eventually erased. (This was his argument against the existence of Agr\( _O \).) We leave the matter open.

19. One might also investigate the possibility that bare DPs in English contain a “defective” T akin to the T of infinitival clauses from which raising takes place (Chomsky 2000). On this view, in English, a phonologically null preposition raises to D in normal accusative DPs, but because of its defective nature (the absence of some potential members of its \( f \)-feature set) fails to mark \( uT \) on D for deletion. Spanish accusative \( a \) (Torrego 1998) may be an overt instance of a defective prepositional T of this sort.

20. This is true of English. We leave open the possibility that other languages, such as those without preposition stranding, may differ in this respect.

21. In an irrealis complement with a subject other than PRO, T in C is realized as \( for \), as expected.

(i) Bill was eager for Mary to read the instructions.

22. We assume that the CPs in examples like (53a–d) are normal complements to N, and we seek an explanation in the properties of T\( _0 \) for the facts under discussion. Several previous researchers have suggested, however, that N does not take a normal finite CP complement at all, and they use this claim as part of an explanation for the obligatoriness of \( that \).

Stowell (1981), for example, argues that finite CPs that look like complements to N are actually appositive adjuncts. On this hypothesis, the CP in a nominal like \( Mary's\ belief\ that\ the\ world\ is\ round \) would be an appositive modifier that offers a description of Mary’s belief. We have chosen nouns that exclude this analysis. The proof that \( X \) is not itself an instance of \( X \), nor is a demonstration that \( X \) an instance of \( X \). Thus, the CPs in (53a–d) cannot be appositive modifiers, contrary to Stowell’s proposal (see also Ogawa 2001, 148–157).

Grimshaw (1990) offers a proposal similar to Stowell’s in many respects, except that her analysis does not claim that all putative complements to N are actually appositives. According to Grimshaw’s theory, the CPs in examples like (53a–d) are syntactic complements to N and are interpreted relative to the lexical conceptual structure evoked by N much as they would be interpreted relative to the lexical conceptual structure of the corresponding V. They are not, however, \( \theta \)-marked arguments of N, since Grimshaw argues that the \( \theta \)-marking capacity of N is defective. N, according to Grimshaw, can only \( \theta \)-mark an argument that is the object of a preposition. Grimshaw suggests (p. 80) that this claim may explain (in the context of a theory...
in which a null C must be governed by a θ-marker) the nonomissibility of that. She argues at length that whatever the relation held by a CP complement to N, it is not θ-marking.

Grimshaw offers several pieces of evidence in support of this proposal. For example, she notes that adjectives like frequent and constant with a singular N eliminate result and object readings of N and force arguments of N to be realized. This explains contrasts outside the domain of clausal complementation (e.g., the frequent expression of one’s feelings vs. *the frequent expression; p. 50). Grimshaw states (p. 74) that this effect is not found with CP complementation, a claim somewhat undercut by her additional claim (p. 75) that adjectives of frequency are actually not possible with singular nouns with (finite) CP complements—a second argument for her hypothesis. In fact, however, the data appear to vary with the choice of nominal. Grimshaw notes the impossibility of such examples as (ia,b) (pp. 75–76, judgments hers).

(i) a. *Their frequent/constant announcement that they were the greatest eventually became tiresome.
   b. *His frequent/constant statement that he was about to resign was intended to mislead.

The behavior of other nominals, however, leads us to question the generalization. These other nominals not only allow the construction excluded in (i) (as seen in (ii)), but also show the pattern identified by Grimshaw as characteristic of argument taking in general. The presence of the frequency adjectives in (ii) makes the object CP obligatory, as seen in (iii).

(ii) a. His frequent/constant claim that he was about to resign annoyed us.
   b. The constant belief that someone is trying to poison you is a sure sign of insanity.

(iii) a. *His frequent/constant claim annoyed us.
   b. *The constant belief is a sure sign of insanity.

We suspect that the unacceptability of (ia,b) arises, not from any deficiency in the argument-taking capacity of nominals, but from some interaction between the semantics of specific predicates and the semantics of individual frequency adjectives. For example, in our judgment, the use of repeated instead of frequent or constant in (ib) renders the example entirely acceptable. Crucially, as in (iii), acceptability disappears if the complement is not present. Thus, though there are factors influencing judgments that are not fully clear, it looks as though the complementation properties of N and V are essentially the same, except for the factors under discussion in the main text. For this reason, we have sought an alternative to the family of approaches represented by Stowell 1981 and Grimshaw 1990. See also Ogawa 2001, 200–216, for fuller discussion along similar lines.

23. See note 27 for a discussion of exceptional case-marking and raising infinitives.

24. We take this correlation from Pesetsky 1989.

25. We know of only one exception, the noun failure. As noted by Pesetsky (1989), this noun, like the verb fail, allows an infinitival complement (Bill’s failure to leave). Yet fail is a (negative) implicative verb. If Bill failed to leave, then Bill did not leave. We do not have an account of this exception.

26. The expression It was John’s good luck to pick a topic that no one had worked on does not involve nominal complementation, but extraposition. Contrast *John’s good luck to pick a topic that no one had worked on just ran out.

27. As is well known, exceptional case-marking (ECM) and raising constructions in English are possible in VP and AP, but not in NP.
If we were to combine our proposals with Chomsky’s (1981, 2000) analysis according to which ECM and raising infinitives are bare TPs, we would make an entirely wrong prediction about VP and NP. Verbal $T_o$ should reject a goal headed by interpretable $T$, and nominal $T_o$ should accept such a goal. This leads us to propose that ECM and raising infinitives are actually CPs. If we propose that the subject of such CPs raises to Spec,CP much as in finite clauses without * that, we immediately explain why such CPs are acceptable as complements of V and A, but not as complements of N. The reason is the same as that provided for the distribution of finite clauses without * that.

The central difference between such CPs and the others we have discussed is the fact that $uT$ on the subject (i.e., case on the subject) is not marked for deletion by any element within CP. This means that $T$ is “defective” in the sense already discussed, and also that $uT$ on $C$ is defective in the same sense. The subject moves to Spec,CP as a consequence of agreement with $[uT, +EPP]$ on $C$, much as it moves first to Spec,TP as a consequence of agreement with $[u\phi, +EPP]$ in both our system and Chomsky’s. (Defectiveness is no bar to Agree and EPP-motivated movement, even though the result does not mark features for deletion.) If $T$ moved to $C$ instead of the subject, the subject would not be in a phase-peripheral position and thus (if Chomsky’s (2000) Phase Impenetrability Condition is correct) would not be accessible to CP-external probes. When the higher clause contains an unaccusative verb like *seem as in (iib), the subject in Spec,CP of the embedded infinitive (Mary) ultimately agrees with a higher $T$, and raises to the higher subject position. When the higher clause contains an active transitive verb like *believe in (iia), the higher $T_o$ marks $uT$ on the embedded subject for deletion, possibly accompanied by movement to Spec,$T_o$, as discussed earlier.

Thus, the fact that ECM and raising infinitivals have a distribution similar to the distribution of finite clauses without * that is directly explained as a consequence of the defectiveness of $uT$ within such infinitivals that motivates ECM and raising in the first place.

If this analysis is correct, the reference to *goal in (59) and (60) should probably be replaced with a reference to *goals. Consider an embedded ECM infinitival whose subject is a * that-clause. Such examples have occasionally been marked as deviant (e.g., by Stowell (1981)), but seem to be acceptable to most speakers, with appropriately helpful prosody.

He considered [[that Mary left] to be a tragedy].

If our analysis of ECM is correct, the * that-clause in (iii) occupies Spec,CP of the embedded infinitive. This means that $u\phi$ on a higher $T_o$ should see the *that-clause as a goal. Since the head of a *that-clause bears $iT$ as well as $uT$, this goal should be acceptable not only to verbal but also to nominal $T_o$. This might make the false prediction that (iv) should be an acceptable nominal.

*his consideration [[that Mary left] to be a tragedy]
28. It is important to ask whether the “technical” property that distinguishes among N, V, and A correlates with (or can be explained in terms of) other properties of these categories. Baker (2003), for example, offers a comprehensive theory of these categories according to which N and V differ in other, more idiosyncratic respects. In particular, only N induces a referential index, and only V (our v) has the ability to take a specifier that bears a thematic role. A is distinguished (in a manner reminiscent of our proposals) by having neither of these properties. Baker’s typology of categories is perhaps compatible with the framework sketched here, but we would need to find a link between properties like “bears an index” and occurrences of T that seek iT. The speculations in the main text would presumably be relevant here.

29. As discussed in section 18.5 and in note 17, it is possible that selected PPs may function as (first) complements of V. If this is the case, we suggested that satisfaction of selectional requirements might outrank the requirement that the goal of verbal T₀ bear uT. If this is true, then there are instances of PP complements to V admitted by our system, which makes the underlying complementary distribution of complement types even more opaque at the level of data.

30. Our choice of the vague phrase associated with in (61) is deliberate, intended to leave open several possibilities. If the structures we have proposed in (57) and (58) are correct, the phrase associated with should be taken to refer to the status of PrP as the complement of TₒV or TₒN. Alternatively, it may be Agree between a feature of Tₒ and features of Pr that establishes the relevant association, perhaps combined with head movement of Pr to Tₒ (and morphological merger). We must also consider a different possibility, which we have omitted from discussion so far. We have assumed without discussion that the various species of Tₒ are syntactic heads distinct from Pr (i.e., independent of V and N).

It is also conceivable, however, that Tₒ (both verbal and nominal) is not a distinct head at all, but a set of features of Pr. We suggested in note 8 that English particles may be overt instantiations of (verbal) Tₒ. We are not, however, aware of constructions that simultaneously contain overt instantiations of Tₒ and Pr. It is thus possible that verbs are instances of Pr with verbal Tₒ-features; nouns, instances of Pr with nominal Tₒ-features; and adjectives, instances of Pr devoid of Tₒ-features. The claim advanced in this section would be recast as the claim that the features that distinguish verbs, nouns, and adjectives are not sui generis categorial features, but the Tₒ-features of Pr. The ϕ-features that are properties of Tₒ in the proposals discussed in the main text would, on this view, be features of Pr. A similar view could be developed for finite Tₛ, which would analyze this Tₛ as a feature of the highest verb of the clause, instead of analyzing it as the first functional projection above Pr. Such an analysis is, of course, a mainstay of many viable treatments of the English auxiliary system. We know of no particular reason to choose among these alternatives. The overall structure of our proposals is independent of this choice.

31. For some critical discussion of these approaches, see Baker 2003, chap. 6. An antecedent of this approach is found in Guérin and Hoekstra 1988, 1995.

32. The integration of this suggestion with the framework of P&T 2001 raises some complex issues discussed in that paper. It is not crucial that nominal Tₛ be the actual source of possessive morphology; rather, it is crucial that possessive morphology is a sign of the presence of nominal Tₛ. A distinct head, as discussed in P&T 2001, might be responsible for the actual shape of possessive morphology.
References


Bresnan, Joan. 1972. Theory of complementation in English syntax. Doctoral dissertation, MIT.


Wiltschko, Martina. 2001. Tense on D and (the lack of) nominative case. In Minjoo Kim and Uri Strauss, eds., *NELS 31*. Amherst: University of Massachusetts, GLSA.

19.1 Theories of Accomplishments and Theories of Lexical Aspect

This chapter discusses some properties of accomplishments on the basis of data from two constructions in which accomplishment VPs are derived from nonaccomplishment heads. The two constructions, progressive achievements and resultative predication with activity verbs, are analyzed in detail in Rothstein, to appear b, and so I will not use this chapter to justify the analysis of the constructions. Instead, I will draw some general conclusions about constraints on deriving accomplishments, and show how the derived accomplishments are an important source of insight into the nature of accomplishments in general, and even more importantly, into the nature of lexical aspect. My goal is to show that derived accomplishments can be used to make the case for the possibility of, and the necessity for, a theory of lexical aspect which postulates what the logical structure of events is and which explains how this structure constrains aspectual possibilities in the language. Space constraints prevent me from considering what such a system might look like, but I discuss the issue in some depth in Rothstein 2004, chap. 8.

Accomplishments are events which are compared on the one hand with activities and on the other with achievements. Activities, following Dowty (1979), are dynamic events which extend over time, but which do not have an inherently determined endpoint. They are thus both homogeneous down to minimal parts, and cumulative: an activity event $e$ of type $P$ can have a proper part which is also a $P$-event, and it may itself be a proper part of a bigger $P$-event. Thus, an event $e$ of Dafna running will normally have proper parts which are also events of Dafna running, and it can also be part of a bigger event of Dafna running. Activities normally involve either agentive participation by a sentient participant, as in Dafna runs, or events of movement with nonsentient participants, as in The river flowed. Achievement events, also following Dowty (1979), are near-instantaneous changes of state from situations in which $\neg\phi$ holds to situations in which $\phi$ holds. Achievements are nonhomogeneous, since they are treated as too short to have parts, and noncumulative, since they...
cannot be extended and cannot be part of a bigger event of the same type. Achievement events include such verbs as arrive and die. Accomplishment events share properties with both activities and achievements. Like activities, they are dynamic and extend over time; they usually involve action by a sentient agent, as in Dafna built a house, but may also involve nonsentient participants, as in The river froze. Like achievements, their endpoint is determined by their meaning: an accomplishment is over when a particular situation is reached. Accomplishments can be characterized as events of gradual change from $\neg \phi$ to $\phi$, which come about through the occurrence of an activity. It has seemed illuminating to talk of accomplishments as culminating activities, and this has had the advantage of making precise an important question—namely, how the culmination of an accomplishment is determined.

Lexical accomplishments are verbs such as read, eat, and build. They are verbs which can head a telic VP when they occur with a “measured” direct object, which is to say, any object other than a bare mass noun or a bare plural. It does not matter how precise the measure is: Dafna ate a lot of candy/sweets is as telic as Dafna ate exactly three sweets. Since both the direct objects are measured, the VP is telic, as (1a,b) show, whereas in (1c), where the object is either a bare mass noun or a bare plural, it is not.

(1) a. Dafna ate a lot of candy/candies in half an hour.
   b. Dafna ate exactly three candies in half an hour.
   c. *Dafna ate candy/candies in half an hour.

I assume that a telic VP is one in which the singular events come with a criterion for individuation, or an atomic measure, and that an atelic VP has no such measure and can therefore be extended indefinitely (see Rothstein 2004, chap. 7). What the data in (1) show—as discussed extensively by Tenny (1987, 1994), Dowty (1991), and Krifka (1989, 1992, 1998)—is that lexical accomplishments allow a measured direct object to contribute to the determination of the measure of the event. Further, it has been argued that the extent of the direct object fully determines the size, or duration, of the event. Thus, in (1a,b) the duration of the event of candy eating under discussion is determined by how long it takes for the specified quantity of sweets to be eaten. Krifka (1989, 1992, 1998) gives the most precise account of how the endpoint of the event is determined. He argues that there is a homomorphism from the extent of the direct object (in this case, the sweets) to the extent of the event; thus, when the direct object is “used up,” the event is over. Accomplishments work the way they do because the thematic relation between the event and the theme is one of graduality (Krifka 1992) or incrementality (Krifka 1998). It is simply a fact about the way that a candy is involved in an eat-a-candy event or a house is involved in a build-a-house event that the event affects parts of the theme in turn until the whole theme has been appropriately affected, at which point the event is over. Thus, what makes accom-
accomplishments different from activities such as *push the cart* is just the fact that in the latter case, the theme, or direct object, is not affected incrementally and thus cannot be used to determine the endpoint of the event.

On this account—or this type of account—there is no important structural difference between activities and accomplishments, since they both consist of dynamic events which have a duration. Activities are unequivocally atelic, and an activity VP gives no information about when an event in its denotation is over: the endpoint of an event in the denotation of *run* is determined on a case-by-case basis by the particular context in which it occurs. Accomplishments may be telic, with a culmination or endpoint determined by the event description and not by contextual facts, but this difference is a by-product of the particular way in which “accomplishment events” affect, or involve, their themes. It just is the case that in an eating event, the theme is affected bit by bit, whereas in a pushing event, it is affected “holistically”; as a result, pushing events can be indefinitely extended, whereas the extent of an eating event is determined by the extent of its theme. The class of accomplishment verbs consists of a set of verbs which happen to involve their themes in this particular, incremental, way. As a consequence, there is no “architectural importance” to the distinction between activities and accomplishments as far as the grammar is concerned, nor are there ontological implications to be drawn. Lexical aspectual distinctions are by-products of kinds of verb meanings, and the approach to lexical aspect is on the whole taxonomic. The particular lexical classes that we take notice of are isolated because of the strength of the generalizations which underlie them, but other than that they have no particular ontological significance.

There is another way of thinking about lexical aspect and aspectual classes. According to this other approach, aspectual classifications are not simply sets of generalizations over verb meanings, but are structural constraints on verb meanings which are determined by the logical structure of the grammar. The grammar makes available certain structures and rules out others, and can be seen as determining templates into which verb meanings fit. On this account, it is interesting and important that lexical accomplishments affect their themes in a particular, incremental, way, but we would not expect this relation between a verb and its direct object to constitute “being an accomplishment.” Rather, this relation should follow from the way in which lexical accomplishments meet the constraints of the accomplishment template. This leaves open the possibility that there are other ways of meeting the accomplishment template too. What I want to argue is that the two constructions mentioned earlier, predicate achievements and resultative predication with activity verbs, are constructions in which nonlexical accomplishments are derived, and that these nonlexical accomplishments are not characterized by a gradual or incremental relation between verbal head and direct object. These constructions thus provide evidence for an “architectural” theory of lexical aspect in which the constraints on
possible verb meanings and classifications are derived from some aspect of the logicosemantic system.

19.2 Two Types of Derived Accomplishments

The first kind of derived accomplishment occurs in progressive achievement sentences such as those in (2).

(2) a. Mary is arriving at the station.
   b. The old man is dying.
   c. John is reaching the top of the flight of steps.

The received wisdom has been that achievements do not appear in the progressive (see, e.g., Dowty 1979, where some counterexamples to this generalization are also discussed). And indeed, achievements should not appear in the progressive for the following reason. The progressive form *x is V-ing* is used, roughly, to assert that an event in the denotation of V is in progress, or more precisely to assert that there is an event going on which is a part of an event in the denotation of V. When V is an activity verb, such as *run*, the witness event for the progressive assertion can itself be a V-event, but when V is an accomplishment, the witness event for the progressive assertion is normally a proper part of the V-event—hence, with accomplishments we get the imperfective paradox. An event which supports *Dafna was running* is itself an event in the denotation of RUN; thus, *Dafna was running* entails *Dafna ran* (assuming, as usual, that the progressive event is not a minimal initial part of a running event), but an event supporting *Dafna is building a house* is not (usually) in the denotation of BUILD A HOUSE, since it is not an event in which a house gets built, but only a proper part of it. Thus, *Dafna was building a house* does not entail *Dafna built a house*. This so-called imperfective paradox (i.e., the lack of entailment) results from the structure of accomplishments: since an accomplishment V has an endpoint determined by its meaning, it is not possible to say that an event in the denotation of V has taken place until the lexically determined endpoint has been reached—in this case, until the house has been built.

Since achievement events are near-instantaneous changes of state, which the grammar treats as unanalyzable into subevents, it is difficult to see how an achievement can occur in the progressive. If an event is treated by the grammar as having no duration, and as “over as soon as it has begun,” what does it mean to assert that it is in progress? Nonetheless, the examples in (2) are acceptable, so they must have some interpretation. The examples in (2) all induce the imperfective paradox, as (3) shows.

(3) a. Mary was arriving at the station when she heard that there was a crisis at the office, so she turned round and went back to work. She never got to the station.
b. The old man was dying when they discovered the new drug, so he didn’t die.
c. John was reaching the top of the flight of steps when he fell and broke his leg. So he didn’t reach the top.

Assuming that the imperfective paradox results from the dynamic event + endpoint structure which we associate with an accomplishment, the data in (3) indicate that progressive achievements make some use of the accomplishment structure. However, as I argue extensively in Rothstein 2004, to appear, progressive achievements are not simply achievements extended into accomplishment readings. We can see this because the progressives in (3) behave differently from the progressives of lexical accomplishments. I will not repeat all the data here, but some of the more striking arguments are derived from the following contrasts. First, when in x time modifies a futurate progressive achievement, it naturally gives information about when the telic point of the completed action will occur, relative to the assertion time. When in x time modifies a futurate progressive accomplishment, it may be interpreted as giving information about when the accomplishment itself will be going on or how long the whole accomplishment will take, but not about when the telic point of the accomplishment is located relative to the time of assertion. This can be seen in the examples in (4).

(4) a. The train is arriving in Tel Aviv Central in five minutes.
   b. John is reaching the top of the Eiffel Tower in ten minutes.
   c. We are eating dinner in half an hour.
   d. I am writing a book in six months.

Second, with progressive achievements, the activity and the telic point can easily be modified independently, as in (5a). This is not naturally the case for accomplishments, as (5b) shows, although, as (5c) shows, it can be done. Still, the contrast between (5a) and (5b) is sharp and needs to be explained.

(5) a. John was dying for a long time, but he actually died quickly.
   b. #Mary was writing a book slowly, but she actually wrote it quickly.
   c. At one point, Mary was writing her book very slowly, but when it came down to it, she actually wrote it quickly.

Third, progressive achievements are not easily seen as parts of other bigger events. Again there is a contrast with progressives of lexical accomplishments, as (6) shows.

(6) a. Mary is running to the Netherlands. In fact, she is running to Amsterdam.
   b. Mary is arriving in the Netherlands. In fact, she is arriving in Amsterdam.

There is a natural reading in which a running from Brussels to Den Bosch supports the first assertion in (6a), and in which this event is seen as part of an event of running from Brussels to Amsterdam. But there is no parallel reading for (6b): an arrival
at Maastricht cannot be seen as part of an event of an arrival in Amsterdam, and the only way to give a reasonable interpretation to (6b) is to interpret the second assertion as giving more precise information about the first: the arrival in the Netherlands was an arrival in Amsterdam.

What these data show is that the accomplishment used in progressive achievements is not a lexical accomplishment, and the progressive has not just been pushed or stretched into accomplishment form. What I argue extensively in Rothstein 2004, to appear, is that the meaning of the lexical achievement VP is incorporated into an accomplishment meaning without losing its internal structure, and the derived accomplishment used in the progressive achievement is an event consisting of a dynamic event with duration (i.e., an activity) of unspecified nature which culminates in an event in the denotation of the achievement VP. Let us oversimplify and assume that an accomplishment has roughly the structure in (7a), which simply conveys the information that accomplishments are singular events (indicated by the superscript $^S$) which are culminating activities. (See Rothstein 2000 for a justification of this structure, and Rothstein 2001, 2004, for a more complex structure which better conveys the structure of accomplishments. Note that I assume that VP is of type $\langle e, t \rangle$ and denotes a set of events, and that the possibility of adding the external argument results from the operation of predicate abstraction which occurs higher in the tree.) A lexical accomplishment sentence like *Dafna painted the house* has the interpretation in (7b), asserting that there was an event which consisted of an activity subevent of Dafna painting the house and which had a culmination, and in which the argument of the culmination event was the theme of the activity (thus capturing the intuition that it is the theme which is the incremental argument and which gets “used up” at the culmination).

(7) a. $\lambda e.\exists e_1 \exists e_2[e = S(e_1 \sqcup e_2) \land \text{ACTIVITY}(e_1) \land \text{cul}(e_1) = e_2$
\hspace{1cm} $\land \text{Th}(e_1) = \text{Arg}(e_2)]$

b. $\exists e \exists e_1 \exists e_2[e = S(e_1 \sqcup e_2) \land \text{PAINT}(e_1) \land \text{Ag}(e_1) = \text{DAFNA}$
\hspace{1cm} $\land \text{Th}(e_1) = \text{THE HOUSE} \land \text{cul}(e_1) = e_2 \land \text{Th}(e_1) = \text{Arg}(e_2)]$

How can we use this structure to explain what is going on with progressive achievements? We assume that there is a type-shifting operation, triggered by the progressive operator, which shifts the achievement into an accomplishment whose culmination is in the denotation of the achievement, as in (8a). The VP complement of the progressive in *is arriving at the station* is the result of applying SHIFT to *arrive at the station*, as in (8b).

(8) a. $\text{SHIFT}(\text{VP}_{\text{achievement}}) =$
\hspace{1cm} $\lambda e.\exists e_1 \exists e_2[e = S(e_1 \sqcup e_2) \land \text{ACTIVITY}(e_1) \land \text{cul}(e_1) = e_2$
\hspace{1cm} $\land \text{Th}(e_1) = \text{Arg}(e_2)$
\hspace{1cm} $\land \text{VP}_{\text{achievement}}(e_2) \land \text{Arg}(e_2) = x]$
b. $\lambda e. \exists e_1 \exists e_2 [e = S(e_1 \sqcup e_2) \land \text{ACTIVITY}(e_1) \land \text{cul}(e_1) = e_2$
\hspace{1cm} $\land \text{Th}(e_1) = \text{Arg}(e_2)$
\hspace{1cm} $\land \text{ARRIVE AT THE STATION}(e_2) \land \text{Arg}(e_2) = x]$}

Assuming that the properties of the activity are inherited by the accomplishment, \text{SHIFT} (\text{ARRIVE AT THE STATION}) denotes the set of events which consist of an unspecified activity and which culminate in an event of arriving at the station. A progressive which uses such a verb meaning, such as \textit{Mary is arriving at the station}, asserts that there is an event in progress which is a part of an activity culminating in an event of Mary arriving at the station. The theme of the activity (i.e., the argument that the accomplishment “happens to”) is the argument of \textit{arrive}. Principles of compositionality force the external argument of the achievement VP to be the theme of the accomplishment; since any internal arguments of the achievement are saturated within the VP before the shift operation occurs, they are not available to be abstracted over at the level of the progressive, and the only free variable is the external argument. The accomplishment denoted by the higher progressive VP which must share an argument with the achievement needs a local argument (i.e., one which it properly governs) to be composed with; the only position which is local relative to the accomplishment is the sentential subject position, and its argument must therefore be the subject of the sentence—and thus identical to the external argument of the achievement. This is made explicit in the more precise—and complex—shift rule detailed in Rothstein 2004, chap. 5.

The second construction in which a derived accomplishment is used is the derived resultative construction, illustrated in (9).

(9) a. Mary scratched the wound open.

b. John sang the baby asleep.

Here, activity verbs, the transitive \textit{scratch} and the intransitive \textit{sing}, both appear with resultatives. As is well known, resultatives give a property of the culmination of an event, so that \textit{Dafna painted the house red} asserts (at least) that there was a painting-the-house event with Dafna as agent, and that at the culmination of the event, the house was red. The formal interpretation of this sentence looks roughly like (10) (following Rothstein 2003, 2004.)

(10) $\exists e \exists e_1 \exists e_2 \exists e_3 \exists e_4 [e = S(e_1 \sqcup e_2) \land e_1 = S(e_3 \sqcup e_4) \land \text{PAINT}(e_3)$
\hspace{1cm} $\land \text{Ag}(e_3) = \text{DAFNA} \land \text{Th}(e_3) = \text{THE HOUSE}$
\hspace{1cm} $\land \text{cul}(e_3) = e_4 \land \text{Arg}(e_4) = \text{Th}(e_3)$
\hspace{1cm} $\land \text{RED}(e_2) \land \text{Arg}(e_2) = \text{Arg}(e_4) \land R(e_4, e_2)]$

This asserts that there was an event $e$, composed of an event $e_1$ and an event $e_2$, where $e_1$ is an accomplishment \textit{paint the house} which is itself composed of an activity $e_3$ and a culmination $e_4$, and $e_2$ is an event of the house being red, and that the culmination of the accomplishment ($e_4$) stands in the $R$ relation to the red event. What
the $R$ relation is I will not go into here; it is sufficient to state that it is the formal relation which guarantees that the resultative predicate red can be interpreted as giving a property of the house at the time of the culmination of the activity (for more details, see Rothstein 2003, 2004.)

However, both scratch and sing are activity predicates and thus do not have culminations. In order for (9) to be interpretable, the meanings of the activity verbs must be shifted into a reading where they have a culmination which the event denoted by the resultative predicate can stand in the $R$ relation with. Thus, we have a situation which complements the situation with progressive achievements. There we had an instantaneous event which was incorporated as the culmination of an accomplishment for which an activity had to be supplied. Here we have an activity which needs to be incorporated into an accomplishment and for which a culmination has to be supplied. We posit the SHIFT operation in (11a), which gives us the meanings for SHIFT(SCRATCH THE WOUND) and SHIFT(SING) in (11b) and (11c), respectively:

(11) a. $\text{SHIFT}(\text{VP}_{\text{activity}}) =$

$$\lambda e . \exists e_1 \exists e_2 [e = S(e_1 \cup e_2) \land \text{VP}_{\text{activity}}(e_1) \land \text{cul}(e_1) = e_2$$

$$\land \text{Th}(e_1) = \text{Arg}(e_2)]$$

b. $\lambda e . \exists e_1 \exists e_2 [e = S(e_1 \cup e_2) \land \text{SCRATCH}(e_1) \land \text{Th}(e_1) = \text{THE WOUND}$$

$$\land \text{Ag}(e_1) = x$$

$$\land \text{cul}(e_1) = e_2 \land \text{Th}(e_1) = \text{Arg}(e_2)]$$

c. $\lambda y . \lambda e . \exists e_1 \exists e_2 [e = S(e_1 \cup e_2) \land \text{SING}(e_1) \land \text{Ag}(e_1) = x \land \text{cul}(e_1) = e_2$$

$$\land \text{Arg}(e_2) = y \land \text{Th}(e_1) = \text{Arg}(e_2)]$$

Since the culmination event will need an argument, the SHIFT operation when applied to the intransitive verb will have to add an argument raising the type from $\langle e, t \rangle$ (the set of events denoted by VP) to $\langle d, \langle e, t \rangle \rangle$, a function from individuals to sets of events. (Again, details are given in the references cited.) The operation of resultative predication will give us (12a) and (12b) as the interpretations for the sentences in (9).

(12) a. Mary scratched the wound open.

$$\exists e_1 \exists e_2 \exists e_3 \exists e_4 [e = S(e_1 \cup e_2) \land e_1 = S(e_3 \cup e_4) \land \text{SCRATCH}(e_3)$$

$$\land \text{Ag}(e_3) = \text{MARY} \land \text{Th}(e_3) = \text{THE WOUND}$$

$$\land \text{cul}(e_3) = e_4 \land \text{Arg}(e_4) = \text{Th}(e_3)$$

$$\land \text{OPEN}(e_2) \land \text{Arg}(e_2) = \text{Arg}(e_4) \land R(e_4, e_2)]$$

b. John sang the baby asleep.

$$\exists e_1 \exists e_2 \exists e_3 \exists e_4 [e = S(e_1 \cup e_2) \land e_1 = S(e_3 \cup e_4) \land \text{SING}(e_3)$$

$$\land \text{Ag}(e_3) = \text{JOHN} \land \text{cul}(e_3) = e_4$$

$$\land \text{Arg}(e_4) = \text{THE BABY} \land \text{Arg}(e_4) = \text{Th}(e_3)$$

$$\land \text{ASLEEP}(e_2) \land \text{Arg}(e_2) = \text{Arg}(e_4) \land R(e_4, e_2)]$$
(12a) asserts that there was an activity in which Mary scratched the wound; that the activity culminated; that the argument of the culmination was the wound; and that at the culmination, the wound was open. (12b) asserts that there was an event of John singing which had a culmination; that the baby was the argument of the culmination event; and that at the culmination, the baby was asleep.

So we have two constructions in which lexical verbs which are not accomplishments are used to build accomplishments. In each case, a shifting operation incorporates the meaning of the lexical item into an accomplishment structure without affecting the integrity of the lexical item itself. In the one case, where the original lexical item is an achievement, the lexical V gives the instantaneous change of state which characterizes the culmination of the accomplishment, and the structure provides information that there is an activity but no information about what the activity is. In the other case, the lexical V provides the activity, and the structure imposes a culmination on it. In both cases, crucially, the accomplishment template determines how the achievement and activity meanings, respectively, can be incorporated into the accomplishment meaning.

19.3 What These Derived Accomplishments Tell Us about Accomplishments in General

So what does this tell us about the semantics of accomplishments and about lexical aspect?

Let us begin with the more “local” issue of the semantics of accomplishments. The first thing that the derived accomplishments show is that there must be more to the characterization of accomplishments than the nature of the thematic relation holding between the event and its theme. Krifka (1989, 1992, 1998) argues that accomplishments are characterized by a homomorphism between the extent of the theme argument and the extent of the event, and the homomorphism exists if the event determined by the verb is the kind of event which affects its theme incrementally, part by part. However, although the derived accomplishments denote events which have a duration, and which may bring about an effect gradually, they do not necessarily affect their themes part by part. This is easy to see with both progressive achievements and the resultative constructions. In progressives such as those in (2), repeated here, the theme of the accomplishment is the sentential subject.

(2) a. Mary is arriving at the station.
   b. The old man is dying.
   c. John is reaching the top of the flight of steps.

These themes are affected gradually by the accomplishment: Mary gets to the station gradually by following a path; the old man may be dying gradually, and John is
reaching the top of the stairs gradually. However, the graduality is not determined by the part structure of the theme, but (in most cases) by a path which is followed by the theme. It is not even clear that there is a homomorphism from the extent of the path to the extent of the event, since there is nothing to show that the path is followed in a straight line, and, for example, Mary may retrace her steps several times as she arrives at the station. Krifka (1998) argues that in nondirect movements, there is a homomorphism from an idealized path movement to the extent of the event, and we may argue about how useful such idealizations are, but this does not affect the central point here, which is that it is not the extent of the theme which is relevant for determining the extent of the event, but the extent, and in particular the final point of an entity, a path, which is not realized as an argument.

With resultatives, we see more or less the same thing, although more radically, since the incrementality associated with the accomplishment is not determined either by the way the part structure of the theme is affected or by a path. For example, in (9a)/(12a), *Mary scratched the wound open*, the scratching does not affect the wound part by part until it is all open, and the scratching need not affect the wound in any ordered way nor need it affect all of the wound. What is necessary is that the wound is scratched in a possibly random way until at some point it begins to bleed. The incrementality lies in the building up of the pressure of more and more scratching, and not in the way the part structure of the wound is affected. In other words, there is a scratching activity that after some time affects the wound in at least one part. In (9b)/(12b), *John sang the baby asleep*, there is the same kind of effect: the singing did not affect the part structure of the baby, bit by bit (i.e., it is not the case that first the feet fell asleep and then the body and finally the head); rather, the singing activity continued and at some point the baby fell asleep.

Second, derived resultatives, in particular the intransitive kind, show that the apparent causal relation between the activity subevent of an accomplishment and its culmination is an implication, rather than part of the semantics: (9b) implies that John’s singing caused, or at least contributed to, the baby’s falling asleep, but there is no way to gauge whether this is true, or whether the baby was falling asleep independent of John’s singing. The baby’s falling asleep marks the end of this particular singing event (the singing may continue, but not as part of the same event), but this property of the culmination may not necessarily have been caused by the singing activity. This is even clearer with other derived intransitive resultative constructions, such as those in (13), where it is obvious that the property expressed by the resultative is not necessarily caused by the activity.

(13) a. On May 5, 1945, the people of Amsterdam danced the Canadians to Dam Square.

b. Reluctant to let him go, the audience clapped the singer off the stage.
c. At the opening of the new parliament building, the crowd cheered the huge gates open.

d. Mary drank John under the table/sick/dizzy.

The culmination of the accomplishment event is “caused” by the activity in the weak logical sense that the final point of an event can only be its final point if the nonfinal points have already happened, but there is no stronger causation involved.

An understanding of derived accomplishments is thus crucial in trying to capture what is essential to the semantics of accomplishments. Some of what seems essential to the semantics of lexical accomplishments turns out to be a by-product of properties of groups of lexical items, rather than being a central characteristic of accomplishments. Thus, we see that the homomorphism from the extent of the theme argument to the extent of the event is not a characteristic of all accomplishments, but follows from the particular way in which verbs like eat, build, and read affect their themes. In fact, a look at a wider range of lexical accomplishments indicates that this homomorphic relation is not even a characteristic of all lexical accomplishments, but rather a property of verbs of consumption and creation, and it follows from the “real-world” fact that one cannot, for example, eat the same piece of cake twice. If we look at accomplishment VPs such as lock the door and wash the clothes, we see that there are also lexical accomplishments where the incrementality lies not in the way in which the theme is “used up” during the event, but in the way in which the process associated with the event develops.

That an accomplishment apparently causes a change in its theme is also something which follows from the thematic relation that holds between a lexical accomplishment and its direct object. If a verb has a lexical theme (i.e., one that it is related to by virtue of its thematic structure and not as a result of a shifting operation), then it is part of the meaning of the verb that it “affects” the theme in some way. That is integral to the meaning of the thematic label lexical theme (what was traditionally called “patient”). An accomplishment \( e \) is characterized as a gradual change of state from a situation in which \( \neg \phi \) holds to one in which \( \phi \) holds. Presumably, such a gradual change of state is made up of a set of ordered minimal changes of state. The culmination point must thus be a minimal change of state from \( \neg \psi \) to \( \psi \), where \( \psi \) entails \( \phi \). Assume that an event has to have an argument (this is oversimplifying because of presentational weather events such as It is snowing/raining, but it will do for the moment). The change of state from \( \neg \phi \) to \( \phi \) will then necessarily involve an event which has an argument \( x \), and the change itself will lie in a change in the properties of the argument. If it is lexically stipulated that the event \( e \) denoted by the verb is an event in which the theme argument is affected gradually, then the activity part of the accomplishment will result in (i.e., cause) a change of state in the theme; and if the culmination of \( e \), the change from \( \neg \psi \) to \( \psi \), is the last in a set of successive minimal changes which together are brought about by the continuing activity, then the
argument of this culmination will also be the theme, and it will look, with justification, as if the culmination is caused by, or more weakly, is the natural consequence of, the activity. However, with derived resultatives such as those in (13), the theme argument is only the structural theme, introduced by the shift rule, and not the lexical theme. A structural theme is the argument which is involved in the change of state which is the culmination, but since it is not lexically related to the activity verb, there is nothing in the meaning of the verb which stipulates that the activity directly affects the theme. For example, in *The crowd cheered the gates open*, the lexical item *cheer* is not lexically related to a theme, and events of cheering do not necessarily affect a theme in any way. The sentence asserts that there was a cheering event which had a culmination at which the gates were open; in other words, it was associated with a change of state at the culmination of which the gates were open. This is what is captured in the representation in (14).

\[
\exists e \exists e_1 \exists e_2 \exists e_3 \exists e_4 (e = \overline{s}(e_1 \sqcup e_2) \land e_1 = \overline{s}(e_3 \sqcup e_4) \land \text{CHEER}(e_3) \\
\land \text{Arg}(e_3) = \text{THE CROWD} \land \text{cul}(e_3) = e_4 \\
\land \text{Arg}(e_4) = \text{THE GATES} \land \text{Arg}(e_4) = \text{Th}(e_3) \\
\land \text{OPEN}(e_2) \land \text{Arg}(e_2) = \text{Arg}(e_4) \land \text{R}(e_4, e_2)]
\]

The nature of the association between the cheering event and the change of state is left open, and the natural truth-conditions for the sentence indicate that it is not causal. This in turn means that we do not want to make a causal relation between the activity and the culmination part of the semantics.

### 19.4 What These Derived Accomplishments Tell Us about Lexical Aspect

We have seen from this brief examination of accomplishments derived via a shift operation that characteristics which are often associated with accomplishments follow from the properties of lexical accomplishments, rather than being properties of accomplishments in general. This brings us to the more general question of what derived accomplishments can tell us about lexical aspect in general. By lexical aspect, I mean classification of verbal expressions—Vs and VPs—into aspectual classes according to the properties of the events in their denotations. It is clear that the very existence of derived accomplishments means that lexical aspect, or classification into lexical classes, cannot be just a series of generalizations about lexical items. Some kinds of lexical classification probably just are generalizations over sets of lexical items and the kinds of events they denote—for example, there seems to be a group of accomplishment verbs which we can call “verbs of consumption” such as *eat, drink,* and *swallow* where there really is a homomorphic relation between the extent of the theme and the extent of the event—but this follows from the real-world fact that one does not normally consume the same item more than once. Similarly, there are gen-
eralizations that have been made about verbs of directed motion, verbs with holistic themes, and so on. But the generalizations about aspectual class seem to be of a different kind. As the derived accomplishments show, these are not generalizations over existing lexical items, but templates which allow new complex and abstract verbs to be derived. Of course, the templates are abstractions over generalizations about verb meanings, but the fact that the accomplishment template in (7a), repeated here, is an abstraction over accomplishment meanings means that there is some distinction to be made between what is essential to the aspectual class and what is not.

(7) a. **Accomplishment template**

\[ \lambda e. \exists e_1 \exists e_2[e = s(e_1 \sqcup e_2) \wedge \text{ACTIVITY}(e_1) \wedge \text{cul}(e_1) = e_2 \wedge \text{Th}(e_1) = \text{Arg}(e_2)] \]

The challenge, then, is to determine what are the essential elements out of which aspectual distinctions are built up, why they are what they are, and how they constrain the structure of events that can possibly be the denotations of VPs in the language.

The notion of an aspectual template such as that in (7a) raises the question of how such templates would be used in the language, and what use they would be. The case of derived accomplishments indicates that the templates will put constraints on what kind of aspectual shifting and movement between classes is possible. A constraint on aspectual shifting which I have tried to make explicit in the discussion above is that the meaning of the shifted item must be incorporated into the derived meaning “as is,” maintaining its lexical integrity. (We can see this constraint as deriving from the principle of compositionality, together with the assumption that aspectual shift is a postlexical rule, which, like other type-shifting rules, is triggered by the necessity of composing the target element with its sister node (see Klein and Sag 1985). Thus, in the two shifting rules posited in this chapter (which I repeat here), which are triggered by the necessity of composing the VP meaning with a progressive operator and a resultative predicate, respectively, the meanings of the original achievement and activity are incorporated intact into the derived meaning.

(8) a. **Achievement into accomplishment**

\[ \text{SHIFT(VP}_{\text{achievement}}) = \lambda e. \exists e_1 \exists e_2[e = s(e_1 \sqcup e_2) \wedge \text{ACTIVITY}(e_1) \wedge \text{cul}(e_1) = e_2 \wedge \text{Th}(e_1) = \text{Arg}(e_2)] \]

(11) a. **Activity into accomplishment**

\[ \text{SHIFT(VP}_{\text{activity}}) = \lambda e. \exists e_1 \exists e_2[e = s(e_1 \sqcup e_2) \wedge \text{VP}_{\text{activity}}(e_1) \wedge \text{cul}(e_1) = e_2 \wedge \text{Th}(e_1) = \text{Arg}(e_2)] \]
The idea that templates constrain operations of aspectual shifting has some important implications. Certain shifts will be much more straightforward than others. In particular, since an accomplishment is a complex event which is constructed out of an activity and a culmination, it will be relatively straightforward to shift from either an activity reading or an achievement reading into an accomplishment (if the appropriate triggers are present) because the accomplishment template has a natural way of accommodating the achievement and activity meanings “intact,” by fitting them into the appropriate slots in the template. This gives us a way to distinguish between what we may call “natural aspectual shift,” which obeys the constraint on compositionality and thus preserves lexical integrity, and what we may call “coercion,” in which a shift in meaning may be at the lexical level and will not respect integrity of the lexical VP. The contrast in naturalness shows up in two contrasting uses of the achievement with the progressive. The first is the use discussed above, which is considered natural, and which obeys the compositionality constraint on the integrity of lexical VPs. The second is the much less natural so-called slow-motion achievement, which I think was first noted by Sandro Zucchi, illustrated in (15).

(15) a. John is noticing that Mary has cut her hair.
    b. Dafna is realizing that her mother has come to pick her up from kindergarten.

In these examples, the achievement verb has been given an activity reading. We can see this from the fact that the examples in (15) do not induce the imperfective paradox. To the degree that these examples can be used naturally, *John is noticing that Mary has cut her hair* entails that he has noticed it, and similarly *Dafna is realizing that her mother has come to pick her up from kindergarten* means that Dafna has at some level realized it but is still processing the information, and thus entails *Dafna has realized that her mother has come to pick her up from kindergarten*. But an activity is a simple event, not a complex event like an accomplishment, and it is not related to an achievement in any natural way. An achievement has no duration (holds at an instant) and is telic, while an activity holds at an interval and is atelic. There is no natural way for an achievement meaning to be incorporated into an activity verb while preserving its lexical integrity, and the examples in (15) can only be understood by forcing an activity reading on the achievement. It is not clear exactly what this means: in (15), the activities are something like “activities associated with having just noticed” and “activities associated with having just realized,” respectively. But this is very fuzzy, and the fuzziness follows from the fact that the shifting is at the lexical level and is thus structurally unconstrained.

Derived accomplishments, then, show us that there is more to lexical aspect than a set of generalizations about the properties of lexical verbs. Lexical aspect must be a set of constraints on verb meanings derived from the logical structure of our theory of events, and the challenge is to determine what this logical structure is.
Note
This chapter is part of a much larger ongoing project on the semantics of lexical aspect, parts of which have appeared or will appear in Rothstein 2000, 2001, 2003, to appear a, and which culminates in Rothstein 2004. The scope of the project, combined with the space constraints on this chapter, meant that I could not explain everything here to the degree that I would have liked, and this has resulted in the large number of references to my own work, for which apparent narcissism I apologize. The chapter (in a somewhat di¤erent form) was originally presented at the International Round Table on the Syntax of Tense and Aspect, and I would like to thank the audience at the conference for helpful comments. Parts of the chapter were presented at the Tel Aviv Linguistics Colloquium, the 15th Annual Conference of the Israel Association for Theoretical Linguistics, the the Bergamo Conference on Tense and Aspect, and I would like to thank the audiences there for many helpful comments. As usual, discussion with Fred Landman was immensely helpful (and enjoyable) along the way.

References
Chapter 20

Sequence Phenomena and Double Access Readings Generalized:
Two Remarks on Tense, Person, and Mood

Philippe Schlenker

20.1 Introduction

Over the years, some analogies have been observed between the semantics of pronouns, tenses, and moods. Thus, Partee (1973) suggested that tenses have all the uses that pronouns do and should thus receive the same abstract analysis; her argument was then extended to mood by Stone (1997). Consider for instance the deictic use of pronouns, illustrated in (1a). Partee’s and Stone’s suggestion was that tenses and moods have an entirely analogous use, illustrated in (1b,c) (in the logical forms, \( \neg \) represents negation and \( P \) represents the past tense operator).

(1) a. She left me. (Partee 1973)
   a’. Left-me(x0)
   b. I didn’t turn off the stove. (Partee 1973)
   b’. \( \#\neg PTurn-off-the-stove \)
   b”. \( \#P\neg T \)
   b”’. \( \neg T(t_0) \)
   c. My neighbors would kill me. (Stone 1997)
   c’. K(w0)

(1a) can be used even when she has no linguistic antecedent, provided that some female individual is salient in the extralinguistic context (in Partee’s scenario, a man sitting on a bench is holding his head in his hands as he utters the sentence; one can infer without difficulty which individual is meant by she). This can be analyzed as in (1a’), where a variable is left free and receives a value from the extralinguistic context. Partee observed that the same analysis carries over to tense in (1b), uttered by someone who has just left her house. She claimed that none of the analyses offered by a standard modal theory will do, for in such theories, a past tense is analyzed as a temporal operator with existential force, as in (1b’) and (1b”). However, the sentence can have neither the logical form in (1b’) (‘at no point in the past did I turn off the stove’—uninformative because trivially false) nor that in (1b”) (‘there is some point
in the past at which I didn’t turn off the stove’—uninformative because trivially true). The problem disappears if the past tense is treated as a free time variable, whose value is provided by the context of utterance, as in (1b”). Finally, in the scenario for (1c), due to Stone (1997), one of the guests at a party starts turning up the volume of the stereo. The host disapproves, and utters (1c). The intended meaning is that ‘my neighbors would kill me in that world or in those worlds in which your action is completed’. The extralinguistic context (the guest’s gesture) is enough to provide a value for the free variable in (1c’). A natural conclusion is that if pronouns are analyzed as introducing (free or bound) individual variables in syntactic representations, tense and mood should, by parity of reasoning, be taken to introduce time and world variables, and not operators, as posited in Modal and Tense Logic.¹

Once pronouns, tenses, and moods are uniformly treated as variables, it is natural to suggest that pronominal, temporal, and modal features should also be analyzed in a uniform fashion. Cooper (1983) treated pronominal features such as gender as presuppositions on the value of individual variables. Extending this view to tense, Heim (1994a) suggested that temporal features are presuppositions on the values of time variables; and some have tried to extend a similar analysis to mood (see von Fintel 1997; Schlenker, to appear a). Further attempts have sought to relate the cross-linguistic typologies found in the temporal and in the personal or modal domains. I tried to argue in Schlenker 2003 that both tense and person display a distinction between indexicals that can be evaluated only with respect to the context of the actual speech act (unshiftable indexicals) and indexicals that can be evaluated either with respect to the context of the actual speech act or with respect to the context of a reported speech act (shiftable indexicals). While the English present tense and the English first person pronoun belong to the first category, the Russian present tense and the Amharic first person marker belong to the second, as (2a) and (2b) suggest, respectively.

(2) a. petja_i skazal, cto on_i plačet
   Petja, said that he_i is-crying
   ‘Petja said that he was crying [at the time of his utterance].’
   a’. #Peter, said a week ago that he_i is crying.
   b. jon jəgna nə-nən yil-all
   John hero be.pf-1SO 3M.say-aux.3M
   ‘John says that he is a hero.’
   b’. ≠ John says that I am a hero.

In (2a), the tense of the embedded clause can (in an intuitive sense) denote the time of Petja’s utterance; this is not in general possible in English, as is seen by the deviance of (2a’).² Similarly, in (2b) the Amharic first person pronoun may denote the speaker of the reported speech act, something that is not possible in English, as shown by (2b’).³
If at least some of the preceding observations are on the right track, one should ask how far the analogy between tenses, pronouns, and moods really extends. In this chapter, I offer two limited suggestions. The first is that, under certain commonly held assumptions, the device of sequence-of-tense rules, postulated to account for tense agreement in indirect discourse, should be extended to person and mood. The second is that so-called double access readings in the tense domain have a purely modal counterpart, which I seek to analyze by generalizing the theory of tense developed in Abusch 1997. In the spirit of Partee 1973, Kratzer 1998, Stone 1997, and Bittner 2001, the goal will thus be to enlarge somewhat the list of phenomena that can receive a unified analysis across tense, person, and mood.

To put things in sharper focus, let us first consider the original motivation for positing tense agreement rules (sequence-of-tense rules). Without such rules, one could claim, as Enc¸ (1987) did, that temporal features are always semantically interpreted—no doubt an attractive theory. That it is not viable is shown by the following example, originally due to Kamp and Rohrer (the present version is slightly modified from Abusch 1997):

(3) John decided yesterday that tomorrow he would tell his mother that they were having their last meal together.

Since the meal is supposed to take place tomorrow, its time of occurrence follows each of the moments that are salient in the discourse, and in particular the time of utterance. Thus, any theory that claims that the past tense of were expresses anteriority with respect to some other moment (e.g., the time of utterance) is bound to go wrong in this case. As a first approximation, the facts can be handled by postulating that a tense T_2 embedded under an attitude verb with tense T_1 may inherit in a purely morphological fashion (i.e., without semantic consequences) the tense features of T_1 if T_1 and T_2 are interpreted as being (in a sense to be clarified below) coreferential. Alternatively, one could say, following Ogihara (1996), that the tense features of T_2 are present throughout the syntactic derivation, but are eliminated right before semantic interpretation by a rule of Tense Deletion. For our purposes, both formulations will do: if would is analyzed as the past tense of will (as is commonly assumed), the representation in (4) is obtained, where will-ed inherits its past tense features from decid-ed and transmits them in turn to were. Since the inheritance process is morphological, the tense features of were do not have to be interpreted semantically, as is desired.

(4) John decid-ed that he will-ed tell his mother that they were having their last meal together.

In section 20.2, I suggest (following Heim (1994b)) that in exactly the same syntactic configuration, the masculine features of he and himself in (5) can also be ignored.

(5) John decided yesterday that tomorrow he would tell his mother that he was having their last meal together.
And we will see that the same facts appear to hold, mutatis mutandis, of the indicative mood features of *is* in (6).

(5) a. *John* hopes that *he* will buy *himself* a car.
    b. *John* hopes PRO to buy *himself* a car.

(6) John *is thinking* (at this very moment) that Mary *is* pregnant.

In section 20.3, I consider what happens when tense agreement *fails* to hold, especially when a present tense is embedded under a past tense attitude verb. A grammatical sentence can then be obtained, but it has a peculiar (double access) reading whereby the agent’s attitude somehow has to be *both* about the time (that he thinks is the time) of this thought act and about the time of the speaker’s utterance; this explains why (7a) (by contrast with (7a′)) is incoherent, since John presumably knows that a pregnancy cannot span two years. No such effect holds when the sequence-of-tense rule is applied, as shown by (7a′) and (7b′).

(7) a. #Two years ago John claim-ed that Mary is pregnant.
    b. OK Two days ago John claim-ed that Mary is pregnant.
    a′. OK Two years ago John claim-ed that Mary *was* pregnant.
    b′. OK Two days ago John claim-ed that Mary *was* pregnant.

We will see that an analogous contrast can be replicated with mood, as in the French examples in (8).

(8) a. Je crains qu’un jour Jean apprenne que Marie est enceinte.
    ‘I fear-IND that someday Jean learn-SUBJ that Marie *is-IND* pregnant
    ‘I am afraid that someday Jean will learn that Marie is pregnant.’
    b. Je crains qu’un jour Jean apprenne que Marie soit enceinte.
    ‘I fear-IND that someday Jean learn-SUBJ that Marie *is-SUBJ* pregnant
    ‘I am afraid that someday Jean will learn that Marie is pregnant.’

The first verb (‘fear’) serves to force the appearance of subjunctive mood on the second (‘learn’). The speaker has the option of applying mood agreement between the second verb (‘learn’) and the third (‘be pregnant’), marking the latter as subjunctive; or he may simply mark the last verb as indicative. We will see that in the latter case, the world equivalent of a double access reading is obtained, whereby what Jean learns in the situations that the speaker fears must be both about the situations in question and about the actual world (similar examples—in fact, more robust ones—can be replicated with a morphological present or past tense interpreted in a purely modal fashion in the antecedent of a conditional, as in (31) and (32) below; the advantage of concentrating on French is that examples with a morphological subjunctive are available in a broader range of contexts). I will try to account for this observation by developing a somewhat generalized version of Abusch’s (1997) theory and especially of her Upper Limit Constraint.
Although I have tried to keep the following discussion reasonably precise, some of the formal details have been omitted; they are more fully laid out in the appendix, where a full fragment is developed. The reader will observe that the syntax I assume throughout is much simpler than that of English or French. This is an idealization, designed to make the semantic discussion more tractable. I trust that the basic mechanisms I posit—in particular, my rules of agreement—can be adapted to any reasonable syntactic analysis. (See von Stechow 2002 for a more realistic implementation of related ideas.)

20.2 Tense Agreement, Person Agreement, Mood Agreement

20.2.1 The Necessity of Rules of Person Agreement

Why should one need rules of person agreement to handle attitude verbs? The argument, first made (to my knowledge) in Heim 1994b, has the following logic:

1. In some cases, a pronoun embedded under an attitude verb cannot literally be interpreted as being de re and thus coreferential with an argument of the superordinate clause. This arises when the pronoun is read de se and thus unambiguously reports a first person thought.
2. Still, in these cases the embedded pronoun agrees in features with the corresponding argument of the superordinate clause (i.e., an individual pronoun agrees with the subject of the embedding verb, a time argument agrees with the superordinate tense, etc.). This holds in some cases in which a presupposition failure would be predicted if the pronominal features were semantically interpreted.

20.2.1.1 De Se Readings

To see why a problem arises in the first place, consider the following example, first analyzed in a different guise by Morgan (1970) and Chierchia (1987) (this version is from Schlenker 2003):

(9) Situation: John is so drunk that he has forgotten that he is a candidate in the election. He watches someone on TV and finds that that person is a terrific candidate, who should definitely be elected. Unbeknownst to John, the candidate he is watching on TV is John himself.
   a. True: John hopes that he will be elected.
   b. False/#: John hopes PRO to be elected [OK if the thought was, “I should be elected”].

In this far-fetched situation, a surprising nuance appears between (9a) and (9b). Somehow, using the infinitive entails that John’s hope was of the form I will be elected (de se reading), rather than He will be elected, where he refers—unknownst to him—to John himself. Lest the reader think that this contrast can be reduced to the distinction between bound variable readings and accidental coreference, I note
(with virtually everyone else who has worked on this topic) that this is not so. If several candidates watch themselves on different TVs without recognizing themselves, one may say truly, “Every candidate hopes that he will be elected,” but not, “Every candidate hopes to be elected.” The de se/de re distinction is preserved in sentences that only have a bound variable reading.

Chierchia (1987) analyzed the problem by suggesting that PRO, the unpronounced subject of an infinitive, can only be read de se. His solution was to revise the semantics of attitude verbs and to suggest that (9b) does not simply establish a relation between John and the set of worlds w in which John is elected; rather, it establishes a relation between John and the set of individual/world pairs \(<x, w>\) such that x is elected in w. In other words, John does not simply hope to live in a world in which John is elected; rather, he wants to be one of the individuals that get elected (or, to put it differently, he stands in the relation of ‘hope’ to the set of pairs \(<x, w>\) such that the individual x is elected in the world w). This approach is naturally extended to tense (as in Abusch 1997), so that in the end hope is taken to establish a relation between John and the set of triples of the form \(<x, t, w>\) such that x is elected at t in w. The upshot is to replace the analysis of hope given in (10) with the one given in (11). As in the appendixes, truth and denotation are relativized to an assignment of values to variables (s) and to a context of utterance (c^c); using standard notations, \(s[w_i \rightarrow w]\) is the assignment that is identical to s, except that it assigns to the variable \(w_i\) the value w. (In my highly simplified syntax, world or context variables are written on complementizers, though nothing essential hinges on this.)

(10) **John hopes that** \(w_i\) \(\phi\) is true_{s, c^c} \iff\) every world w compatible with John’s hope is such that \(\phi\) is true_{s[w_i \rightarrow w], c^c}.

(11) **John hopes that** \(<x, t, w, \phi>\) is true_{s, c^c} \iff every triple \(<x, t, w>\) compatible with John’s hope is such that \(\phi\) is true_{s[x_i \rightarrow x, t_j \rightarrow t, w_k \rightarrow w], c^c}.

The contrast between (9a) and (9b) can then be derived by positing that (for whatever reasons) PRO must be coindexed with the first coordinate of the triple \(<x_i, t_j, w_k>\), while no such requirement holds of he (e.g., in (12a) \(he_{x_m}\) is a free variable that is taken to denote John^4). For readability, I will sometimes replace that with to, without giving any account of the difference; and as in the appendixes, I explicitly represent time and world arguments of a predicate as suffixes.

(12) a. **John hopes that** \(<x_i, t_j, w_k> he_{x_m} be-elected-t_j-w_k\) is true_{s, c^c} \iff for every triple \(<x, t, w>\) compatible with John’s hope, \(s(x_m)\) (i.e., John) is elected at t in w.

b. **John hopes to** \(<x_i, t_j, w_k> PRO_x be-elected-t_j-w_k\) is true_{s, c^c} \iff for every triple \(<x, t, w>\) compatible with John’s hope, x is elected at t in w.

This appears to derive the correct truth-conditions. In order to account for the nonstandard behavior of the indexicals discussed in (2), we may restate this analysis

Philippe Schlenker
by observing that a triple of the form \( \langle x, t, w \rangle \) can be identified with a context, that is, a point at which an act of thought or of speech could originate.\(^5\) Such a reanalysis has the advantage of explaining why certain indexicals that are in the scope of an attitude operator appear to be evaluated with respect to the context of the reported speech act, as was shown in (2). The semantic rule in (11) can then be rewritten as in (13a), and the analysis in (12) can be restated as in (13b), where \( c_A \) denotes the author of the context \( c \), \( c_T \) its time of occurrence, and \( c_W \) its world of occurrence (again, the switch from that to to is for convenience only).

(13) a. \( \text{John hopes that}_{c_j} \phi \) is true\(_{s,c} \) iff for every context \( c \) compatible with John’s hope, \( \phi \) is true\(_{s(c_j) - c_j, c} \).

b. \( \text{John hopes to}_{c_j} PRO_{c_j A} \) be-elected-\( c_{IT} - c_{IW} \) is true\(_{s,c} \) iff for every context \( c \) compatible with John’s hope, the agent of \( c \) is elected at the time of \( c \) in the world of \( c \).

Within this framework, the embedded present tense of the Russian example in (2a) is simply taken to spell out the term \( c_{IT} \), the time coordinate of the embedded context \( c_1 \), while the embedded first person pronoun in the Amharic example in (2b) is the morphological reflex of the author coordinate \( c_{IA} \) of \( c_1 \). The latter case is illustrated in (14), which can be seen to be semantically analogous to (13b).

(14) \( \text{John says that}_{c_1} c_{1A} \) be-a-hero-\( c_{IT} - c_{IW} \) (Amharic) is true\(_{s,c} \) iff for every context \( c \) compatible with John’s claim, the agent of \( c \) is a hero at the time of \( c \) in the world of \( c \).

**20.2.1.2 Sequence-of-Person Rules** Whether one adopts the system in (11) or that in (15), the same formal problem arises: even though in a pretheoretical sense PRO is coreferential with \( \text{John} \), the analysis does not establish any formal link between the two. And yet PRO does appear to inherit the features of \( \text{John} \), since it can transmit them to a reflexive pronoun that it binds locally, as in (15).

(15) John hopes \( \text{PRO}_i \) to buy himself\(_i \) a car.

Of course, one could claim that the masculine features of \( \text{himself} \) are there because they are semantically interpreted—after all, it is reasonable to presuppose in (15) that the denotation of \( \text{PRO} \), and thus also of \( \text{himself} \), is indeed a male individual. Unfortunately, even when this is not the case the sentence remains grammatical, contrary to one’s initial expectations (this example is from Schlenker 2003).

(16) John (a transsexual) hopes \( \text{PRO} \) to become a woman, and he hopes \( \text{PRO}_i \) to buy himself\(_i \) (*herself\(_i \)) a car.

Since attitude verbs are analyzed as structures of universal quantification over contexts, the first conjunct asserts that for every context \( c \) compatible with John’s hope,
the author of c is a woman. But standard rules of presupposition projection applied to the second conjunct lead one to expect that for every context c compatible with John’s hope, the author of c should be male (because himself triggers a presupposition that the denotation of PRO should be male). As a result, (16) as a whole should be incoherent, contrary to fact.

In sum, within the present framework it cannot be argued that the features of the embedded PRO or of the reflexive himself are semantically licensed. The problem is familiar from the research on de se readings, and it has led Heim (1994b) to state purely morphological rules of agreement between PRO and the matrix subject. While the agreement rules that are posited by each theory of de se readings are bound to be somewhat stipulative, it is noteworthy that the problem they are designed to solve has a direct counterpart in the tense literature. Consider the example in (17a), whose embedded tense is interpreted de se, that is, as the time coordinate of the embedded context. One could posit a logical form either as in (17b) or as in (17c).

(17) a. She thought that he (e.g., Clinton) was president. (simultaneous reading, temporal de se)
   b. she₁ think-past₁-ind₁ thatc₁ he₂ be-president-pastc₁T-c₁W
   c. she₁ think-past₁-ind₁ thatc₁ he₂ be-president-c₁T-c₁W

In (17b), the embedded past tense morpheme is assumed to be visible for semantic interpretation; in (17c), it is assumed to be semantically invisible and thus to be present in the pronunciation only (in the latter case, one must explain how a postsyntactic rule may transform c₁T into a past tense morpheme; this is discussed below). If the past tense features are semantically interpreted, they should contribute a presupposition that c₁T denotes a moment prior to the time of the context of utterance c*. If so, standard rules of presupposition projection would predict the following (slightly simplified) definedness conditions, where the predicate be weirds, is used in the metalanguage to indicate presupposition failure with respect to an assignment function s and a context of utterance c* (the conditions are simplified because I only consider cases of presupposition failure that are triggered by the embedded past tense; a more complete treatment is given in the appendixes).

(18) (17b) is weirds, c* iff … for some context c compatible with what s(x₁) believes at time s(t₁) in world s(w₁), cₜ is not prior to c*ₜ …

As has been observed in the literature, this prediction is incorrect. Even if the agent of the attitude thinks that the time of her thought act is after the time at which the sentence is uttered, the grammaticality of our example remains unaffected. This is brought out by the following variation of (17a) (also from Schlenker 2003).

(19) [Uttered in 2002]
   In 1999, Mary believed that she was already in year 2005, and she thought that he (e.g., Clinton) was still president.
Here the first conjunct asserts (on a temporal de se reading) that for each context c compatible with Mary’s belief, the time of c is after the time of utterance (= 2002). But in the second conjunct, the past tense of was triggers a presupposition that the time of each context compatible with Mary’s belief should be before the time of utterance. This raises an obvious problem for the theory. There are two ways to solve it.

1. We could deny that such examples involve a de se reading. In the case of PRO, this option was not open because we had semantic evidence that PRO is not simply read de re. But to my knowledge, no analogous argument has been given in the case of tense. In fact, on anybody’s theory it is very hard to see how the past tense could fail to have, among others, a de re reading. Thus, the issue is a particularly subtle one: on the assumption that the embedded tense has a de re reading, can we find evidence that it also has a de se reading? An equally difficult problem would have been raised if we had asked whether he, which uncontrovertially has a de re reading, also has a separate de se reading. The heart of the difficulty is that a de se reading is standardly assumed to entail the corresponding de re reading. Thus, the task is to argue for the separate existence of a “strong” reading (the de se reading), which asymmetrically entails a “weak” reading (the de re reading). This is a somewhat nightmarish situation for the semanticist, since any situation compatible with the strong reading will ipso facto be compatible with the weak reading—which leaves open the possibility that only the latter exists (i.e., that the “strong” reading is in fact no reading at all, but just a borderline case of the weak reading; see Fauconnier 1975 and Reinhart 1997 for other instances of the same argumentative situation). The possibility of analyzing part of the data in a de re fashion is discussed in section 20.2.4.

2. Alternatively, we may posit that the embedded tense is really read de se, but that its features are invisible in the interpretive component, or, to put it differently, that the embedded tense inherits the features of the matrix tense in a purely morphological fashion.

The latter alternative is particularly natural for reasons of symmetry, but also because there are other cases in which a de re analysis won’t do, namely, those that were originally taken to argue decisively in favor of rules of purely morphological tense agreement, as in the Kamp and Rohrer example cited above.

(20) John decided yesterday that tomorrow he would tell his mother that they were having their last meal together.

No de re analysis will save us from positing an agreement rule in this case, since on a de re construal the time of the event denoted by the most embedded verb lies in the speaker’s future even though were bears past tense features. The idea, then, is that both (19) and (20) can be accounted for by one and the same rule of morphological agreement, which is in effect the temporal counterpart of the sequence-of-person rule.
that was posited above. I now mention an argument for positing an analogous rule of mood agreement (section 20.2.2) and sketch a unified (and admittedly stipulative) account of agreement phenomena in attitude reports (section 20.2.3). In section 20.2.4, I outline a partial alternative in terms of a de re analysis.

20.2.2 The Necessity of Rules of Mood Agreement

Consider the following sentence:

(21) a. She thinks that it is raining.
   b. she\_1 think-past\_1-ind\_1 that\_c\_1 be-raining-c\_1T-ind\_c\_1W
   c. she\_1 think-past\_1-ind\_1 that\_c\_1 be-raining-c\_1T-c\_1W

As in the discussion of embedded tense in (17), two analyses suggest themselves. According to the representation in (21b), the indicative features of the embedded clause are interpreted and thus introduce a certain presupposition on the value of the term c\_1W. By contrast, in the representation in (21c), the embedded indicative features are assumed to be semantically invisible and thus to trigger no presupposition at all.

While the semantic analysis of the indicative is controversial, it would appear that the representation in (21b) will systematically lead to incorrect predictions.

1. Suppose first that a world-denoting term with indicative features is presupposed to denote the world of utterance. A problem immediately appears, since for (21a) this leads to the prediction that the world of every context compatible with the agent’s beliefs should be the actual world. Since this means that the agent must have perfect and complete knowledge of the world, the analysis is clearly undesirable.

2. Suppose now that a more elaborate theory of the indicative is adopted, along the lines proposed by Stalnaker (1975). In the terms of the present discussion, Stalnaker essentially assumed that an indicative feature introduces a presupposition that the world-denoting term on which it appears denotes one of the worlds compatible with what the speech act participants presuppose (i.e., one of the worlds in the set \{c\_W: c is compatible with what the participants of c\^* presume at time c\^*\_W in world c\^*\_W\}; this is what Stalnaker calls the “context set”\(^{10}\)). The theory was designed to account for indicative conditionals, such as If John comes, Mary will be happy. On a common theory of conditionals (developed in Stalnaker 1968), the if-clause denotes the closest world from the world of utterance in which John comes; and the entire sentence is true just in case that world, call it w, is one in which Mary is happy. In this framework, the contribution of the indicative mood is to trigger a presupposition that w is compatible with what the speech act participants presuppose, and thus that it is possible that John will come. While such a theory has desirable consequences for the analysis of conditionals, it leads to incorrect predictions for (21b). If we apply once again rules of presupposition projection in universally quantified structures, we
obtain the requirement that for every context $c$ compatible with the agent’s belief, the world of $c$ is compatible with what the speech act participants presuppose. In other words, the worlds compatible with the agent’s beliefs are presupposed to be also compatible with the beliefs of the speech act participants. But this is incorrect: no matter how outlandish the agent’s beliefs may appear to the speaker and hearer, the grammaticality of (21b) will remain unaffected.\(^{11}\)

The obvious solution, then, is to suppose that there are purely morphological rules of agreement in attitude reports, so that the indicative features of the embedded verb in (21a) are semantically invisible, in line with the hypothesis in (21b).

### 20.2.3 Analysis

If the foregoing observations are correct, some rules of morphological agreement are needed to handle person, tense, and mood when these appear in the scope of an attitude verb. More precisely, terms of the form $c_{iA}$, $c_{iT}$, or $c_{iW}$ (the author, time, and world coordinates of a context $c_i$) are pronounced with features that are inherited from an argument of the attitude verb and are not semantically interpreted. Why such a phenomenon should exist in the first place is a mystery; here I will only attempt to state a stipulation that accounts for the similarity among person, tense, and mood agreement.

The idea I pursue is that the rule for forming attitude operators requires that the context variables (in my implementation: the complementizers) inherit the features of the individual, time, and world arguments of the embedding verb. These features are then pronounced in a postsyntactic (morphological) component of the grammar (what syntacticians call “PF”). A full fragment is developed in the appendixes, but the crucial definition is given here:

\[(22) \text{If } \phi \text{ is a formula, } P \text{ is an attitude verb, } i \text{ is an individual term, } t \text{ is a time term, } w \text{ is a world term, and } k \text{ is an integer, then } i \ P-t-w \ \text{that } c_k^F \ \phi \text{ is a formula,} \]

where $F$ is the triple of \{$e, he, she\} \times \{e, \text{pres, past}\} \times \{e, \text{ind, subj}\}$ whose first coordinate is $he/she$ if $he/she$ appears in $i$, and $e$ otherwise; whose second coordinate is $\text{pres/past}$ if $\text{pres/past}$ appears in $t$, and $e$ otherwise; and whose third coordinate is $\text{ind/subj}$ if $\text{ind/subj}$ appears in $w$, and $e$ otherwise.\(^{20}\)

The bulk of the morphological work is done by the triple of features $F$, which plays no semantic role. In the phonological component, each coordinate of a context, of the form $c_i^{FA}$, $c_i^{FT}$, $c_i^{FW}$ is replaced with the corresponding coordinate of $F$. This is illustrated in the following example, where each argument (individual, time, and world) of the embedded verb is read \textit{de se}—that is, spells out a coordinate of the embedded context.

\[(23) \text{a. He hopes that he is elected. (} \textit{de se} \text{ reading for the embedded } he)\]
b. he\textsubscript{1} hope-pres\textsubscript{1}-ind\textsubscript{1} that\textsubscript{c\textsubscript{1}F A be-elected-c\textsubscript{1}F\textsubscript{T}-c\textsubscript{1}F\textsubscript{W}, with F = \langle he, pres, ind\rangle

c. (b) is pronounced as he hope-pres-ind that he be-elected-pres-ind.

(23a) receives the syntactic analysis in (23b), which serves both as a surface structure and as a logical form. In the phonological component, the sentence is pronounced as in (23c), where c\textsubscript{1}F\textsubscript{A}, c\textsubscript{1}F\textsubscript{T}, and c\textsubscript{1}F\textsubscript{W} have been replaced with he, pres, and ind, respectively, as desired. Finally, the truth-conditions are the ones we would expect: when the sentence does not result in a presupposition failure (as is the case, for instance, when the matrix argument he\textsubscript{1} is used with the intention of referring to a female individual), it is true just in case for every context c compatible with the agent’s hope (at the time and world of the utterance c\textsuperscript{*}), the author of c is elected at the time of c in the world of c.

Note that something special must be said about future auxiliaries, for an attitude verb in the future triggers the same agreement behavior as if it were in the present. In particular, the future tense features are not morphologically transmitted to the embedded verb, so that for instance John will say that he will be elected does not readily have a reading on which John’s utterance is supposed to be of the form, “I am elected” (rather, the sentence is naturally understood as predicting that John will say, “I will be elected,” which shows that the embedded future tense features are semantically interpreted). Similarly, an attitude verb preceded by would (analyzed as the past tense of will—i.e., will-ed) triggers the same agreement as would be found under an attitude verb in the past tense. In order to capture these facts, I poset that the future is always composed of two parts: will is analyzed as will\textsubscript{p}res, while would is analyzed as will\textsubscript{past}.\textsuperscript{12} In line with the analysis of tenses as variables, I assume that both parts of the compound come equipped with their own referential indices. I further assume that the argument of will (whether it is pres or past) only has the power to trigger a presupposition failure. For instance, will\textsubscript{i(past\textsubscript{k}) yields a presupposition failure under an assignment s in a context c\textsuperscript{*} (i.e., it denotes\textsubscript{s,c} #) in case s(t\textsubscript{i}) (so to speak, the denotation of will is not after s(t\textsubscript{k}) (= the denotation of the past tense). But in case no presupposition failure occurs, the argument of will plays no additional role, so that for instance will\textsubscript{i(past\textsubscript{k}) simply denotes\textsubscript{s,c} s(t\textsubscript{i}). On the morphological side, I assume that the features of will never appear on the diacritics of context variables, but that the features of pres and past do get transmitted in this way. This provides an account of Kamp and Rohrer’s example, along the following lines:

(24) a. He decided (yesterday) that (tomorrow) he would say (to his mother) that

b. he\textsubscript{1} decide-past\textsubscript{1}-ind\textsubscript{1} that\textsubscript{c\textsubscript{1}F A say-fut\textsubscript{2}(c\textsubscript{1}F\textsubscript{T}-c\textsubscript{1}F\textsubscript{W that}c\textsubscript{2}F\textsubscript{T}-c\textsubscript{2}F\textsubscript{W, with F = F' = \langle he, past, ind\rangle

c. (b) is pronounced as *he decide-past-ind that he say-fut(past)-ind that he be-leaving-past-ind.*

Each argument of the first embedded verb (*say*) is a coordinate of the context variable $c_1$, which bears the diacritic $F = \langle he, past, ind \rangle$ because the arguments of the embedding verb (*decide*) are $he_1$, $past_1$, and $ind_1$. As a result, $c_1^{F_A}$, $fut_2(c_1^{F_T})$, and $c_1^{F_W}$ are eventually pronounced as *he*, *fut-past* (i.e., *would*), and *ind*, respectively. But this is not the end of the story. The features that appear on $c_1^{F_A}$, $fut_2(c_1^{F_T})$, and $c_1^{F_W}$ are then copied onto the diacritic $F'$ of the context variable $c_2$, in accordance with the rule stated in (22). The rule requires that $F'$ have as its first coordinate the person features that appear in $c_1^{F_A}$, that is, *he* (since $F = \langle he, past, ind \rangle$). Similarly, the second coordinate of $F'$ should include the tense features of $fut_2(c_1^{F_T})$, excluding *fut* (which does not enter into agreement phenomena); this simply yields *past*. And by the same token, the third coordinate of $F'$ should be *ind*, so that in the end $F' = \langle he, past, ind \rangle$ ends up being identical to $F$. $c_2^{F'}$ can then trigger the correct agreement patterns on the individual, time, and world arguments of the most deeply embedded verb, which are all coordinates of $c_2^{F'}$ and are thus pronounced as *he*, *past*, and *ind*, respectively.

### 20.2.4 An Alternative without Person and Mood Agreement but with (Some) Tense Agreement

One major drawback of this system is that it relies on agreement rules that are entirely ad hoc. Its major virtue is that the agreement rules are uniform across referential domains, in the sense that a single rule takes care of person, tense, and mood agreement all at once. One way to improve on this system would be to motivate the rule in question—for instance, by showing that it falls under a broader system of agreement between a variable and its binder. This has been attempted in Heim 2002, although many stipulations are admittedly needed to make attitude verbs fall in line with generalized quantifiers.\(^{13}\)

An alternative would be to deny that an agreement rule is necessary to begin with. The suggestion builds on the observation that a *de se* reading entails the corresponding *de re* reading; in other words, if it is true that *John hopes to be elected*, it is also true that *John hopes, of John, that he will be elected*. As a result, a *de se* reading can be analyzed as a *de re* reading that has certain additional requirements. In this fashion, we can do without agreement in most, though not in all cases. A tense agreement rule remains necessary to account for Kamp and Rohrer’s example, as was pointed out above.

Let us first consider the issue of quantifying-in independently of the *de se* problem. The initial observation, due to Quine (1956), was that the following sentences may simultaneously be true:
(25) a. Ralph believes, of Ortcutt, that he is a spy (qua the man Ralph saw at the cocktail party).
   b. Ralph believes, of Ortcutt, that he is not a spy (qua the man Ralph saw at the beach).

On the assumption that beliefs are closed under conjunction, the simplest analysis would risk attributing irrationality to Ralph. For instance, if we analyze (25a) as asserting that every world (resp. every context) compatible with Ralph’s belief is one in which Ortcutt is a spy, by parity of reasoning we will also have to analyze (25b) as asserting that every world (resp. every context) compatible with Ralph’s belief is one in which Ortcutt is not a spy. Since there are no worlds in which Ortcutt both is and isn’t a spy, there should be no worlds at all (resp. no contexts at all) compatible with Ralph’s beliefs, which should make him irrational. This fails to distinguish irrationality from cases of mistaken identity. Kaplan’s (1969) solution was to reintroduce in his truth-conditions the mode of presentation under which Ralph held the relevant beliefs. According to Kaplan, what is asserted by (25a) is that for some “vivid” description $a$ that in fact picks out Ortcutt, Ralph believes (de dicto): $a$ is a spy (e.g., $a$ may be the description the man I saw at the cocktail party). This does not exclude that for some other description $a'$ that also denotes Ortcutt (e.g., the man I saw at the beach), Ralph may believe $a'$ is not a spy. As long as $a$ and $a'$ are different, no irrationality need be attributed to Ralph, as desired.

Crucially, not just any description that happens to pick out Ortcutt will count as “vivid.” For instance, Ralph would certainly assent to The shortest spy is a spy; and it might well be that (unbeknownst to Ralph) the description the shortest spy does in fact pick out Ortcutt. Still, one wouldn’t say in this situation, Ralph believes that Ortcutt is a spy. Somehow, for the de re reading to be true, Ralph must bear some direct connection to Ortcutt. This is what motivates Kaplan to add the restriction that the description should be “vivid.” How “vivid” should be defined is an open question; but it is clear that some restriction of this kind is needed for de re readings of individual-denoting terms. As will become clear later, an analogous restriction is necessary in the analysis of de re readings of time- and world-denoting terms, as one would expect.

Abusch (1997) adopts a variant of Kaplan’s theory in which there is no existential quantification over vivid descriptions. Rather, she assumes that the relevant (vivid) description is contextually given. One motivation for doing so is that (25a) and (25b) cannot both be asserted in a given context. Arguably, Ralph believes that Ortcutt is a spy, and he also believes that Ortcutt is not a spy sounds like a near-contradiction, contrary to what Kaplan would predict. Abusch’s variant can explain this on the assumption that only one “vivid” description of Ortcutt can be salient in a given context. (25a) and (25b) can still both be true, but they cannot both be asserted
felicitously in the same context. Without taking a principled stance on this issue, I adopt this modified version of Kaplan’s analysis, mainly because it simplifies the formal development of the system.

At this point, any theory is bound to make somewhat stipulative assumptions to derive the correct truth-conditions. On the approach pursued by Abusch (1997) and Heim (1994a), the de re term is moved outside the embedded clause by an operation of covert movement. There is no syntactic evidence for such an operation, which would have to violate standard island constraints on movement. On the other hand, it allows the semantics to operate relatively smoothly, in a compositional fashion. Here I have adopted a different method, namely, to stipulate that each free variable ranging over objects of sort S in the scope of an attitude operator is replaced with a variable over functions from contexts to objects of sort S (i.e., descriptions of objects of sort S), indexed with the closest c-commanding context variable.

(26) If k is the index of a free variable in the immediate scope of an attitude verb introducing a variable c1F, replace k with k*, i.

For example, a variable x2 in the immediate scope of an attitude verb introducing a variable c1F is replaced with the expression x2*,1. Its value under an assignment s is s(x2*), a function from contexts to individuals, applied to s(c1). This yields the individual named or described by s(x2*) in the context s(c1), as is desired. (In Quine’s example, s(x2*) might be the value of the description the man I saw at the beach, or of the man I saw at the cocktail party). Here is an illustration:

(27) a. He thought that she was pregnant. (de re for the embedded she, se se for the embedded past tense)
   b. he1 think-past1-ind1 thatc1F she2 be-pregnant-c1FT-c1FW, with F = 〈he, past, ind〉
   c. he1 think-past1-ind1 thatc1F she2*,1 be-pregnant-c1FT-c1FW, with F = 〈he, past, ind〉
   d. When (c) is not weirds,c', (c) is true_s,c' iff for every context c' in think〈s(x1),s(t1),s(w1)〉, s(x2*)c' is pregnant at the time c'T in the world c'W.
   e. Pronunciation: he think-past-ind that she be-pregnant-was-ind.

(27b) is the formula generated by the initial version of the system, without de re transformation. (27c) is the output of the de re Transformation, which only affects the pronoun she2, transformed into she2*,1, which could have been written less concisely as she2*(c1F). The pronunciation is, of course, as in the old system. As for the truth-conditions, they are given in simplified form in (27d), where the various possible sources of presupposition failure have been omitted.

This system can then be modified to account for de se readings, treated as a species of de re readings in which the only acceptable descriptions are I (for individuals), now
(for times), and actually (for worlds). In appendix C, this idea is implemented by optionally substituting ‘+’ for ‘*’ after the De Re Transformation, with the convention that in such cases, the corresponding description is presupposed to be restricted to the value of $I$, now, or actually (i.e., $\lambda c c_A$, $\lambda c c_T$, or $\lambda c c_W$). One example (developed in appendix C) is given in simplified form in (28), where each of the embedded arguments is read de re and de se. The important observation is that this is achieved without recourse to any of the terms $c_1^{F_A}$, $c_1^{F_T}$, $c_1^{F_W}$, which were used above to derive de se readings, and that therefore the diacritic F plays no role in deriving the correct pronunciation.

(28) a. He hopes that he is elected./He hopes that he himself is elected./He hopes to be elected. (de se reading for each of the embedded arguments)
   b. he$_1$ think-pres$_1$-ind$_1$ that$_{c_1}^{F}$ he$_1$ be-elected-pres$_1$-ind$_1$, with $F = \langle he, pres, ind \rangle$
   c. he$_1$ think-past$_1$-ind$_1$ that$_{c_1}^{F}$ he$_{1+,1}$ be-elected-pres$_{1+,1}$-ind$_{1+,1}$, with $F = \langle he, past, ind \rangle$
   d. When (c) is not weird$_{s,c'}$, (c) is true$_{s,c'}$ iff for every context $c''$ in
      think$\langle s(x_1), s(t_1), s(w_1) \rangle$, $s(x_{1+}) (c'')$ is elected at time $s(t_{1+}) (c'')$ in world $s(w_{1+}) (c'')$;
      that is, $c'_A$ is elected at time $c'_T$ in world $c'_W$.
   e. Pronunciation: he think-past-ind that he be-elected-pres-ind.

This system can be extended to tense and mood (see appendix C). However, it cannot account for Kamp and Rohrer’s example, since there is no sense in which the tense of the most deeply embedded verb (was leaving) can be interpreted as being de re with respect to any past moment. For this example, we are thus forced to posit a sequence-of-tense rule, one that does not appear to have any counterpart in the person or mood domain. Thus, it is unclear that any net gain is realized by giving a de re treatment of de se readings; although the need for a mechanism of morphological agreement is obviated in some cases, some stipulations remain necessary for the original sequence-of-tense cases.

### 20.3 Double Access Readings with Tense and Mood: The Generalized Upper Limit Constraint

If the approach developed in sections 20.2.1–20.2.3 is on the right track, sequence of tense in English should be analyzed as one instance of a more general agreement mechanism that affects person, tense, and mood all in the same way. There is, however, another phenomenon that has been taken to target specifically tense in attitude reports: so-called double access readings. In this section, I suggest that the equivalent of double access readings exists with mood, and I try to generalize the theory pro-
posed by Abusch (1997) to account for this phenomenon. As was the case in section 
20.2, the goal is not to derive the facts from first principles, but only to show that 
some stipulations that have been taken to apply specifically to tense can be stated in 
a slightly more general fashion so as to account for similar phenomena in the domain 
of mood. (I leave person out of the present discussion, since to my knowledge it does 
not display the equivalent of double access readings.)

20.3.1 The Generalization

The initial observation concerning tense is summarized in the following paradigm:

(29) a. #He already thought ten years ago that she is pregnant.  
    b. He already thought ten days ago that she is pregnant.  
    a’. He already thought ten years ago that she would (now) be pregnant.  
    b’. He already thought ten days ago that she would (now) be pregnant.  
    a”. He thought ten years ago that she was pregnant.  
    b”. He thought ten days ago that she was pregnant.

Unsurprisingly, (29a”) and (29b”) attribute to the agent a thought about the time of 
his thought act (or according to the de se analysis sketched above, about the time 
that he thinks is the time of his thought act); just as unsurprising are (29a’) and 
(29b’), which (with the adverb now) attribute to the agent a thought about the time of 
utterance. On the other hand, the contrast between (29a) and (29b) is surprising. 
Abusch (1997) suggests that in this case, the present tense serves to attribute to the 
agent a thought about an interval that includes both the time (that he thinks is the 
time) of his thought act and the time of utterance (see also Ogihara 2000 for a 
somewhat different analysis). Surprising though it is, this description accounts for the 
contrast between (29a) and (29b), since it would seem that it is difficult for anyone to 
think that a pregnancy could span an interval of ten years. The point can be made 
more sharply by considering embeddings under attitude verbs that are factive and 
thus force the embedded clause to be true.

(30) a. #He learned ten years ago that she is pregnant.  
    b. He learned ten days ago that she is pregnant.

In (30a), the speaker must presuppose that the pregnancy actually spanned ten years, 
hence the deviance of the sentence given standard assumptions.

The suggestion I wish to pursue is that double access readings also exist under 
structurally similar conditions in the domain of mood. In such cases, the attitude 
holder must have a thought that is both about the world of the speaker and about the 
world (that he thinks is the world of) his thought act. Particularly striking (though 
not necessarily robust) is the effect found with factive attitude verbs embedded in the 
antecedent of a subjunctive conditional.
(31) a. If John learned that Mary was/were (now) pregnant, he would be devastated.
b. If John learned that Mary is (now) pregnant, he would be devastated.

For some speakers, (31b) presupposes that Mary is actually pregnant, while no such presupposition holds in (31a). Furthermore, in (31b) the presupposition is that Mary is pregnant both in the actual world and in the world picked out by the if-clause. Similar facts appear to hold of the French sentences in (32), where the present/past morphology in the antecedent of the conditional is interpreted in a purely modal fashion (both sentences are understood to be about the time of utterance).

(32) a. Si d’aventure Jean apprenait que Marie était enceinte, il serait désespéré.
   ‘If Jean ever learned that Marie was pregnant, he would be devastated.’
b. Si d’aventure Jean apprenait que Marie est enceinte, il serait désespéré.
   ‘If Jean ever learned that Marie is pregnant, he would be devastated.’

(32a) presupposes only that Marie is pregnant in the world picked out by the if-clause, so to speak. By contrast, (32b) presupposes both that Marie is pregnant in the actual world and that she is pregnant in the world picked out by the if-clause. The same effect can to some extent be replicated with a morphological subjunctive in French.

(33) a. Je crains qu’un jour Jean rentre chez lui et qu’il apprenne que Marie soit enceinte.
   ‘I am afraid that one day Jean will come home and learn that Marie is pregnant.’
b. Je crains qu’un jour Jean rentre chez lui et qu’il apprenne que Marie est enceinte.
   ‘I am afraid that one day Jean will come home and learn that Marie is pregnant.’

There appears to be a preference for interpreting (33b) with a presupposition that Marie is pregnant both in the actual world and in the worlds compatible with what
I fear. By contrast, (33a) only requires that Marie be pregnant in the worlds compatible with what I fear.

Although these facts are suggestive, they are not entirely robust, and they are also difficult to analyze because of their interaction with the complex issue of presupposition projection in subjunctive conditionals (see, e.g., Heim 1992 for a treatment). I henceforth concentrate on nonfactive attitude verbs, whose behavior is illustrated by the following paradigm:

(34) Situation: It is raining outside.
   a. Si Jean pensait qu’il fait beau, il serait fou.
      ‘If Jean thought that the weather is nice, he would be crazy.’
   b. #Si Jean pensait qu’il faisait beau, il serait fou.
      ‘If Jean thought that the weather was nice, he would be crazy.’
   c. Si Jean pensait qu’il faisait beau, il se mettrait en short.
      ‘If Jean thought that it did beautiful he SE would-put in shorts’

Given a situation where both the speaker and the hearer know that it is raining, (34a) appears to be true. This can be explained in the following way: the if-clause picks out a world \( w \) in which Jean thinks, of \( w \) and of the actual world \( c^\ast_w \), that they are worlds in which the weather is nice. This thought is not reasonable in view of the evidence available to the speaker and the hearer. By contrast, it is hard to make sense of (34b), where Jean’s thought in the counterfactual world \( w \) is only about \( w \), not about the world of utterance \( c^\ast_w \). Presumably the closest world from \( c^\ast_w \) in which Jean thinks that the weather is nice need not be a world in which it is raining (as is the case in the actual world), unless Jean is assumed to be systematically misguided in his judgments. Hence, (34b) does not sound true or even coherent. As expected, the incoherence stems from this particular choice of consequence clause; as soon as the latter is modified, as in (34c), coherence is regained. Similar facts can be replicated in English, although my informant preferred claim to think (again, every verb is interpreted as being about the time of utterance; for reasons that I do not understand, my informant preferred was nice to were nice in (35a) and found it helpful to have were to claim rather than claimed in the antecedent).

(35) Situation: It is raining outside.
   a. If John were to claim that the weather is nice, he would be crazy.
   b. ??If John were to claim that the weather was nice, he would be crazy.
   c. If John were to claim that the weather was nice, Peter would immediately put on his shorts.
In the preceding example, the “counterfactual” mood of the conditional is morphologically expressed with a past tense (imperfect), something that is common across languages (see Iatridou 2000). Lest the reader think that the phenomenon of double access readings is somehow related to tense morphology, I also give a French example in which this is clearly not so. (I note, however, that some French speakers appear not to accept mood agreement under the subjunctive; for those speakers, (36b) is ungrammatical.)

(36) Situation: It is raining outside.
   a. Il faudrait que Jean prétende qu’il fait beau.
      it would-be-necessary that Jean claim-subj that it does-ind beautiful
      ‘Jean should claim that the weather is nice.’
   b. Il faudrait que Jean prétende qu’il fasse beau.
      it would-be-necessary that Jean claim-subj that it does-subj beautiful
      ‘Jean should claim that the weather was nice.’

In (36a), the speaker presents as desirable a situation in which Jean makes a particularly implausible claim, one that entails that the weather in the actual world is in fact nice. No such inference can be drawn from (36b), even in the situation as described. In other words, the presence of the indicative in the embedded clause triggers an interpretation on which Jean’s claim is both about the actual world and about the world of his utterance, as is expected on the present analysis.

20.3.2 Extending Abusch’s Account: The Generalized Upper Limit Constraint
I now extend to mood the theory of double access readings developed by Abusch (1997). I first restate Abusch’s analysis of tense within the present framework, and then extend it to mood.

20.3.2.1 A Restatement of Abusch’s Analysis of Double Access Readings One of the important insights in Abusch 1997 was that the existence of double access readings is related to another peculiarity of tense: the unavailability of forward-shifted readings in the absence of a future tense morpheme in the embedded clause, as shown in (37).

(37) a. #He thought in 1990 that she was pregnant in 2000.
   b. He thought in 1990 that she would be pregnant in 2000.

Following Abusch (1997), the generalization appears to be that the time coordinate of a context variable c is an “upper limit” for the denotation of all time terms that are in its immediate scope, in the sense that these may not denote an interval that is entirely after the time of c. Within the framework I develop in the appendixes, I stipulate that a presupposition failure occurs if a time description denotes an
interval that is entirely after the denotation of the time coordinate of the closest c-commanding context. The relevant part of the statement is given in (38); it has the effect of preventing time descriptions that correspond to a present or past tense from denoting an interval that lies entirely after the time of the local context.

(38) $t_{k^+,i}$ denotes $\tau_{k^+,c}$ # iff ... (iii) $[\tau \in \{\text{pres, past}\}$ and $s(t_{k^+})(s(c_i))$ is entirely after $(s(c_i))_T]\ldots$

For instance, $\text{past}_{k^+,i}$ will denote # (i.e., trigger a presupposition failure) if the salient description of times $t_{k^+}$ fails to denote (in the context $s(c_i)$) an interval that lies entirely after the time of $s(c_i)$ (remember that given our conventions, the second index of $\text{past}_{k^+,i}$ is the index of the local context variable).

Independently of these unexciting details of implementation, the important observation made by Abusch was that this stipulation (mainly motivated by the unavailability of forward-shifted readings) suffices to account for double access readings. Why? Because the Upper Limit Constraint authorizes a time description embedded under a context variable $c$ to denote an interval $T$ that reaches beyond the time of $c$, but only if $T$ also includes the time of $c$—hence the double access effect, which attributes to the agent a thought about an interval that has two anchors, so to speak.

Let us see in greater detail how this works. Here is a representative example:

(39) a. He thought that she is pregnant.
   b. $\text{he}_1\text{think-past}_{1}\text{-ind}_{1}\text{that}_{c_1}\text{she}_2\text{be-pregnant-pres}_{2}\text{-c}_1\text{F}_W$, with $F = \langle \text{he, past, ind} \rangle$
   c. $\text{he}_1\text{think-past}_{1}\text{-ind}_{1}\text{that}_{c_1}\text{she}_2\text{be-pregnant-pres}_{2,1}\text{-c}_1\text{F}_W$, with $F = \langle \text{he, past, ind} \rangle$
   d. (c) is weird$_{s,c}$ iff ... for some $c'$ in think $\langle s(x_1), s(t_{1}), s(w_1) \rangle \ldots$
      i'. $s(t_2)$ is not $c^+T$, or
      ii'. there is a context $c$ corresponding to $\langle s(x_1), s(t_{1}), s(w_1) \rangle$ and $[s(t_{2^+})$ isn’t vivid for $c$ or $s(t_2)$ is not a part of $s(t_{2^+})(c)$, or
      iii'. $s(t_{2^+})(c')$ is entirely after $c'_T \ldots$
   e. Pronunciation: $\text{he}\text{think-past}\text{-ind}\text{that}\text{she}\text{be-pregnant}\text{-pres}\text{-ind}$.

(39c) is the result obtained after the De Re Transformation, which replaced the time variable $\text{pres}_{2}$ with the time description $\text{pres}_{2^+1}$, whose context argument is $c_1$ (as indicated by the second subscript of $\text{pres}_{2^+1}$). Some of the failure conditions are given in (39d), where it is seen that in the context of the agent’s thought act (which we call $c$), $s(t_{2^+})$ must denote an interval that includes $s(t_{2})$—that is, (by (i')) the time of utterance $c^+T$. But it is also the case that for each context $c'$ compatible with the agent’s thought, $s(t_{2^+})(c')$ should not be entirely after $c'_T$ (by (iii')). Hence, if the agent is not mistaken about the time, his thought will have to be about an interval
that includes both the time of the speaker’s utterance and the time of the agent’s thought act, as desired.

### 20.3.2.2 Extension to Mood

The logic of this argument can be extended to mood by stating for the indicative a stipulation that is roughly the world analogue of the Upper Limit Constraint. The idea is that a world term in the immediate scope of a context variable \( c_i \) must denote, among others, the world of the denotation of \( c_i \). Thus, the constraint in (38) is extended by adding the following clause:

(40) \( \omega_{\kappa, i} \) denotes \( s_{c'} \) # iff \( \ldots (iii) \ldots [\omega \in \{ind\} \text{ and } (s(c_i))_W \text{ is not a part of } s(w_{k^*})(s(c_j))] \ldots \)

Let us see an application right away. To avoid the issue of presupposition projection in subjunctive conditionals, I consider an example in which an indicative verb is embedded under a subjunctive attitude verb, which is itself embedded under \( il \text{ faut que} \) ‘it is necessary that’, which triggers the subjunctive. As before, I include only the most important part of the failure conditions (a full derivation is given in appendix B).

(41) a. (Il faut que) il pense qu’elle est enceinte.
   (it is necessary that) he think-subj that she is-pregnant
b. he \( _1 \) think-pres-subj that \( c_F \) she \( _2 \) be-pregnant-c \( _T \)-ind \( _2 \), with \( F = \langle he, \text{pres, subj} \rangle \)
c. he \( _1 \) think-pres-subj that \( c_F \) she \( _2 \) be-pregnant-c \( _T \)-ind \( _2 \), with \( F = \langle he, \text{pres, subj} \rangle \)
d. (c) is weird \( _{s, c'} \) iff \( \ldots \) for some \( c' \) in think \( \langle s(x_1), s(t_1), s(w_1) \rangle \) \( \ldots \)
   i’. \( s(w_2) \) is not \( c^*_W \), or
   ii’. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(w_2')] \) is
   not vivid for \( c \) or \( s(w_2) \) is not a part of \( s(w_2')(c) \), or
   iii’. \( s(w_2')(c') \) does not contain \( c'_W \) \( \ldots \)
e. Pronunciation: he think-pres-subj that she be-pregnant-pres-ind.

After the De Re Transformation, the world variable \( ind_2 \) is replaced with \( ind_2', i \), which denotes a world description whose argument is the variable \( c_1 \), as indicated by the second subscript of \( ind_2', i \). To avoid a presupposition failure, \( w_2' \) must denote in the context of the agent’s speech act \( c \) a group of worlds that includes \( s(w_2) \) (by (ii’)), hence \( c^*_W \), the world of the actual context (since by (i’) a presupposition failure ensues if \( s(w_2) \neq c^*_W \)). Moreover, by (iii’), for each context \( c' \) compatible with the agent’s thought, \( s(w_2')(c') \) must also include \( c'_W \). The latter is the contribution made by the Generalized Upper Limit Constraint.

Let me make things more concrete. Suppose the agent of the attitude is John, who is thinking about Mary; and assume that the salient description \( \delta \) is the worlds in
which Mary has the same symptoms as she in fact does, or (equivalently) the worlds in which Mary has these symptoms, pointing to Mary’s current condition (the semantic value of this description is $\lambda c$ the worlds $w$ such that Mary has the same symptoms in $w$ as in $c_W$). Does $\delta$ satisfy the presuppositions of (41)? Let us assume that (i’) is satisfied. (iii’), which is the contribution of the Generalized Upper Limit Constraint, requires that for every context $c'$ compatible with what John thinks in the actual world $c'_W$ at the time of utterance $c'_T$, $\delta$ uttered in $c'$ should denote a group of worlds that includes $c'_W$; this is trivially the case since Mary certainly has the same symptoms in $c'_W$ as she does in $\ldots c'_W$. Thus, owing to the indexical nature of the description (the same symptoms as she does in the actual world), the Generalized Upper Limit Constraint is automatically satisfied. Condition (ii’) requires that the description $\delta$, uttered in the counterfactual world $s(w_1)$, should denote a group that includes the actual world $c'_W$. In other words, it should be presupposed that Mary has the same symptoms in $s(w_1)$ as in the actual world. To put it more generally, Condition (ii’) forces the counterfactual worlds that are “talked about” in (41a) to share some salient property $P$ with the actual world, where $P$ represents a natural way in which the agent of the attitude (in the counterfactual world) would characterize the world he thinks he lives in. Speakers’ intuitions are certainly not sharp enough to validate this prediction, especially since everything depends on the choice of the description $\delta$, for which there is no independent evidence. However, it does seem to be presupposed in (41a) that the counterfactual situations that are talked about (= the situations compatible with what the speaker deems desirable) somehow share some salient property with the actual world. No such impression would hold if the embedded indicative were replaced with a subjunctive: Il faut qu’il pense qu’elle soit enceinte. The present theory can analyze this contrast as a consequence of Condition (ii’).

Let us now see what would go wrong if we did not have Condition (ii’) or Condition (iii’) (for simplicity, I am assuming that there is a context that corresponds to $\langle s(x_1), s(t_1), s(w_1) \rangle$). Without the requirement that $s(w_2)$ (i.e., $c'_W$) be a part of $s(w_2^*)(c)$, there would be no sense in which the agent’s thought has to be about the actual world. Without the vividness condition, any kind of description would be allowed—for instance, the worlds in which Mary is pregnant. Now there is no doubt that John would assent to Mary is pregnant in the worlds in which Mary is pregnant. But this should not be enough to attribute to John a thought about the actual world, even if the actual world is one in which Mary is in fact pregnant. Something more must be required of the description. In the above example (the worlds in which Mary has these symptoms [pointing]), we can assume that the vividness requirement is satisfied by the fact that a term of direct reference is used in the definition of the description. But this is not even the beginning of a theory of what “vivid” means when applied to a description of worlds. All the present argument shows is that some
constraint of this form is needed if the theory is to get off the ground. This is of course unsurprising since we saw that, in the case of de re readings of individual terms, such a constraint is also needed (see Kaplan 1969 for an attempt to spell out a theory of vividness for descriptions of individuals).

Without Condition (iii’), the present account would allow the salient description to be one that, according to John, does not pick out the world that he thinks he lives in. For instance, the description could be the closest world in which Mary has a big belly (whose semantic value is \(\lambda c \text{ the closest worlds from } c_W \text{ in which Mary has a big belly}\)). If so, the thought attributed to John could very well be a conditional—for instance, If Mary had a big belly, she would be pregnant. But here intuitions are, I believe, very sharp: (41a) entails that in the worlds compatible with what the speaker deems desirable, John would assent to something of the form Mary is pregnant, not to a merely conditional thought such as If she had a big belly, etc. The desired entailment would disappear if Condition (iii’) were done away with. I conclude that the Generalized Upper Limit Constraint is both necessary and (almost) sufficient to account for the modal analogues of double access readings, at least when it is embedded in a theory of de re attitudes about possible worlds.

Appendix A: A Fragment with Quantification over Contexts and Rules of Agreement for Person, Tense, and Mood

- Definitions

  - Vocabulary and Syntax

  - Terms and Predicates

  Terms

  1. Bare variables: \(x_k\) (individuals), \(t_k\) (times), \(w_k\) (worlds), \(c_k^F\) (contexts) for each \(k \in \mathbb{N}\) and each element \(F\) of \(\{e, he, she\} \times \{e, pres, past\} \times \{e, ind, subj\}\)

  2. Simple pronominal variables: \(hek\), \(shek\) (pronouns); \(pres_k, past_k\) (tenses); \(ind_k, subj_k\) (moods), for each \(k \in \mathbb{N}\)

  3. Coordinates of contexts: \(c_A\) (individuals), \(c_T\) (times), \(c_W\) (worlds), for each context variable \(c\)

  4. Complex pronominal variables: If \(t\) is a time term formed by 1–3, \(fut_k(t)\) is a complex tense.

Predicates

1. Simple predicates with one individual argument, one time argument, and one world argument: be-elected, be-leaving, be-pregnant

2. Attitude verbs: hope, think, decide, say, . . .
Formulas

If i is an individual term, t is a time term, and w is a world term, and if P is a simple predicate, then \( i \ P - t - w \) is a formula.

Note

In a more common logical syntax, \( i \ P - t - w \) would be written as \( P(i, t, w) \).

If \( \phi \) and \( \psi \) are formulas, then \( (\phi \ & \ \psi) \), \( (\phi \ \lor \ \psi) \), and \( \neg \phi \) are formulas.

If \( \phi \) is a formula, P is an attitude verb, i is an individual term, t is a time term, w is a world term, and k is an integer, then \( iP - t - w that ckF \phi \) is a formula, where F is the triple of \{e, he, she\} \( \times \) \{e, pres, past\} \( \times \) \{e, ind, subj\}, whose first coordinate is he/she if he/she appears in i, and e otherwise; whose second coordinate is pres/past if pres/past appears in t, and e otherwise; and whose third coordinate is ind/subj if ind/subj appears in w, and e otherwise.

Notes

1. By appear in i (resp. appear in t, appear in w) is meant: appear anywhere in i (resp. t, w), including as a coordinate of a triple of features F if i is of the form \( c_k^{F_A} \) (resp. \( c_k^{F_T}, c_k^{F_W} \)). This will be crucial in example (A4).

2. We will say that \( \phi \) is in the scope of \( iP - t - w that ckF \).

3. F does not play any semantic role but serves to keep track of the features that must be pronounced in the phonological component as a result of the rules of person, tense, and mood agreement. Note that the future morpheme fut never appears in F (because the future morpheme does not trigger any agreement phenomena).

Denotation and Truth

An assignment function s is a function that assigns to each variable \( x_k \) an individual, to each variable \( t_k \) a moment, to each variable \( w_k \) a world, and to each variable \( c_k \) a context. If \( \xi \) is a variable and d is an object that can be a value of \( \xi \), \( s[\xi \rightarrow d] \) is the assignment defined by (i) for each variable \( \zeta \) different from \( \xi \), \( s[\xi \rightarrow d] (\zeta) = s(\zeta) \), and (ii) \( s[\xi \rightarrow d] (\xi) = d \).

Assumptions

1. Each context c has exactly one agent \( c_A \), one time of occurrence \( c_T \), and one world of occurrence \( c_W \).

2. For each attitude verb P and each triple of the form \( \langle i, t, w \rangle \), either (i) there is no attitude of P-ing at \( t \) in \( w \) by \( i \), or else (ii) there is a (possibly empty) set \( P^{i, t, w} \) which is the set of contexts compatible with \( i \)'s attitude of P-ing at \( t \) in \( w \).
Let $c^*$ be the context of utterance, let $k$ be any integer, and let $s$ be an assignment function. Then:

- **Denotation**

  $x_k$ denotes $s(x_k)$.
  $t_k$ denotes $s(t_k)$.
  $w_k$ denotes $s(w_k)$.
  $c_k^F$ denotes $s(c_k)$ for each $F \in \{he, she\} \times \{pres, past\} \times \{ind, subj\}$.
  $c_k^F_A$ denotes the agent of $s(c_k)$ for each $F \in \{he, she\} \times \{pres, past\} \times \{ind, subj\}$.
  $c_k^F_T$ denotes the time of $s(c_k)$ for each $F \in \{he, she\} \times \{pres, past\} \times \{ind, subj\}$.
  $c_k^F_W$ denotes the world of $s(c_k)$ for each $F \in \{he, she\} \times \{pres, past\} \times \{ind, subj\}$.
  $he_k$ denotes $\#i \quad \text{iff} \quad s(x_k)$ is not a male at the time of $c^*$ in the world of $c^*$. Otherwise, it denotes $s(x_k)$.
  $she_k$ denotes $\#i \quad \text{ifff} \quad s(x_k)$ is not a female at the time of $c^*$ in the world of $c^*$. Otherwise, it denotes $s(x_k)$.
  $pres_k$ denotes $\#i \quad \text{ifff} \quad s(t_k)$ is not the time of $c^*$. Otherwise, it denotes $s(t_k)$.
  $past_k$ denotes $\#i \quad \text{ifff} \quad s(t_k)$ is not before the time of $c^*$. Otherwise, it denotes $s(t_k)$.
  $ind_k$ denotes $\#i \quad \text{ifff} \quad s(w_k)$ is not $c^*_w$. Otherwise, it denotes $s(w_k)$.
  $subj_k$ denotes $s(w_k)$.

- **Note**

  This is an extremely crude analysis of mood, but it will suffice for present purposes. In a more elaborate treatment, one could use Stalnaker’s (1975) notion of common ground to give a definition in which $ind_k$ denotes $\#i \quad \text{ifff} \quad s(w_k)$ is not in $\{w: c$ is compatible with what $c^*_A$ believes at $c^*_T \in c^*_W\}$. The analysis of the subjunctive would also have to be refined (in the present account, the subjunctive introduces no presupposition at all).

  $fut_k(\tau)$ denotes $\#i \quad \text{ifff} \quad \tau$ denotes some moment $t$ and $s(t_k)$ is not after $t$. Otherwise, $fut_k(\tau)$ denotes $s(t_k)$.

- **Truth**

  If $\phi$ is an atomic formula $i P \cdot t \cdot w$, where $P$ is a simple predicate, $\phi$ is weird $\#i \quad \text{ifff} \quad$ at least one of its arguments denotes $\#$. Otherwise, it is true $\#i \quad \text{ifff} \quad$ satisfies $P$, where $i, t, w$ are the denotations of $i, t, w$, respectively.

  If $\phi$ is a formula $\neg \psi$, $\phi$ is weird $\#i \quad \text{ifff} \quad \psi$ is weird. Otherwise, $\phi$ is true $\#i \quad \text{ifff} \quad \psi$ is not true.
If \( \phi \) is a formula \((\chi \& \psi)\) (resp. \((\chi \vee \psi)\)), \( \phi \) is weird \(s,c\) iff \( \chi \) is weird \(s,c\) or \( \psi \) is weird \(s,c\). Otherwise, \( \phi \) is true \(s,c\) iff \( \chi \) is true \(s,c\) and \( \psi \) is true \(s,c\) (resp. \( \chi \) is true \(s,c\) or \( \psi \) is true \(s,c\)).

If \( \phi \) is a formula \(i P_{-t-w} \psi\), where \( P \) is an attitude verb, \( \phi \) is weird \(s,c\) iff (i) \( i \), \( t \), or \( w \) (or several of them) denotes \(s,c\) # or (ii) \( i \), \( t \), or \( w \) denote \(s,c\) respectively an individual \( i \), a time \( t \), and a world \( w \) and there is an attitude of \( P \)-ing at \( t \) in \( w \) by \( i \), and for some context \( c \) in \( P^{i,t,w} \), \( \psi \) is weird \(s_{[c_k \rightarrow c]},c\). Otherwise, \( \phi \) is true \(s,c\) iff there is an attitude of \( P \)-ing by \( i \) at \( t \) in \( w \) \(^{18}\) and for every context \( c \) in \( P^{i,t,w} \), \( \psi \) is true \(s_{[c_k \rightarrow c]},c\).

**Agreement and Pronunciation**

A formula is pronounced by (i) erasing all numbers, (ii) replacing each occurrence of \( c_{FA} \) with the first coordinate of \( F \), \( c_{FT} \) with the second coordinate of \( F \), and \( c_{FW} \) with the third coordinate of \( F \), for each \( F \in \{he, she\} \times \{pres, past\} \times \{ind, subj\} \), and (iii) eliminating all remaining context variables.

**Examples**

(A1)  a. He hopes that he is elected./He hopes that he himself is elected./He hopes to be elected. (de se reading for the embedded pronoun)

   b. \( he_1 \) hope-pres-ind that \( c_{1F} \) be-elected-c_{1F_A}-c_{1F_T}-c_{1F_W} \), with \( F = \langle he, pres, ind \rangle \)

   c. (b) is weird \( s(x_1) \) iff \( s(x_1) \) is not male at \( c^*_T \) in \( c^*_W \) or \( s(t_1) \) is not \( c^*_T \) or \( s(w_1) \) is not \( c^*_W \). Otherwise, (b) is true \( s(x_1) \) iff there is an attitude of hoping by \( s(x_1) \) at \( c^*_T \) in \( c^*_W \) and for every context \( c \) in hope \( s(x_1), s(t_1), s(w_1) \rangle \), \( \langle c_A, c_T, c_W \rangle \) satisfies be-elected.

   d. (b) is pronounced as \( he \) hope-pres-ind that \( he \) be-elected-pres-ind.

**Note**

Even if some contexts compatible with \( s(x_1) \)'s hope at \( c^*_T \) in \( c^*_W \) are contexts whose agent is a woman, the sentence is predicted to be grammatical since the features of the embedded pronoun \( he \) are present in the pronunciation only.

(A2)  a. He hopes that he is elected. (de re reading for the embedded \( he \))

   b. \( he_1 \) hope-pres-ind that \( c_{1F} \) he \( 1 \) be-elected-c_{1F_T}-c_{1F_W} \), with \( F = \langle he, pres, ind \rangle \)

   c. (b) is weird \( s(x_1) \) iff \( s(x_1) \) is not male at \( c^*_T \) in \( c^*_W \) or \( s(t_1) \) is not \( c^*_T \) or \( s(w_1) \) is not \( c^*_W \). Otherwise, (b) is true \( s(x_1) \) iff there is an attitude of hoping by \( s(x_1) \) at \( c^*_T \) in \( c^*_W \) and for every context \( c \) in hope \( s(x_1), s(t_1), s(w_1) \rangle \), \( \langle s(x_1), c_T, c_W \rangle \) satisfies be-elected.

   d. (b) is pronounced as \( he \) hope-pres-ind that \( he \) be-elected-pres-ind.
(A3) a. She thought that he (e.g., Clinton) was president. (*de se* reading for the embedded tense)

b. she \_think-past1-ind\_ that\_c1\_F \_he\_2 \_be-president-c1\_F\_T-c1\_F\_W, with F = \langle she, past, ind \rangle

c. (b) is weird\_s\_c\_ iff s(x\_1) is not female at c\_T in c\_W or s(x\_2) is not male at c\_T in c\_W or s(t\_1) does not precede c\_T or s(w\_1) is not c\_W. Otherwise, (b) is true\_s\_c\_ iff there is an attitude of thinking by s(x\_1) at c\_T in c\_W and for every context c in think\_\langle s(x\_1), s(t\_1), s(w\_1) \rangle, \langle s(x\_2), c\_T, c\_W \rangle satisfies be-president.

d. (b) is pronounced as *she think-past-ind that he be-president-past-ind*.

Note
Even if for some context c compatible with s(x\_1)’s hope at time s(t\_1) in c\_W, c\_T is not before c\_T, the sentence is predicted to be grammatical since the features of the embedded past tense are present in the pronunciation only.

(A4) a. He decided (yesterday) that (tomorrow) he would say (to his mother) that he was leaving. (the embedded past tenses need not be interpreted)

b. he \_decide-past1-ind\_ that\_c1\_F A \_say-fut2(c1\_F\_T)-c1\_F\_W that\_c2\_F\_A \_be-leaving-c2\_F\_T-c2\_F\_W, with F = F’ = \langle he, past, ind \rangle

c. (b) is weird\_s\_c\_ iff s(x\_1) is not male at c\_T in c\_W or s(t\_1) does not precede c\_T or s(w\_1) is not c\_W or (if none of the three preceding conditions holds) there is an attitude of deciding by s(x\_1) at s(t\_1) in c\_W and for some context c in decide\_\langle s(x\_1), s(t\_1), s(w\_1) \rangle, s(t\_2) does not follow c\_T. Otherwise, (b) is true\_s\_c\_ iff there is an attitude of deciding by s(x\_1) at s(t\_1) in c\_W and for every context c in decide\_\langle s(x\_1), s(t\_1), s(w\_1) \rangle, there is an attitude of saying by c\_A at s(t\_2) in c\_W and for every context c’ in say\_\langle c\_A, s(t\_2), c\_W \rangle, \langle c’\_A, c’\_T, c’\_W \rangle satisfies be-leaving.

d. (b) is pronounced as *he decide-past-ind that he say-fut(past)-ind that he be-leaving-past-ind*.

(A5) a. She thinks that he is president. (the embedded mood need not be interpreted)

b. she \_think-pres1-ind\_ that\_c1\_F \_he\_2 \_be-president-c1\_F\_T-c1\_F\_W, with F = \langle she, past, ind \rangle

c. (b) is weird\_s\_c\_ iff s(x\_1) is not female at c\_T in c\_W or s(x\_2) is not male at c\_T in c\_W or s(t\_1) is not the time of c\_ or s(w\_1) is not in c\_W. Otherwise, (b) is true\_s\_c\_ iff there is an attitude of thinking by s(x\_1) at s(t\_1) in c\_W and for every context c in think\_\langle s(x\_1), s(t\_1), s(w\_1) \rangle, \langle s(x\_2), c\_T, c\_W \rangle satisfies be-president.

d. (b) is pronounced as *she think-pres-ind that he be-president-pres-ind*.
Note
Even if (as is extremely likely) for some context \(c\) in think\({s(x_1), s(t_1), s(w_1)\}\), \(c_w \neq c^*_w\), the sentence is still predicted to be grammatical since the features of the embedded mood are present in the pronunciation only.

Appendix B: Adding Kaplan’s Analysis of Quantifying-In and a Generalized Upper Limit Constraint

■ Definitions

▲ Vocabulary and Syntax

• Terms and Predicates
Same as in appendix A, but replace 2 with 2’ and 4 with 4’.

2’. Simple pronominal variables: same as 2, adding \(he_{k^*,i}\), \(she_{k^*,i}\) (pronouns); \(pres_{k^*,i}\), \(past_{k^*,i}\) (tenses); \(ind_{k^*,i}\), \(subj_{k^*,i}\) (moods), for each \(k, i \in \mathbb{N}\).

4’. Complex pronominal variables: If \(t\) is a time term formed by \(1–2'–3\), \(fut_k(t)\) and \(fut_{k^*,i}(t)\) are complex tenses.

• Formulas
The well-formed formulas are those of appendix A, modified by the following transformation:

De Re Transformation
If \(k\) is the index of a free variable in the immediate scope of an attitude verb introducing a variable \(c_i^F\), replace \(k\) with \(k^*,i\).

Note
By free variable is meant: any free variable (i.e., a bare variable, a simple pronominal variable, or a complex pronominal variable). By variable \(v\) is in the immediate scope of the attitude verb \(A\) is meant: \(v\) is in the scope of \(A\) and there is no other attitude verb \(A'\) that is in the scope of \(A\) and such that \(v\) is in the scope of \(A'\).

▲ Denotation and Truth
An assignment function \(s\) is a function that assigns to each variable \(x_k\) a singular individual, to each variable \(t_k\) a singular moment, to each variable \(w_k\) a singular world, to each variable \(c_k\) a context, to each variable \(x_{k^*}\) a function from contexts to (singular or plural) individuals, to each variable \(t_{k^*}\) a function from contexts to time intervals, and to each variable \(w_{k^*}\) a function from contexts to groups (= pluralities) of worlds.
Terminology
For individuals, times, and worlds, we adopt a mereology with a part-of relation. For times, only intervals and singular moments are considered (in other words, the only plural moments are intervals). Correspondingly, predicates are taken to be satisfied by singular or plural objects.

• Denotation
Let \( i P-t-w \) that \( c_{i}^{r} \) be the attitude verb in the immediate scope of which the following terms appear. Let \( i, t, w \) be the denotations \( s_{i}^{c}, s_{t}^{c}, s_{w}^{c} \) of \( i, t, w \), respectively. Then for each \( a \in \{ \text{he, she, pres, past, ind} \} \), for each time term \( t \), and for each \( k, i \in \mathbb{N} \), the following holds, where \( a \) is ‘x’ if \( a \in \{ \text{he, she} \} \), ‘t’ if \( a \in \{ \text{pres, past} \} \) and ‘w’ if \( a \in \{ \text{ind} \} \):

\[
\text{\( a_{k}^{c} \) denotess, \( c_{k}^{c} \) # iff}
\begin{align*}
1. & \ a_{k} \ denotess, \( c_{k}^{c} \) #, or \\
2. & \ \text{there is a context} \ c \ \text{corresponding to} \ \langle i, t, w \rangle \ \text{and} \ [s(a_{k}) \ \text{is not a part of} \ s(a_{k})(c) \\
& \ \text{or} \ s(a_{k}^{c}) \ \text{is not vivid for} \ c], \ \text{or} \\
3. & \ [a \in \{ \text{pres, past} \} \ \text{and} \ s(a_{k})(s(c_{i})) \ \text{is entirely after} \ (s(c_{i}))_{t} \ \text{or} \ [a \in \{ \text{ind} \} \ \text{and} \ (s(c_{i}))_{w} \ \text{is not a part of} \ s(a_{k})(s(c_{i}))].
\end{align*}
\]

Otherwise, \( a_{k}^{c}, i \) denotes \( s_{i}^{c} \). \( s(a_{k})(s(c_{i})) \).

Note
Clause 1 is the only constraint that would hold if the De Re Transformation had not been applied. Clause 2 is the requirement that \( s(a_{k}) \) be a vivid name of \( s(a_{k}) \) for the agent of the attitude, at the time of the attitude, and at the world of the attitude. Clause 3 is a generalized version of the Upper Limit Constraint, applied both to tense and to mood. (Note that the subjunctive, like the future, does not have to obey this constraint.)

\[
\text{fut}_{k}^{c}, i(t) \ \text{denotess,} \ s_{i}^{c} \ # \ \text{iff}
\begin{align*}
1. & \ t \ \text{denotess,} \( c_{t}^{c} \) #, or \\
2. & \ t \ \text{denotess,} \( c_{t}^{c} \) \ \text{a moment} \ t \ \text{and} \ s(t_{k})(s(c_{i})) \ \text{is not entirely after} \ t, \ \text{or} \\
3. & \ \text{there is a context} \ c \ \text{corresponding to} \ \langle i, t, w \rangle \ \text{and} \ [s(t_{k}) \ \text{is not a part of} \ s(t_{k})(c) \ \text{or} \\
& \ \text{s(t_{k}) is not vivid for} \ c].
\end{align*}
\]

Otherwise, \( fut_{k}^{c}, i(\tau) \) denotes \( s_{i}^{c} \). \( s(x_{k})(s(c_{i})) \).

• Truth
Same rules as in appendix A.
Examples

In the following examples, (a) is the English sentence to be analyzed, (b) its counterpart produced by the fragment in appendix A, (c) the result of applying the De Re Transformation to (b). The truth-conditions of (c) are given in (d) and the pronunciation in (e).

(A6) **Tense agreement and a de re pronoun**

a. He thought that she was pregnant. *(de re reading for the embedded she, de se reading for the embedded past tense)*

b. \( \text{he}_1 \text{think-past}_1\text{-ind}_1 \text{that}_c \text{she}_2 \text{be-pregnant-}_c^1 \text{F}_T\text{-c}_1^1 \text{F}_W, \text{with } F = \langle \text{he}, \text{past}, \text{ind} \rangle \)

c. \( \text{he}_1 \text{think-past}_1\text{-ind}_1 \text{that}_c \text{she}_2^* \text{be-pregnant-}_c^1 \text{F}_T\text{-c}_1^1 \text{F}_W, \text{with } F = \langle \text{he}, \text{past}, \text{ind} \rangle \)

d. (c) is weird if \( s(x_1) \) is not male at \( c^*_T \) in \( c^*_W \) or \( s(t_1) \) is not before \( c^*_T \) or \( s(w_1) \) is not \( c^*_W \) or there is an attitude of thinking by \( s(x_1) \) at \( s(t_1) \) in \( s(w_1) \) and for some \( c' \) in think\( \langle s(x_1), s(t_1), s(w_1) \rangle \):

i. \( s(x_2) \) is not female at \( c^*_T \) in \( c^*_W \), or

ii. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(x_2^*)] \) is not vivid for \( c \) or \( s(x_2) \) is not a part of \( s(x_2^*) \)

Otherwise, (c) is true if there is an attitude of thinking by \( s(x_1) \) at \( s(t_1) \) in \( s(w_1) \) and for every context \( c' \) in think\( \langle s(x_1), s(t_1), s(w_1) \rangle \), \( \langle s(x_2^*), c', c'_T, c'_W \rangle \) satisfies be-pregnant.

e. Pronunciation: *he think-past-ind that she be-pregnant-past-ind.*

Note

In the “weirdness” conditions, the quantification over contexts in think\( \langle s(x_1), s(t_1), s(w_1) \rangle \) is in this case vacuous and could thus be eliminated.

(A7) **A double access reading with tense**

a. He thought that she is pregnant. *(de re reading for the embedded she and for the embedded present tense)*

b. \( \text{he}_1 \text{think-past}_1\text{-ind}_1 \text{that}_c \text{she}_2 \text{be-pregnant-pres}_2\text{-c}_1^1 \text{F}_W, \text{with } F = \langle \text{he}, \text{past}, \text{ind} \rangle \)

c. \( \text{he}_1 \text{think-past}_1\text{-ind}_1 \text{that}_c \text{she}_2^*\text{be-pregnant-pres}_2^*\text{-c}_1^1 \text{F}_W, \text{with } F = \langle \text{he}, \text{past}, \text{ind} \rangle \)

d. (c) is weird if \( s(x_1) \) is not male at \( c^*_T \) in \( c^*_W \) or \( s(t_1) \) is not before \( c^*_T \) or \( s(w_1) \) is not \( c^*_W \) or there is an attitude of thinking by \( s(x_1) \) at \( s(t_1) \) in \( s(w_1) \) and for some \( c' \) in think\( \langle s(x_1), s(t_1), s(w_1) \rangle \):

i. \( s(x_2) \) is not female at \( c^*_T \) in \( c^*_W \), or

ii. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(x_2^*)] \) is not vivid for \( c \) or \( s(x_2) \) is not a part of \( s(x_2^*) \).
i. \( s(x_2) \) is not female at \( c^*_T \) in \( c^*_W \), or

ii. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(x_2^*)] \) is not vivid for \( c' \) or \( s(x_2) \) is not a part of \( s(x_2^*) (c) \), or

i'. \( s(t_2) \) is not \( c^*_T \), or

ii'. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(t_2^*)] \) is not vivid for \( c \) or \( s(t_2) \) is not a part of \( s(t_2^*) (c) \), or

iii'. \( s(t_2^*) (c') \) is entirely after \( c'_T \).

Otherwise, \( (c) \) is true if there is an attitude of thinking by \( s(x_1) \) at \( s(t_1) \) in \( s(w_1) \) and for every context \( c' \) in \( \langle s(x_1), s(t_1), s(w_1) \rangle \), \( \langle s(x_2^*) (c'), s(t_2^*) (c'), c'_W \rangle \) satisfies be-pregnant.

e. Pronunciation: he think-past-ind that she be-pregnant-pres-ind.

Note
In the “weirdness” conditions, the quantification over contexts in \( \langle s(x_1), s(t_1), s(w_1) \rangle \) is in this case not vacuous, since clause (iii') (the Upper Limit Constraint) depends on it.

(A8) A (failed) forward-shifted reading

a. #He thought (in 1990) that she was pregnant (in 2000). (de re reading for the embedded she and for the embedded past tense)

b. he\(_1\) think-past\(_1\)-ind\(_1\) that\(_{c_f}\) she\(_2\) be-pregnant-past\(_2\)-c\(_1\)\(_F\)_W, with \( F = \langle he, past, ind \rangle \)

c. he\(_1\) think-past\(_1\)-ind\(_1\) that\(_{c_f}\) she\(_{2,1}\) be-pregnant-past\(_2,1\)-c\(_1\)\(_F\)_W, with \( F = \langle he, past, ind \rangle \)

d. (c) is weird\(_s,c^*_\) iff \( s(x_1) \) is not male at \( c^*_T \) in \( c^*_W \) or \( s(t_1) \) is not before \( c^*_T \) or \( s(w_1) \) is not \( c^*_W \) or there is an attitude of thinking by \( s(x_1) \) at \( s(t_1) \) in \( s(w_1) \) and for some \( c' \) in \( \langle s(x_1), s(t_1), s(w_1) \rangle \),

i. \( s(x_2) \) is not female at \( c^*_T \) in \( c^*_W \), or

ii. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(x_2^*)] \) is not vivid for \( c \) or \( s(x_2) \) is not a part of \( s(x_2^*) (c) \), or

i'. \( s(t_2) \) is not before \( c^*_T \), or

ii'. there is a context \( c \) corresponding to \( \langle s(x_1), s(t_1), s(w_1) \rangle \) and \( [s(t_2^*)] \) is not vivid for \( c \) or \( s(t_2) \) is not a part of \( s(t_2^*) (c) \), or

iii'. \( s(t_2^*) (c') \) is entirely after \( c'_T \).

e. Pronunciation: he think-past-ind that she be-pregnant-pres-ind.

Note
For the sentence to be acceptable, \( s(t_2^*) \) must be such that (i) \( s(t_2^*) (c') \) does not lie after \( c'_T \), for each \( c' \) in \( \langle s(x_1), s(t_1), s(w_1) \rangle \), and (ii) \( s(t_2^*) (c) \) includes \( s(t_2^*) \) (i.e., yes-
terday), where c is the context corresponding to the agent’s attitude. Thus, if the agent is not mistaken about the time (i.e., if for each \( c' \) in \( \text{think}^{(s(x), s(t), s(w))} \), \( c'_T = s(t) \), which is ten years ago), his thought must be that the woman’s pregnancy spans ten years, which is not reasonable. This accounts for the deviance of the example.

\[ \text{(A9) A (successful) forward-shifted reading} \]
\[ \text{a. He thought (in 1990) that she would be pregnant (in 2000). (de re reading} \]
\[ \text{for the embedded she and for the embedded past tense)} \]
\[ \text{b. he}_1 \text{think-past-ind}_1 \text{that}_{c'_T}\text{she}_2 \text{be-pregnant-fut}_2(c_{1F_T}-c_{1F_W}), \text{with} \]
\[ \text{F} = \langle \text{he}, \text{past}, \text{ind} \rangle \]
\[ \text{c. he}_1 \text{think-past-ind}_1 \text{that}_{c'_T}\text{she}_2 \text{be-pregnant-fut}_2(c_{1F_T}-c_{1F_W}), \text{with} \]
\[ \text{F} = \langle \text{he}, \text{past}, \text{ind} \rangle \]
\[ \text{d. (c) is weird, s, c', if s(x) is not male at } c'_T \text{ in } c'_W \text{ or } s(t) \text{ is not before } c'_T \text{ or } s(w) \text{ is not } c'_W \text{ or there is an attitude of thinking by } s(x) \text{ at } s(t) \text{ in } s(w) \text{ and for some } c \text{' in } \text{think}^{(s(x), s(t), s(w))}. \]
\[ \text{i. s(x)} \text{is not female at } c'_T \text{ in } c'_W, \text{or} \]
\[ \text{ii. there is a context } c \text{ corresponding to } \langle s(x), s(t), s(w) \rangle \text{ and } [s(x_2) \text{ is not vivid for } c \text{ or } s(x) \text{ is not a part of } s(x_2)(c)], \]
\[ \text{or} \]
\[ \text{i'. } c_{1F_T} \text{denotes}_{s[c_1 \rightarrow c']}, \text{c} \text{' (impossible), or} \]
\[ \text{ii'. } s(t_2')(s(c)) \text{ is not after } (s(c))_T, \text{or} \]
\[ \text{iii'. there is a context } c \text{ corresponding to } \langle s(x), s(t), s(w) \rangle \text{ and } [s(t_2) \text{ is not vivid for } c \text{ or } s(t_2) \text{ is not a part of } s(t_2')], \]
\[ \text{Otherwise, (c) is true, s, c', if there is an attitude of thinking by } s(x) \text{ at } s(t) \text{ in } s(w) \text{ and for every } c \text{' in } \text{think}^{(s(x), s(t), s(w))}, s(x_2)(c) \text{ is pregnant at } s(t_2')(c') \text{ in } c'_W. \]
\[ \text{e. Pronunciation: he think-past-ind that she be-pregnant-fut(past)-ind.} \]

\[ \text{Note} \]
\[ \text{The Upper Limit Constraint does not play any role in this example because the embedded past tense of (A8) has been replaced with } \text{fut}_2(c_{1F_T}) \text{ (pronounced as } \text{fut(past)} \text{ because of the agreement rule).} \]

\[ \text{(A10) Mood agreement} \]
\[ \text{a. (Il faut qu') il pense qu'elle soit enceinte. (it is-necessary that) he think-SUBJ that she be-SUBJ pregnant} \]
\[ \text{b. he}_1 \text{think-pres-subj}_1 \text{that}_{c'_T}\text{she}_2 \text{be-pregnant-c}_1\text{F}_T-\text{c}_1\text{F}_W \]
\[ \text{c. he}_1 \text{think-pres-subj}_1 \text{that}_{c'_T}\text{she}_2 \text{be-pregnant-c}_1\text{F}_T-\text{c}_1\text{F}_W, \text{with } \text{F} = \langle \text{he, pres, subj} \rangle \]
d. (c) is weird, s, c if \( s(x_I) \) is not male at \( c^*T \) in \( c^*W \) or \( s(t_I) \) is not \( c^*T \) or there is an attitude of thinking by \( s(x_I) \) at \( s(t_I) \) in \( s(w_I) \) and for some \( c' \) in think\(<s(x_I), s(t_I), s(w_I)>\):
   i. \( s(x_2) \) is not female at \( c^*T \) in \( c^*W \), or  
   ii. there is a context \( c \) corresponding to \( <s(x_I), s(t_I), s(w_I)> \) and \([s(x_2^{}')]\) is not vivid for \( c \) or \( s(x_2) \) is not a part of \( s(x_2^{}')(c)\).

Otherwise, (c) is true, s, c if there is an attitude of thinking by \( s(x_I) \) at \( s(t_I) \) in \( s(w_I) \) and for every context \( c' \) in think\(<s(x_I), s(t_I), s(w_I)>\),  
\(<s(x_2^{}') (c'), c'_T, c'_W>\) satisfies be-pregnant.

e. Pronunciation: he think-pres-subj that she be-pregnant-pres-subj.

**Note**

Even if I had given a more sophisticated analysis of mood in which the subjunctive imposed some interpretive condition on world variables, this condition would not have been felt in this example because the features of the embedded subjunctive are present in the pronunciation only.

(A11) *A double access reading with mood*

a. (Il faut qu’) il pense qu’elle est enceinte.
   (it is-necessary that) he think-subj that she is-PREGnant

b. he\(_1\) think-pres\(_1\)-subj\(_1\) that\(_{c^F}\) she\(_2\) be-pregnant-c\(_{1\,T}\)-ind\(_2\), with \( F = <he, \)  
   pres, subj>

c. he\(_1\) think-pres\(_1\)-subj\(_1\) that\(_{c^F}\) she\(_2\,\,\,1\) be-pregnant-c\(_{1\,T}\)-ind\(_2\,\,\,1\), with  
   \( F = <he, \) pres, subj>

d. (c) is weird, s, c if \( s(x_I) \) is not male at \( c^*T \) in \( c^*W \) or \( s(t_I) \) is not \( c^*T \) or there is an attitude of thinking by \( s(x_I) \) at \( s(t_I) \) in \( s(w_I) \) and for some \( c' \) in think\(<s(x_I), s(t_I), s(w_I)>\):
   i. \( s(x_2) \) is not female at \( c^*T \) in \( c^*W \), or
   ii. there is a context \( c \) corresponding to \( <s(x_I), s(t_I), s(w_I)> \) and \([s(x_2^{}')]\) is not vivid for \( c \) or \( s(x_2) \) is not a part of \( s(x_2^{}')(c)\), or
   or
   iii. \( s(w_2) \) is not \( c^*W \), or
   ii. there is a context \( c \) corresponding to \( <s(x_I), s(t_I), s(w_I)> \) and \([s(w_2^{}')]\) is not vivid for \( c \) or \( s(w_2) \) is not a part of \( s(w_2^{}')(c)\), or
   iii. \( s(w_2^{}')(c')\) does not contain \( c'_W \).

Otherwise, (c) is true, s, c if there is an attitude of thinking by \( s(x_I) \) at \( s(t_I) \) in \( s(w_I) \) and for every context \( c' \) in think\(<s(x_I), s(t_I), s(w_I)>\),  
\(<s(x_2^{}')(c'), c'_T, s(w_2^{}')(c')>\) satisfies be-pregnant.

e. Pronunciation: he think-pres-subj that she be-pregnant-pres-ind.
Note

It might be helpful to consider some values of $s(w_2^*)$ that would be allowed by conditions (i$'$)–(iii$'$) (since each of these is sufficient to trigger referential failure, $s(w_2^*)$ is allowed by these conditions just in case it satisfies the conjunction of their negations). Suppose the agent of the attitude (call him John) thinks, “Mary is pregnant in the worlds in which she displays the same symptoms as in this world.” Then the relevant description of worlds, $s(w_2^*)$, is the function: $\lambda c$ the group of all worlds w such that Mary displays in w the same symptoms as in $c_w$. On the assumption that $s(w_2^*)$ is not ruled out by condition (i$'$), and thus that $s(w_2) = c^*_w$, we have that

- Condition (iii$'$) is automatically satisfied: for each $c'$ in think$\langle s(x), s(t), s(w_1) \rangle$, $s(w_2^*)(c')$ contains $c'_w$, since (vacuously) Mary displays in $c'_w$ the same symptoms as in $c'_w$.
- If there is a context c corresponding to $\langle s(x), s(t), s(w_1) \rangle$, Condition (ii$'$) requires that $s(w_2)$ (i.e., $c^*_w$) be part of $s(w_2^*)(c)$, that is, of the worlds in which Mary has the same symptoms as in $s(w_1)$. In other words, Mary must display the same symptoms in $s(w_1)$ as she does in the actual world $c^*_w$.

On the assumption that the salient description of worlds $s(w_2^*)$ is as above, we may apply a standard mechanism of presupposition projection to obtain the following result:

Presupposition

Every world compatible with what the speaker considers to be desirable is one in which Mary has the same symptoms as in the actual world.

Assertion

In every world compatible with what the speaker considers to be desirable, John thinks, “Mary is pregnant in the worlds in which she displays the same symptoms as in this world.”

Arguably this is a correct result: to the extent that we have intuitions about (A11a), it would appear that it is indeed presupposed that the speaker “talks about” worlds in which Mary has the same symptoms as in the actual world.

Appendix C: De Se Readings as a Species of De Re Readings

The vocabulary and syntax are the same as in appendix B, except that the symbol ‘$*$’ can optionally be replaced with the symbol ‘$+$’. Everything else remains the same, except the definition of denotation, to which clause 4 must be added.

$\alpha_{k+,i}$ denotes $s,c^* \ # i f f$
1. $a_k$ denotes $s_{x,c}$, #, or
2. there is a context $c$ corresponding to $\langle i, t, w \rangle$ and $[s(a_k)]$ is not a part of $s(a_k^+)(c)$ or $s(a_k^+, i)$ is not vivid for $c_i$, or
3. $[a \in \{\text{pres}, \text{past}\}$ and $s(a_k^+)(s(c_i))$ is entirely after $(s(c_i))_T$ or $[a \in \{\text{ind}\}$ and $(s(c_i))_W$ is not a part of $s(a_k^+)(s(c_i))]$, or
4. $s(a_k^+)$ $\notin \{\lambda c \ c_A, \lambda c \ c_T, \lambda c \ c_W\}$

Otherwise, $a_k$, $i$ denotes $s_{x,c}^+ s(x_k^+)(s(c_i))$.

**Notes**

1. As it stands, the system will overgenerate, since it has the resources to yield *de se* readings in two distinct ways: (i) as before, through terms such as $c_i^{F_A}$, $c_i^{F_T}$, $c_i^{F_W}$, but also (ii) through *de re* terms with an additional constraint, of the form $a_k^+, i$. We could decide to eliminate the diacritic $F = \langle \text{he}, \text{pres}, \text{ind} \rangle$ and the context terms $c_k^{F_A}$, $c_k^{F_T}$, $c_k^{F_W}$; this would have no undesirable consequences, except for the account of Kamp and Rohrer’s example in (A4) since the most embedded past tense features cannot be analyzed as being interpreted *de re* (whether or not this *de re* is of the *de se* variety).
2. The system could be set up in a different way, by redefining the notion of an assignment so that each variable $x_{i+}$ is assigned the value $s(x_{i+}) = \lambda c \ c_A$, each variable $t_{i+}$ is assigned the value $s(t_{i+}) = \lambda c \ c_T$, and each variable $w_{i+}$ is assigned the value $s(w_{i+}) = \lambda c \ c_W$. This would also emphasize the great similarity between, say, a term $x_{i+, k}$ and the term $c^{F_A}$ used in appendix A and appendix B.

**Example**

(A12) a. He hopes that he is elected./He hopes that he himself is elected./He hopes to be elected. (*de se* reading for each of the embedded arguments)

b. he$_1$ think-past$_1$-ind$_1$ that$_{c_1}$ he$_1$ be-elected-past$_1$-ind$_1$, with $F = \langle \text{he}, \text{pres}, \text{ind} \rangle$

c. he$_1$ think-past$_1$-ind$_1$ that$_{c_1}$ he$_1+$, $1$ be-elected-past$_1$, $1$-ind$_1$, $1$, $1$, with $F = \langle \text{he}, \text{past}, \text{ind} \rangle$

d. (c) is weird$_{s,c}$ iff $s(x_i)$ is not male at $c^+_T$ in $c^+_W$ or $s(t_i) \neq c^+_T$ or $s(w_t) \neq c^+_W$ or there is an attitude of thinking by $s(x_i)$ at $s(t_i)$ in $s(w_t)$ and for some $c'$ in think$\langle s(x_i), s(t_i), s(w_t) \rangle$:

i. $s(x_i)$ is not male at $c^+_T$ in $c^+_W$ (redundant), or

ii. there is a context $c$ corresponding to $\langle s(x_i), s(t_i), s(w_t) \rangle$ and $[s(x_i^+) \neq c^+_T]$ and $s(x_i^+)$ is not vivid for $c$ or $s(x_i)$ is not a part of $s(x_i^+)(c)]$, or

iii. $s(x_i^+) \notin \{\lambda c \ c_A, \lambda c \ c_T, \lambda c \ c_W\}$ (since $s(x_i^+)$ is a function from contexts to individuals, it could only be identical to $\lambda c \ c_A$);
or
i'. $s(t_I)$ is not $c'_T$ (redundant), or
ii'. there is a context $c$ corresponding to $\langle s(x_I), s(t_I), s(w_I) \rangle$ and $[s(t_I')]$ is not vivid for $c$ or $s(t_I)$ is not a part of $s(t_I')(c)$, or
iii'. $s(t_I')(c')$ is entirely after $c'_T$, or
iv'. $s(t_I') \notin \{\lambda c_A, \lambda c_T, \lambda c_W\}$ (since $s(t_I')$ is a function from contexts to moments, it could only be identical to $\lambda c_T$);

or
i''. $s(w_I)$ is not $c'_W$ (redundant), or
ii''. there is a context $c$ corresponding to $\langle s(x_I), s(t_I), s(w_I) \rangle$ and $[s(w_I')]$ is not vivid for $c$ or $s(w_I)$ is not a part of $s(w_I')(c)$, or
iii''. $s(w_I')(c')$ does not contain $c'_W$, or
iv''. $s(w_I') \notin \{\lambda c_A, \lambda c_T, \lambda c_W\}$ (since $s(w_I')$ is a function from contexts to worlds, it could only be identical to $\lambda c_W$).

Otherwise, $(c)$ is true $s_{c,c}$ if there is an attitude of thinking by $s(x_I)$ at $s(t_I)$ in $s(w_I)$ and for every context $c'$ in think$^{s(x_I), s(t_I), s(w_I)}$, $\langle s(x_I')(c'), s(t_I')(c'), s(w_I')(c') \rangle$; that is, when the sentence is not weird$_{s,c}$, (because $s(x_I'), s(t_I'), s(w_I')$ must be $\lambda c_A, \lambda c_T, \lambda c_W$, respectively), $\langle c'_A, c'_T, c'_W \rangle$ satisfies be-elected.

e. Pronunciation: he think-past-ind that he be-elected-pres-ind.

Notes

The first part of this chapter develops in greater detail suggestions that are only sketched in Schlenker 2003. As is made clear in the text, the second part of the account owes much to Abusch 1997 and Heim 1994a, although the technical implementation is rather different. Thanks to Orin Percus for discussion, to Béatrice Lenoir for help with the French data, and to Jacqueline Lecarme and Jacqueline Guéron for helpful comments. This chapter was already completed when I read the first version of von Stechow 2002, which offers a different—and very elegant—implementation of ideas related to those I develop in section 20.2.

1. As is well known, the pronouns-as-variables theory encounters problems in the analysis of so-called donkey sentences. These can be solved by developing systems of dynamic semantics, as in Kamp 1981 or Heim 1982, or by reanalyzing pronouns as concealed definite descriptions, as in Heim 1990, Schein 1993, and Ludlow 1994. In the latter case, pronominal, temporal, and modal features should be seen as falling within the restrictor of the definite description. On a Strawsonian or Fregean treatment of the, it would then follow that these features trigger presuppositions.

2. In double access readings in English, a present tense embedded under an attitude verb in the past tense may denote an interval that includes the time of utterance, but only if it also includes the time of the attitude (or to put it more precisely: the time that the agent thinks is the time of his thought or speech act). This standard observation is discussed below.

3. A further observation is that the distinction between shiftable and unshiftable indexicals is naturally extended to encompass indexicals that are obligatorily shifted and are thus
systematically evaluated with respect to the context of a reported speech act. A natural suggestion is that logophoric pronouns (as found for instance in Ewe; see Clements 1975) belong to this third category. I argue in Schlenker 2003 that the latter also includes a kind of “logophoric mood,” the German Konjunktiv 1, which is in some ways formally analogous to logophoric pronouns.

4. If John were replaced with a quantifier or a \( \lambda \)-abstractor, \( he_{xm} \) could be bound. Thus, to account for the contrast between Every candidate hopes that he is elected and Every candidate hopes to be elected, we may posit the following logical forms:

(i) a. \([\text{every candidate}]_{xm} \left[ t_{xm} \text{ hopes that } \left( x, t, w_k \right) \text{ be-elected-t}_j-w_k \right] \)

b. \([\text{every candidate}]_{xm} \left[ t_{xm} \text{ hopes to } \left( x, t, w_k \right) \text{ PRO}_x \text{ be-elected-t}_j-w_k \right] \)

5. This is a slight simplification. The identification is possible only if \( x \) exists at \( t \) in \( w \) (if this condition is not met, there is presumably no context that corresponds to \( \left( x, t, w \right) \)).

6. This is because in structures of restricted universal quantification, presupposition projection requires that every element (in fact, assignment function) that satisfies the restrictor should satisfy the presuppositions of the nuclear scope. For instance, in Every director admires herself, the expected presupposition is that every director should be female—hence the impression that the speaker is presupposing that every director in the domain of discourse is a woman (this holds only in non–politically correct English). The same reasoning applies to attitude verbs as we analyze them (the role of the restrictor is played by the set of contexts compatible with the agent’s attitude).

7. The precise reasoning is as follows: since the first conjunct in (16) asserts that all contexts compatible with John’s hope are contexts whose agent is a woman, this fact should be a presupposition of the second conjunct. This should suffice to license the feminine features on herself, while himself should be disallowed, contrary to what is observed.

8. However, see Heim 2002 for an attempt to relate these rules to a more general mechanism of feature transmission under binding.

9. After I had completed this chapter, I learned that Orin Percus and Uli Sauerland had provided a full argument for the existence of de se readings of he (see Percus and Sauerland 2002). It would be interesting to try to apply their methods to tense. I leave this for future research.

10. The terminology is unfortunate since for us the “context set” is really a set of possible worlds (Stalnaker 1968 and 1975 were not concerned with the world/context distinction).

11. In principle, the same point could also be made about subjunctive conditionals, but the difficulty is that there is no consensus on how these should be analyzed semantically (one possible theory is that the subjunctive does not introduce any special semantic constraint and that its contribution is purely pragmatic, arising from an implicature that the speaker could not have marked the conditional as indicative; see von Fintel 1997 for a related theory). In any event, it also appears that whatever semantic/pragmatic contribution a subjunctive mood normally makes disappears when it can be analyzed as the result of agreement with a superordinate attitude verb. Thus, (ia) presents Mary’s act of thinking as possible, while in (ib) there is a presumption that it is counterfactual; but there is no corresponding difference between the way the event of raining is presented in (ia) and in (ib). On the present analysis, this is because the modal features of be raining in (ia) and (ib) result from a rule of morphological agreement with the superordinate attitude verb; as a result, these features need not be present in the interpretive component and thus have no semantic consequences.
(i) a. If she thinks that it is raining, she will take an umbrella.
    b. If she thought that it was/were raining, she would take an umbrella.

12. By no means does this suffice to account for the full behavior of the future. One basic phenomenon omitted from the present discussion is the ability of a future operator to shift the point of evaluation of a present tense that is in its scope, as in the following example:
   (i) John will meet a man who is holding a copy of \( L&P \) in his hand. (Ogihara 1996, 161)

13. Heim observes that in, say, \( [\text{Only I}] \lambda x \ x \text{did my}_x \text{homework} \), the first person possessive pronoun \( \text{my}_x \) must be allowed to range over nonspeakers. This suggests that its features are the result of agreement with the generalized quantifier \( [\text{Only I}] \), which is itself presumed to inherit the features of \( I \). Heim attempts here to reanalyze the syntax of attitude verbs in order to make them fall under the same kind of agreement rules as those needed for \( \text{only I} \) (see Heim 2002 for details).

14. Consider the following:
   (i) [Talking to Orcutt]
   Ralph believes that if you are a spy, you must have caused a lot of trouble.
   Here \( you \) must be quantified-in. On the movement approaches mentioned in the text, \( you \) would have to be raised out of the \( if \)-clause to become an argument of \( \text{believe} \). This is not a satisfactory analysis, since it is known that \( if \)-clauses are islands for movement.

15. As Jacqueline Lecarme (personal communication) observes, the sentence becomes acceptable if I report a male individual’s thoughts about Mona Lisa. Of course, this only confirms the generalization I develop below: thanks to Leonardo, if Mona Lisa is pregnant, she is pregnant in all eternity. And hence her pregnancy \( \text{does} \) span more than nine months . . .

16. The rule stated in appendix B looks more abstract because it encompasses both (38) and (40).

17. Of course, Condition (ii’) would still require that in the counterfactual context in which John is thinking, the description \( \text{the closest world in which Mary has a big belly} \) should in fact pick out the actual world \( c^{-}\text{w} \).

18. On the present definition, if there is no attitude of \( P \)-ing at \( \tilde{t}_w \) in \( w \) by \( \tilde{t}_i \), the sentence is vacuously false.

19. The present analysis would have to be extended to provide a full account of those examples in which the nonbracketed part of (A11a) is embedded in the antecedent of a counterfactual conditional, as in (32b) in the text.

References


Kamp, Hans, and Uwe Reyle. 1984. Indirect discourse. Manuscript, University of Texas at Austin and University of Stuttgart.


21.1 Introduction

The syntactic domain of tense is the clause: tense appears in some form in every clause of a tensed language. Semantic interpretation of tense requires information from context, however. This has been clear at least since Partee’s (1984) demonstration of the anaphoric properties of tense. In this chapter, I will show that the facts about context are quite complex, perhaps more so than has been appreciated. There are three patterns of tense interpretation according to the type of discourse context in which a clause appears. I will introduce the notion of discourse mode to account for the different types of context. I offer an interpretation of tense in Discourse Representation Theory, a framework that is organized to deal with information from the context. I also show that a syntactically based theory can handle contextually based tense interpretation.

I first set out the basic analysis of tense and show how it applies to sentences in isolation (section 21.2). I then discuss types of discourse context (section 21.3), patterns of tense interpretation (section 21.4), and the formal analysis of tense (section 21.5). I conclude with a summary and a prediction about temporal interpretation in tenseless languages (section 21.6).

21.2 Tense in Single Sentences

21.2.1 Syntax

I assume that a tense morpheme is generated in each clause. In Principles-and-Parameters Theory (now the Minimalist Program), tense heads a functional category. In Discourse Representation Theory, the tense morpheme appears under the Auxiliary node in surface structure.

21.2.2 Semantics

My approach to the analysis of tense is based on Reichenbach 1947. Each tense involves three times and conveys information about two relations between them: a
relation between speech time and reference time (SpT and RT), and a relation be-
tween reference time and event time (RT and ET). In the simple tenses (past, pres-
ent, future), ET and RT are the same; for the relative tenses, they differ.

The notion of reference time has been controversial.¹ RT makes the information
associated with tense relatively complex, and some scholars have argued that it is
unnecessary for simple tenses. However, I think that the arguments in favor of RT
are decisive. The examples are from English; languages differ so that the details of
each system must be worked out separately.

The classic argument for RT, due to Reichenbach, concerns the analysis of relative
tenses such as the perfect. The argument is still good. The perfect differs conceptually
but not truth-conditionally from the simple tenses. Consider these examples:

(1) a. Mary arrived.
    b. Mary has arrived.
    c. On Sunday, Mary had (already) arrived.

The difference between (1a) and (1b) is that of temporal standpoint or perspective. In
(1a), the event is set squarely in the past: RT is the same as ET. In (1b), the event is
presented from the standpoint of the present, so that RT is the same as SpT. (1c) is a
past perfect requiring three different times for semantic interpretation: SpT, RT (the
Sunday before), and ET, which precedes that time. (2) states schematic meanings for
the tenses of (1).

(2) Present: RT = SpT, ET = RT
    Past: RT < SpT, ET = RT
    Past perfect: RT < SpT, ET < RT

If simple and perfect tenses are analyzed in this way, we capture both conceptual and
truth-conditional meanings.

A second argument, also due to Reichenbach, concerns the temporal relation be-
tween events and states in multiclause sentences. In (3a), the arrival occurs during the
interval of the smile; in (3b), it precedes the smile.

(3) a. Mary was smiling when John arrived.
    b. Mary smiled when John arrived.

The notion of RT provides a locus for relating the events in a principled manner
(Hinrichs 1986). Similar contrasts occur with events expressed in independent
sentences.

Another argument for RT concerns the phenomena of shifted deixis. As is well
known, deictic adverbials such as now and in three days, normally oriented to the
moment of speech, can orient to a past (or future) time, as in (4).

(4) Mary sat down at the desk. Now she was ready to start work.
In such contexts, the shifted *now* suggests Mary’s perspective. The notion of RT is the anchoring point for this perspective.

Tense interpretation interacts with aspectual information, as the sentences of (3) show. I will briefly introduce the aspectual notions we need.

**Aspect:** Aspectual systems have two components, viewpoint and situation type (Smith 1991). Situation type indirectly classifies a sentence as expressing an eventuality, a state or an event. The information is conveyed by the verb and its arguments (the verb constellation). Aspectual viewpoint, conveyed morphologically, focuses all or part of the eventuality. Sentences with the perfective viewpoint have the simple verb form and focus events with endpoints. Imperfective (progressive) sentences have the verb auxiliary *be* + *ing*; they focus an internal interval of an event, without endpoints. (5) illustrates.

(5) a. Mary walked to school. (Perfective)
   b. Mary was walking to school. (Imperfective)

The perfective focuses events as bounded; the progressive focuses them as unbounded. States are unbounded; in English, they are expressed in sentences with the perfective viewpoint.²

The property of boundedness is crucial for the interaction of tense and aspect. Bounded events are included in the ET interval (ET ⊆ e); unbounded events and states overlap or surround the ET interval (ET O e). (6) illustrates.

   b. John was working. Lee was at school.

We understand the events of (6a) as taking place within the interval of ET—unstated in these examples. The ongoing event and state of (6b) overlap ET: that is, they hold during the ET interval and are understood to hold before and after it as well.

**Discourse Representation Theory (DRT):** The theory introduces entities for individuals, eventualities, and times with each clause of a sentence. Tense information is conveyed by features associated with a given tense. These features trigger conditions in the discourse representation structure (DRS) that relate the times. The time entities are distinguished as *t₁*, *t₂*, *t₃* and associated with an interpretation in the DRS.

Aspectual information is interpreted by rules that construct the DRS. The construction rules interpret a given verb constellation as expressing a state, telic event, and so on. The information appears as a condition on the eventuality introduced for the clause.

21.2.3 Tense Interpretation of Single Sentences

The interpretation of tense is deictic for single sentences: all simple tenses are oriented to SpT. This point is not controversial. As we have seen in the examples above,
past tense conveys that RT precedes SpT, while present tense conveys that RT and SpT are the same.\textsuperscript{3} For concreteness, I give a semiformal statement for two sentences. The first has past tense and expresses a bounded event, the second has present tense and expresses an ongoing, unbounded event; \( t_1 = \text{SpT} \); \( t_2 = \text{RT} \); \( t_3 = \text{ET} \).

(7) a. John left. 
\[ E: \text{bounded event} \]
\[ t_2 < t_1, \; t_3 = t_2 \]
\[ \text{ET} \subseteq e \]

b. John is working. 
\[ E: \text{unbounded event} \]
\[ t_2 = t_1, \; t_3 = t_2 \]
\[ \text{EOE} \]

The construction of detailed DRT representations is discussed in section 21.5.

\textbf{21.3 Sentences in Context}

I now turn to the interpretation of tense in sentences in discourse. The question immediately arises of how to investigate this topic: what does one look at? My first thought was to use genre as an organizing principle. Discourse is traditionally classified into genres according to purpose and other criteria; thus, novels, newspaper articles, and business letters constitute separate genres. Texts of different genres might function as different types of context. I use the term \textit{discourse} for spoken and written material, \textit{text} for written. Only written texts will be discussed here.

The standard genre categories function as different types of activity; they are rooted in context and culture. The notion of activity type is introduced in an important article on discourse structure by Levinson (1979). An activity type is “any culturally recognized activity . . . in which language plays a significant role . . . [They are] goal-defined, socially constituted, bounded, events with constraints on participants, setting . . . and allowable contributions” (1979, 368). Levinson develops a strong case for the pragmatic basis of activity types.

The pragmatic basis of genre makes it inappropriate for close linguistic analysis. Levinson’s argument applies to genre categories.\textsuperscript{4} Pragmatic factors, including detailed expectations, predominate in the understanding and interpretation of genre. People recognize the structure of a discourse by using their cultural and contextual knowledge. This is another take on the well-established point that structure is not “in” the text but is constructed by the receiver.

Genre is also too global a category: texts of a given genre tend to be quite varied when examined carefully. In narratives, for instance, events and states occur in sequence, bound together by a unifying theme. But narrative episodes rarely consist
entirely of such sequences. There are descriptive passages, and sometimes commentary. Similarly in the expository genres, narrative sequences that depart from the main argument line are often found.

21.3.1 Discourse Mode
At the local level of the passage, one recognizes stretches of text that are intuitively of different types—for example, narrative, description, argument. These stretches tend to have a particular force and a characteristic cluster of linguistic features and interpretations. Narrative, description, and argument make different contributions to a text: they have different linguistic features and interpretations, including tense interpretations.

I introduce the notion of discourse mode for such stretches of text (Smith 2000). I posit five modes: Narrative, Report, Description, Information, and Argument. The list is not exhaustive (it ignores conversation and procedural discourse, for instance), but it includes types that appear in many texts. The list of modes should be relatively short if it is to make significant generalizations. One way to keep it short is to allow for variation within a mode. I will assume that the modes vary in point of view, or authorial stance, and in level of formality. Discourse modes cut across genre categories.

The modes can be characterized with two interpreted linguistic features, both relating to temporality. One feature is the type of entity introduced into the universe of discourse; the second is the principle of advancement.

One way of getting at what a text is about is to ask what sorts of things the text deals with. More formally, we ask what kinds of entities the text licenses in semantic representation. The most familiar entities are eventualities: events and states and a larger category of statives, sentences that express generalizations due to pattern or regularity. There is another important category, that of abstract entities, which consists of facts and propositions. Texts also introduce entities for individuals and times, not relevant here.

21.3.2 Types of Entities
Entities are conceptual categories, expressed linguistically at the level of the clause. They are realized by verb constellations and nominal forms. The linguistic forms have distinct distributional properties and are covert categories of grammar in the sense of Whorf (1956). Therefore, the types of entities invoked by a text are interpreted linguistic features.

The main types of entity are eventualities, general statives, and abstract entities. They differ in temporality: eventualities and general statives are temporally located in the world, whereas abstract entities are not. (8)–(9) illustrate the first two categories.
(8) **Eventualities**
   a. Mary won the race. John opened the door. Lee rehearsed. (Event)
   b. The cat is on the table. Sam is tired. Mary likes ice cream. (State)

(9) **Stative (general)**
   a. The lion has a bushy tail. (Generic)
   b. John often fed the cats last year. (Generalizing-habitual)

The linguistic properties that distinguish events and states are quite well known (Vendler 1957; Dowty 1979; Smith 1991). General statives are exemplified in (9). (9a) is a generic sentence, denoting a kind; (9b) makes a generalization over patterns of situations; both are discussed in Krifka et al. 1995. Generics and generalizations are semantically stative, though the latter have the syntactic characteristics of events (Smith 1991).

Linguistic expressions of abstract entities—facts and propositions—also have distinct characteristics when they occur as complements of particular predicates. The point was first made by Vendler (1967, 1972); it has been elaborated by Asher (1993) and Peterson (1997). Abstract entities are important for this study because they predominate in certain text modes. The following examples illustrate:

*Abstract entities: not temporally located*

(10) **Facts: objects of knowledge**
    a. I know that Mary refused the offer.
    b. Mary’s refusal of the offer was significant.

(11) **Propositions: objects of belief**
    a. I believe that Mary refused the offer.
    b. Mary’s refusing the offer was unlikely.

Not all expressions of abstract entities have distinct linguistic characteristics. Sentences that directly express facts and propositions cannot be identified linguistically, although they can be so identified when they appear as clausal complements.

There is a strong correlation between the discourse modes and types of entity. Entities of different types predominate in each of the discourse modes. They fall into two groups on the basis of temporality, as summarized in (12) and (13).

(12) **Temporal**
    Narrative: events, states
    Report: events, states, general statives
    Description: states, statives, ongoing events

(13) **Atemporal**
    Information: facts, statives
    Argument: abstract entities, general statives
This summary ignores the question of how to decide when a given type of entity predominates in a text. The question will be addressed in further work.

21.3.3 Advancement

All texts advance through a structured domain, but not in the same manner: texts of different modes have different principles of advancement. Advancement is a linguistic feature in the sense that information in the text gives rise to interpretation. There is also a literal sense of advancement, in which a hearer or reader processes the text unit by unit.

In the temporally organized modes, a text advances as location changes—time or space. The text modes of Argument and Information are not temporally organized, though they may include eventualities that are temporally located.

To understand text advancement in the atemporal modes, we need something other than dynamism. We find it in the notions of metaphorical location and motion, from the spatial domain. The semantic domain of an atemporal discourse can be seen as terrain to be traversed: a metaphorical space. The discourse advances as key reference moves metaphorically from one part of the domain to another. Such motion is closer to spatial than to temporal location. The spatial domain is basic to our understanding of the world, and it underlies our notion of time (Clark 1973). Notions associated with space underlie the organization of atemporal texts. Space is not unidimensional, like time: rather, it allows directions of various kinds. Similarly, direction in a text domain can be hierarchically up or down, lateral, and so on. We need the complexity of space to model metaphorical motion.

I suggest, then, that the notion of discourse mode accounts nicely for the different types of passages that appear in discourse. The discourse modes cut across genre lines. For further discussion of the discourse modes, see Smith 2003.

21.4 Patterns of Tense Interpretation

Tense is interpreted differently in the discourse modes of Narrative, Report, and Description. There are patterns of interpretation for passages of each type. I discuss here only the discourse modes in which advancement depends on temporal factors.

21.4.1 Narrative

Narrative has been studied extensively and is fairly well understood. The main unit is the episode, a sequence of consequentially related events and states; the order in which they occur is crucial for understanding (Moens 1987). The essence of Narrative is dynamism, in which events and states are related to each other. After the first sentence of a narrative, the times are sequential or simultaneous with previous times in the text. They are not related to SpT. The narrative fragments in (14) illustrate.
(14) **Narrative: states, events related to each other**

   a. When I got to Harry’s Waldorf Towers apartment, they were winding up the meeting downstairs. Harry appeared about a half-hour later, greeted me warmly, went immediately to the telephone. (Lillian Hellman, *Scoundrel time*, Little, Brown, Boston, 1976, 55)

   b. One night in November 1961, Alice went into the tub room to put some clothes in her old wringer washing machine. When she turned on the light, there was a rat the size of a small cat sitting on the machine. (J. Anthony Lukas, *Common ground*, Knopf, New York, 1985, 149)

   c. 1 She put on her apron, took a lump of clay from the bin and weighed off enough for a small vase. 2 The clay was wet. 3 Frowning, she cut the lump in half with a cheese-wire to check for air bubbles, then slammed the pieces together much harder than usual. 4 A fleck of clay spun off and hit her forehead, just above her right eye. (Peter Robinson, *A necessary end*, Avon Books, New York, 1989, 182)

In these fragments, narrative time advances with perfective event sentences and with explicit temporal adverbials, and fails to advance otherwise. This is the basic finding of discourse dynamics (Hinrichs 1986; Kamp and Rohrer 1983; Partee 1984). I take it that the basic case of narrative is sequence; I ignore flashbacks, changes of scale, and the like.⁶

To see just how narrative dynamism works, let us consider (14c) in more detail. The narrative conveys a series of events that follow each other at a time prior to SpT. There is one state (sentence 2), which is simultaneous with the time of the preceding event. The time line in (15) illustrates; *E* indicates an event, *S* a state.

(15) **Time line for (14c)**

\[
\begin{array}{cccccccc}
\ldots & t_1 & \ldots & t_2 & \ldots & t_3 & \ldots & t_4 & \ldots & t_5 & \ldots & t_6 & \ldots & t_7 & \ldots & < \text{SpT} \\
E_1 & E_2 & E_3 & E_4 & E_5 & E_6 & E_7 \\
S_1
\end{array}
\]

Aspectual information provides the dynamism or lack of it in (14c). Bounded events occur in sequence; states are simultaneous with the time of the preceding event.

Tense conveys continuity in these fragments. Past tense is not interpreted deictically: if it were, the events would be related to SpT rather than to each other. Nor do we interpret (14) as expressing a series of events successively prior to one another. The same pattern holds for narratives in the present or future tense.

There are two principles for tense interpretation in Narrative. If a sentence expresses a bounded event, RT advances. If the eventuality is not a bounded event, RT does not change and tense is anaphoric. The two patterns are set out in (16).
(16) a. *Continuity pattern, narrative advancement: bounded events*

\[ \begin{align*}
E_1 & \cdots \cdots \ E_2 \cdots \cdots \ E_3 \cdots \cdots \\
RT_1 & < SpT \quad RT_2 > RT_1 \quad RT_3 > RT_2
\end{align*} \]

b. *Anaphoric pattern, simultaneous with preceding RT: states, progressives*

\[ \begin{align*}
E_3 & \cdots \cdots \ S_1 \cdots \cdots \\
RT_1 & \quad RT_2 = RT_1
\end{align*} \]

Similar principles are stated by Kamp and Reyle (1993) using a Reichenbach-based approach. These principles do not account for advancement in the other two temporal discourse modes, as I will now show.

### 21.4.2 Report

Reports give an account of eventualities and their significance from the temporal standpoint of the reporter. They are, like narratives, mainly concerned with events and states. It is not primarily the dynamism of events but the position of the reporter that advances the text. Eventualities are related to SpT, rather than to each other. In reports there is “... an immediate link between [SpT] and the reported events” (Caenepeel 1995, 231). I have found report passages in texts of various genres.

Reports are discussed in Caenepeel 1995 as a genre. This is not surprising: there is a certain correspondence between genres and modes. For each mode, there is a genre in which that mode predominates: narratives predominate in fiction, reports predominate in (certain) newspaper articles, and so on.

In reports, eventualities are ordered with respect to an advancing SpT and to changing location. Thus, tense is deictic in reports. Order of presentation, a key factor in narratives, is less significant in reports. Caenepeel observes that the order of presentation could be changed in a report without changing the information given. The deictic interpretation of tense is like that of independent sentences, as in examples (7)–(8). (17) illustrates; the first fragment appears in Caenepeel 1995.

(17) *Report: eventualities related to SpT*

a. 1 The war to free Kuwait began a few minutes before midnight last night, as squadrons of American fighter-bombers blasted Baghdad. 2 And early today the Ministry of Defense confirmed that British forces were also involved “in military action.” 3 The American F-15Es took off at 9:50 pm GMT from the largest US air base in central Saudi Arabia. 4 “There were loud explosions, obviously bombs, in three parts of the city,” the American Cable News Network, CNN, quoted one of its correspondents as saying... 5 The White House said the US-led attack was aimed at Iraqi troops in both Iraq and Kuwait. 6 The American broadcasting networks in the Iraqi capital reported brilliant flashes of light, thunderous explosions and heavy anti-aircraft fire in the sky. 7 The attack began about 3am on a moonless
night. 8 A squadron of British Tornado ground attack aircraft also took off from Bahrain just after 1am. (*Daily Express* 1991)

b. 1 A week that began in violence ended violently here, with bloody clashes in the West Bank and Gaza and intensified fighting in Southern Lebanon. 2 Despite the violence, back-channel talks continued in Sweden. 3 Israeli, Palestinian and American officials have characterized them as a serious and constructive dialogue on the process itself and on the final status issues. 4 News accounts here say that Israel is offering as much as 90 percent of the West Bank to Palestinians, although it is difficult to assess what is really happening by the bargaining moves that are leaked. (*New York Times* 2000)

The past tenses and adverbs in these fragments are deictic, relating to SpT: *last night* and *early today* in (17a) indicate the position of the reporter, as does *here* in (17b). There are also changes of tense. (18) gives a time line for (17b).

(18) *Time line for (17b)*

\[
\begin{array}{cccc}
E_1 & \ldots & E_2 & \ldots \\
S_1 & \ldots & S_2 & \ldots \\
RT: & < \text{SpT} & < \text{SpT} & = \text{SpT} & = \text{SpT}
\end{array}
\]

Sentences 3–4 are in the present tense, so that the eventualities are simultaneous with SpT; sentence 3, in the present perfect, expresses the result state of a past event.

Passages in the deictic pattern often have sentences with different tenses, as in the fragments above. As usual, aspectual information interacts with tense interpretation. Eventualities that are unbounded overlap with the present or a past RT. Bounded events are included in a past RT.

Bounded events are not expressed in present tense sentences. This is true of language generally. Thus, in English all present tense sentences express unbounded situations, owing to the interaction of present tense and aspectual viewpoint. There are exceptions, marked cases such as the “sports announcer present” or the historical present. Present progressive sentences express ongoing events (19a); present simple (perfective) sentences express states (19b) or generalizations—also semantically stative (19c).

(19) a. Mary is eating an apple.
    b. Mary is tall/pleased.
    c. Mary feeds the cat.

The deictic pattern of past tense interpretation is given schematically in (20).

(20) *Deictic tense interpretation*

\[
\begin{array}{cccc}
E_1 & \ldots & E_2 & \ldots \\
S_1 & \ldots & S_2 & \ldots \\
RT: & < \text{SpT} & < \text{SpT} & < \text{SpT} & < \text{SpT}
\end{array}
\]

In the deictic pattern, eventualities and deictics are oriented to SpT.
21.4.3 Description

Description is portrayal of a scene or state of affairs by means of language. In description, pictures are drawn of particular objects, characters, and mental states, as Cairns notes (1902, 114). Description is indispensable to narration, also common in works of other modes, and predominant in travel books.

In descriptive passages, time is stable or suspended, without dynamism. If there is motion, it does not involve significant changes of state and there is no sense that time advances. Tense is anaphoric: all the sentences of a given passage have the same RT. Advancement is spatial: the text advances as the reader goes from one part of the scene to another.

Usually a locative adverbial appears at the beginning of a description, with scope over the material that follows; such a phrase appears in both examples in (21).

(21) Description
a. 1 In the passenger car every window was propped open with a stick of kindling wood. 2 A breeze blew through, hot and then cool, fragrant of the woods and yellow flowers and of the train. 3 The yellow butterflies flew in at any window, out at any other, and outdoors one of them could keep up with the train, which then seemed to be racing with a butterfly. 4 Overhead a black lamp in which a circle of flowers had been cut out swung round and round on a chain as the car rocked from side to side, sending down dainty drifts of kerosene smell. (Eudora Welty, Delta wedding, Harcourt, Brace, New York, 1945, 1)
b. 1 On the big land below the house a man was ploughing and shouting admonitions to the oxen who dragged the ploughshares squeaking through the heavy red soil. 2 On the track to the station the loaded wagon with its team of sixteen oxen creaked and groaned while the leader cracked his whip that reached to the horns of the leader oxen and yelled on a note only they understood.... 3 On the telephone wires the birds twittered and sang. 4 The wind sang not only in the wires, but through the grasses, and the wires vibrated and twanged. (Doris Lessing, Under my skin, HarperCollins, New York, 1994, 107)

To account for the temporal stability of descriptions like this, I suggest that they be modeled with a durative time adverbial that has scope over the entire passage.

The eventualities expressed in these fragments include states and ongoing events (progressives), which fit the anaphoric pattern discussed above. There are also perfective events, in sentences 2, 3, and 4 of both (21a) and (21b). All are activities. In this context, one interprets them as continuous and/or iterative—for example, the breeze blowing through, the lamp swinging, the birds twittering. The perfective viewpoint of an activity focuses a bounded unit that may but need not coincide with the
endpoints of the activity. In descriptive contexts, the activities are expected to con-
tinue more or less indefinitely; the contribution of the perfective viewpoint to activ-
ities is discussed in Smith 1999a. Perfective events do not fit the anaphoric pattern, 
which is limited to unbounded events.

To reach a better understanding of description, consider (22), a variant of (21b). I 
have changed the example slightly; here, sentence 3 has a telic verb constellation
(walk to school). The descriptive mode is undisturbed and, strikingly, sentence 3 does 
not have dynamic force.

(22) 1 On the big land below the house a man was ploughing and shouting
    admonitions to the oxen who dragged the ploughshares squeaking through the
    heavy red soil. 2 On the track to the station the loaded wagon with its team of
    sixteen oxen creaked and groaned. 3 A group of children walked to school. 4
    On the telephone wires the birds twittered and sang.

In this context, the event of sentence 3 is taken as atelic, an instance of coercion. The 
descriptive mode overrides the potential dynamism of the event.

The coercion effect can be attributed to the tacit time adverbial of description posited above. Within the scope of a durative time adverbial, telic sentences regularly 
undergo a shift of situation type to atelic. This is a general phenomenon (Moens and
Steedman 1987; Smith 1995). One well-known set of examples involves durative time 
adverbials and telic sentences with telic verb constellations.

(23) a. The children walked to school for an hour.
    b. Mary read a book for an hour.

The durative time adverbial overrides the telicity of the internal verb constellation. 
These sentences can only be taken as atelic: there is no sense that the children got to 
school, or that Mary finished the book—on the contrary.

Similarly, A group of children walked to school in (22) is reinterpreted as atelic, 
under the scope of the tacit durative adverbial of description. The actual duration of 
such an adverbial is determined by context. The assumed time is often either the time 
during which the situation is expected to hold—in (21a), perhaps the duration of the 
train trip—or the time it takes for the perceiver to scan a scene and become aware of 
its properties.

In Description, the anaphoric pattern of tense interpretation holds for all event-
tualities. There are coercion effects due to the tacit adverbial of duration.

21.4.4 Summary

Three broad patterns of tense interpretation have been demonstrated for nonfirst 
clauses. Tense conveys continuity, anaphora, or deixis. Each discourse mode has a 
slightly different pattern, as set out in (24).
(24) **Patterns of tense interpretation in the temporal discourse modes**
- Continuity: nonfirst clause, bounded events, narrative mode
- Anaphora: nonfirst clause, unbounded events and states, narrative mode, all eventualities, descriptive mode
- Deictic: default—all other cases

Notice that the narrative pattern departs from the deictic interpretation that is traditionally said to hold of tense. Equally important, other patterns must be recognized to account for the interpretation of tense in discourse.

In the next section, I consider how to account formally for these patterns.

### 21.5 Formal Accounts of Tense Interpretation

I offer an account of tense interpretation in DRT, assuming an extended version that recognizes and records discourse mode. I then show that a syntactically based theory can also deal with the dependence of tense on discourse mode.

#### 21.5.1 Discourse Representation Theory

DRT was developed to account for conceptual as well as truth-conditional meaning, and to deal with contextual dependencies. Tense interpretation can be nicely accounted for within this theory. Indeed, an analysis of Narrative in the DRT framework is given by Kamp and Reyle (1993). Here I sketch a somewhat different analysis of narrative advancement and the other patterns of interpretation.

In DRT, syntactic surface structure is the basis for construction of a discourse representation structure (DRS). Construction rules interpret the information of surface structure in terms of entities and conditions, which are encoded in the DRS. When available, linguistic context also provides information for the construction rules.

##### 21.5.1.1 Independent Sentences

The DRT treatment of independent sentences, outlined above, is presented here in some detail. Syntactic surface structures are the input to construction rules; the output of the rules appears in the DRS. In this sketch, I provide a surface structure and a DRS; I will not state the construction rules. See Kamp and Reyle 1993 for detailed discussion of the construction algorithm.

Surface structures are relatively simple, as illustrated schematically in (25b); IP = Infl Phrase; AuxP = Auxiliary Phrase. AuxP has the progressive auxiliary, or the zero morpheme with the simple verb form. Information percolates up the tree so that it is available at the IP node: tense, viewpoint (Ø in this case); the event entity e; the individual entities x and y.
Tense, $\varnothing$, $e$, $x$, $y$ trigger entities and conditions that are introduced into the DRS. Information about them arises as follows: the VP is associated with an event or state entity; the participants appear in the VP; AuxP is associated with the perfective or imperfective viewpoint.

The tense morpheme triggers the introduction of three temporal entities into the DRS, and two features that relate them. The times will be notated simply as $t_1$, $t_2$, $t_3$; they are associated with the temporal concepts SpT, RT, ET. The features, A and B, relate the times to each other, providing what Kamp and Reyle (1993) call the “two-dimensional theory” of tense. I shall say that the A feature relates $t_1$ and $t_2$, and the B feature relates $t_2$ and $t_3$. The conditions interpret $t_1$ as SpT (the default case), $t_2$ as RT, $t_3$ as ET.

Tense is deictic in (25a), since it is an independent sentence. The viewpoint is perfective, so that the event is included in ET, $t_3$. The past tense has the A and B features introduced above: A feature $t_2 < t_1$; B feature $t_2 = t_3$. This information is introduced into the DRS for (25a), roughly as in (26): the entities appear at the top, the conditions that specify them below. The A and B features appear on lines 2 and 3 of the DRS; $t_2$ and $t_3$ are specified only relationally because no time adverbial or context gives other information for interpreting the sentence. Line 4 specifies the aspectual information: the event is included in ET. The other lines specify the event and individual entities.
When constructed for a discourse, the DRS is dynamic: each sentence is interpreted with information already in the DRS, so that the DRS is a cumulative representation.

The DRS in (26) illustrates the deictic interpretation of tense, which holds for independent sentences and for passages in the Report mode. In this pattern, a sentence is related to SpT according to the content of the A and B features associated with it.

(27) Deictic Principle of tense interpretation

A sentence S involves three times. \( t_1 = \text{SpT} \).

Feature A: \( t_2 \) is related to \( t_1 \) according to the tense of S.

Feature B: \( t_3 \) is related to \( t_2 \) according to the tense of S.

The principle applies to independent sentences and as a default to other sentences unless another principle applies. In the perfect tenses, not discussed here, the B feature provides that \( t_3 \) either precedes or follows \( t_2 \).

21.5.1.2 Continuity and Anaphora Tense Patterns The interpretation of tense for non-first sentences of passages in the Narrative and Description modes requires a departure from the deictic pattern. Moreover, there are differences between the Narrative and Description modes. In this section, I offer an account of all three patterns in the DRT framework. For the non-deictic patterns, I use a technique of analysis that in effect neutralizes the A feature of tense.

Information about the mode of a given passage must be available to the construction rules; each mode will trigger the appropriate rule(s) of tense interpretation. I will assume that the mode can be determined by considering types of entities and other factors. Mode information will be stated in an extended DRT along lines suggested by Asher (1993) for handling discourse coherence relations.\(^9\) Since it depends on mode, tense may be interpreted at a relatively late stage in the construction process.

SpT plays no role in the continuity and anaphora tense patterns, but the notions of ET and RT are needed. Recall that RT is relevant to related eventualities, shifted
deixis, and tenses where ET ≠ RT (the perfect and “future in the past”). The notion of ET is needed for the relative tenses (not discussed here) and to relate aspectual information to time.

Accordingly, the DRS for these patterns will omit the temporal entity \( t_1 \) (SpT). This will have the effect of neutralizing the A feature associated with tense, the feature that gives the relation between \( t_1 \) and \( t_2 \). Without a temporal entity \( t_1 \), no information can be stated concerning the relation between \( t_1 \) and \( t_2 \). The rules will provide that tenses interpreted in the continuity and anaphora patterns introduce two times, \( t_2 \) and \( t_3 \) (RT and ET), into the DRS. This neutralizing technique does not require a change in the information associated with tense. Either two or three times will be associated with a tense, according to the context. If three times are introduced, both A and B features will be active; if two, only the B feature will be active.

Assuming this technique, we need principles for calculating continuity and anaphora interpretations of tense for narrative and descriptive passages. For narrative, I adapt the ideas of Kamp and Rohrer (1983) and Kamp and Reyle (1993). Advancement occurs with a bounded event sentence: in such cases, RT advances, following the preceding RT. This is the Continuity Principle. The actual time of advancement may be specified adverbially; otherwise, it is taken as the standard run time for the type of event expressed. The Limited Anaphora Principle provides that RT does not advance with sentences expressing unbounded eventualities: ongoing events, states, and general statives are simultaneous with the preceding RT.

(28) **Narrative Continuity: Advancement Principle**

If \( S \) is a nonfirst sentence of a narrative passage, RT\(_x\) immediately preceding, and if \( S \) expresses a bounded event:

\[
RT_y > RT_x
\]

(29) **Narrative: Limited Anaphora Principle**

If \( S \) is a nonfirst sentence of a narrative passage, RT\(_x\) immediately preceding, and if \( S \) expresses an unbounded eventuality:

\[
RT_y = RT_x
\]

For simplicity, I have avoided sentences where ET ≠ RT. They include perfect tenses and the “future in the past,” as in *On Sunday, Mary had arrived three weeks ago* and *Mary said that she would leave*. Sentences like this do not advance narrative; they are stative and fall under the Anaphora Principle.

I illustrate the Continuity and Anaphora Principles in a DRS for a narrative fragment of three sentences; the first two introduce events, the third introduces a state. The first sentence introduces three times (subscripted a) in the DRS. The others introduce two times (subscripted b, c). The events (e) are numbered 1, 2; \( s \) is the state. The entities are all introduced at the top of the DRS.
This DRS provides two RTs \( (t_2) \) for the three sentences: the first is specified as prior to SpT on the Deictic interpretation, line 2; the second follows the first by the Advancement Principle, line 8. The third RT is equal to the second by the Anaphora Principle, line 15. The events are included in the intervals of \( t_3 \) (ET), lines 4 and 10; the state overlaps \( t_3 \), line 17.

(30) 1 Mara put on her apron.
    2 She took out a lump of clay.
    3 The clay was wet.

<table>
<thead>
<tr>
<th>( t_{1a} )</th>
<th>( t_{2a} )</th>
<th>( t_{3a} )</th>
<th>( e_1 )</th>
<th>( x )</th>
<th>( y )</th>
<th>( t_{2b} )</th>
<th>( t_{3b} )</th>
<th>( e_2 )</th>
<th>( z )</th>
<th>( w )</th>
<th>( t_{2c} )</th>
<th>( t_{3c} )</th>
<th>( s )</th>
<th>( u )</th>
</tr>
</thead>
</table>
1. \( t_{1a} = \) SpT (Deictic)  
2. \( t_{2a} < t_{1a} \)  
3. \( t_{2a} = t_{3a} \)  
4. \( e_1 \subseteq t_{3a} \)  
5. \( x = \) Mara  
6. \( y = \) her apron  
7. \( e_1: \) Mara put on her apron  
8. \( t_{2b} > t_{2a} \) (Advancement)  
9. \( t_{2b} = t_{3b} \)  
10. \( e_2 \subseteq t_{3b} \)  
11. \( z = x \)  
12. \( w = \) a lump of clay  
13. \( e_2: \) She took out a lump of clay  
14. \( t_{2c} = t_{2b} \) (Anaphora)  
15. \( t_{2c} = t_{3c} \)  
16. \( s \subseteq t_{3c} \)  
17. \( u = w \)  
18. \( s: \) The clay was wet

For descriptive passages, the Advancement Principle must be suppressed, and the Anaphora Principle extended to apply to all types of eventuality.

(31) **Description: Full Anaphora Principle**

If \( S \) is a nonfirst sentence of a descriptive passage, \( RT_x \) immediately preceding:

\[
RT_y = RT_x
\]

For contexts not identified as Narrative or Description, the Deictic Principle of tense interpretation applies.
The principles use the technique of introducing two temporal entities in the DRS for tenses interpreted in the continuity and anaphoric patterns. This technique neutralizes the A feature associated with tense. It decouples tense from SpT in a given sentence and allows the statement of narrative advancement in terms of RT.  

21.5.2 The Syntax-Based Approach

Tense interpretation with a Reichenbach flavor has also been considered extensively in the generative framework of Principles-and-Parameters Theory, now the Minimalist Program (Hornstein 1990; Zagona 1990). This framework provides that temporal and aspectual information appears in syntactic structure, including Logical Form (LF). Tense either originates syntactically as a verbal affix and moves to a functional tense projection at LF (Stowell 1996) or is generated under TP (Tense Phrase; Thompson 1999). Semantically, tenses are dyadic predicates, relational expressions that directly encode relations between temporal entities (Giorgi and Pianesi 1997).

Deictic tense interpretation is not problematic in this framework because it requires no information from outside the clause. I therefore proceed directly to a discussion of the other patterns.

The key factor in nondeictic tense interpretation is dependence on context. The RT of a nonfirst sentence either follows the preceding RT or is simultaneous with it (assuming no adverbial information). The dependence can be handled in a syntax-based theory by providing that a temporal element appear in a topiclike position high in the syntactic tree (Stowell (1996) makes a similar proposal, though for a different purpose). Then a dependent RT would be bound by the RT element in the preceding sentence, also high in the syntactic tree. Assuming that this notion can be implemented, I will adapt the neutralizing technique to the syntactic framework.

The analysis must provide that \( t_1 \) is neutralized in certain contexts. Assume that three times are generated in all sentences. In Narrative and Description contexts, the SpT entity of a nonfirst sentence will be bound by the preceding SpT entity. Then it will not be available for the relation between SpT and RT, so that this relation will be neutralized (however it is expressed).

The structure that I assume is essentially the one proposed by Thompson (1999), except for the final position of SpT. There are three temporal entities and an eventuality entity. The latter is associated with the head of VP. ET is also associated with VP (Thompson gives persuasive syntactic evidence for this). RT is associated with the head of AspP (Aspect Phrase). SpT is generated under TP and moved to Spec,CP, where it is in a position to be bound by a form in a preceding sentence.  

The tree structure in (32) has the NP subject raised to Spec,IP; TP is omitted for simplicity.
The Continuity and Anaphora Principles can be adapted to a syntactically based representation, given the possibility for dependence on context. I do not attempt to state the principles here, but note simply the information that they would require. Like the principles stated above for a DRT approach, they would relate the RTs of different sentences. The principles would need access to context for information about discourse mode and whether a temporal entity in the preceding sentence binds the highest temporal entity in the tree. Thompson (1999) presents an analysis that is similar to the continuity pattern. She uses “linking rules” that relate the RTs of clauses and independent sentences with the adverb then.

The principles also need aspectual information, available as shown in (32). Recall that in the continuity pattern, RT_y follows RT_x for a sentence expressing a bounded event. In the anaphora pattern, RTs are simultaneous for unbounded eventualities (as in Narrative) or for all eventualities (as in Description). In the deictic pattern, adjacent sentences are not temporally related to each other.

21.6 Conclusion

21.6.1 Summary
Tense interpretation depends on the discourse context in which a sentence or clause appears. The relevant information about context is determined at the level of the passage. I introduce the notion of discourse mode to account for passages of different types. There are five discourse modes, each with defining linguistic characteristics of a temporal nature. They differ in the types of entities they introduce and their principle of advancement. Three of the discourse modes are temporally organized, with
different tense interpretation principles for each one. In the Report mode, tense is
deictic; in the Narrative mode, tense conveys either continuity or limited anaphora;
in the Description mode, tense is fully anaphoric. Aspectual information is an essen-
tial factor in tense interpretation.

I have shown how the dependency of tense on context can be handled in dynamic
semantic theories such as Discourse Representation Theory, and I have sketched an
approach in a syntactically based theory.

21.6.2 Tenseless Languages
The different patterns of tense interpretation have implications for tenseless lan-
guages. The natural question to ask about such languages is how the information
of tense is conveyed. Let us assume that the deictic pattern is basic for languages
generally, including tenseless languages. We might expect that analogues to the other
patterns can be found and that they are triggered by additional information in the
context. In the English fragments presented above, this information comes from dis-
course mode.

The default for tenseless languages follows the deictic pattern for present tense:
unbounded eventualities are taken as present, bounded events are taken as past (e.g.,
in Mandarin Chinese and Navajo; Smith 1991). The study of discourse modes sug-
ggests that nondefault interpretations are triggered by additional information in the
context. More specifically, we would expect that in tenseless languages, explicit cues
can be found for the nondefault cases. I list the main cases in (33), using examples in
English (for simplicity, I ignore the interpretation of future time).

\[(33) \begin{align*}
\text{a. Unbounded events in the past} \\
& \quad \text{Mary was drawing a circle.} \\
\text{b. Unbounded states in the past} \\
& \quad \text{Kim was rich.} \\
\text{c. Bounded states in the past} \\
& \quad \text{John was here yesterday. (but isn’t now)}
\end{align*}\]

I am currently exploring the predictions about tenseless languages for Mandarin
Chinese in joint work with Mary Erbaugh (Smith and Erbaugh 2001).

Notes

I would like to thank the members of the audience at the International Round Table on the
Syntax of Tense and Aspect for helpful comments and questions.

1. There are some well-known difficulties with Reichenbach’s theory: in the abstract, it predicts
more temporal relations than are found in natural language; and the relations between times
is not always clear. These difficulties are not crippling, and various proposals have been made
to overcome them (Comrie 1985; Hornstein 1990). I will use the Reichenbach-based approach
developed by Kamp and Reyle (1993)—with some differences, which I point out below.
2. The temporal schema of a state does not include its endpoints: changes in and out of a state are not part of the state itself. The perfective viewpoint focuses the temporal schema of a state and thus expresses an unbounded eventuality (Smith 1991).

The progressive (imperfective) viewpoint appears neutrally only with events. There are some marked stative progressives, for example, *I'm really loving this walk.*

3. For such cases, Partee (1984) suggests anaphoric reference to a time established in the context.

4. Levinson is interested in relating the structure of a discourse to its function. “Wherever possible,” he writes, “I would like to view structural elements of an activity as rationally and functionally adapted to the point or goal of the activity—functions members of the society see the activity as having” (1979, 369). Levinson recognizes divisions of an activity into sub-units: court case, seminar, and so on. Within each unit, there may be prestructured sequences required by conventions and other parts.

5. I identify key reference as the referent of the NP that plays a focal role in a clause, usually the role of theme (for discussion, see Smith 2003).

6. There are many departures from the sequential norm. Events may appear in reverse order; there may be a change of level from the general to the particular; events may be simultaneous. For instance, many simultaneous events are presented in E. L. Doctorow’s novel *Ragtime,* as James Higginbotham has pointed out to me.

7. Kamp and Rohrer note that “no event whose duration is properly included within that of the entire discourse may be reported in the present tense” (1989, 72). They suggest that a presupposition leading to it underlies verbal communication. The presupposition is that verbal expression takes place only after the thought it expresses has been conceived. Moreover, communication is in principle instantaneous; communication of a bounded event, even if instantaneous, requires at least one instant after the completion of the event.

8. In some cases, \( t_1 \) is an orientation time other than SpT—for instance, in complex sentences where a complement clause is oriented to a time established in the main clause.

   (i) The senator will predict next week that in a year he will have resigned.

   Here the complement RT is a year from the main clause RT (*next week*), and auxiliary *have* in the complement indicates that ET is prior to RT. The main clause provides the orientation time to which *will* is related.

9. Asher (1993) proposes an extension of DRT, Segmented DRT. The extended theory includes information about discourse coherence relations. I assume that a similar extension would be an appropriate place for information about discourse mode.

10. A different approach to the interpretation of tense in narrative is presented by Kamp and Reyle (1993). In their version of the two-dimensional analysis, tense introduces two times for all clauses and a third time is calculated, the temporal perspective point (similar to Reich- enbach’s RT). Kamp and Reyle use these times to interpret independent and first sentences on the deictic pattern. They add another time, the Rpoint, for nonfirst sentences. They state principles using the four times for advancement and the limited anaphora of narrative.

   Their account could easily be augmented to deal with the other patterns presented here. They too would have to identify and note Narrative and Description contexts. For Description, the Advancement Principle would be suppressed and the Anaphora Principle extended to all eventualities.
11. In Thompson’s analysis, SpT is associated with the head of TP, located above AspP.
12. Thompson claims that there is no need to posit independent principles to account for the discourse behavior of tense, a point that is called into question by the material presented here.

References

The class of true modal verbs in English is usually understood to include auxiliary verbs conveying possibility and necessity (including predictive future) that lack non-finite morphological forms; from a syntactic perspective, these verbs occur only in finite clauses (as opposed to infinitives or gerunds). Nevertheless, the true modals do not inflect for third person singular agreement, unlike normal present tense verbs. When they are negated, true modals always precede the negative particle *not*, regardless of their understood scope relative to negation, and never give rise to *do*-support.

The true modals include *can, could, may, might, must, shall, should, will*, and *would*. All of these select bare VP complements, for which a small-clause raising analysis is often assumed (see, e.g., Stowell 1983). The modal verb *ought* likewise occurs only in an uninflected finite form, though it takes a *to*-infinitive complement, rather than a bare VP. Finally, *need* behaves like a true (necessity) modal when it selects a bare VP complement, having only an uninflected nonfinite form, though it also occurs as a regular control verb taking a *to*-infinitive complement. Modal *need* occurs only in negative environments, like its Dutch counterpart *hoeven*. These facts are illustrated in (1) and (2).

(1) a. (I believe that) Sam may/might/must/should/will (not) leave early.
   b. *(I believe that) Sam mays/mights/musts/shoulds/wills leave early.
   c. *(I believe that) Sam doesn’t may/might/must/should/will leave early.
   d. *I believe Sam to may/might/must/should/will leave early.

(2) a. (I believe that) Sam need not leave early.
   b. *(I believe that) Sam needs not leave early.
   c. *(I believe that) Sam need not to leave early.
   d. *(I expect that) Sam needs/doesn’t need to leave early.
   e. *I expect Sam (not) to need to leave early.
   f. *I expect Sam (not) to need leave early.
The true modals also differ from other English verbs with respect to the distinction between present and past tense. In a limited set of syntactic contexts, some true modals exhibit a present/past alternation that is similar to what obtains with normal verbs; these include the pairs can|could, shall|should, and will|would in contemporary colloquial American English, as well as may|might in some conservative dialects. But the present/past alternation is semantically neutralized for these verbs in many syntactic and semantic contexts, in a way that has no parallel with normal verbs. Moreover, other true modals, including must, ought, and need (as well as may and might in contemporary American English), do not exhibit any morphological present/past alternation. Of these, must, may, and need behave in many respects like present tense verbs, while ought and might seem to behave ambiguously in precisely those syntactic contexts where the first group of modals exhibits a limited present/past alternation.

The question naturally arises, therefore, whether these true modals should really be considered to involve a morphosyntactic combination of tense with a modal verbal head, or whether instead they should be analyzed in Modern English as distinctive modal heads that occur as alternatives to tense in finite contexts, more or less in the way they were analyzed in the earliest models of generative grammar proposed by Chomsky (1957, 1965). This question has not been definitively resolved in contemporary formal theories of syntax and semantics, despite the development of a rich formal theory decomposing inflectional elements in terms of the theory of functional projections in later Government-Binding Theory and the Minimalist Program.

The question has acquired a new urgency in light of recent proposals by Cinque (1999) and others to greatly expand the set of functional projections associated with tense, aspect, and modality in the context of a broader theory of functional projections associated with various classes of adverbs, auxiliary verbs, and inflectional affixes in the world’s languages. Part of the reason for this is that Cinque has shown that many of the restrictions on the temporal construals of English modals turn out to have parallels in other languages that, at first glance, do not seem to have a distinctive morphological class of true modals on the English pattern. To the extent that these crosslinguistic parallels turn out to be valid, the question arises as to what mechanisms of grammar (and in particular, principles of syntax as opposed to rules of morphology or constructs of semantic theory) are responsible for them.

In addition to the true modals, English has a small number of so-called semimodal verbs, including the necessity modal have-to (i.e., have taking a to-infinitive complement). This semimodal has largely displaced must in many syntactic contexts in modern usage, most notably in order to convey modal necessity at a past time (since must lacks a past tense form), as well as in nonfinite contexts. Unlike the true modals, the semimodal have-to exhibits normal third person singular agreement in the present tense and is free to occur in nonfinite contexts. Modern English also
makes use of adjectives such as able, possible, and necessary, and past participial forms such as allowed, to convey particular types of modal force. For the most part, I will not be concerned with these adjectives and participles, except to contrast them with the modal verbs, largely because they co-occur unexceptionally with tenses in finite clauses and are free to occur in nonfinite clauses. However, I will not ignore the semimodal have-to, since its tense interpretation seems to be subject to some of the same restrictions as that of the true modals, even though (like can/could, etc.) it exhibits a robust present/past alternation.

It is well known that most modal verbs conveying possibility or necessity can be used with either epistemic or root modal force. Root modal construals of possibility modals often involve notions of ability or permission, while necessity modals may carry deontic or quasi-imperative force. Epistemic modal construals may have an evidential or quasi-predictive interpretation. The examples in (3) most naturally allow a root modal interpretation, while those in (4) most naturally allow an epistemic reading.

(3) a. Jack can’t swim.
   b. You must leave immediately.
   c. Sam should be more careful.
   d. They ought to fix that elevator.
   e. Susan may not go out alone at night.

(4) a. That can’t be a dodo bird; they’re extinct.
   b. Jack must have already left; there are no lights on in his house.
   c. It should rain this evening.
   d. There ought to be a subway station somewhere nearby.
   e. George may have already checked in; he arrived a few hours ago.

Because of various restrictions on the availability of each type of reading, some of which are specific to particular modal verbs, not all occurrences of modals are in fact ambiguous along the root/epistemic dimension. For example, can, unlike could, allows an epistemic reading only when it occurs in the scope of negation (including yes/no questions).

(5) a. ??That can be a sparrow; they are common around here.
   b. That could be a sparrow; they are common around here.

Similarly, the possibility modal might has only an epistemic construal in contemporary colloquial American English, even though it derives historically from the past tense form of may, which allows a root modal sense of permission. Nevertheless, the epistemic/root ambiguity is sufficiently pervasive crosslinguistically so as to suggest that homophony is not involved; rather, the ambiguity seems to be analogous to the distinction between anaphoric and deictic construals of pronouns.
Epistemic and root construals of modals differ from each other in terms of how they interact with tense and aspect, as well as with lexical aspectual classes (aktion-sarten). For example, Zagona (1990) notes that when the complement of an epistemic modal is stative, the eventuality time (or the interval of habitual quantification) may be understood to coincide with the modal time (the time at which the modal evaluation obtains), yielding a so-called simultaneous reading. In many contexts this is the most natural reading, though in most cases a future-shifted reading is also possible. When the complement of the modal is eventive, however, it must have a future-shifted reading with respect to the modal evaluation time.

(6) a. John must/should be in class today. (simultaneous or future-shifted)
   b. Joe must/should leave today. (only future-shifted)

(7) a. John could/may be at home. (simultaneous or future-shifted)
   b. Joe could/may take the train. (only future-shifted)

As in other syntactic contexts, habitual and progressive eventive predicates behave like stative predicates with respect to this distinction. Unsurprisingly, if the complement of the epistemic modal contains the periphrastic perfect (have plus the past participle), the complement has a past-shifted interpretation relative to the modal time. These facts are illustrated in (8).

(8) a. John must take the bus to school (every day).
   b. Sam should be lying on the beach by now.
   c. Karen may have already finished her paper.

In contrast, most root modal construals favor a forward-shifted reading of the eventuality time relative to the modal time, regardless of the aspectual class of the complement of the modal, except in the case of ability readings of can and could, for which a simultaneous reading is natural. For the most part, I will abstract away from these aspectual distinctions among the modal complements, though I will return to the case of the periphrastic perfect below.

I will focus instead on another distinction between root and epistemic modals—namely, that epistemic modals generally may not fall under the logical scope of tenses (at least when the tense and modal occur in the same clause), whereas root modals are in general free to do so. More concretely, when a modal verb occurs in a past tense form, the modal evaluation may be understood to hold at a past time in the case of a root modal interpretation, whereas an epistemic construal generally requires the modal evaluation to hold at the utterance time, as though it were a present tense modal. (Actually, this is an oversimplification, since it ignores a distinction between two types of epistemic readings, as I discuss further below.) Conversely, root modals, unlike epistemic modals, may not in general take logical scope over tenses (again, when they occur in the same clause).
In English, these distinctions can be illustrated most straightforwardly with respect to the possibility modals \textit{can} and \textit{could}. When these modals are used to convey the root modal senses of ability and permission, they participate in a semantically viable present/past tense alternation, just like normal verbs. This is illustrated in (9), where \textit{UT} designates the utterance time.

(9) a. Carl can’t move his arm. (ability at UT)
   b. Carl couldn’t move his arm. (ability at a past time)
   c. Max can’t go out after dark. (permission at UT)
   d. Max couldn’t go out after dark. (permission at a past time)

Example (9a) asserts that, at the utterance time, it is not possible for Carl to (habitually) move his arm. In (9b), \textit{could} functions as a past tense form of \textit{can} in (9a); at some time prior to the utterance time, it was not possible for Carl to move his arm. Examples (9c,d) work similarly. In contrast, when \textit{could} is used epistemically in simple sentences, it cannot have a past tense interpretation.

(10) a. Jack’s wife can’t be very rich.
    ‘It is not possible that Jack’s wife is very rich.’
   b. Jack’s wife couldn’t be very rich.
    ‘It is not possible that Jack’s wife is very rich.’
   c. *It was not possible that Jack’s wife was very rich.’

In both (10a) and (10b), the speaker reports his or her epistemic modal evaluation holding at the actual utterance time. Thus, \textit{could} in (10b) does not have a past tense epistemic modal interpretation: it cannot report an epistemic modal evaluation holding at a past time. Furthermore, because the complement of the modal does not contain perfect aspect, it cannot receive a past-shifted interpretation analogous to that of (8c); the possible eventuality of John’s wife (not) being rich is also located at the utterance time. To force a past tense reading of (10b), it is necessary to construe \textit{could} as a root modal involving ability or permission.

Why should this be so? The most natural explanation is surely that true past tense can combine with \textit{can} only in the case of a root modal construal and not in the case of an epistemic construal. But why? Before addressing this question, I will provide more evidence supporting the claim that the distinction does not involve an idiosyncrasy of \textit{can} and \textit{could}, but rather is pervasive to the modal system.

Because \textit{can} and \textit{could} constitute the only true modal pair that exhibits a present/past alternation on a root modal construal, it is not possible to precisely replicate the paradigm in (9) and (10) with other true modals. Nevertheless, the necessity semi-modal \textit{have-to} seems to work in a similar, though not identical way. On its root modal construal, \textit{have-to} exhibits a semantically viable present/past alternation, where the past tense locates the modal evaluation at a past time preceding the utterance time.
(11) a. John has to stay home today because he is sick.
   b. John had to stay home last night because he was sick.

On its epistemic construal, however, the past tense form had to, like epistemic could, is construed as if the modal evaluation time were in the present tense; that is, the epistemic modal judgment must hold at the actual utterance time. Differently from epistemic could, however, epistemic had to locates the eventuality time of its complement in the past, as though it were interpreted like has to have or must have.

(12) a. There has to be at least a hundred people here.
    b. There had to be at least a hundred people there.

   ‘There must have been at least a hundred people there.’

In other words, the morphosyntactic past tense in (12b) is interpreted as though it were under the scope of the epistemic modal have-to, even though, from the perspective of the theory of verbal head movement, it should originate syntactically in a position above that of the modal. This suggests an analysis whereby the epistemic semimodal is required to undergo movement in the derivation of the Logical Form (LF) representation to a position above that of the past tense, which is then interpreted as though it were equivalent to a (nonfinite) perfect under the scope of the semimodal. The semimodal then has an interpretation consistent with its having the status of a present tense form.

This analysis leads to a number of analytical and theoretical consequences. First, the tense-modal scope reversal must be prevented from applying in the case of epistemic could in (10b), since it does not allow an interpretation equivalent to that of can’t have. This suggests that epistemic could is not a morphologically past tense form of epistemic can; this is supported by the fact that epistemic could is free to occur in nonnegative environments, unlike epistemic can. Second, it suggests that the relevant factor requiring the epistemic modal to occur above the domain of past tense holds either at the level of LF or in the semantic representation deriving therefrom (if these two notions are in fact distinct).

Before addressing the nature of the relevant conditioning factor, I will briefly introduce some more data, both from English and from other languages. Although other true modals do not exhibit the full range of paradigmatic variation along the dimensions of present/past and epistemic/root interpretation that we have seen with can/could and have-to, they still conform to the operative generalization that (true) past tense must be construed under the scope of an epistemic modal. For the sake of brevity, I confine my discussion to modals that allow for the possibility of (apparent) past tense forms in at least some syntactic contexts.

I begin by establishing the latter possibility. As Abusch (1997) observes, the modals might and ought, when they occur in a complement clause governed by an intensional verb in a past tense main clause, can be understood to have a modal
evaluation time located in the past; this is actually true regardless of whether they have an epistemic or root modal construal. The same is true of should and could.

(13) a. Caesar knew that his wife might be in Rome. (epistemic)
    b. Susan told me that she ought to stay home. (root)
    c. Max said that he should leave. (root)
    d. Fred thought that there could be at least a hundred people at the reception. (epistemic)

In all of these examples, the modal evaluation can be understood to hold at a past time relative to the actual utterance time. Although this might at first glance appear to be at odds with the generalization that past tense does not take scope over an epistemic modal in the case of (13a,d), a more careful consideration of the facts shows that this is not the case. The first point to note is that the modal evaluation time in these examples, although it is located in the past relative to the utterance time, must coincide with the eventuality time of the main clause intensional predicate. Unlike occurrences of past tenses with normal verbs in the same syntactic environment, the modal evaluation time cannot have a “past-shifted” reading relative to the main clause event time, nor for that matter can it have an “independent past” interpretation (in the sense of Enc (1987)). Thus, the interpretation of these epistemic modals is analogous to that of a simultaneous “sequence-of-tense” construal with normal verbs, which is licensed in precisely this syntactic environment. Since a traditional analysis of this “simultaneous” reading of the past tense is that it is in some sense an occurrence of a present tense in disguise, these examples in fact conform to the relevant generalization; the epistemic modal is construed as though it were a present tense modal, relative to the time of the main clause event time. In this respect, these epistemic modals differ from true present tense epistemic modals such as must and may, which require a “double access” interpretation in the same environment, whereby the modal evaluation time must correspond to an interval that includes both the actual utterance time and the past tense main clause eventuality time.

(14) a. Caesar knew that his wife may be in Rome. (epistemic)
    b. Fred said that there must be at least a hundred people at the reception.
       (epistemic)

This double access interpretation of the epistemic modals in (14) is exactly what we find with present tense forms of normal verbs in this environment. The contrast between (13) and (14) thus suggests that the epistemic modals in (13) do in fact involve an occurrence of the morphological past tense, even though they do not violate the generalization that the past tense in question cannot be construed as a normal past tense taking scope over the epistemic modal in the same clause (as is shown by the lack of a past-shifted reading).
When the epistemic modals in (13) occur in main clauses, they receive an interpretation that is unambiguously that of a present tense, supporting the view that, although these modals arguably contain a morphological past tense morpheme, this morpheme may not receive a true past tense interpretation taking scope over the epistemic modal.

(15) a. John might go home today.
   ‘It may be that John will go home today.’
   b. Susan should be at the station.
   ‘It’s likely that Susan is (or will be) at the station.’
   c. Max ought to know the answer.
   ‘It’s likely that Max knows (or will know) the answer.’

Abusch (1997) suggests that the modals in (13) are in fact tenseless forms that can receive a simultaneous reading relative to the evaluation time obtaining in their surrounding syntactic environment, differing both from morphologically past tense modals and from present tense modals such as those in (14). Though her proposal has some appeal (and is certainly consistent with the contrast noted above between could and had to), there is a hitherto unnoticed fact that points in the opposite direction. When these modals govern intensional verbs which themselves select complement clauses containing the morphological past tense, the latter tense can receive a simultaneous “sequence-of-tense” reading relative to the main clause eventuality time, as is illustrated in (16). This is not possible when the main clause modals are present tense modals such as can or may, as in (17), where the past tense in the complement clause must receive a past-shifted reading relative to the main clause event time.

(16) a. Sam might say that he lived in Paris.
   b. Sam could claim that he knew the answer.

(17) a. Sam may say that he lived in Paris.
   b. Sam can’t claim that he knew the answer.

Since the relevant syntactic conditioning environment for a simultaneous construal of a morphological past tense in a complement clause involves an occurrence of a morphological past tense in the main clause, this supports the view that the modals in (13) may in fact be morphologically complex forms containing morphological past, even though the interpretation of these modals is such that the past tense in question can never be understood to take scope over an epistemic modal in the same clause.

In addition to the English facts discussed above, data from other languages generally support the basic empirical claim that past tense may take scope above a root modal occurring in the same clause but not above an epistemic modal in the same clause. A range of evidence supporting this claim is provided by Cinque (1999),
based on observations relating to the linear order of affixal morphology and modal adverbials such as possibly, necessarily, and maybe, and their counterparts in other languages; I refer the reader to Cinque’s work for discussion of such cases. I will mention instead some cases involving further apparent instances of tense-modal reversals similar to those involving English had to discussed above. Ana Bravo (personal communication) cites the examples in (18) from Spanish, based on similar Catalan examples discussed by Picallo (1990), where a possibility modal occurring in an inflected preterite or perfect past tense displays the same kind of alternation. When the modal is understood to have root modal force, it is interpreted as though it falls under the semantic scope of the past tense, but when it is understood to have epistemic modal force, the past tense is interpreted as though it were a (nonfinite) perfect occurring in the complement of a present tense epistemic modal; that is, the modal evaluation time must be understood to coincide with the actual utterance time.

(18) a. El ladron pudo entrar por la ventana.
   the thief can-PAST enter through the window
   ‘The thief was able to enter through the window.’ (root)
   or
   ‘It is possible that the thief entered through the window.’ (epistemic)

b. El ladron ha podido entrar por la ventana.
   the thief has can-PAST.PART enter through the window
   ‘The thief was able to enter through the window.’ (root)
   or
   ‘It is possible that the thief entered through the window.’ (epistemic)

As in the case of the English examples involving the past tense necessity semimodal had to, these examples seem to involve a derivation where the past tense originates syntactically in a position above the modal on both the root and epistemic readings; the epistemic modal construal presumably involves an LF representation where the modal is moved to a position above the tense.

A slightly different type of case arises in Danish, as discussed by Davidsen-Nielsen (1988) and Vikner (1988).

(19) ?Der har måske nok kunnet være tale om en fejl.
   there has maybe probably could be talk about a mistake
   ‘It might have been a mistake.’

Vikner comments that “the perfect, . . . although clearly realised on the epistemic modals, really is the perfect of the main verbs” (1988, 7). This is again consistent with our contention that when an epistemic modal co-occurs with past tense in the same clause, it must occur in the LF representation in a position above that of the tense, undergoing movement to such a position if necessary.
I now turn to the question of why past tense should be able to take scope above root modals but not above epistemic modals. A theoretical basis for an account of this is provided by Cinque’s (1999) theory of functional categories associated with tense and modality. The essential idea is that a modal verb must occur as the syntactic head of a functional category associated with a particular type of modality. Simplifying his proposal somewhat, the idea is that the semantic epistemic/root distinction is a function of the choice of which functional category the modal occurs in, where the functional category giving rise to the epistemic reading is (universally) located higher up in the tree than the functional category giving rise to the root modal reading, with the functional category for (past) tense located in between.

At this point, it is necessary to confront an issue concerning the level of representation at which Cinque’s universal hierarchy is supposed to hold, bearing in mind the possibility that, in at least some cases, modals appear to undergo movement across past tense in the derivation of LF representations, as suggested above. If the root and epistemic interpretations of (12b), (18a,b), and (19) are derived from a common syntactic structure (as I have implicitly assumed thus far), with the epistemic modal interpretation involving LF movement of the modal to a position above the past tense, Cinque’s universal hierarchy presumably fixes the LF positions of modals and tenses relative to each other. On this view, a modal verb might originate in a verbal projection on either type of interpretation, and then undergo movement to a modal functional projection, perhaps in order satisfy minimalist-style feature-checking requirements; the type of modal force (epistemic vs. root) would then be fixed by the choice of which functional projection the modal moves to. This immediately raises a technical problem with respect to the locality conditions governing head movement, however, since it assumes that a modal head can move across a tense head (in the case of epistemic modals), in violation of Travis’s (1984) Head Movement Constraint or the principle(s) responsible for it. It might be possible to get around this problem by assuming a more complex syntactic derivation, whereby the modal would move across the tense by virtue of phrasal XP-movement rather than by head movement. Such a derivation would presumably have to involve prior extraction of the verb phrase complement of the modal out of the phrasal category containing the modal (with the later category then undergoing remnant phrasal movement to a position above the tense), but I know of no independent empirical evidence for such a derivation.

An alternative analysis of (12b), (18a,b), and (19), consistent with another interpretation of Cinque’s hierarchy and also with the Head Movement Constraint, is that epistemic and root interpretations of modals are determined by the base positions of the modals, so that root modals originate in a lower position than epistemic modals (with past tense occurring in between). On this view, (18a) would be structurally ambiguous in terms of the base position of the modal root. On the root in-
terpretation, the modal originates in the lower modal position and moves to the head position of the TP to combine with the past tense affix. On the epistemic modal interpretation, the modal originates above the tense in the higher modal position; presumably, the tense affix moves to combine with the higher epistemic modal head. The derivation of the root and epistemic modal interpretations of English have-to in (12) would work similarly. Since the scope relation holding between the past tense and the modal would be determined by their source positions on this interpretation of Cinque’s hierarchy, such cases would be analogous to structures involving reconstruction.

To extend this analysis to the periphrastic perfect constructions in Spanish and Danish in (18b) and (19), where the counterparts of the auxiliary verb have precede the participial forms of the modals, it is necessary to assume that it is the past participle suffix, rather than the auxiliary verb have, that originates in the head position of the TP between the two modal projections. On the root modal interpretation of (18b), the modal originates below the participial affix and undergoes head movement to combine with it; on the epistemic interpretation, the modal originates in the higher modal position above the past participle affix, which then undergoes head movement to the epistemic projection to combine with the modal.

Another type of case involving an apparent scope reversal between an epistemic modal and a past tense has recently been brought to light by Condoravdi (2002), who cites examples such as those in (20a,b), which she contrasts with cases such as (21).

(20) a. At that point, he could/might still have won the game.
   ‘At that point, it was still possible that he would win the game.’
   b. In October, Gore still should have won the election.
   ‘In October, it was still likely that Gore would win the election.’

(21) He may/might have (already) won the game.
   ‘It is possible that he has (already) won the game.’

Condoravdi notes several important properties of such cases. First, crediting Mondadori (1978) for the essential insight, she observes that the examples in (20) are interpreted as involving a future possibility in the past, as though the (nonfinite) perfect were interpreted as a (finite) past tense taking scope over the modal; this contrasts with (21), where the epistemic modal has the expected present tense interpretation and the eventuality time of its complement is past-shifted with respect to the modal time. In a sense, this is the mirror image of what we observed with the past tense semimodal had to in (12b), where the past tense is interpreted as though it were a perfect in the complement of the semimodal. Note, however, that whereas the case in (12b) clearly conforms to the scopal hierarchy placing epistemic modality above past tense, the scope reading in (20) is in apparent conflict with it (though the conflict is only apparent, as we will see shortly).
Second, the interpretation in (20), unlike that in (21), is necessarily counterfactual; the eventuality denoted by the complement of the modal, though possible or likely at the past time in question, did not in fact occur. Condoravdi plausibly accounts for the counterfactuality as arising from a pragmatic inference induced by the speaker’s choice of a past tense modal rather than a present tense modal; her account is substantially similar to the theory of imperfect conditionals in Italian developed independently by Ippolito (this volume).

Third, the type of modal force in (20) differs from that in (21), though both are often traditionally classified as “epistemic”; whereas the epistemic modality in (21) is evidential, in (20) it is “metaphysical” (in Condoravdi’s terminology). In (21), the actual state of affairs concerning the eventuality has already been determined at the time of the modal evaluation, so the only uncertainty involves the speaker’s lack of evidence and/or knowledge about the actual state of affairs that obtains. As Condoravdi points out, this is true for any epistemic modal whose complement has an eventuality time that is interpreted as being simultaneous with, or past-shifted with respect to, the modal evaluation time. In contrast, in (20), where the complement of the modal has a future-shifted interpretation, the state of affairs in the actual world has not yet been fixed at the time of the modal evaluation. Thus, the type of epistemic modal force is dependent on the temporal relation between the modal and its complement. This dependency is also illustrated by the fact that epistemic must, which does not allow its complement to have a future-shifted interpretation, as noted by Enç (1996), has only an evidential (as opposed to “metaphysical”) interpretation, as Condoravdi observes.

This distinction between the two types of “epistemic” modality resolves the apparent conflict between the scopal interpretation of (20) and Cinque’s hierarchy. Cinque, like Condoravdi, distinguishes between two types of epistemic modality—evidential versus “alethic”—a distinction that I ignored in my simplified outline of his theory presented above. Cinque’s notion of alethic modality should probably be equated with Condoravdi’s notion of metaphysical modality (though the two authors explain the distinction in somewhat different ways and attribute somewhat different properties to them). Cinque actually proposes that modals conveying alethic force differ from evidential modals in allowing past tense to take scope over them, so the scope relation that Condoravdi argues for in (20) is actually consistent with this more articulated tense/modal hierarchy. In fact, Condoravdi notes that (20a) (her (7b)) “is not just about epistemic uncertainty at that past point (though of course since the outcome had not [yet—TS] materialized one couldn’t know it either)” (2002, 62).

More generally, the type of apparent scope reversal seen in (20) is never possible for evidential modal interpretations. This suggests that “metaphysical” or “alethic” modality, though traditionally classified as epistemic, in fact more closely resembles
root modality than true evidential epistemic modality, at least in terms of its relationship to tense (and perhaps more generally). This leads us to expect that modal-perfect combinations such as should-have and ought-to-have might allow for a root modal deontic interpretation on Condoravdi’s scope reversal reading. Though the relevant semantic judgments are extraordinarily delicate and difficult to distinguish from their other potential root modal reading (where the root modal has a present tense interpretation and its complement is past-shifted with respect to it), my intuition is that the relevant reading is in fact possible.

(22) a. You should have bought that book when you had the chance.
    b. Max ought to have kept his mouth shut at the meeting.

It strikes me as more plausible to suppose that in (22), the relevant deontic obligation held at the past times in question, rather than obtaining at the utterance time (obligating the subject at the utterance time to have arranged things in the past in a particular way).

A fourth observation that Condoravdi makes is that the apparent scope reversal reading in (20) is possible only for non–present tense modals such as might, could, should, and ought; it is not possible for present tense modals such as may, can(’t), shall, and must. In other words, the distinction between the modals that allow the apparent scope reversal and those that do not precisely coincides with the distinction between the modals that allow a simultaneous “sequence-of-tense” construal when they occur in the clausal complement of a past tense intensional verb and those that force a double access reading in the same environment, as discussed above. Recall further that the two groups of modals also differ in terms of their ability to trigger sequence-of-tense effects in finite clauses that they c-command, as in (16).

In Stowell 1995, I suggested that the so-called present and past morphemes in English are not actually present and past tenses per se (where tenses are understood as temporal ordering predicates in the sense of Zagona (1990)) but polarity markers on time-denoting heads designating a particular scope relation with a higher (true) past tense. A time-denoting phrase containing past must occur under the scope of a true past tense at LF, whereas a time-denoting phrase containing present may not. If this analysis is adopted, and if we further assume that the two groups of modals are actually morphologically complex, composed of a modal root combining with either present or past, then we have an immediate explanation for Condoravdi’s fourth observation (and also support for her basic analysis of (20)): the reason that the present tense modals never allow a scope reversal reading of the sort seen in (20) is that the present tense morpheme that they contain may not occur under the scope of a higher past tense, so that if the perfect takes scope over the modal and is construed as a past tense, the resulting LF scope relation would violate the polarity requirements of the present morpheme in the finite modal.
Although *should* and *ought*, like *must*, allow a future-shifted construal of their complements on the root modal interpretation, even when the complement is stative, as in (23b), they appear not to allow a future-shifted perfect interpretation in (23c), unlike *must* in (23d). Thus, the root deontic sense of *should-have* and *ought-to-have* seems to actually require the perfect to take scope over the modal, as in (22).

(23) a. You ought-to/should/must leave.
   b. You ought-to/should/must be at the station at 2 p.m.
   c. ??You ought-to/should have left by the time we arrive.
   d. You must have left by the time we arrive.

This would follow if we assume that *should* and *ought*, though containing the polarity marker *past*, may not occur as the complement of an actual null past tense: to license the polarity marker *past*, the perfect would have to take scope above the modal. This is just the speculative outline of an explanation, since it fails to explain either why the null past tense may not co-occur with these modals or why no problem for the polarity marker arises in (23a,b); but it perhaps hints at the direction that an account of (22) versus (23c) might take.

As a final comment on Condoravdi’s modal-perfect reversal cases, I should observe that they seem to be in more direct conflict with Travis’s (1984) Head Movement Constraint than the apparent tense-modal reversal cases I discussed earlier, since the perfect can be separated from the preceding modal by an adverb such as *still*. At this point, I do not see a clear solution for this incompatibility, though given the evidence supporting the validity of the scope reversal analysis, it seems that the solution must involve either some kind of phrasal movement or an abandonment of the Head Movement Constraint in its strictest form.

**Note**

I am grateful to members of the audience at the International Round Table on the Syntax of Tense and Aspect, Université Paris 7, at the Meertens Instituut, Amsterdam, and at the UCLA Syntax-Semantics Seminar, for useful comments. Special thanks also to Jacqueline Guéron and to Jacqueline Lecarme for their patience and encouragement. After this chapter was completed, my attention was drawn to Cormack and Smith 2002, which independently observes the negative polarity status of modal *need* and epistemic *can*. Cormack and Smith make many other insightful observations concerning the interaction of tense, modals, and negation, which I am unfortunately unable to do justice to in my discussion.

**References**


Chapter 23
Tense Construal in Complement Clauses: Verbs of Communication and the Double Access Reading

Karen Zagona

23.1 Introduction

Giorgi and Pianesi (2000) (henceforth, G&P) argue that the double access reading (DAR) in sentences like (1a) is also appropriate for the analysis of (1b), on the basis of the readings shown (G&P 2000, 20).

(1) a. Gianni ha detto [che Maria è incinta].
   ‘Gianni said that Maria is pregnant.’
   Embedded present (the time of Maria’s being pregnant): includes matrix event (the time of Gianni’s saying) and utterance time (UT)

   b. Gianni ha detto [che Maria era incinta].
   ‘Gianni said that Maria was pregnant.’
   Embedded past (the time of Maria’s being pregnant): precedes the matrix event (the time of Gianni’s saying) and UT

G&P argue that the DAR is due to movement of the embedded verb to the C(omp) position occupied by che ‘that’ in (1). Movement creates a copy of the embedded tense, as shown in (2).

(2) [ . . . [ . . . [c Ti C] AgrP . . . Ti . . . ]]]

Ti in AgrP is locally anchored by the matrix event, hence evaluated relative to it; the moved T adjoined to C is interpreted as anchored to UT. G&P assume crucially that embedded tenses are generally anchored by the matrix event, not UT (G&P 2000, 20), but may be anchored to UT under certain conditions, to be given below.

In this chapter, I develop the hypothesis that, contra G&P, movement of Ti to C shown in (2) is a mechanism for locally anchoring the embedded tense to the matrix event, not to UT. I argue here that the trigger for this movement is an aspectual feature of the matrix predicate and that an aspectual distinction underlies the disparate behavior of verbs of communication like ‘say’ in (1) and attitude verbs like ‘believe’, which do not manifest DAR, as shown in (3).
If correct, this analysis shows that the syntactic correlates of DAR identified by G&P can be linked to a syntactic process in the matrix clause—the aspeccual licensing of the matrix verb.

The chapter is organized as follows. Section 23.2 presents an overview of G&P’s analysis of the structure of complement clauses and of the selectional properties that underlie the contrast between (1) and (3). Section 23.3 argues that the partition between the type of verb in (1) and the type of verb in (3) is aspeccual. Section 23.4 proposes an analysis of aspeccual feature checking that accounts for the syntactic properties observed by G&P and for the distribution of the DAR.

23.2 Morphosyntax of the Complement Clause

This section describes G&P’s account of the contrast between (1) and (3), with particular attention to the morphosyntactic correlates of the DAR in the complement clause.

23.2.1 The Double Access Reading and Complementizer Deletion

G&P introduce evidence from complementizer deletion (CD) in Italian showing that the left periphery of complement clauses with the DAR is not the same as that of predicates that exclude the DAR. The contrast is illustrated in (4) and (5).

(4) Verbs of communication: DAR, no CD
   a. Ha detto *(che) è partito. (G&P 2000, 11)
      ‘He said (that) he left-IND.’
   b. Ha confessato *(che) è partito.
      ‘He confessed (that) he left-IND.’

(5) Verbs of attitude: no DAR, but CD OK
   a. Crede (che) sia partito. (G&P 2000, 10–11)
      ‘He believes (that) he left-SUBJ.’
   b. Gianni ha ipotizzato (che) fosse incinta.
      ‘Gianni hypothesized (that) she was-IMP-SUBJ pregnant.’

In (4), verbs of communication, shown in (1) to admit the DAR, do not allow CD. Verbs of attitude, shown in (3) not to admit the DAR, do allow CD. G&P show that the contrast with respect to CD does not derive from mood. Subjunctive mood is a necessary but not sufficient condition for CD.
Si rammarica *(che) sia partito. (G&P 2000, 11)
‘He regrets (that) he left-SUBJ.’

Gianni ha ipotizzato *(che) sia incinta.
‘Gianni hypothesized (that) she is-PRES.SBJ pregnant.’

The factive verb rammarica ‘regrets’ in (6) takes a subjunctive complement, yet the complement clause disallows CD and admits the DAR. Likewise, the subjunctive clause in (7) does not trigger CD. Notice that (7) contrasts with (5b), which also contains ipotizzare ‘hypothesize’. G&P note that the contrast between (7) and (5b) correlates with whether ipotizzare is understood as a verb of communicative behavior or not. In (5b), it reports an attitude of the subject, and it patterns with credere ‘believe’; in (7), it is construed as a verb of communicative behavior, and the properties of the complement are reversed.

Citing the distribution of complementizer deletion, G&P suggest the generalization in (8) as a morphosyntactic correlate of the DAR.

(8) [+DAR] iff [CD].

That is, a complement clause will have the DAR if and only if CD is impossible.

23.2.2 Clause Structure and Complementizer Deletion
In section 23.2.1, it was shown that CD and the DAR are in complementary distribution. G&P propose an account of this distribution that is based on two factors: (i) selectional properties of matrix verbs, and (ii) structural reflexes of selection in the complement clause. Following Poletto (1995), G&P assume that in Italian, there are two complementizer positions: the standard C and a ‘lower C’ containing Mood. The complementizer che can occupy either of these positions.

(9)

```
C
  |   |   
  che M Agr
  |   |   
  che
```

The distribution of CD is determined by the selection of one or the other of these complementizers. Verbs that select the ‘upper’ C show overt C uniformly: this head has no option other than to be overtly realized as che. The verbs of communicative behavior select the upper C. Therefore, they never display CD. On the other hand, selection of the ‘lower’ C is compatible with CD, because the lower C (= Mood)
can take two forms. It can be a pure M(ood) head, as shown in (9), or it can be a syncretic category, as shown in (10).

(10)
```
C
  └── M/Agr
     └── che
```

The syncretic category in (10) does not contain *che*; instead, it is filled by V-movement. Movement is triggered by a strong feature of Agr. When M and Agr are “scattered,” as in (9), no feature attracts the V in overt syntax, and M is filled by *che*. The availability of CD is therefore related to the selection by the matrix verb of an M complementizer, which has both “scattered” and syncretic variants. The impossibility of CD with the upper C is due to the absence of a syncretic category combining C with Agr.

Summarizing to this point, the possibility for CD is related to the following contrast:

(11) a. \( V_{communic} \rightarrow [C \text{ che}] [M/Agr \text{ Ind}] \)

b. \( V_{attitude} \rightarrow [M \text{ che}] [Agr \text{ V}_{i+Agr}] \ldots t_i \)
   (M filled by overt *che*)

c. \( V_{attitude} \rightarrow [M/Agr \text{ V}_{i+M/Agr}] \ldots t_i \)
   (M filled by V-movement)

### 23.2.3 Clause Structure, Selection, and the Double Access Reading

Assuming the differences in structure shown in (11), the next question is how these structures, together with selectional properties of the matrix predicate, account for the distribution of the DAR. In particular, in what way does selection of the upper C in (11a) “enforce” the DAR, while selection of the lower C in (11b,c) blocks it?

Selection of the upper C is assumed to trigger covert movement of T(ense), as shown in (2), repeated here.

(2) \[ \ldots [c \text{ T} \text{ C} ] [AgrP \ldots \text{ T} \ldots ]] \]

This movement is related to the DAR in the following way. G&P adopt the assumption that embedded clause tenses are normally evaluated relative to the matrix event, not to UT. The moved T does not alter this; instead, it adds a component that constrains the value assigned to the embedded event/state. The contribution is computed as if the adjoined tense were anchored to UT (G&P 2000, 30). If the upper C is absent, as in (11b) or (11c), there is no trigger for T to move to C. The embedded tense will therefore only be evaluated relative to the local anchor: the matrix event.
This accounts for the ungrammaticality of (3a) and for the construal of (3b), repeated here.

(3) a. *Gianni credeva [che Maria sia incinta].
   ‘Gianni believed [that Maria is-PRES.SUBJ pregnant.’
 b. Gianni credeva [che Maria partisse domani].
   ‘Gianni believed [that Maria left-PAST.SUBJ tomorrow.’

The absence of the upper C means that the structure in (2) is absent, so UT anchoring is impossible. (3a) is not possible on an “anaphoric” reading, according to G&P, because of the following selection generalization:

(12) a. Past+V\text{belief} selects a “tenseless” anaphoric Tense. (G&P 2000, 20)
    b. Pres+V\text{belief} does not select M/T.

That is, the matrix T coselects the T/M of the complement clause. A past belief verb selects a “tenseless” T, which means that the past form of the tense does not correspond to a relation (of precedence). The past subjunctive form is such a tense; the present subjunctive is not. A present belief verb does not select a “tenseless” anaphoric T. Rather, it can co-occur with either subjunctive or indicative.

(13) a. Gianni crede che Mario sia malato/sia partito/partirà.
   ‘Gianni believes that Mario is-PRES.SUBJ sick/has-PRES.SUBJ left/will leave.’
 b. Gianni crede che Mario mangiasse/fosse (già) partito.
   ‘Gianni believes that Mario ate-IMP.SUBJ/had-IMP.SUBJ (already) left.’

Present crede ‘believes’ permits both subjunctive and future indicative complements, as in (13a). When the complement is past, it does have a relation: the complement predicate is construed as shifted relative to the matrix verb.

23.2.4 Summary
G&P have demonstrated that morphosyntactic properties of complement clauses underlie the distribution of the DAR. This is supported both by evidence from CD and by contrasting properties of different classes of matrix predicates. The latter evidence provides a basis for fixing the structure of the complement, which in turn determines the construal of the complement clause.

23.3 Evidence That the Contrast between (1) and (3) Is Aspectual

We have seen that the structure of the complement clause is determined by selective properties of the matrix predicate and that verbs of pure “attitude” have different selective properties from verbs of communicative behavior. As noted above, I propose that the relevant distinction between these classes is aspectual: the verbs
of communicative behavior are processes, while the verbs of pure attitude are states. Notice that the attitude verbs cannot be used in ordinary progressives.

(14) a. John was saying/confessing/hypothesizing . . . (communicative behavior)
    b. *John was believing . . . (attitude)

I begin by outlining and excluding two other possible bases for the contrast between communicative and belief verbs (section 23.3.1). Then I present evidence to support the claim that aspect plays a crucial role (section 23.3.2).

23.3.1 Possible Approaches to Subclass Behavior

Before considering the aspectual hypothesis in further detail, let us briefly examine two alternatives. One alternative is that there is no underlying grammatical or semantic distinction between classes, either because this selection is purely idiosyncratic, or because it is fundamental—that is, it underlies other grammatical and semantic differences between these classes. From the correlation between selectional properties for C and the semantic and aspectual characteristics of the matrix verbs, we can conclude that the selection is not idiosyncratic. If this selection were an idiosyncratic feature of these verbs, it would be unexpected that it should correlate systematically with other properties of the class. It may be, however, that this syntactic property of these lexical items is the fundamental property, and that temporal properties and perhaps other semantic characteristics of the class are derivative. This possibility is not supported by the aspectual evidence, a point to which we return below.

A second alternative is that the selectional properties follow from an independent semantic distinction between verbs of pure attitude and verbs of communication. Hooper (1975) distinguishes between these classes according to their “degree of assertiveness.”

(15) a. Communicative verbs: nonfactive, strongly assertive
    b. Verbs of attitude: nonfactive, weakly assertive

The complements of strongly and weakly assertive verbs differ along another syntactic dimension, namely, the property of “Neg-raising” (and “Q-raising”). Strongly assertive predicates allow a Neg or Q to be construed as having scope over either the matrix or part of the complement.

(16) a. The boss didn’t say that he wanted to hire a woman, the personnel director said that. (G&P 1997, citing Hooper 1975, (27))
    b. Did he say it was raining? (G&P 1997, citing Hooper 1975, (32))

In (16a), negation may have scope over say, or only over the embedded predicate; likewise for the interrogative in (16b).
Given that the two verb classes at issue are distinguished from each other along an independent semantic dimension, it is possible that this dimension is itself the source of the selectional generalization that determines the CP structure of the complement. On this hypothesis, it would be expected that upper C selection, and therefore the DAR, should be associated with the strength of assertiveness of the complement. Contrary to this expectation, the DAR occurs with the nonassertive factive ‘regret’. Recall example (6), repeated here.

(6) Si rammarica *(che) sia partito. (G&P 2000, 11)
‘He regrets (that) he left-SUBJ.’

The nonassertive verb ‘regret’ patterns with strongly assertive verbs of communication: they disallow CD and force the DAR. Degree of assertiveness therefore does not account for the complement selection observed above.

23.3.2 Stativity of the Matrix Predicate
Spanish does not seem to have a CD phenomenon analogous to that discussed by G&P in Italian. The presence versus absence of the DAR can be detected by the possibility of present tense embedded under past. This possibility correlates with the DAR. As in Italian, verbs of communication allow present under past, while verbs of attitude do not, instead forcing a stricter sequence of morphological tense.

(17) a. Juan creía que María estaba embarazada.
     ‘Juan believed that María was pregnant.’
 b. *Juan creía que María está embarazada.
     ‘Juan believed that María is pregnant.’

(18) a. Juan dijo que María estaba embarazada.
     ‘Juan said that María was pregnant.’
 b. Juan dijo que María está embarazada.
     ‘Juan said that María is pregnant.’

For some verbs, the choice between the preterite and the imperfect past can correspond to a contrast between stative and nonstative readings. When a normally stative verb of attitude occurs in the preterite past (vs. the imperfect), it may take on an inchoative (onset-of-state) reading. For example, the verb saber ‘know’ is a verb of attitude in the present and in the imperfect past. When used in the preterite past, it comes to mean ‘realized’ or ‘found out’. Along with this alternation comes a difference in the acceptability of present embedded under past.

(19) a. *Sabía que María está embarazada.
     ‘I knew-IMP that María is pregnant.’
 b. En cuanto la vi, supé que María está embarazada.
     ‘As soon as I saw her, I knew-PRET that María is pregnant.’
The stative form in (19a), like the stative creer ‘believe’ in (17), is not compatible with an embedded present. Once the verb takes on an inchoative change-of-state reading, the embedded present is improved. As with the Italian verbs of communication, the DAR is observed. Other verbs show similar alternations.\(^1\)

(20) a. ?*Creı́a que María està embarazada.
   ‘I believed-IMP that María is-PRES pregnant.’
   b. Creı́ que María està embarazada.
   ‘I began to believe-PRET that María is-PRES.IND pregnant.’

(21) a. ?*Jose ´dudaba que María este´ embarazada.
   ‘Jose´ doubted-IMP that María is-PRES.SUBJ pregnant.’
   b. Jose´ dudo´ que María este´ embarazada.\(^2\)
   ‘Jose´ (suddenly) doubted-PRET that María is-PRES.SUBJ pregnant.’

(22) a. *Negaba que María esté embarazada.
   ‘I denied-IMP that María is-PRES.SUBJ pregnant.’
   b. Negue´ que María está embarazada.
   ‘I denied-PRET that María is-PRES.IND pregnant.’

(23) a. *Le molestaba que María esté embarazada.
   ‘It bothered-IMP him that María is-PRES.SUBJ pregnant.’
   b. Le molestó que María esté embarazada.
   ‘It bothered-PRET him that María is-PRES.SUBJ pregnant.’

Observe that there is no necessary contrast between the (a) and (b) examples with respect to classification as a predicate of attitude versus communication. In most cases, an attitude reading is constant; in (22), however, the inchoative of negar ‘deny’ takes on communicative behavior meaning. There does, however, appear to be an aspectual contrast in all cases. We can see this with dudar ‘doubt’. Normally, statives are only possible in the imperfect (Amaba-IMP a Juan/*Amé-PRET a Juan ‘I loved Juan’). When dudar comes to be used in the preterite, it takes on nonstative characteristics, including an improved progressive (24b) and the ability to co-occur with punctual adverbs (25b).

   ‘I was-IMP doubting, believing . . .’
   b. ?Estuve dudando/creyendo.
   ‘I was-PRET (momentarily) doubting/believing.’

   ‘I suddenly doubted-IMP that . . .’
   b. Súbitamente dudé que . . .
   ‘I suddenly doubted-PRET that . . .’
23.3.3 Two Other Cases

We have seen that complement clauses show aspectual alternations that correlate with the DAR, as shown by exceptions to sequence of tense. There are also predicate classes that do not show these alternations. These include adjectival predicates and “semifactives,” illustrated here.


(28) a. *Era probable que María esté embarazada.
   ‘It was-IMP probable that María is-PRES.SUBJ pregnant.’

   b. *Fue probable que María esté embarazada.
   ‘It was-PRET probable that María is-PRES.SUBJ pregnant.’
(29) a. *Era extraño que María esté embarazada.
   ‘It was-IMP strange that María is-PRES.SUBJ pregnant.’
   b. *Fue extraño que María esté embarazada.
   ‘It was-PRET strange that María is-PRES.SUBJ pregnant.’


(30) a. *Juan notaba que María está embarazada.
   ‘Juan noted-IMP that María is-PRES.IND pregnant.’
   b. *Juan notaba que María estaba embarazada.
   ‘Juan noted-IMP (iter.) that María was-IMP.IND pregnant.’
   c. Juan notó que María está embarazada.
   ‘Juan noted-PRET that María is-PRES.IND pregnant.’

In (28)–(29), we see that adjectives that select clauses do not show the DAR in the preterite. Likewise, these adjectives do not have nonstative readings in the preterite.

(31) *Súbitamente fue probable que . . .
   ‘Suddenly it was probable that . . .’

In (30), we see that semifactives like ‘note’ and ‘realize’ do not show an aspectual alternation. The preterite form allows the DAR, but the imperfect form is ungrammatical. These verbs seem to be intrinsically punctual change-of-state predicates (i.e., achievements). When used in the imperfect, they are not statives, but iterative achievements. This is shown by their occurrence with iterative adverbs rather than durative ones.

(32) a. ??Juan notaba varias veces que . . .
   ‘Juan noted-IMP several times that . . .’
   b. *Juan notaba toda la tarde que . . .’
   ‘Juan noted-IMP all afternoon that . . .’

The two cases introduced here support the aspectual hypothesis, in that, when an aspectual alternation is absent, the non-DAR/DAR alternation is also lost. The distribution of the DAR with these predicates is also consistent with the aspectual hypothesis: the (stative) adjectives do not show the DAR, and thus pattern with verbs of belief discussed above and by G&P; the change-of-state semifactives do show the DAR.

Summarizing, we have seen that lexical items that have both stative and nonstative readings show strict sequence of tense only on their stative reading. Nonstatives allow present under past more freely, and they display the DAR in those cases. Predicates that do not alternate in stativity do not alternate with respect to sequence of tense or the DAR.
23.4 The Aspectual Basis for Complementizer Selection

The preceding discussion showed that the DAR occurs with nonstative verbs and is absent with purely stative verbs and adjectives. This suggests that it is the matrix Aspect Phrase that participates with V in determining selection of the embedded complementizer, in turn determining whether T-to-C movement is triggered. In this section, I will consider the nature of the relationship between the Aspect Phrase, the stativity reading, and complementizer selection.

23.4.1 The Inner Aspect Phrase

23.4.1.1 Stativity

Much of the research on the syntactic licensing of aspect in recent years has focused on the licensing of telic versus atelic readings, which are clearly affected by features of the complement. Guéron (2000) proposes a feature that can be used to check stativity in the “inner” (lexical) Aspect Phrase (AspP).\(^3\) This phrase is projected above VP, as shown in (33).

(33) \[
\begin{array}{c}
\text{AspP} \\
\text{Asp'} \\
\text{Asp} & \text{VP}
\end{array}
\]

Guéron proposes that AspP checks a feature \[\text{ext(ended)}\], which is a spatially interpreted number feature. \[\text{+[ext]}\] (or “plural”) is construed as more than one point in space, and \[\text{[-ext]}\] (“singular”) refers to a single point. The contrast between \[\text{+[ext]}\] and \[\text{[-ext]}\] corresponds to the presence or absence of “complex or serial articulations over space,” as shown in (34). Examples of each are given in (35).

(34) a. \[\text{+[ext]}\] = plural points in space; “complex or serial articulations over space”
   b. \[\text{[-ext]}\] = a singular point in space; lacking complex articulations over space

(35) a. \[\text{+[ext]}\]: activities, accomplishments
   i. V: run, rain
   ii. P: to (and English particles)
   iii. All nominals (their spatial extension is defined with respect to the domain that contains them (concrete, conceptual, psychological, etc.))
   b. \[\text{[-ext]}\]: light verbs, achievements
   i. V: go, be
   ii. P: at
The checking of this feature is subject to the constraint in (36).

(36) The Asp head is universally [+ext].

According to Guéron (2000), the event type of VP and its arguments must be available at the syntax-semantics interface, in order to check the compatibility of temporal adverbs with the VPs they modify (*John walked for an hour/*in an hour) and to evaluate the truth of the sentence. Guéron proposes that this information is available in the form of values for interpretable formal features, which should be understood to translate to semantic features at the interface. This assumption implies that a [+ext] feature of Asp must be checked by a [+ext] feature in its complement VP, and further, that [+ext] will be checked in different ways according to the feature value of the verb. The two options are summarized in (37).

(37) a. [+Ext] can be checked by a [+ext] verb. (activities, accomplishments)
   b. [+Ext] cannot be checked by a [−ext] verb; it must therefore be checked by a [+ext] feature from the complement of V.

As shown in (37), the Asp head can be checked in a head-head relation if VP is headed by a [+ext] verb; otherwise, it must be checked by a [+ext] feature from the complement of V, once it moves to Spec,AspP. These two options are shown in (38).

(38) a. 
   \[
   \text{Asp} \\
   \quad \text{V} \\
   \quad \text{[+ext]} \\
   \quad \text{rains} \\
   \quad \text{[+ext]}
   \]
   b. 
   \[
   \text{Asp} \\
   \quad \text{Prt} \\
   \quad \text{V} \\
   \quad \text{Asp} \\
   \quad \text{out} \\
   \quad \text{[+ext]} \\
   \quad \text{is} \\
   \quad \text{[−ext]}
   \]

Motivation for the universal value shown in (36), with its implication in (37), is the impossibility of intransitive [−ext] verbs. Processes can be intransitive, but punctual predicates cannot.
Let us now consider the features of states. Guéron takes states to be spatially extended, given the availability of scalar modifiers (e.g., *I am quite/very happy*). Since adjectives rarely require complements, it must be possible for them to check the [+ext] feature of AspP via a head-head relation as in (38a). Now consider verbal states. Unlike activities like *rain* and *dance*, states normally require complements.

(40) a. *Sue resembled.
    b. *They seem.
    c. *Fred loves.

States do not take spatial modifiers.

(41) a. It rained in Tucson.
    b. Sue ate an apple in the kitchen.
    c. *Sue resembles Mary in Tucson.
    d. *Fred loves Sue in his mind.

I will assume that verbal states are [−ext] and become [+ext] through the features of their complements. In section 23.4.2, we will return to the question of how this requirement concerns the structure of the complement clause. First, however, let us look at a second type of aspectual feature checking.

23.4.1.2 Telicity I assume that nonstative predicates must also be evaluated for telicity, since many activity predicates are construed as accomplishments on the basis of features of their complements.

(42) a. Mary read the chapter (in two minutes/*for two minutes).
    b. Mary read books (for two hours/*in two hours).

Given the relevance of features of the complement, I assume with numerous other authors (Schmitt (1996), among others) that AspP has an interpretable feature for telicity that must be licensed, normally by the specifier-head relation. I will adopt from Jackendoff (1996) the feature [+−bounded] (henceforth, [+/−b]).

Jackendoff (1996) suggests that the feature for boundedness can have sources other than complements. For example, where a preposition (for Jackendoff, a “Path”) can be construed as either bounded or nonbounded, as in (43) and (44), the addition of a temporal adverb can provide an endpoint, disambiguating the sentence.

(43) a. The cart rolled through the grass in ten minutes. (bounded)
    b. The cart rolled through the grass for ten minutes. (unbounded)
(44) a. The cart rolled down the hill in ten minutes. (bounded)
b. The cart rolled down the hill for ten minutes. (unbounded)

Jackendoff also notes, however, that there cannot be disagreement between adjuncts and internal arguments in boundedness.

(45) *John ran toward ([−b]) the house in ([+b]) an hour.
(46) *John ran into ([+b]) the house for ([−b]) an hour.

The “agreement” requirement shown in (45) and (46) suggests that AspP has a value for [+/−b] that must be checked by a complement to license the “lexical” aspect layer of the clause. An ambiguous VP like the cart rolled through the grass may be contained within either a [+b] or a [−b] AspP. At the level of outer Asp, a temporal modifier can be added that disambiguates the sentence, as in (47).

(47) 
```
T/Asp
   in an hour
       T/Asp
                   T/Asp
                                   AspP
                                           through the grass
                                                                 [+b]
                                                                 Asp
                                                                     Asp
                                                                       VP
                                                                         V
                                                                                   rolled
                                                                                   [+ext]
                                                                                   [+b]
```

Inner and outer Asp have independent sources of boundedness, and these features bound different objects: inner Asp bounds an event, outer Asp bounds a time interval. These two are independent of each other but are in agreement.

23.4.1.3 Summary In this section, I have argued that verbal states differ from nonstates both in their own aspectual features and in the features that are required of their complements. The relevant features are summarized in (48).

(48) **Verb**
| State:  | [−ext] | [+ext] |
| Activity: | [+ext] | [+/−b] |

(Complement licenses [+ext] (see (34))
(V licenses [+ext]; complement licenses telicity of event)
A stative verb requires that its complement contain [+ext] features, in order to check the intrinsic [+ext] feature of inner AspP, as discussed in section 23.4.1.1. The stative verb itself cannot check this feature, since it is [−ext]. On the other hand, an activity verb, such as a verb of communicative behavior, checks [+ext]. Therefore, a feature [+ext] is not required of its complement. However, the activity verb requires that its complement provide [+/−b], thereby determining the telicity or atelicity of the event. This feature is necessary both for construal of the event and for agreement with outer Asp.

23.4.2 Aspectual Feature Checking and Complementizer Selection
Let us turn now to the relationship between the feature-checking requirements specified in (48) and the complementizer selection discussed above. Recall that nonstatives, including verbs of communicative behavior and inchoatives, select an upper C, while pure statives select lower C. This is shown schematically in (11), repeated here.

(11) a. V_communic \rightarrow [c \text{ che}] [M/\text{ Agr} \text{ Ind}]  
   b. V_{\text{attitude}} \rightarrow [M \text{ che}] [\text{ Agr} V_{i}\text{ +Agr}] \ldots t_i  
      \text{(M filled by overt che)}  
   c. V_{\text{attitude}} \rightarrow [M/\text{ Agr} V_{i}\text{ +M/\text{ Agr}}] \ldots t_i  
      \text{(M filled by V-movement)}

23.4.2.1 Verbs of Communication (Nonstatives) Verbs of communicative behavior (as well as inchoative verbs like Spanish dudar ‘doubt’ and negar ‘deny’, in the preterite past) select upper C, shown in Italian by the absence of CD, the grammaticality of present under past, and the DAR. According to G&P’s analysis, these verbs select upper C, which attracts T. Let us see how this may follow from the aspectual feature checking summarized in (48). Consider (49).

(49) John said that Mary is pregnant.

Verbs of communicative behavior are nonstatives, or [+ext] heads. The verb itself therefore checks the [+ext] feature of AspP, as shown in (50).

(50) [\text{AspP}_{\text{Asp}} \text{ said}, Asp] [\text{VP t CP}]  
    [+ext] [+ext]

The complement clause need not provide a [+ext] feature for checking. However, because these verbs are nonstative, the complement must provide a [+/−b] feature, in order to license the telicity of the predicate by checking the [+/−b] feature of AspP. I suggest that this is the feature that is borne by the embedded T head that necessitates T-to-C movement discussed by G&P. Recall that inner and outer Asp agree in boundedness, which implies that outer Asp, a functional head in upper clause structure, bears a [+/−b] feature. This feature must be attracted to C, since if it is not, it is
too deeply embedded in the clause to be accessible to outside feature checking, as
in (51b).

(51) a. \ldots V [CP that [T/Asp [+/-b] \ldots]]
   b. \ldots V [CP [[T/Asp [+/-b],] that] [t_1 \ldots]]

Suppose a lower \(C\) were selected rather than an upper \(C\). As G&P suggest, this
structure does not contain a feature to attract \(T(/Asp)\).

(52) \ldots V [MP that [T/Asp [+/-b] \ldots]]

The ungrammaticality arises because the [+/-b] feature is inaccessible to the main
clause AspP, which therefore contains an unchecked feature for boundedness.

23.4.2.2 Statives  Let us turn now to verbs of belief, which G&P have shown select
a lower \(C\), as evidenced in Italian by the possibility of CD. The structure for these
embedded clauses must be (54), not (53).

(53) *\ldots Asp[+ext] \ldots V[-ext] [C [T+C] \ldots] [+/-b]

(54) \ldots Asp[+ext] \ldots V[-ext] [MP M Agr \ldots]

Consider first the impossibility of the structure with upper \(C\), which attracts the
[+/-b] feature of \(T/Asp\). Because the matrix verb is stative, the complement does
not need to supply a [+/-b] feature. This structure would trigger movement that is
unnecessary, since it would involve T-to-C movement that is not needed for any
reason and therefore should be impossible. Consider now the selection of the lower
\(C\). The matrix AspP does need a feature for [+ext], to satisfy the intrinsically [+ext]
Asp head. I will suggest that the closest source for this feature is Agr, which con-
tains nominal features. Since nominals are intrinsically [+ext] according to Guéron’s
analysis (see (35)), the structure in (54) may be considered to carry the appropriate
feature for checking the [+ext] of the Asp head. If structure (53) were selected in-
stead, the periphery of the clause would incorrectly contain a feature for bounded-
ness rather than a feature for extension.

Recall that the verbs of belief and of communicative behavior discussed by G&P
differ neither according to the mood of their complement nor according to whether
or not the complement contains a “real” tense. Both verbs of belief and verbs of
communication can select “real” tenses. The question then arises why the statives
show stronger sequence-of-tense behavior. The present analysis does not posit any
direct connection between the form of the embedded tense and the checking of the
features in the matrix AspP. It may be that agreement in \(T\) is simply a reflex of the
fact that nominal features of the complement are the source of the spatial “exten-
sion” for the main clause event. That is, sequence of tense may be simply an overt
morphological correlate of a certain form of aspectual feature checking: D-features
of a single argument (the complement clause subject) are providing extension for both matrix and embedded eventualities. The tense agreement may be an optional marker of this relation. That the relationship is not a deeper one is supported by the fact that under certain conditions, tense agreement can be overridden.

(55) a. ??John believed that Mary is pregnant.
    b. John believed that the world is round.

Where the complement contains an individual-level predicate, an embedded present is better.

Summarizing, this section has shown that the requirements of checking the aspectual features in the matrix clause may account for the presence of the upper C in the embedded clause. The upper C is compatible with verbs of communicative behavior (and other nonstates), because upper C attracts T, which expresses [+/-b]—a feature that is necessary for full interpretation of nonstates. The lower C is compatible with belief verbs because it contains nominal features that satisfy checking of [+ext]. Where the wrong C is chosen, feature checking is impossible and the matrix AspP is not interpretable. Recall that Guéron considers these features to be interpretable, but nonetheless they must be checked. This may be necessary for the “transition” of these features to semantic features at the interface.

23.5 Conclusions

G&P showed strong evidence of a correlation between the complementizer structure of a complement clause and the presence or absence of the DAR. In this chapter, I have suggested that the trigger for this structure is not tense, but aspectual features of the matrix predicate, together with other lexical properties of the matrix verb.

I have argued that (i) complementizer selection (for upper or lower C) is determined by aspectual features of the selecting predicate and (ii) complements contribute to checking of features in the matrix AspP. For stative verbs, the complement clause contributes a [+ext] feature; for nonstatives, the complement contributes a [+/-b] feature. The [+/-b] feature of T is accessible to checking in the matrix clause once T-to-C movement has occurred.

If correct, this analysis provides new evidence that clausal complements can participate in “measuring out” events in ways similar to nonclausal complements. Further, the analysis provides an account of the features of the complementizer heads that determine their selection by different matrix predicates.

Notes

1. The alternations illustrated here are possible for both Latin American and peninsular speakers, although they are subject to speaker variation.
2. Sunér and Padilla-Rivera (1984) note that verbs like _dudar_ ‘doubt’ typically disallow a present tense embedded under past. They note, however, that for some speakers the exclusion of embedded present under past can be overcome by the right context, in examples such as (i).

(i) Los periodistas no nos _creyeron/dudaron_ que esté incommunicado.

‘The reporters didn’t _believe-PAST us/doubted-PAST_ that he _is-PRES.SUBJ_ incommunicado.’

3. AspP is referred to as “Measure Phrase” in Guéron 2000.

References


Index

Absolute vs. relative tense. See Tense
Abstract entities 601–602
Abusch, D. 7, 38–40, 557, 568, 571, 574, 626, 628
Accessibility relation 363–366
Accompli 237, 246
verbs 390–391, 395–397, 406
Achievement 220, 222, 224, 225, 226, 227, 228, 229, 213, 241, 254, 308–311, 542
atelic 225, 226, 228
in the progressive 542–545, 547, 552
verbs 407, 410, 417
Actionality 241, 247, 250
Activity 218, 219, 220, 221, 223, 226, 227, 228, 240–241, 539, 552
verbs 416
Adjective
complementation properties 502, 511, 519–520, 524
Adjective Phrase (AP)
semantic properties 505
Advancement (in texts) 603, 604, 607, 612
Adverbial temporal clauses 164–175. See also When-clauses
Adverbs
bare CP time 163–164, 170
bare NP time 162–163
collocaational 237
durational time 159–162, 392, 413, 415
locational time 153–159
PP time 153–158
quantificational 122–125
time 152–175
in-X-time/for-X-time adverbials test 271–272, 274
Agent (non-overt) 80–82
Agree 500
Agreement
and modals (see Modals (and agreement))
Mood agreement 559
projections 239, 253
Akkadian 246
Aktionsart 1–2, 9, 23, 240, 242, 251, 417–418. See also Accomplishment, Achievement, Activity, Atelic, Stative, Telic
and aspect 115–116, 117–122
nominal 3, 20
operator 2–3, spatial 300,
Alexiadou, A. 20, 75, 84, 98, 100
Anaphoric tense. See Tense
Anchoring Conditions 5, 6–7, 204–205, 207
condition (c) revisited 63
Antecedent 196
Anteriority 238, 242, 243, 247
Aorist 252
Applicative constructions 442, 461–464
genitive constructions as 461, 466, 468
Applicative head 20, 442
Arabic 236, 239, 241–46, 250, 252, 254, 255
Argument
structure 16, 75, 103
Argument Tense Condition 501
Asher, N. 611, 617
Aspect 9–10, 23, 236, 300. See also Imperfective, Perfect, Perfective, Perfectivity, Progressive and case 103, 106–110
habitual 241, 624, 625
lexical 1–2, 9, 15, 433–434, 539–553 (see also Aktionsart)
and case, 18
and nominalizations 91–95
punctual 246, 253
syntactic 434–435
viewpoint 1–2, 9, 21, 418
Aspect head 503
hierarchy of Asp heads 427–429
Aspect language 236, 251
Aspectless language 235, 250, 442
Aspect projection (Aspect Phrase) 3, 14–15
inner Aspect Phrase 647–651
Aspectual classification 217, 224–227
features of affixes 95–99
features of the Romanian infinitive suffix 96, 97
features of the Romanian supine suffix 98, 99
interpretation (of nominals) 93–95
shift (see Shift operations)
system 599
templates 551
Aspectual periphrases 10–11
monoclausal status 427
relative order 427, 429–433
Assertion time 144, 155–158, 165–169, 172–173
Assignment sequence 283, 286
speaker- and subject-oriented 284
update of 287, 289–290
Atelic 235, 248–249
predications (activities) 93
Atelicity. See Telicity
Atemporal texts 603
Auxiliary 186–187, 190, 192, 193
Baker, M. 508, 533
Bare CP time adverbs. See Adverbs
Bare NP time adverbs. See Adverbs
Barrs, A. 466, 513
Basque 163–164
Bertinetto, P. M. 132–133, 288
Bianchi, V. 132
Biclausal construction 192–193, 200
Blanche-Benveniste, C. 56
Bonomi, A. 12, 129, 294, 357
Borer, H. 16, 20, 103, 477, 478, 525
Bounded event 604, 606, 612, 615
Boundedness 236, 599, 649–652, 390
Branigan, P. 55, 58
Bresnan, J. 500
Branigan, P. 390, 400–403, 496
and aspect 103, 106–110, 389–391
Genitive 19, 441, 456, 461, 466–467
inherent 459, 471, 519
nominative 495
partitive 400–403
structural 104, 403, 441–442, 459
in the nominal domain 441, 461, 468
Case Filter 501
Case Theory 519, 524
Catalan 425–437
Categorical vs. thetical 116, 126, 129, 133, 137, 141
Categories (syntactic) 523–527
Causative 220, 225
event (see Event)
Chains (T/Asp). See Tense (T)
Change
of location 220, 221, 223, 225, 226, 227
of state 218, 219, 220, 221, 225, 226, 227, 228, 230, 231
structure 219, 222, 223, 224, 225, 229, 230
Chierchia, G. 222, 559–560
Chomsky, N. 16, 19, 139, 219, 317, 390, 441, 448, 499, 501, 512, 519, 524, 526, 530, 532, 622
Chronology (future tense formation) 188–192
Cinque, G. 10, 252–253, 427, 630–632
Cipria, A. 295, 296
Clitics 320
Coene, M. 97
Coercion 608
Collins, C. 55, 58
Collocational adverb. See Adverbs
Complementation 496
Complementizer (C) 200, 495
for 500
omission of 499–500, 516
positions 639–640
prepositional 529
that 498, 499, 515–516
Complementizer Phrase (CP)
as complement 502, 522–524, 530
Completion 236, 245
Composed forms 183, 191, 194
Comrie, B. 4, 184, 246, 616
Conative alternations 392, 396
Conditionals 181–200
evaluation event in 196–197, 200
hearsay reading of 196, 200
imperfect 369–379
indicative 366–367
inverted 379–382
past 183, 194–197
subjunctive 367–369
Condition of Specification of Tense 55, 58–59
Condition on Extraction Domains (CED) 172–174
Condoravdi, C. 631–634
Context 597, 600–601, 614, 615
set (C) 367, 368
Cooper, 556
Culmination 14, 19, 130, 236, 240, 249, 391, 393–394, 396–397, 406, 541, 544, 549–550
condition, 391, 395, 410
Danish 629
DAR. See Double access reading
Davidson, D. 340
Default interpretation. See Time (Reichenbachian)
Deictic tense. See Tense
Delfitto, D. 133, 288
Demirdache, H. 434, 438, 446, 510
Dependency (T/Asp). See Tense
Derivation (bottom-to-top) 528
Description 607–608
De Se reading, 8, 559–561
Determiner Phrase (DP) 441–442, 447, 467–469
as complement 457, 502, 511–514, 519, 524
tensed 3, 19, 441–472
Discourse
entities in discourse 601, 612
modes 5–6, 601–609, 615
Discourse Representation Theory (DRT) 5, 599, 609–613
Double access. See Tense interpretation (of modal)
Double access reading (DAR) 6, 8–9, 243, 254, 266, 555, 570, 574, 638–639
Double Object Constructions. See Applicative constructions
Duration 241–242
Durational time adverbs. See Adverbs
Economy Condition 498
Egocentric temporal coordinates 282, 283–284, 286, 287
Embick, D. 108, 526
Emonds, J. 510
Enc¸, M. 6, 203, 205, 317, 385, 441, 446, 627, 632
English 116, 139, 241–45, 254, 413, 417
Belfast 498
Entities in discourse. See Discourse
Erteschik-Shir, N. 227
Evaluation event (in conditionals). See Conditionals
Event
causative 16, 485–489
complexity 16, 480–490
e(vent) nominal 75, 77–80, 82–84
event time (see Time (Reichenbachian))
identification 103,104
modification 222, 223, 228
structure 13–14, 448
and Vendler classification 331
Eventualities 241, 601, 607
modification 433–434
Evidentiality 469. See also Modality
Exceptional case marking (ECM) 531
Existential interpretation
and bare nouns 116, 134–135
and present/imperfective tenses 134, 138, 140
Extended Projection Principle feature (EPP). See Features
Features
[+/- bounded] 15
deletion 515–516
EPP 398, 400, 467–468, 497
[+/- extended] 14, 17, 300–310
indices as 398, 400
interpretability 17–18, 390, 403, 412–413, 445, 496
[+quoted] 55, 58–59
[+telic] 76, 96
tense 22, 445
Felicity conditions 374–376
Fictional and dream contexts 266–269, 291–293
Figure/ground configuration 300–301
Finnish 400–403, 413, 505
Fintel, K. von 556
Focus (aspectual) 227–228, 229, 230
For-trace effect 500
Full Interpretation principle (FI) 218, 221–222, 231
Functional category/projection 184, 622, 630
Future 150, 152, 181–200, 236–237, 249
anterior 188, 190, 191, 194, 200
auxiliary will (semantics and LF) 38–41
in the past 183–184, 188, 193
perfect 238–239
perfect of past 253
proximate 193, 194
Genericity
and bare nouns 135–138
and predication 126, 128
and quantification 115, 123, 124–125
Genre 600, 605
German 241–44, 252, 254, 403–417, 419
Germanic 241–244
Givon, T. 176
Government-Binding Theory 519, 524
Grammaticalization 181, 183
Greek 242, 252, 255
Grice, H. P. 122, 374, 375, 382
Grimshaw, J. 75, 83, 100, 109, 480, 530–531
Guéron, J. 252, 300, 312, 321, 441, 447, 461, 533, 647–648, 652, 653
Habitual. See Aspect (habitual)
Haeberli, E. 528
Hale, K. 18, 20, 76, 84, 89, 143, 151, 152, 218–220, 503
Halkomelem 471
Harley, H. 76, 525
Hay, J. 394, 416, 489
Hearsay reading. See Conditionals
Hebrew 246, 252
Heim, I. 8, 363, 398, 556, 557, 562, 569, 573, 591, 592–593
Higginbotham, J. 121, 294, 329, 336, 441, 448–449, 458
Hoekstra, T. 441, 447, 478, 533
Hornstein, N. 4, 166, 172, 184, 252, 614, 616
Hout, A. van 16, 103, 104, 477, 480, 491

Hungarian 466

Iatridou, S. 108, 366, 384, 574

Icelandic 505

Igbo 250

Imparfait 243, 245

and aktionsart 117–122
as encoding predication 115–116, 122–124, 125–126, 140–141
futurate/modal reading 262–264, 265, 269, 276, 287–289
and genericity (see Genericity)
habitual reading 115–116, 123–125, 127–128, 133–134
past 254
as a polarity feature triggering quantification 115–116, 117–122
progressive reading 115–116, 130–134
as a tense of aspectual polarity 117–122
operator 405–407, 418
paradox 542
Implicature 365
Inalienable possession 321, 462
Inchoative 218, 222, 229, 230
Incorporation 181
Incremental change 225, 226, 227, 231
Incremental theme 479–480, 490, 491, 540–541, 549

Indexical tense. See Tense (referential)
Indexicality 280, 282, 284
Indices 398
as features 400

Inertia 198

Inflect 246

Infinitive 211–213
future reading 34–36
generic interpretation 500
irrealis vs. realis interpretation 500–501, 520–522
logical form and compositional semantics 44–50
Romanian infinitive nominals 77–80, 82–84, 96–98
simultaneous reading 28–34

Inner Aspect Phrase. See Aspect
Instrument 217, 222, 230, 231
Interpreted Logical Form (ILF) 283
Introductory Statement (IS) 55–58

in initial position (IIS) 55–58, 63–64
in noninitial position 55–58, 64–68
Ippolito, M. 263, 267

Modern Italian 182, 183
Old Italian 182, 183, 199
present and progressive 337–338
Southern Italian 200

Jackendo¤, R. 15, 224, 488, 649

Jaeqggi, O. 82
Jespersen, O. 132

Kamp, H. 5, 158, 433, 446, 557, 566, 591, 604, 609–612, 616–617
Kaplan, D. 578, 583

Kaye, R. 461, 499, 506, 507, 529

Kennedy, C. 394, 416, 421, 489
Keyser, S. J. 18, 20, 76, 84, 89, 218–220, 503
Kiparsky, P. 18, 389, 393, 400, 505
Klein, W. 9, 144, 252, 434, 503

Koizumi, M. 503

Korean 420
Kriika, M. 259, 391, 397, 479, 489, 540, 547, 602
Kupferman, L. 75, 83
Kuryłowicz, J. 246, 251, 252, 255

Lakoff, G. 486
Landau, I. 81
Landman, F. 12, 129, 330, 339, 341, 347, 349
LaPolla, R. 487, 489
Lasnik, H. 466, 499, 503, 513

Latin 186–187, 188, 190, 191, 192, 200, 242, 253, 255

Lecarme, J. 441, 447, 458, 523

Left Branch Condition 173
Levin, B. 16, 221, 223, 231, 394, 416, 478, 485, 489
Levinson, S. 600, 617

Lewis, D. 366
Lexical classes 541
Lexical entries 14

LF movement. See Movement

“Little v” (v) 21, 441, 448, 452–453

Locality constraints 171–175

Locational time adverbs. See Adverb

Ludlow, P. 591

Main clause 192, 193, 195–196
Manner 217, 218, 223, 224, 227
manner-of-motion verbs 223
manner-of-progression verbs 223
Index

Match Condition 500, 517
Matushansky, O. 508–509, 517
McCawley, J. 481, 486
Means 217, 219, 221, 222, 230
Measure phrase 411–412, 415, 421
Middle construction 223–225, 227, 231
Mittwoch, A. 491
Modal 198, 209, 239, 252
alethic 632–633
epistemic 209, 623–634
with stative complements 624, 634
metaphysical (alethic) 632–633
root 406, 623–634
semimodal 625, 625–626
past tense 209–211, 621–634
present tense 621–622, 625–634
tense 621–622, 625
Modal evaluation time (modal time) 624–627, 629, 631–632
Modality
epistemic 12, 374–376, 632–633
evidential 12, 374–376, 469, 632–633
Modal reading of the imperfect. See Imperfect Modals
and agreement 621–622
and negation 621, 623
and present/past alternation 622–623, 625
tense 621–634
Modal time. See Modal evaluation time
Modal verbs. See also Modal (true)
can 621–626, 628, 633
could 621–628, 631, 633
have to 622–623, 625–626, 631
may 621–622, 627
might 621–623, 626–628, 631, 633
must 621–624, 627, 632–634
need 621–622
ought 621–623, 627–628, 633–634
should 621–624, 627–628, 631–634
will 621–622
would 621–622
Modification of event. See Event
Monoclausal construction 193
Mood, 237, 252
Sequence of Mood, 555, 564, 570
Morphological merger 508–510
Morphology, Distributed 442, 525–526
Movement
constraint 497, 630–631, 634
head 508–510, 626, 630–631
LF movement
of past tense/perfect aspect above modal 631, 634
of modal above tense 626, 629–630
T to C 467, 497
Musan, R. 441, 446, 454
Narrative 603–605
Neo-Reichenbachian model of tenses. See Tense construal
Nominal
e(vent) nominal 75, 77–80, 82–84
object of 77–80
passive nominal 98
r(result) nominal, 75, 77–80, 82–84
Romanian infinitive nominals. See Infinitive
Romanian supine nominals. See DP
unergative configuration 84, 89, 90, 91
Nominalization 20–21, 520–521, 525
lexicalist view 101
derivational account 96
Non-cancelability 371–375
Noun (N)
complementation properties 519–523, 524
Noyer, R. 76, 525
Object
cognate 513
of nominal (see Nominal)
null prototypical 87
Objective case. See Case
Ogihara, T. 6, 214, 379, 571
Parsons, T. 130, 294, 330, 336, 339, 354, 391, 481
Partee, B. 5, 317, 458, 555, 557, 597, 604
Participle 238, 255, 317–318
past 188, 194–195
Particles 528
Passive 512
nominal (see Nominal)
imperfect (see Imperfect)
of the past 238, 254
past-polarity marker 633–634
perfect (see Perfect)
perfective (see Perfective)
progressive (see Progressive)
Past-shifted. See Tense interpretation (of modal)
Path 218, 223–225, 231
Perfect 147–149, 152, 165–166, 172–174, 182, 187, 193, 200, 624, 629, 631–634. See also Aspect
past 238
present 240
shift 187, 193
Perfetive 2, 21, 151, 156, 169, 240, 242, 246, 249, 250, 253
operator 418
past 238, 254
Perfectivity/imperfectivity 271–275, 294
Perfectum 246
Performatice 242, 245, 254
Periphrastic construction 182, 183, 188, 190, 192, 193, 200
Pesetsky, D. 17, 222, 383, 390, 441, 465, 466–468, 495, 500, 531
Portuguese 253, 425–437
Possessive construction 450, 456–468, 533
Predicate Phrase (PrP) 525–527, 533
Predication 154, 158, 167–169
as encoding genericity (see Genericity) and reconstruction 127
Prediction reading 196
Prefixed tense 240–242, 247–249
Preposition (as instance of T) 506–510
Prepositional Phrase (PP) as complement of A 506, 508 as complement of V 513, 518 internal structure 508–510
PP time adverbs (see Adverbs) Preposition-trace effect 506–507 Present 145–147, 240–244, 249, 250
and empty locative arguments 137–140 and existential interpretations 134, 138, 140 and imperative tenses 134–140 and the stage- vs. individual-level distinction 134–135, 137
under past 244
Present perfect. See Perfect
Presupposition 367
Preterite 246
Privative 255
logical form 340–342 operator 397, 408 past 245
Projection principle 16
Pronouns (reflexive) 321
Prospective 150, 152
Pseudopassive 529
Punctual aspect. See Aspect
Pustejovsky, J. 491
Pykkänen, L., 391, 441, 468, 526
Q(quantificational)-adverbs. See Adverbs
Quotations 7, 55, 71 [+ quoted] feature. See Features
Ramchand, G. 389, 391, 417, 489, 491
Rapoport, T. 223, 227
Rappaport Hovav, M. 16, 221, 223, 231, 478, 485
Reference time. See Time (Reichenbachian)
Reichenbach, H. 3, 204, 207, 214, 235, 597–598, 616
Reinhart, T. 222, 478
Relative tense 237, 247, 252
Report 605–606
Representation-source theme 489–490
Resultatives 545–547, 548–549
resultative construction 478–484, 487, 491
Reyle, U. 5, 158, 433, 609–610, 612, 616–617
Rizzi, L. 88
Roberts, C. 181, 295, 296
Roberts, I. 317
Rohrer, C. 557, 666, 604, 612
Romanic 181–200, 241–244
Romanian 75–114
infinitive nominal. See Infinitive supine nominal. See Supine verbal supine. See Supine
Rothstein, S. 231, 544–546
Russian 67, 403–405, 419
Saito, M. 503
Salish 446, 523
Schein, B. 591
Schlenker, P. 556
Scope reversal of tense and modal 626, 629–634
Scottish Gaelic 420
Semitic 235, 237, 246, 252
Sequence of Mood 555, 564, 570
Sequence of Person 561–564
Sequence of Tense (SOT) 6–8, 15, 204, 254, 278–284, 289–291, 627–628, 633
Shift operations 544–545, 546, 551
Shifted readings 39, 41–42, 203, 209, 624 future 39, 41–42, 194, 200, 624
Siloni, T. 76
Simultaneous. See Tense interpretation (of modal complement)
Simultaneous reading 203 of clausal complement, 33–36, 241, 242–244
Slavic 235, 244, 419, 421
Smith, C. 10, 355, 419, 425, 433, 601, 616
Somali 441–472, 523
SOT. See Sequence of Tense
Spanish 425–437, 472, 629, 643–646
a as object marker: 504, 530
Spatiotemporal predicates 143–145, 151–152, 164, 175
Speaker and subject perspective 266, 277–278, 282, 285–286
Specifier 508–510
Squartini, M. 132–133
Stage-level vs. individual-level 116, 134–140
Stalnaker, R. 366, 367, 564, 592
Statives 624, 634
general 601–602
interaction with semantics of complementation

Stechow, A. von 559, 591
Stone, M. 5, 555–557
Stowell, T. 4, 143, 144, 252, 385, 499, 500, 503, 520, 530, 614, 621, 633
Structural case. See Case
Subjacency 171–172
Subject (of nominal) 82–84
Suffixed tense 236–240
Süßer, M. 55, 59

Supine
Romanian supine nominal 77–80, 82–84, 98–100
Romanian verbal supine 84–86
Swart, H. de 433
Synthetic form 182, 187, 188–191, 193–194, 199, 236, 245, 249
Szabolcsi, A. 76, 528

Telic 235, 248–249
[+/− telic] feature. See Features
telic head 390, 393–395, 398, 408
telic predications (events) 93
verb stems 395, 397
and case 38, 389–391
representation of 341–342
syntactic construction of 397–400
Telos of event 12–13
Temporal
adverb, interaction with futurity 29–30
anchoring 268, 280–284, 292
arguments 235
mismatches 379–382
phrases 275–278
substitution operator 36–38, 44–45
Temporalinity in discourse 601–603, 615
Tenny, C. 13, 226, 231, 391, 477, 479, 489, 528, 540
Tense 239–240, 253. See also Past, Present
absolute vs. relative 236, 237, 243, 252
anaphoric 187–188, 194–197, 200
and case 17, 23 (see also Case)
deictic 188, 200
non-deictic 236–237
dependency 240, 242–244, 255
in embedded clauses 6
feature (see Features)
future-shifted reading (see Future)
and modality 6, 11–12, 21–22
in nominals 3, 19, 441–472 (see also Determiner Phrase)
operator 62–64, 447
and possessive constructions (see Possessive constructions)

Tense (T)
defective 512
T(ense)-chain 236, 300, 441–442, 470
T(ense)-controller, 17, 311–312
uninterpretable feature (uT) 441–442, 466, 495
T_o 503
nominal 518–523
compatibility with T, 527
semantics: 504–505
verbal 511–516, 523
T_s 503
Tense-Anaphora pattern 605, 608, 611–613, 615
continuity pattern 605, 610–612, 615
deictic pattern 606, 610–611
Reichenbach theory 598–599, 610
syntax-based approach 614–615
Tense construal (model of)
logical approaches 5–8
(neo-)Reichenbachian 3, 235, 236–244, 253
as predicate 4–5, 11
Tensed modals. See Modal
Tense interpretation
of modal
double access 627, 633
past-shifted 627–628, 631–634
simultaneous 627–628, 633
of modal complement
future-shifted 624, 632, 634
past-shifted 624–625, 628, 631–632
simultaneous 624, 632, 634
Tense language 236
tenseless language 235, 250, 442
Tense phrase (TP) 239
Tense restrictions 435–437
Terminativity 236, 246, 255, 270–275, 277
That-trace effect 498
Time (Reichenbachian)
default interpretation 184, 188
event time (ET) 184, 187, 194–197, 200, 237–238
reference time (RT) 184, 195–196, 237–238, 598, 612, 614
speech/utterance time (UT) 184, 195–197, 237–238
Time adverb. See Adverbs
Time reference 246, 250
Time topic 11, 261–262, 264, 277, 286–287
Torrego, E. 17, 390, 441, 466–468, 495, 503, 510, 530
Transitive reflexive verb. See Verbs
Transitivity 217, 219, 221, 222, 229
Travis, L. 503, 508, 630, 634
Turkish 378–379

Unaccusative. See Verbs
Unaccusativity 512–513
Unbounded events and states 599, 609, 615
Upper Limit Constraint, 558
generalized, 570–571
Uribe-Etxebarria, M. 434, 438, 510

Valin, R. van 487, 489
Vendler, Z. 14, 220, 225–226, 235, 331, 486, 602
Verb (V)
complementation properties 514–518, 524
light 513
movement 181
Verbs
of attitude 642–645
of change of state 486, 488
of communication 639–640, 651–652
of consumption 488–489
of motion 487
transitive reflexive 90
unaccusative 407, 466, 479–480, 491
unergative 512
Verkuyl, H. 231, 477, 491
Vikner, S. 104, 253, 480, 629

Webelhuth, G. 108
When-clauses 165–166, 169–171
Wilkinson, K. 123
Williams, E. 126, 449, 528
Witschko, M. 523

Yoruba 250

Zagona, K. 4, 143, 252, 503, 614, 624, 633
Zeit Phrases 143, 145, 154, 159, 165–167, 175