Linking Constructions into Functional Linguistics

The role of constructions in grammar

Edited by
Brian Nolan
Elke Diedrichsen

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Elke Diedrichsen

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Introduction

There is a pressing need in the linguistics community for a book on syntax at the interfaces between syntax, semantics, lexicon and constructions, within a functional Role and reference Grammar (RRG) perspective where the lexicon has heretofore had a prominent and special role in the grammar. It has been recognised in the literature (Levin & Rappaport Hovav 2005: 189–193), in respect of multiple argument realisation, that sometimes the projectionist approach of lexicalist theories, such as RRG, appears to run into difficulties with uses of language that suggest an argument structure different from that projected by the verb. These instances of seemingly construction-based argument structure pose a challenge to the descriptive adequacy of RRG. That is, when the argument structure of the verb, as expressed in the RRG lexicon, does not appear to be predictable by the verb via its lexical entry, as would be the case with the novel and creative uses of verbs that are common and normal in everyday use of language.

The RRG theoretical machinery includes a theory of the lexicon, a linking system and a syntactic inventory of constructional schemata. We ask the question: Is the theoretical apparatus for treating constructions in RRG, in a functional model of grammar with a strong theory of the lexicon, actually under-utilised at present and in fact represents a better-motivated device to characterise “constructions” in the grammar? Can it be that the challenges of constructions are better answered within RRG via the characterisations of constructions, within the constructional schemata, formally articulated with the interfaces to semantics, syntax, morphology and indeed pragmatics and lexicon expressed?

In Van Valin and LaPolla (1997) an approach is presented that mediates the relationship between the rules of syntax and the lexicon. In that account, the grammatical structures of a language are stored in a syntactic inventory as constructional templates. That is, as constructions, more or less analogous to the idea of constructions as found in Construction Grammar. Fillmore et al. (1988: 36) is cited as justification for the approach taken in RRG:

‘By grammatical construction we mean any syntactic pattern which is assigned one or more conventional functions in a language, together with whatever is linguistically conventionalised about its contribution to the meaning or the use of structures containing it.

On the level of syntax, we distinguish for any construction in a language its external and its internal properties. In speaking of the external syntax of a construction we
refer to the properties of the construction as a whole, that is to say, anything speakers know about the construction that is relevant to the larger syntactic contexts in which it is welcome. By the internal syntax of a construction we have in mind a description of the construction’s make-up.’

Presently however, RRG views constructions as having two separate but related components: (a) a syntactic inventory of all the syntactic templates (which represents parts of the structure of a sentence) for the particular language, and (b) a lexicon contains the lexical entries, especially for verbs but also for the set of other categories. In contrast, the Construction Grammar view of constructions is that they encapsulate all information, including information considered lexical in RRG, in a a theory-specific integrated manner within the construction. These then represent two different poles of thinking about constructions, while recognising the contributions of constructions in language use. Additionally, in the RRG view of constructions the constructional templates contain relevant morphological, syntactic, semantic and pragmatic components that need to be considered as contributing to the construction (Van Valin & LaPolla 1997: 432; Van Valin 2005: 131–135). Van Valin (2005: 132) offers the English passive construction as a good example of a construction containing, as it does, the interaction of the general and language specific features, within a characterisation of voice constructions. The constructional schema containing this information is presented semi-formally in RRG.

It is especially interesting, then, that Van Valin (2004) foresees the possibility of reconciling constructions within these two polarities of thinking, as represented by the lexical-projectionist accounts, like RRG, and constructionist approaches as represented by, for example, Pustejovsky’s Generative Lexicon (Pustejovsky 1995) and indeed, Goldberg’s Cognitive Construction Grammar (Goldberg 1995), within an RRG account. Specifically, Van Valin argues that:

‘The first approach […] which has been dubbed the ‘projectionist approach,’ […] while the second, which has been termed the ‘constructionist approach,’ has been championed by Goldberg (1995), Pustejovsky (1995) and Michaelis & Ruppenhofer (2001), among others. The two approaches have often been viewed as conflicting and incompatible with each other, but in this paper it will be argued that they are in fact complementary and therefore not necessarily in conflict with each other.’

An interesting observation by Van Valin (ibid) is that the two approaches represent different perspectives on the construction of sentence meaning. That is, the projectionist approach represents the speaker’s perspective, while the constructionist approach represents the hearer’s perspective. In RRG terms, then, taking on board the speakers vs. hearer perspectives, the former is held to fit naturally with the linking from semantics to syntax, whereas the latter fits naturally with the linking from syntax to semantics.
This book is a collection of papers, characterising constructions of a diverse and interesting collection of languages by scholars across the world, that place emphasis on constructions via RRG constructional schemata. The challenges of the book will be to place constructions (via RRG constructional schemata) into a more prominent perspective in RRG and to integrate current thinking regarding constructions into the functional RRG framework. RRG as a functional grammar is strongly lexicalist with a robust linking algorithm mediating the interface between semantics, lexicon and syntax. It incorporates constructions into the general theory via constructional schemata stored in the syntactic inventory. RRG also makes strong claims regarding descriptive and typological adequacy (Van Valin & LaPolla 1997; Van Valin 2005; Butler 2003a, 2003b; Butler 2009: 24).

In these papers, the morphosyntactic coding of the arguments and also verb agreement is determined for a construction. As RRG abdicates the concept of a “Subject”, it introduces the “Privileged Syntactic Argument” (PSA), as the unmarked argument that controls verb agreement. It is deduced from the Actor and Undergoer assignments via language-specific rules, which are called “PSA-selection principles”. These involves the selection of the syntactic templates for the syntactic representation and following which, the predicates, arguments and adjuncts from the logical structure are assigned to positions in it. This happens according to language-specific rules that have to be described as parts of the RRG linking system.

RRG faces a variety of challenges to its claims of descriptive, typological and explanatory adequacy (Butler 2009) and these challenges pivot around both the notion and place of a construction within the grammar. Constructions seem to be found at the level of the clause to the level of the morphological word, and possibly lower into the phonological level. The important questions for RRG are therefore:

1. How does the theory understand a construction?
2. What information does a construction contain?
3. How do the constructions relate to other parts of the grammar?
4. How do the constructions relate to other constructions?
5. Is (part of) our grammatical knowledge organized in constructions?
6. Do the constructions include information about both form and function/meaning?
7. Are the constructions organized in a structured network with other constructions?

In addition to syntactic information, constructions may also specify lexical, semantic and pragmatic information. Constructions may be idiomatic where the semantics and/or pragmatics of the larger structure are not predictable from the set of lexical items in the construction.
The constructional schemata suggested by RRG are comparable with the popular account of Construction Grammar, where it is argued that every argument structure construction, for example, should be treated as a “construction”, where the syntactic features, including the number of arguments, are not determined by the valence or Aktionsart of the verb, but by the construction itself. It is believed here, that constructions are stored and applied as regular patterns that are acquired at a very early age (cf. for example Goldberg 1995, 2006). As argued by Diedrichsen (2010), the Aktionsart-based approach to argument structure put forward in RRG runs into problems with constructions where the argument structure is not predictable by the verb via lexical entry, as it would be the case with novel verbs, loan verbs and creative uses of verbs, which are ubiquitous in everyday discourse. It is also argued here that many of the assumptions that lead to the RRG-notion of the syntax-semantics-interface, as for example the existence of two, not three, macro-roles and the formulation of the logical structure with slots for one, two, or three arguments, are basically not motivated by the semantics of verbs, but rather by an account that describes sentence grammar from the perspective of the transitive construction, of which monotransitive and ditransitive constructions are treated as deviations (see Haspelmath 2008 for a similar argument).

In recent years there has been a growing recognition that the RRG account of constructions is an under-utilised resource that deserves a wider application to problems in cross-linguistic analysis (Diedrichsen 2010, 2012, 2013a, 2013b). More recently too, RRG has had several challenges to this account from Construction Grammar (Butler & Martín Arista 2009; Goldberg 2006; Michaelis 2006 & 2009). Within the recent work on the RRG account of the layered structure of the word (Nolan 2011), and also lexical polysemy in Irish (Nolan 2013, 2012a, b), there has been a significant recognition that constructions seem to exist at the level of morphology where lexical items may, in many cases, be viewed as constructions themselves. Nolan (2011, 2012b) proposes a view of the construction in RRG within an enhanced perspective in which constructions are posited to be structured grammatical objects with a unique constructional signature that uniquely identifies the schema, that the construction has an input and an output, and that it contains a local workspace, in the sense of Van Valin (2005: 161) over which the processing of the variables and the application of the various lexical and grammatical rules apply, according to the constraints within the schema. This extended view of constructions subsumes the current conceptualisation of RRG’s constructions. The linking over the syntactic, semantic and pragmatic interfaces, the RRG linking system, resides in the body of the construction, and this interacts with the lexicon as needed in a model where the lexicon provides relevant lexical information to the construction, mediated via the local execution of the in-construction linking according to RRG principles.
Instead of a syntactic inventory, it is suggested that the constructions can be better understood as residing in a syntactic construction repository, with a motivated internal architecture that facilitates the fast retrieval and activation of a constructional schema based on the identification of an identifying constructional signature for real-time linguistic processing. The resulting view of constructions is compatible with RRG while situated in a model that, we believe, will prove amenable to allowing for an RRG treatment of idioms and metaphoric constructions, lexical polysemy within verbs and morphological constructions within the layered structure of the word and deliver a thorough and adequate means to address the challenges posed to the RRG account of the role and place of constructions within a lexicalist functionalist model of grammar.

The book is a collection of articles that will serve the scholarly community as a reference work. As we indicated earlier, there is a growing awareness of the significance of constructions in grammar in the world’s languages, and this has been reflected in a number of recently published volumes (for example, Van Valin 2008; Butler & Martin Arista 2009; Fillmore et al. 2009; Goldberg 2006; Michaelis 2006, 2009; Fried & Östman 2009). To date there has not been a single volume that addresses the issues of constructions within an RRG account with a comprehensive, coherent and integrated analysis of the grammars of particular languages, as we propose.

This edited volume will fill this gap, offering a collection of papers dealing with different aspects of constructions (as RRG constructional schemata) in a range of related and unrelated languages in descriptive and cross-linguistic treatments that are based on the same RRG theoretical framework. As a result, this volume represents the first instance of cross-linguistic comparison of these important discourse and syntax-related phenomena. Further, this volume will contribute towards providing a comprehensive overview of these constructions, which are central to our understanding of how human languages function.

The key important aspect of this scholarly work is that it is grounded in the functionally oriented world of linguistics within a theory that has strong claims of descriptive and typological adequacy, that is, Role and Reference Grammar. The book will represent a valuable step forward in linguistics research due to its use of the RRG theory and its examination of constructions in language and within RRG. The book emphasises the role of constructions within the respective language analyses. The various chapters of the book provide original and scholarly analyses of elements of the grammars of languages of the world across a rich variety of languages: Yaqui, Tepehua (Totonacan), Japanese, French and other Romance languages, Irish, Spanish, English and German. Additionally, the contributors are experts within their fields.
Because of this, there is a need for a scholarly book that creates a well-motivated connection between the work in RRG and functional linguistics as lexical projectionist theories, and the non-lexicalist cognitive research domain of construction grammar, and which includes well written and careful analyses of the interfaces between semantic, syntax and lexicon, and how the contribution that constructions make to our understanding of grammar can be integrated into this view. The editors (and authors) believe that this is timely and necessary as a scholarly contribution to knowledge.

Uniquely, the book serves to motivate a structured connection between research in RRG and functional linguistics, and the role that constructions play in grammar. Each chapter provides an analysis of elements of a grammar of the language under study with an emphasis on the interfaces between syntax, semantics, lexicon and constructions across a number of active and voiced constructions. Accordingly, the book provides a context for an integrated view of the role of constructions within the RRG theory and in the grammars of several of the world’s languages. The book raises and addresses important challenges for functional, constructional and computational approaches to understanding constructions in language within the RRG framework and how these interface to the lexicon. This work will serve to create a bridge between the world of RRG, as a respected functional linguistics model, and constructions, such that constructions can have a principled and motivated position within a theory of a functional grammar, and be grounded in robust real analyses of real languages by scholars who are experts in these languages and the RRG theory. The work will be of interest to scholars of linguistics, researchers and postgraduate students internationally who work at the interfaces between syntax, semantics and the lexicon. It will also be of interest to the community of researchers within construction grammar. We motivate the idea of constructions as grammatical objects. The structure of the book is as follows:

In Chapter 1, Lilián Guerrero, provides ‘a construction-based account of controller-controllee relations in purposive constructions’ and examines purpose and rationale clauses, two subtypes of purposive constructions. A purpose clause is a VP-internal adjunct containing a gap bound to the matrix object. In this study of controller-pivot relationships for purpose, Guerrero argues that the lexical manifestation of the controlled element is a language-specific feature, and, as such, it can be covert or overt. In some languages, the two lexical manifestations are possible. That is, it is a construction-specific property.

In Chapter 2, James K. Watters explores the nature of ‘Transitivity, constructions, and the projection of argument structure in RRG’. In his view, traditional “projectionist” accounts of transitivity project the argument structure of a clause from the head verb. Some studies within Construction Grammar have shown this does not account for cases in which syntactic frames override a verb’s inherent
transitivity, arguing instead that transitivity is determined by the syntactic construction. Watters demonstrates that, in languages such as Tepehua (Totonacan), verbs have rigidly specified transitivity, with no such overriding of argument structure. Role and Reference Grammar treats argument structure as a projection from the composite logical structure, accounting for clause structure in both types of languages. Watters argues that languages like Tepehua, with rigid transitivity and overt derivational processes to change argument structure are languages in which the syntactic construction does not override the verb’s argument structure. Rather, the argument positions of the construction and the verb must overtly match.

Kiyoko Toratani, in Chapter 3, in a paper entitled ‘Constructions in RRG: A case study of mimetic verbs in Japanese’, examines the ability of a mimetic verb in Japanese (e.g. burabura ‘manner of swinging’ + suru ‘do’ → burabura-suru) to occur in different morphosyntactic environments. She argues that two seemingly contradictory standpoints, the constructionist’s view and a projectionist’s view, are actually complementary. The paper utilizes two constructional schemas to cover notable characteristics of transitive mimetic verbs: one for mimetics compounded by -sase ‘cause’ and the other for the colloquial alternate of the adverbial mimetic-transitive verb combination. This chapter argues that these seemingly incompatible positions on mimetic verbs are actually complementary and that the constructionist’s analysis represents the hearer’s perspective while the projectionist’s analysis is the speaker’s perspective. Toratani additionally asks if constructional schemas are needed for mimetic verbs in Japanese and argues in the negative for intransitive mimetic verbs (the large majority of mimetic verbs) and in the affirmative for transitive ones. This is because the large majority of mimetic verbs in Japanese are syntactically intransitive, no postulation of multiple constructions per verb, or ‘constructional schemas’ in RRG terms, is required; they present straightforward cases of linking in simple sentences. However, two constructional schemas are posited to handle transitive mimetic verbs: one involves a body-part causee, and the other involves the colloquial register of the adverbial transitive-mimetic verb combination.

In Chapter 4, Farhad Moezzipour, provides a ‘constructional perspective on clefting in Persian: An insight into differentiating between emphatic and deictic in’. Specifically, Moezzipour provide an RRG analysis of cleft sentences in Persian with respect to the role of interaction over the domains of syntax, semantics and information structure. Moezzipour argues that clefting is functionally motivated by the thematically marked expression of a single proposition via bi-partition syntax in the sense that a sequence of two clauses including a matrix and a cleft clause is employed in order to bring into focus an element that can be otherwise expressed as a non-focal element in the unmarked predicate-focus structure. This deviation from the unmarked predicate-focus structure feeds cleft sentences with a non-isomorphic/non-compositional feature that can be accounted for in terms
of a constructional framework that encompasses the morphosyntactic, semantic and informational properties that a cleft construction has. RRG is equipped with a bi-lateral syntax-semantics representation that is enriched with discourse-pragmatic considerations which enables it to facilitate processing of linguistic properties of cleft constructions by means of constructional schemas. Non-compositionality in a cleft construction implies that the semantic composition of the whole cleft construction is not the computable sum of the meaning of its parts. Hence, a construction-based account is necessary to explain how the mapping between semantics and information structure in clefting can be elucidated with respect to the syntactic juxtaposition of the constituents. This account characterizes these constructions on the basis of the RRG constructional framework.

Rolf Kailuweit, in Chapter 5, in a paper called ‘Radical Role and Reference Grammar (RRRG): A sketch for remodelling the Syntax-Semantics-Interface’ outlines a reworking of standard RRG in a radical RRG (RRRG). Thus, as characterised here, Radical RRG will abandon the (traditional) linking algorithms and instead advocate for three structural levels of different complexity that assumedly function simultaneously: lexical items, syntactic-semantic event templates and construction schemas. As in standard RRG, general rules and principles operate at all levels. The functioning of this centrepiece of RRRG is demonstrated with verbs of emotion and with anticausative constructions at the level of constructional schemas across various Romance languages.

Building on the premise that it is now accepted that constructions exist at all levels in grammar from clausal syntax to word level morphology and even within the lexicon itself where lexical items themselves may be viewed as constructions, Nolan, in Chapter 6, in a paper on ‘Constructions as grammatical objects: A case study of the prepositional ditransitive construction in Modern Irish’ argues that the standard RRG account of constructions is a significantly under-utilised resource. He poses a set of questions of importance to functional linguists: (1) How does the theory understand a construction? (2) What does a construction contain? (3) How do the constructions relate to the grammar and other constructions? (4) To what extent is our grammatical knowledge organized in constructions? (5) Do constructions include information about form, function and meaning? (6) Are constructions organized in a structured network? This paper then proposes a view of constructions as structured grammatical objects with a constructional signature to identify the schema, a construction input and output, a local workspace over which the processing of the variables and the various lexical and grammatical rules apply, according to construction constraints. Additionally, the construction is argued to have a principled relationship to the lexicon via the linking system. Constructions are understood as residing in a construction repository.
ditransitive constructions. These constructions resolve issues relating to syntactic weight, the informational status of referents, animacy of referents, definiteness and the various implicational hierarchies. The resulting view allows for a characterisation of the behaviour of the prepositional ditransitive constructions found in Irish, within a lexicalist functionalist model of grammar.

In Chapter 7, Jiménez-Briones and Luzondo-Oyón examine ‘Constructions in Role and Reference Grammar: The case of the English resultative’. This paper provides a detailed account of the English resultative constructions within an enriched the constructional schema building on Van Valin (2005), Nolan (2012a, b, 2013) and Diedrichsen (2010, 2011), while also drawing on insights coming from the family of Construction Grammars. An innovation here is that these scholars propose the incorporation of additional features to the construction – these are the motivation of the construction and its family resemblance connection; two essential issues which heavily depend upon the role of metaphor and metonymy. The family resemblance slot in the construction schema turns out to be indispensable in attaining a coherent degree of structured organization in the analysis of the other members of the family that a particular construction belongs to. This paper employs the overall formalism for the representation of constructions proposed in Nolan (2011, 2012a, b) and Diedrichsen (2010, 2011) and accordingly, each construction schema has a specific signature, a number of constraints on the signature, input and output strings, a workspace, and a construction body. Each construction schema also includes the new features, namely, information about the motivation and the family resemblance of the construction. These new elements allow a consideration of the architecture of a structured construction repository that would accommodate the family-resemblance constructions in RRG.

Carlos Periñán-Pascual, in Chapter 8 in a paper called ‘Towards a model of constructional meaning for natural language understanding’, argues convincingly that few attempts have been made to confront the new challenges in linguistics from a natural language processing approach. Accordingly, the goal of his chapter is to introduce the theoretical foundation underlying a language aware knowledge-based system called ARTEMIS that is intended to simulate natural language understanding in the framework of Role and Reference Grammar. In his paper he focuses on how this functional model can be enhanced such that constructions play a decisive role in the computational analysis of the semantics of a text. Although RRG was not devised within computational linguistics, this functional model turns out to be very useful for text meaning representation, which can be described in terms of a logical structure. However, he had to fully integrate constructional meaning into RRG to deepen semantic processing by incorporating the fine-grained constructional schemata from the Lexical Constructional Model
(LCM) into FunGramKB, the functional grammar knowledge-base. In this way, the knowledge base provides a lexico-conceptual architecture in which to anchor a comprehensive model of constructional meaning like the LCM.

The paper in Chapter 9 by Francisco José Ruiz de Mendoza Ibáñez on ‘Meaning construction, meaning interpretation and formal expression in the Lexical Constructional Model’ gives an overview of the contribution of the Lexical Constructional Model (LCM), related to RRG, to our understanding of meaning construction, meaning interpretation and formal expression. It has placed emphasis on the role of constructional meaning in this process, while making critical revisions of other constructionist accounts of language in use, whether cognitivist or functionalist. It posits the notion of replicability of a construction, which allows the analyst to give constructional status to non-frequent form-meaning pairings in a way that is coherent and compatible to the nature of the language to which the construction belongs. The paper argues that verbal meaning is always projected into syntax through constructional meaning. This leads to a view of compositionality that is markedly different from the one in Langacker’s Cognitive Grammar: meaning is not composed by means of assemblies of concepts, but rather by making use of the conceptual scaffolding provided by constructions. It relates formal expression to meaning representation in terms of idiomatic and non-idiomatic constructions. In this connection it has specified the requirements for full formal expression and related them to the format of constructional templates in the LCM.

In Chapter 10, a paper called ‘Constructions in the Lexical Constructional Model’ by Christopher S. Butler discusses the concept of construction in the Lexical Constructional Model, focusing on difficult tensions, concerned largely with the relationship between meaning and form in constructions, which have arisen in the model as a result of contributions from three different groups of scholars: functionalists, cognitivists and computational linguists/computer scientists. The article plots the relationship of the LCM and its use of ideas from Role and Reference Grammar, and also assesses the influence of the cognitivist contribution and the input from the computational knowledge base, FunGramKB, also, as it turns out, based on RRG. Finally, it summarises recent work on characteristics of constructions and their role within the RRG model, suggesting that the new proposals for treating constructional schemas as central to RRG could prove useful in resolving many of the theoretical issues regarding the role and place of constructions mentioned in this book.

In the final paper in Chapter 11, entitled ‘From idioms to sentence structures and beyond: The theoretical scope of the concept “Construction”’, Diedrichsen argues that constructional approaches are often held to have a number of advantages over projectionist accounts as they can explain phenomena that are not
Construction Grammar defines constructions as linguistic signs with a strong “form/function”-correlation (Goldberg 1995, 2006). Constructions are described in terms of idioms, and also on the level of phraseologies and sentence structure. To cover the scope of the concept, an account is needed that allows some variability in the architecture of linguistic constructions. In RRG (Van Valin 2005), features of constructions are represented by the use of Constructional Schemas which display the knowledge associated with constructions in terms of semantics, syntax, morphology, pragmatics. They are flexible enough for the description of a great variety of construction types, as they allow for the semantics, syntax etc. slots to be filled with features to variable degrees. However, Constructional Schemas are claimed to be relevant for the linking only in cases where “idiosyncratic, language-specific features of constructions” (Van Valin 2005:132) apply. It is assumed that generally, the argument structure of a construction follows from the semantics, i.e. the logical structure of a verb. Diedrichsen proposes to use Constructional Schemas from RRG as descriptive tools for constructions in general, which includes argument structure constructions and also grammatical patterns for word- and sentence structure formation. The construction is presented as a grammatical object with a signature that identifies it and a context constraint that distinguishes it in cases of constructional ambiguity (Diedrichsen 2010, 2011, 2012). Following Jackendoff (2002), it can be argued that constructions are learnable items with varying degrees of formal and semantic variability. Constructional Schemas are utilised for the description of the constructions themselves, their emergence, and also the extra-linguistic knowledge associated with them. The interpretation of the sentence may, for example, require specialised constructional knowledge in the “Pragmatics” slot, when the appropriate speech act is not the one generally associated with the sentence type on hand. Diedrichsen then takes the notion of constructional knowledge further and expands it to include constructions whose use and functionality is based on cultural knowledge. These constructions require a mix of culturally acquired background knowledge and situational factors, and their use is deeply embedded in basic behavioural patterns in a society of speakers. She explains their pragmatic effects by adhering to Dawkin’s notion of the cultural unit “meme” and Wittgenstein’s idea of “life form”.

The collection then is the first RRG collection of grammatical descriptions for various languages that emphasise the role and importance of the construction-schemata, and the explanatory power they contain to understanding grammatical phenomena at the interfaces that appear to go beyond the lexicon. We hope that it will contribute to serious linguistic discussion and research on constructions as grammatical objects with a structured relationship to the lexicon and, additionally, the role that constructions play in human language.
References


Controller-controllee relations in purposive constructions

A construction-based account

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This paper examines purpose and rationale clauses, two subtypes of purposive constructions. The study of these constructions has been mainly developed for English within formal syntax. A purpose clause is a VP-internal adjunct containing a gap bound to the matrix object (i.e. controllee), while a rationale clause is a VP-external adjunct lacking a gap bounded to the matrix object. A similar approach to controller-pivot relationships for purpose has been adopted in previous studies in Role and Reference Grammar. Based on cross-linguistic data, I argue that the lexical manifestation of the controlled element is a language-specific feature, i.e. it can be covert or overt. In some languages, the two lexical manifestations are possible, i.e. a construction-specific property.

1. Introduction

When analyzing the syntax and semantics of simple clauses, the significance of constructional schemas tends to be straightforward. In a constructional schema, aspects of the semantics of predicate as well as particular features of the construction as a whole both contribute to the argument structure expressed in that sentence. The final meaning is the result of the interaction between the verb meaning and the construction meaning (Goldberg 1995). Role and Reference Grammar (henceforth RRG) recognizes the relevance of constructional schemas when explaining ‘idiosyncratic, language-specific features’ of constructions (Van Valin 2005:132).

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1. This paper is part of a larger project exploring purpose clauses and control relations in Yaqui and other languages (see Guerrero 2011, 2012, under review). I am grateful for the valuable discussion on this topic with the participants of the 2011 RRG Conference in Chile, and to the anonymous reviewers of this article for helpful suggestions.
The form-function correspondence schemas are supposed to be stored as part of our linguistic knowledge, and applied in cases where the construction is not a direct consequence of the valence of the verb or when the general argument realization principles of the model do not apply.

Two subtypes of purposive constructions are examined in this paper: purpose clauses, as in (1), and rationale clauses, as in (2). The study of these constructions has mainly been developed for English within formal syntax. It has been argued that a purpose clause is a VP-internal adjunct containing a gap bound to the matrix object, while a rationale clause is a VP-external adjunct lacking a gap bounded to the matrix object (Faraci 1974; William 1980; Jones 1991; Bach 1992). Another formal difference is that purpose clauses are incompatible with ‘in order’ (2b). The following examples come from Van Valin (2009).

(1) a. \textit{Pat brought the book} \textit{i for her sister to read }\ldots \textit{i} \\
a’. \textquote{Pat brought the book for her sister to read it}  \\
b. \textit{Pat} \textit{brought the book} \textit{i} \textit{to read }\ldots \textit{i} \\
b’. \textquote{Pat brought the book to read it}

(2) a. \textit{Pat brought the book in order (for her sister) to read it}  \\
b. \textquote{Pat brought the book in order (for her sister) to read it}

Cutrer (1993) and Van Valin (2009) also discuss the two clause types in English. Within RRG, a purpose clause exhibits an obligatory missing syntactic argument in the linked unit, whereas in a rationale clause there is no missing argument, but a pronoun. In the former, the obligatory missing argument, the pivot, is what would be the immediately post-nuclear element (i.e. the undergoer) in the infinitival core, since the pre-nuclear argument (i.e. the actor) may be different (1a, b). There is no obligatory controller-pivot relationship of any kind in rationale clauses (Van Valin 2009: 47–48).

The aim of this paper is to extend the study of purposive constructions outside of English. I follow Cutrer and Van Valin’s assumption that in purposive constructions there is an argument of the linked core controlled by an argument of the main unit, but I deviate in the definition of control relations. In order for the RRG analysis to be valid cross-linguistically, I suggest that controller-controllee relations are better defined in semantic rather than structural properties, i.e. referential dependency. The lexical manifestation of the linked argument, i.e. the

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2. In these examples, co-referential arguments are co-indexed; the ‘\ldots’ is for illustrative purposes only and indicates a missing syntactic argument which is co-referential with an argument of the main unit.

3. In RRG, the Privileged Syntactic Arguments are divided into controllers and pivots. In the sentence \textit{Chris slapped Pat, and then }\ldots \textit{ran away}, \textit{Chris} is the controller of the missing argument in the second clause, and the syntactically missing argument is the pivot.
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controllee, is subject to language-specific restrictions, i.e. it can be covert and show structural control (e.g. the gap in (1)) or it can be overt and yield inherent control (e.g. the pronoun in (2)). In some languages, the two lexical manifestations are possible, i.e. a construction-specific property. In order to support this, I show data from several languages where the lexical manifestation of the controllee vary, not only inside a purposive construction but also within complementation.

In what follows, I briefly outline the traditional approach to purpose clauses within formal syntax and then within RRG (§2). Based on data from Yaqi and Spanish, I then examine some properties of controller-controllee relations in purposive constructions based on the notion of referential dependency, and the structural/inherent control patterns on the controllee (§3). In §4, I advance an analysis of purposive constructions following RRG’s constructional schema.

2. Defining purpose and rationale clauses

The main task of any theoretical model applied to purposive constructions is to account for the control of the non-lexical elements in a regular way. Most commonly, control is determined in syntactic terms, i.e. subject, object (Faraci 1974; Bach 1982), but it can also refer to thematic roles, i.e. agent, theme, patient, instrument (Jackendoff 1972; Williams 1980; Jones 1991; Cutrer 1993). Consistently, the pivot or controllee is defined as a syntactic gap. A typical purpose clause is illustrated in (3).

(3) Mary <i>brought John along [PRO<sub>i</sub> to talk to e<sub>j</sub>]</i><sup>4</sup>

From a sentence as in (3), Jones (1991) proposes three related purpose clauses (PC) in English based on the empty slot inside the dependent unit: object-gap, subject-gap, and in order-clauses. In all of these, the empty elements in the linked unit are, more or less, referentially dependent on overt NPs inside the matrix sentence (Jones 1991: 25).

(4) Obligatory control relations of empty slots in purpose clauses
   a. Object-gap clause (OPC)
      Mary <i>brought John along [____<sub>i/k</sub> to talk to ____]</i>

(Van Valin 2009:46). I use controllee, instead of pivot, in order to indicate the referentially dependent argument, which can be covert or overt in the linked unit.

4. In formal syntax, PRO and e are treated differently; the object-gap e cannot be PRO because it is in a governed and case-marked position, while the optional subject gap can be treated as a controlled element. That is, only the latter can be considered a case of control phenomena (Cutrer 1993: 168). Most of the examples in this section come from Jones (1991), where e is used for both subject- and object-gaps clauses.
b. Subject-gap clause (SPC)
   Mary, brought John along [__j to talk to her,]  

   c. In order-clause (in order-PC)
   Mary, brought John along in order [to __j talk to him,]  

Syntactically, OPCs have an obligatorily controlled gap in object position and an empty subject position, while SPCs have an obligatorily controlled gap in subject position (Jones 1991: 105). In a rationale clause, there are no empty slots. The interpretation of PCs crucially depends on how their empty elements are construed as referentially dependent on other elements in the sentence, especially the matrix theme (Jones 1991; May 1990). Thus, in an OPC, the missing object argument is subject to obligatory control by the matrix theme (5a); control of the OPC’s subject, on the other hand, is not obligatory (5b–c).

(5) a. We gave clothes to the Salvation Army, to use __i as they see fit  
    b. Bambi, was brought [__k to read __i to the children]  
    c. I brought this wine over [__k to enjoy __i with our dinner]  

In an SPC, the missing subject argument is also subject to obligatory control. Again, the controller is, preferably, the matrix theme (6a). A sentence like (6c’) is disallowed because there is not a matrix NP as the controller.

(6) a. Mary, brought John along [__j to talk to her,]  
    b. I brought this wine over for John [__j to enjoy __i with dinner]  
    c. We’ve been hiring guards to watch the children  
    c’. *We’ve been hiring Ø to watch the children  

In order-clauses do not involve obligatory control in object position. With respect to the subject, it may be controlled by the main subject (7a), it may be ‘context’ controlled, i.e. by someone else (7b), and it can have a lexical NP, i.e. no empty slot (7c).

(7) a. Mary, brought John along in order [__j to talk to him,]  
    b. The lights were turned off in order [__k to conserve electricity]  
    c. The lights were turned off in order for John [__j to change the bulbs]  

Although the formal analysis may be slightly more complex (see Jones 1991; Landau 2000 and further work), in summary it is said that in a purpose clause there is an empty slot in the linked unit functioning as the ‘object’; if there is a lexical element in that syntactic slot, then there is a rationale clause. Moreover, the empty slot for the linked ‘object’ must be controlled by the main theme, while the empty slot for the ‘subject’ may be controlled also by an NP inside the main unit.  

5. Some semantic differences are occasionally purported to distinguish the two clauses, but they can be very fuzzy (May 1990), and native speakers sometimes disagree in such
When dealing with English purposive constructions, Cutrer (1993) follows Bach (1992) in distinguishing the two clause types and thus adopts the same formal assumptions behind control relations, i.e. the referential dependency between an overt matrix NP and an unexpressed argument in the dependent unit. When identifying the controller, syntactic, semantic, and pragmatic factors, as well as the type and tightness of clause linkage, may intervene; when identifying the controllee, only syntactic factors are taken into consideration. In Cutrer’s analysis (1993: 177), rationale clauses are considered as a type of clause juncture, and hence there are no obligatorily shared arguments between the two clause units; instead, there is a post-nuclear pronoun when transitive, as in (9a–b). The subject gap has a non-obligatory control relation, since it may be filled or unfilled. If there is a subject gap, then the main actor is also the actor of the linked event, as in (9a–c). There are no other choices for the controller but the main actor. In (9d) the controller is a non-macrorole oblique core argument, i.e. the beneficiary. All the examples in this section come from Cutrer (1993).

(9) a. John$_i$ bought Mary$_j$, a book$_k$ (in order) [$_i$ to please her$_j$]  
   b. John$_i$ sang the children$_j$, a lullaby (in order) [$_i$ to calm them$_j$]  
   c. John$_i$ ran the race (in order) [$_i$ to impress his friends]  
   d. John$_i$ bought the turkey$_j$ (in order) for his wife$_j$ [$_i$ to cook it$_j$]

In contrast, purpose clauses are a type of core juncture, and then, there must be an argument shared between the two cores. In fact, it is possible to have two control relations, but only one is obligatory: the object-gap. In (10), the post-verbal gap is obligatorily controlled by the main theme.

(10) a. John$_i$ caught a fish$_j$ [$_i$ to eat$_j$ for dinner]  
   b. John$_i$ gave a tape$_j$ to Mary$_k$ [$_i$ to listen to$_j$]  
   c. John$_i$ built a chest$_j$ for her sister$_k$ [$_i$ to put her clothes in$_j$]

The author cites Bach (1982)’s syntactic tests for further distinctions. Bach argues that in a rationale clause (11a), the controller of the missing argument is the subject John$_i$, while in a purpose clause (12a), the controller is the matrix object Mary$_k$. The former can be clause-initial (11b) but not the latter (12b). It is also claimed that purpose clauses exhibit a ‘future orientation’ with respect to interpretations. One such potential distinction is in regards to intention (Balkanski 1992; Nissenbaum 2005): a rationale clause expresses the agent’s intention in acting as he does (i), while a purpose clause expresses only the participant’s intention (ii).

i. ?Someone left these leaves here for me to rake them  
ii. Someone left these leaves here for me to rake
the main clause (12c), but this is not always the case with rationale clauses (11c). The examples come from the original:

\begin{enumerate}
\item[(11)] a. John bought Mary a piano in order to play it
b. (In order) to please her, John bought Mary a piano
c. I bought it in order to use up my money
\end{enumerate}

\begin{enumerate}
\item[(12)] a. John bought Mary a piano to play
b. *To play, John bought Mary a piano
c. I bought it to give to my sister
\end{enumerate}

Moving beyond previous analyses, Cutrer (1993:177–8) also offers some valuable semantic characterizations. At the clause level, a rationale clause encodes the rationale or reason of the action; the goal to be accomplished results from the action/event encoded in the matrix unit, while the second event is the motivation for doing the first event. A purpose clause encodes the choice, possession, or transfer of possession of an item and the use to which that item is put. Accordingly, purpose clauses entail more restrictions on the choice of a matrix verb than rationale clauses: because a purpose clause revolves around the item which is used, possessed, or transferred, that entity functions in both cores, usually as the theme. It is also assumed that the obligatorily controlled argument, i.e. the post-nuclear gap, is controlled by the lowest ranking argument in the Actor-Undergoer hierarchy (i.e. the undergoer); the control of the subject-gap, the pre-nuclear gap (i.e. the actor), can also be semantically determined, e.g. the possessor of possession and use verbs, the recipient of transfer verbs.

In Van Valin (2009), the defining feature of English purpose clauses is again the obligatory control relationship between the post-nuclear arguments in each core. Thus, the obligatory missing argument is what would be the undergoer in the infinitival clause in *Pat brought the book to read* (1b) where the controller in the initial core is also the immediately post-nuclear argument, the main undergoer. In rationale clauses, the controller-pivot relationship involving pre-nuclear arguments is optional, e.g. *Pat brought the book for her sister to read* (1a) and so this is not the defining relationship for the construction. Again, rationale clauses do not involve obligatory controller-pivot relationship of any kind, e.g. *Pat brought the book in order (for her sister) to read it* (2). So despite the semantic similarities of the two constructions, their syntactic properties are different, particularly with respect to controller-pivot relationships (Van Valin 2009:48).

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6. The first part of this definition ‘the rationale or reason of the action’ closely resembles reason or causal adverbial constructions expressing ‘the motivation or cause for an action or event’, in a sentence like *the baby cried because she was hungry* (Van Valin 2005:206), one of the loosest linkage types. Additionally, the definition for purpose is extremely restrictive, since it only applies to certain transitive verbs in the main unit, i.e. utility purpose clauses. See Guerrero (submitted) for a comparison between reason and purpose clauses in Yaqui.
3. Purposive constructions within RRG revisited

The current RRG approach to purposive constructions requires some adjustments when one tries to extend the analysis cross-linguistically. Firstly, purpose and rationale are still distinguished in configurational grounds, i.e. in a verb-final language, there would not be a post-nuclear argument; see the example in (13a) from Yaqui. Secondly, obligatory vs. non-obligatory control are determined in terms of post-nuclear and pre-nuclear elements, respectively, which closely resemble VP constituents in formal syntax. Thirdly, and most notably, the two clause types are distinguished in terms of the formal expression of the controlled element inside the linked unit: if there is a gap, then it is purpose; if there is not a gap, then it is rationale. Although there is an obligatory referential dependency among the undergoers in each core in the examples in Yaqui (Uto-Aztecan) and Spanish below, strictly speaking, only the example in (13b) satisfies the requirement of a post-nuclear argument gap in the dependent unit.7

(13) a. Empo₇ tractor-ta₇ jinu-k [⊥₉ a₇ u’ute-bae-kai]  
   1sg.nom tractor-acc buy-pfv 3sg.acc fix-desid-clm  
   ‘I bought the tractor to fix it.’

b. Compré el tractor [⊥₇ para arreglar⊥₉]  
   ‘I bought the tractor to fix.’

b’. Compré el tractor [⊥₇ para arreglarlo⊥₉]  
   ‘I bought the tractor to fix it.’

A major difficulty for the study of purposive constructions is, perhaps, the fact that there is quite a range of possible forms expressing a purpose relation. To go one step further to our understanding of purposive constructions, in what follows, I first comment on some tendencies found in two on-going corpus-based studies of Spanish and Yaqui, and then I examine the lexical manifestations of the controller based on a variety of linguistic data.

3.1 Tendencies for the controller-controllee relations

All previous studies (Bach 1972; Jones 1991; Cutrer 1993; Van Valin 2009) analyze constructions where the matrix unit takes a two-place predicate, and the

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dependent unit also involves a two-place predicate. However, extensive language data have shown that purpose relations are commonly about the purpose of motion (Cristofaro 2003: 157; Schmidtke-Bode 2009: 41).

From a corpus of 303 Spanish purpose clauses (Guerrero 2012), I found that 66% (201/303) involve active events coding motion (come, go/walk, run, enter, exit, and so on), and change of position (stand up, sit down, among others), but only 25% (76/303) take a transitive verb coding possession, transfer or use-verb types. Motion predicates take only one core argument, and the construction encodes a situation where the main actor goes somewhere in order to obtain the realization of the intended event, i.e. motion-cum-purpose (Aissen 1984: 559). Accounting for control phenomena where there is only one possible controller is easy: the main actor obligatorily controls the identity of the linked actor. Some examples are shown in (14); notice that, though the linked actor tends to be unfilled, there are still some languages where it is filled (14c).

(14) a. Nupe (Kwa; Nigeria; George 1975)
Musa be [__ i láèbi]
Musa came took knife
‘Musa came to take the knife.

b. Jamsay (Dogon; Niger-Congo; Heat 2008: 625)
[kó sùmò__ i lé] yà:-rà-m i
NON.HUM.O wash.L in go-habit-L-1SGS
‘I am going (there) in order to wash it.’

c. South Efate (Southern Oceanic; Thieberger 2006: 317)
ku=totan [na ku=fam]
2SGS-REAL=sit PURP 2SGS.REAL=eat
‘You sit to eat.’

Without doubt, the interesting cases for control relations are found in sentences involving more than one core argument in the main and the dependent unit; very often, two control relations may take place in the very same construction. See the examples in (15) from Spanish and English equivalents.

(15) Thematic control relations in purpose clauses (Guerrero 2012)

<table>
<thead>
<tr>
<th>Controller</th>
<th>Controllee</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Juan, fue al río [__ a descansar]</td>
<td>actor</td>
</tr>
<tr>
<td>a’. John, went to the river [__ to rest]</td>
<td>actor</td>
</tr>
<tr>
<td>b. Juan, compró un libro, para [__ leer (lo)]</td>
<td>actor</td>
</tr>
<tr>
<td>b’. John, bought a book, [__ to read__]</td>
<td>actor</td>
</tr>
</tbody>
</table>

(Continued)
The tendencies for the controller-controllee relations in Spanish are shown in Table 1 above. In the current Spanish corpus, there is a strong tendency for the linked actor to be controlled by the matrix actor (15a, e, f) or by the matrix actor and undergoer together (15d); this is indicated by actor+ in the table; clauses where the actor and the undergoer are controlled by a matrix NP (15b) are common too; there are fewer examples where there is an obligatory control relation involving the dependent undergoer, such as in (15c). The very same tendencies are observed in the Yaqui corpus. In Table 2, I also indicate whether the main clause in Yaqui involves an intransitive or (di)transitive verb, and the former being more common. That is, based on the Spanish and Yaqui data, there is a clear tendency for a referential dependency between a matrix argument and an argument in the dependent unit.9

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8. A better English equivalent would be I gave my sister a book so that she would read it.

9. It does not mean that there must be an obligatorily referential control for all purposive construction types, but that there is a strong tendency to share one argument in semantic terms. The tendencies for actor controllers, instead of undergoer controllers, in these corpora can be due to the predicate types in the main unit (e.g. activity vs. non-activity, intransitive vs. transitive). All these patterns would need to be checked systematically in a larger sample in Spanish and other languages.
Table 1. Controller-controllee relationships in Spanish purposive constructions (N=351)

<table>
<thead>
<tr>
<th>Controller</th>
<th>Actor</th>
<th>Undergoer</th>
<th>Actor+</th>
<th>OblIQUE/ADJUNCT</th>
<th>None</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actor</td>
<td>251</td>
<td></td>
<td>24</td>
<td>6</td>
<td>6</td>
<td>281</td>
</tr>
<tr>
<td>Undergoer</td>
<td>13</td>
<td>29</td>
<td>14</td>
<td></td>
<td>17</td>
<td>46</td>
</tr>
<tr>
<td>OblIQUE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2. Controller-controllee relationships in Yaqui purposive constructions (N=179)

<table>
<thead>
<tr>
<th>Controller controller</th>
<th>A&lt;sub&gt;extor&lt;/sub&gt;</th>
<th>A&lt;sub&gt;extor&lt;/sub&gt;</th>
<th>U&lt;sub&gt;ndergoer&lt;/sub&gt;</th>
<th>U&lt;sub&gt;ndergoer&lt;/sub&gt;</th>
<th>U&lt;sub&gt;ndergoer&lt;/sub&gt;</th>
<th>OblIQUE</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main action intransitive (di)transitive</td>
<td>103</td>
<td>4</td>
<td>14</td>
<td>19</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2 The lexical manifestation of the controllee

The literature dealing with control phenomena focuses on complement-taking predicates involving infinitival complements, e.g. *try, promise, want, order*, and so on. The theory of obligatory control refers to hypotheses about how the controller of the missing syntactic argument in the linked unit is to be determined. There are syntactic as well as semantic approaches trying to predict what matrix argument is the controller. Within the semantic accounts, Comrie (1984) and Foley and Van Valin (1984) predict control relations based on the semantics of the matrix verb. Thus, the theory of control as illustrated in (16) is based on the macroroles, actor and undergoer, in the matrix predicate as the controllers. It applies to matrix predicates which are M-transitive (i.e. take two macroroles), and M-intransitive (i.e. take one macrorole).

(16) Theory of obligatory control (Foley & Van Valin 1984):
   a. Causative and jussive verbs have undergoer control (Control<sub>U</sub>)
   b. All other (M-)transitive verbs have actor control (Control<sub>A</sub>)

One of the most striking facts about control phenomena, as defined in (16), is how consistent control properties are across languages (Van Valin 2005:241). In English (17), Lakhota (18), and Dyirbal (19), for instance, the controllee inside the complement clause is left unfilled, i.e. the linked verb occurs in an infinitive verb form. From examples like these, the conclusion has been drawn that the typical instance of obligatory control involves a covert argument in the complement.
clause; neither free nor bound pronouns are assumed to be possible (Stiebels 2007). In English and Dyirbal, the controllee inside a purpose clause is also left unfilled. The Lakhota and Dyirbal examples come from Van Valin (2005: 241).

(17) English
   a. Chris tried to see Pat
   b. Kim persuaded Pat to go to the party
   c. Robin promised Sandy to wash the dishes
   d. Pat brought the book to read
   e. Pat brought the book for her sister to read

(18) Lakhota
   a. [Wówapi ki Ø-yawá] i-bl-úthe
      book the INAN-read read-1SGA-try
      ‘I tried to read the book.’
   b. Wówapi ki hená Ø-yawá-wičha-wa-ši
      book the those INAN-read-3PLU-1SGA-tell
      ‘I told them to read those books’

(19) Dyirbal
   a. Bayi yaṭa-Ø walma-ɲu [wayndi-li]
      NM.ABS man-ABS get.up-TNS go.uphill-PURP
      ‘The man got up to go to the hill.’
   b. Balan yabu-Ø baŋgul ŋuma-ŋgu
      NM.ABS mother-ABS NM.ERG father-ERG
gigan-n [banagay-gu]
tell-TNS return-PURP
      ‘Father told the mother to return.’

Acehnese is a language well-known for the special treatment of ‘grammatical’ relations in terms of actor and undergoer (Durie 1985; Van Valin 2005). As for control structures, verbs like try, begin, intend, and want allow the controlled actor to be optionally unfilled, as in (20a–b), and this is also true for undergoer control verbs, in (20c–d). Among other factors, the presence/absence of the controllee may be determined by the occurrence of some clause linkage markers introducing the linked unit, as nak (20b) and beu (20d), i.e. alternative clause linkages. As for purpose clauses, in (20e) the main actor controls the identity of the dependent actor and there is an explicit pronominal clitic in the linked unit, i.e. there is not a gap.

(20) Acehnese (Austronesia, Durie 1985: 253–257)
   a. hän=lôn=têm [(lôn=)jak u=keude lôn]
      NEG=1SG=want 1SG=go to=town 1SG
      ‘I don’t want to go to town.’
b. *abang geu=meukeusu*  
elder: brother 3sg=intend  
\[nak=geu=ceume’ucah uroe=nyoe\]  
DES=3sg=clear.scrub day=this  
‘The elder brother intends to clear scrub today.’

c. *soe yue’=neuh* [(‘neu)=jak keu=noe]  
who order=2sg 2sg=go to here  
‘Who ordered you to come here?’

d. *ka=lôn=yue*  
in=1sg=order  
\[jih beu=ji=pugot pinto=nyoe\]  
3sg DESID=3sg=fix door= this  
‘I told him to fix this door.’

e. \[ku,]= jak =[seumayang]\  
1sg = go= pray  
kee, dilee u = krueng  
1sg now DIR = river  
‘Now I am going to pray to the river.’ (p. 196)

In Chuj (Mayan), an ergative language, actor control verbs like *want* demand the controllee to be filled inside the complement unit (21a). It is not strange, therefore, that in purpose clauses where the main and the linked actors are identical, the controllee emerges as a bound pronoun (21b), i.e. there is no gap.

(21) Chuj (Mayan; Buenrostro 2007)

a. *tz-ø-in,-nibéj*  
NCOMPL-3B-1A-want  
\[tz-ø-in,-bat ta Chinapjul\]  
NCOMP-1B-go PREP Huehuetenango  
‘I want to go to Huehuetenango.’

b. *ix-in,-ja-i’*  
COMPL-1B-eat-INTR CLM FUT-1B-walk-IRR  
‘I came to eat.’

3.3 Structural and inherent control relations

Although there is a tendency for the so-called ‘equi-deletion’ phenomena in complementation, there is also a wide range of variation in the world’s languages when encoding co-referential arguments inside of complex constructions, i.e. Acehnese and Chuj complement clauses taking a covert but still semantically bound controllee. Based on cross-linguistic observations, Stiebels (2003, 2007) has developed...
Controller-controllee relations in purposive constructions

a different view of control phenomena within complementation. When discussing control and argument realization, she distinguishes structural vs. inherent control based on the lexical manifestation of the controllee. Among other properties, there is *structural* control (i.e. missing syntactic elements, gap, empty slots, null NPs), and *inherent* control (i.e. overt pronouns, clitics, agreement-inflection), as long as the referential properties of an overt controller determine the referential properties of a silent controllee (Stiebels 2007: 2).

Accordingly, the crucial feature of control is the obligatory co-reference of two arguments inside a complement sentence. This definition does not impose any requirement with regard to the structure of the whole construction or the status of the arguments involved in the controller-controllee relation, meaning it allows for the inclusion of a wider range of data excluded by the standard control approaches. What is more, if control is understood as a semantic relation of co-reference between two arguments, then we may provide a unified characterization of control phenomena for complement and purpose constructions: some languages may choose structural control (e.g. gap), others may select inherent control (e.g. bound pronouns), and others may have both options (e.g. gaps for ‘subject’, and bound pronouns for ‘object’ controllee).

English demands structural control for actor and undergoer control verbs, as illustrated in (17a–c) above. For purposive constructions, there is structural control when the referential identity of the linked actor is controlled by the main actor, as in *Pat brought the book to read* (17d), and when the main undergoer controls the linked undergoer, as in *Pat brought the book for her sister to read* (17e). When the main undergoer controls the referential identity of the linked undergoer, there may be structural control in a sentence like *Pat brought the book for her sister to read*, and inherent control in *Pat brought the book in order for her sister to read it*. As Cutrer reveals, the last controller-controllee pattern is the result of different clause linkages, i.e. core juncture demands structural control, whereas clause juncture exhibits inherent control ($\S$5).

In Spanish, on the other hand, there must be structural control with actor control verbs (22a, c) and undergoer control verbs (22b). As for purposive constructions, there is structural control when the main actor and the linked actor are identical (22d), but there can be both control types when the matrix undergoer controls the referential identity of the linked undergoer (22d, e). The next question

10. Stiebels shows very interesting cases of non-obligatory control relationships, i.e. variable, shift, partial and even split control readings, with verbs like *propose, ask, want, order*. See also Landau (2000) and Jackendoff and Culicover (2003).
would be which semantic or pragmatic factors are involved in each linkage type for each language, and that goes beyond the goal of this paper.

(22) Spanish equivalents of English examples in (17)
   a. Cristina intentó ver a Paty       Control_A
   b. Kim convenció a Paty para ir a la fiesta  Control_U
   c. Ruben le prometió a Sandra lavar los platos  Control_A
   d. Paty compró el libro para leer(lo)     Control_A
   e. Paty le compró el libro a su hermana para leer  Control_U

In Yaqui, actor control predicates demand structural control (23a), and the same must be true in purpose clauses with identical actors (23b). There are alternative structures for jussive verbs; there is structural control when the main undergoer controls the linked actor within a core juncture (23c), but inherent control when the linkage involves a clause juncture (23d).

11 When the controller-controlee relation involves the main and linked undergoer, there is again inherent control (23b). In (23e) there are two control relations and none involve the main actor: the main undergoer (recipient) controls the linked actor (i.e. structural control), and the main theme controls the dependent theme (i.e. inherent control).

(23) Yaqui (Guerrero 2006, 2012, under review)

Complement clause: structural actor control
   a. Ivan-Ø  kaa __i ubba-bae-k
      Ivan-nom  neg  bath-desid-pfv
      ‘Ivan didn’t want to bath.’

Purpose clause: structural actor control
   b. Empo_i  tractor-ta_j  jinu-k [__i  aj  u’ute-bae-kai]
      1sg.nom  tractor-acc  buy-pfv  3sg.acc  fix-desid-clm
      ‘I bought the tractor to fix it.’

Complement clause: structural and inherent undergoer control
   c. Empo_i  Goyo-ta_j  tekil-ta __j  tekipanoa-ne-sae-k
      2sg.nom  Goyo-acc  land-acc  work-pot-order-pfv
      ‘You ordered Goyo to work the land.’
   d. Empo_i  Goyo-ta_j  sawe-k [tekil-ta aj  tekipanoa-ne-’u]
      2sg.nom  Goyo-acc  order-pfv  land-acc  3sg.acc  work-pot-clm
      ‘You ordered Goyo to work the land.’

11 In Yaqui, the verbal affix -tua ‘cause’ yields nuclear juncture, while -sae ‘order’ exhibits core juncture; only the latter allows the linked verb to be marked by the potential suffix -po, but never -tua, i.e. operator dependency (see Guerrero 2006).
Purpose clauses: structural and inherent non-actor control

e.  
$$Min-O_j \ yoi-ta_j \ kaba’i-m_k \ reuwa-k$$
Fermín-NOM  foreigner-ACC  horse-PL  lend-PFV

$$[am \ _\ _j \ wiria-ne-betchi’ibo]$$
3PL.ACC  feed-POT-CLM

‘Fermin lent the foreigner the horses so that he would feed them.’ (lit. in order for him to feed them)

In Toqabaquita, both complement-taking predicates and purpose clauses involve inherent control. The main actor and the linked actor in (24a–b) are co-referential, and there is a bound pronoun inside the linked unit. In the purpose clause in (24c), there are again two controller-controllee relationships, first among the actor participants in each core, and then between the undergoer participants; for the second, there is a co-referential pronoun in the dependent verb. Notice that the referential phrase introducing the actor appears inside the dependent unit, instead of the main unit, i.e. backward control.

(24)  
Toqabaquita (Austronesian; Lichtenberk 2008)

Complement clauses: inherent actor control

a.  
$$Nau \ ku_i \ thathami-a \ [kwai_i]$$
1SG  1SG.NFUT  want-3.OBJ  1SG.FUT

$$rongo-a \ qa-kuqa \ uqunu \ fasi \ qoe]$$
hear-3.OBJ  SBEN-1SG  story  ABL  2SG

‘I want to hear (some) stories from you.’ (p. 1003)

Complement clause: inherent undergoer control

b.  
$$Kera \ tako \ fale_i \ [nau_i \ kwaiili-a \ raa]$$
3PL.NFUT  ask.sb.to.do.st  1SG  1SG.FUT  do-3.OBJ  work

‘They asked me to do (some) work.’ (1137)

Purpose clauses: inherent undergoer control

c.  
$$Tari-a_i \ teqe \ iqa_i \ [fasi \ qoko_j \ thau-ngi-a_j]$$
chase-3.OBJ  one  fish  PURP  2SG.SEQ  kill-TR-3SG.OBJ

‘Chase one fish so that you may kill it.’ (p. 1146)

The fact that the lexical manifestation of the controllee in complement constructions may vary within the same language, suggests that the cross-linguistic study of obligatory and non-obligatory control phenomena is much more complex than traditionally assumed (Stiebels 2007). What is important here is that purposive constructions may follow the same controller-controllee semantic relations, as well as the lexical manifestation of the controllee found in control predicates. In contrast to control verbs, to determine the range of obligatory vs. non-obligatory control relations for purposive constructions requires more corpus-based studies.
in the languages of the world. Meanwhile, we found some tendencies of semantic roles for English (Cutrer 1993), Spanish and Yaqui. For instance, if the main predicate encodes motion or change of position, then the main actor obligatorily controls the dependent actor; if the main predicate involves a transitive verb expressing possession, transfer or use-verb types, the main undergoer obligatorily controls the linked undergoer. If there is a human undergoer (recipient) involved in the main unit, there is a strong preference for a control reading of the linked actor. In the next and final section, I share a preliminary analysis of purposive constructions in terms of RRG constructional schemas.

4. A constructional schema for purpose clauses

Role and Reference Grammar discusses a wide range of grammatical phenomena and linguistic variation of simple and complex sentences. The analysis considers the syntactic and semantic representations of a particular sentence and how they are related to each other, as well as the discourse-pragmatic factors that may intervene between the two representations; there is also a set of rules, called the linking algorithm, that establish how the syntax, semantics and pragmatics link to each other in a particular sentence (Van Valin 1993, 2005; Van Valin & LaPolla 1997).

Cross-constructional and cross-linguistic generalizations are captured in terms of general principles and constraints established in the linking algorithms, e.g. the actor-undergoer hierarchy, the layered structure of the clause (LSC), the privileged syntactic argument (PSA) selection hierarchy, and so on. Only the idiosyncratic, language-specific features of constructions are represented in constructional schemas. There are constructional schemas that account for the particular properties of passives, antipassives, conjunction reduction and wh-questions. Hence constructional schemas, by virtue of their reference to general principles, permit the capturing of cross-linguistic generalizations, while at the same time expressing language-particular properties of grammars (Van Valin 2005: 131–2).

In order to account for both, complements and purposive constructions cross-linguistically, control constructions in RRG require some modifications to the syntax-semantics algorithm, and some construction-particular specifications. In Van Valin (2005: 250), the linking algorithm was modified in order to account for the theory of obligatory control in complement sentences. Having determined the voice of the verb, the RPs functioning as the actor and undergoer and other core

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12. For details on the analysis of control constructions and the linking algorithm, see §7.3.1 (Van Valin 2005).
arguments (step 1), the relevant adjustments apply after the logical structure of the clause is retrieved (step 2), and the linking of macrorole and non-macrorole core argument have taken place (step 3). Thus, before linking a predicative adpositional adjunct, a new step is added:

(25) 4. In non-subordinate core junctures, one of the arguments of the matrix core must be linked to an argument position in the embedded logical structure, following (16) above.

This step in the linking algorithm establishes, on the one hand, that there is a control relation among an argument in each core inside a non-subordinate core juncture, and, on the other, that the controller selection follows the theory of obligatory control based on the semantics of the matrix predicate, i.e. it is a construction-specific feature. A purpose clause cannot function as a core argument, but as an adjunct (or argument-adjunct), thus extra information may be needed with respect to the semantics of the clause. In order to extend the analysis to purpose clauses, we may add to (25) the specifications below; (a) and (b) apply to both, complement and purpose relations:

a. if the construction demands structural control, then the linked argument must be unfilled, i.e. the syntactic controllee in English, Lakhota, Dyrbal
b. if the construction demands or allows inherent control, then the linked argument can be filled by a bound pronoun, clitic, or agreement-inflection, i.e. the semantic controllee in Acehnese, Chuj, Yaqui, Toqabaquita
c. when the linked unit functions as an event adjunct, the control relations may follow the semantics of the main unit, and the Referential control hierarchy (below); pragmatics and real world knowledge can also influence the choice of the controller:
the referential identity of an argument in the linked unit is controlled by the main undergoer > the main actor > another main argument > there is no control relation.

Cutrer already establishes two clause linkage types expressing a purpose relation in English. There is a core juncture in which there must be a syntactically shared argument, i.e. structural control in (4.a); and there is a clause juncture in which there is a (semantically) linked pronoun, i.e. inherent control in (4.b). In the latter only, the dependent unit is formally introduced by the clause linkage marker in order, and it can be clause-initial. While the semantics is apparently the same, the structural differences are due to the degree of syntactic tightness of each linkage. Furthermore, the crucial feature of non-subordinate core juncture is a shared semantic argument between or among the linked cores, and this shared argument requires modifications of the linking algorithm (Van Valin 2005:240): when the controllee is left unfilled in
a non-subordinate core juncture, then the number of core slots inside the linked unit reduces by 1 (e.g. unfilled, structural control).

As a preliminary proposal, the constructional schema in Table 3 tries to capture the properties of a sentence like *Pat went to buy a book*. Because there is only one macrorole direct core argument in the matrix unit, there is only one choice for the controller, e.g. the actor.

### Table 3. Constructional schema for English core cosubordination *Pat went to buy a book*

**CONSTRUCTION:** English purpose core cosubordination

**SYNTAX:**
- Juncture: core
- Nexus: cosubordination
- Construction type: adverbial non-subordination
  
  \[
  \text{NP} \{ \text{CORE} \{ \text{CORE}_1 \ldots \} \{ \text{CORE}_2 \ldots \} \} (\text{NP})
  \]
- Unit template(s): default
- PSA: the controller is the matrix actor in \text{CORE}_1
  
  the controllee is the linked actor in \text{CORE}_2
- Linking: reduces the number of core slots by 1, i.e. structural control
  
  (4.a) following (25)

**MORPHOLOGY:**
- Verb: infinitival
- Controllee: unfilled
- CLM: none

**SEMANTICS:**
- One action is done with the intent of realizing another state of affairs

**PRAGMATICS:**
- Illocutionary force: unspecified
- Focus structure: unspecified

The obligatory control relation follows from the meaning of motion-\textit{cum}-purpose, e.g. a participant moves to one place with the intention to realize another event. In the example in (20e) from Acehnese in Table 4, there is also an obligatory control relation among the two actors, but here the number of core slots in the dependent unit is not reduced, i.e. it is a case of inherent control. In other words, there is not a syntactic but a semantic pivot, since the interpretation of \textit{kee-} follows the predictions of the theory of obligatory control of a motion-\textit{cum}-purpose clause, i.e. actor control.

The constructional schema in Table 5 captures the properties of core coordination in *Pat brought the book for her sister to read*, where there is an obligatory control relation among the two undergoers of each core. Because the sentence expresses the potential transfer of the theme to the recipient, then the main recipient controls the referential identity of the linked actor too, i.e. two syntactic argument slots missing.
Table 4. Constructional schema for the Acehnese core coordination ‘Now I go to pray to the river’ in (20e)

CONSTRUCTION: Acehnese purpose core coordination

SYNTAX:
Juncture: core
Nexus: coordination
Construction type: adverbial non-subordination
\[[\text{CL} \ [\text{NP} \{\text{CORE}_1\ldots\}] \ [\text{NP} \{\text{CORE}_2\ldots\} \ (\text{NP})]]\]
Unit template(s): default
PSA: the controller is the matrix actor in \(\text{CORE}_1\)
the controllee is the linked actor in \(\text{CORE}_2\)
Linking: the number of core slots is maintained, i.e. inherent control (4.b) following (25)

MORPHOLOGY:
Verb: non finite
Controllee\(_1\): filled
CLM: none

SEMANTICS:
One action is done with the intent of realizing another state of affairs

PRAGMATICS:
Illocutionary force: unspecified
Focus structure: unspecified

Table 5. Constructional schema for the English core coordination Pat brought the book for her sister to read

CONSTRUCTION: English purpose core coordination

SYNTAX:
Juncture: core
Nexus: coordination
Construction type: adverbial non-subordination
\[[\text{CL} \ [\text{NP} \{\text{NUC}\ldots\} \ (\text{NP})] \ [\text{CORE} \{\text{NUC}\ldots\} \ (\text{NP})]]\]
Unit template(s): default
PSA\(_1\): the controller is the matrix undergoer in \(\text{CORE}_1\)
the controllee is the linked undergoer in \(\text{CORE}_2\)
PSA\(_2\): the controller is an NMR oblique core argument in \(\text{CORE}_1\)
the controllee is the linked actor in \(\text{CORE}_2\)
Linking: reduces the number of core slots by 2, i.e. structural control (4.a) following (25)

MORPHOLOGY:
Verb: infinitival
Controllee\(_1\): unfilled
Controllee\(_2\): unfilled
CLM: none

SEMANTICS:
One action is done with the intent of realizing another state of affairs

PRAGMATICS:
Illocutionary force: unspecified
Focus structure: unspecified
Finally, the constructional schema in Table 6 captures the syntactic and semantic properties of clausal cosubordination in a sentence like *Pat brought the book for her sister in order to read it*. Cosubordination at the level of the clause yields a looser linkage, in which the two units depend on the expressions of one or more of the operators for that level. Because of its nature, purpose must express a future-oriented motivating event, and so the linked verb must be unmarked or be marked in a special way (e.g. hypothetical, irrealis, subjunctive), i.e. operator dependency at the clause level. In here, there is an inherent control relation among the undergoers in each core, but a structural control situation with regard to the linked actor.

Table 6. Constructional schema for the English clause cosubordination *Pat brought the book in order for her sister to read it*

<table>
<thead>
<tr>
<th>CONSTRUCTION: English purpose clausal juncture</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX:</td>
</tr>
<tr>
<td>Juncture: clausal</td>
</tr>
<tr>
<td>Nexus: cosubordination</td>
</tr>
<tr>
<td>Construction type: adverbial non-subordinate clause</td>
</tr>
<tr>
<td>[ CL {CORE NP {NUC,…} (NP)} CLM {CORE {NUC,…} (NP)} ]</td>
</tr>
<tr>
<td>Unit template(s): default</td>
</tr>
<tr>
<td>PSA(_1): the controller is the matrix undergoer in \text{core(_1)}</td>
</tr>
<tr>
<td>the controllee is the linked undergoer in \text{core(_2)}</td>
</tr>
<tr>
<td>PSA(_2): the controller is an NMR oblique core argument in \text{core(_1)}</td>
</tr>
<tr>
<td>the controllee is the linked actor in \text{core(_2)}</td>
</tr>
<tr>
<td>Linking: reduces the number of core slots by 1, i.e. inherent control for PSA(_1) (4.b), but structural control for PSA(_2) (4.a) following (25)</td>
</tr>
<tr>
<td>MORPHOLOGY:</td>
</tr>
<tr>
<td>Verb: infinitival</td>
</tr>
<tr>
<td>Controllee(_1): filled</td>
</tr>
<tr>
<td>Controllee(_2): unfilled</td>
</tr>
<tr>
<td>CLM: <em>in order</em></td>
</tr>
<tr>
<td>SEMANTICS:</td>
</tr>
<tr>
<td>One action is done with the intent of realizing another state of affairs</td>
</tr>
<tr>
<td>PRAGMATICS:</td>
</tr>
<tr>
<td>Illocutionary force: unspecified</td>
</tr>
<tr>
<td>Focus structure: unspecified</td>
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</tbody>
</table>

In contrast, in a reason clausal subordination like in *Pat brought the book to her sister because she really wanted to read it*, the linked verb is fully marked by tense and mood.
5. Final remarks

Role and Reference Grammar tries to provide the simplest and most general analysis possible of any construction with as little formal stipulation as possible, and so it provides just the kind of theory of the syntax-semantics interface that is adequate for the analysis of cross-linguistic variation. Hence, a unified account for control phenomena is possible, if control is understood as a referential dependency among a matrix argument, and an argument of the linked unit. The controller selection is determined by the semantics of the main clause, i.e. construction-specific, while the lexical manifestation of the controllee, that is, structure or inherent control, can be specified inside the constructional schemas, i.e. language-specific feature. Cutrer (1993) offers some semantic and pragmatic considerations for English purposive constructions. Nonetheless, in order to deeply understand the pragmatic motivations behind the selection of one linkage type over another, i.e. structural vs. inherent control, more corpus-based studies are necessary. In addition to real world knowledge, data from oral or textual corpora will allow us to examine the discourse context affecting the type of referring expressions that are chosen in particular purposive constructions, that is, the status and coding of referents in terms of focus structure.

References


Transitivity, constructions, and the projection of argument structure in RRG

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Traditional “projectionist” accounts of transitivity project the argument structure of a clause from the head verb. Some studies within Construction Grammar have shown this does not account for cases in which syntactic frames override a verb’s inherent transitivity, arguing instead that transitivity is determined by the syntactic construction. Such examples typically come from English and related languages in which many or most verbs freely occur in transitive or intransitive frames without any overt derivational morphology. However, in languages such as Tepehua (Totonacan), verbs have rigidly specified transitivity, with no such overriding of argument structure. Role and Reference Grammar treats argument structure as a projection from the composite logical structure, accounting for clause structure in both types of languages.

1. Introduction

This paper1 explores the relation between syntactic constructions and the arguments projected by the verb in two Tepehua (Totonacan) languages, languages that display significant differences from English and other European languages in what we could call the “rigidity” of verb transitivity. I will discuss the relevance of the data for the ongoing discussion regarding the projectionist approach found in standard generative theory, the approach assumed by different theories of Construction Grammar, and the projectionist account presented in Role and Reference Grammar (RRG).

Following a significant cross-linguistic tradition in both European and American linguistics, the differences between a transitive and intransitive clause has been attributed to the verb of the sentence. In the generative tradition, the

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1. I am very grateful for comments from two anonymous referees which have resulted in significant improvements in this paper.
head of a phrase has an argument structure that is “projected” onto the phrase. Similarly, though theories differ in the details, ultimately the verb’s argument structure or valence is projected onto the clause, determining the syntactic transitivity of the clause.

An alternative account of the source of transitivity in a clause has been discussed in the last two decades in several publications in Construction Grammar (CxG). A number of constructions have been presented in these publications which suggest that the tradition of projecting the arguments of a clause solely from the verb is misguided.

An oft-cited example is “He sneezed the napkin off the table.” About such a sentence, Goldberg says,

> a lexicosemantic theory would have to say that *sneeze*, a parade example of an intransitive verb, actually has a three-argument sense, ‘X causes Y to move Z by sneezing’ (1995: 9)

To account for this sentence and a benefactive construction such as *She baked him a cake*, Goldberg says, “such a theory would need to claim that there exists a special sense of *bake* that has three arguments: an agent, a theme, and an intended recipient” (1995: 9). Rather than posit a projectionist account, she says “we can understand the direct objects found in the above examples to be licensed not directly as arguments of the verbs but by the particular constructions” (1995: 10).

In the RRG model of argument structure, the core arguments of a clause are projected from the logical structure (LS), not simply from the lexical information contained in the verb but also from the heads of co-occurring constructions, such as prepositions. Because of this, Van Valin (2012:105) is able to argue that the projectionist account and that of CxG are compatible:

> far from being incompatible and contradictory, the two approaches represent different perspectives on the construction of sentence meaning: the projectionist approach represents the speaker’s perspective, while the constructionist approach represents the hearer’s perspective.

This paper will focus on issues of argument structure that come up when one compares languages that differ significantly in what it means for a verb to be transitive or intransitive. In the first section of this paper, I will discuss issues of argument structure by presenting the nature of Tepehua transitivity, contrasting it with the nature of transitivity in English. It will be clear that transitivity in Tepehua is remarkably rigid by comparison.

In the second section, I will consider the CxG approach to accounting for common examples in English where there are mismatches between the argument structure of a verb and the syntactic frame in which it is used. I will show how the ubiquity of such mismatches in data from English and other European languages
Transitivity, constructions, and the projection of argument structure in RRG

contrasts with the firm requirement in Tepehua that verbal projections match the syntactic constructions in which they occur.

I will conclude with some thoughts about a typology of rigidity of transitivity and the implications such a typology might have for the discussion of the projectionist and constructionist approaches and that of RRG to argument structure.

2. Transitivity in English and Tepehua

English: Underspecified transitivity

Much of the discussion in the literature of examples where a syntactic construction apparently overrides the verb’s argument structure focuses on English and other Indo-European languages. These languages typically have a large number of verbs unspecified for transitivity – the same verb form can occur in transitive and intransitive constructions without undergoing overt derivation or morphological marking of any kind. One approach is to consider the transitive and intransitive uses of a verb as distinct lexical entries or as two verbs related by a lexical rule. This is certainly necessary for the inchoative-causative pairs such as The door opened vs. Chris opened the door.

However, for many other verbs (eat, drink, write, etc.) it seems the transitivity can be considered to be simply lexically underspecified, allowing alternations between constructions with an unspecified object and fully transitive clauses (e.g. He ate vs. He ate a sandwich; drink, write, etc.).

There are many “transitive” verbs in English that can be used with no specified object. In fact, there are so many that one major syntactician has commented,

It is in fact extremely hard to come up with a list of even ten transitive verbs associated with a really hard requirement that the direct object be explicit rather than implicit. Sometimes I almost begin to think there aren’t really any.

(Pullum 2004)

As a leading grammar of modern English puts it, “More precisely, transitivity applies to uses of verbs” (Huddleston & Pullum 2002: 216 emphasis in original), presumably meaning rather than to the verbs themselves. Yet, a few pages later, the same grammar states, “The most important property of complements in clause structure is that they require the presence of an appropriate verb that licenses them” (ibid. 219). So, even though there is recognition that an English verb’s transitivity can be determined by its use, there seems to be a clear sense that the occurrence of a direct object is licensed by the verb.
At the same time, many intransitive verbs in English can be used in apparently transitive syntactic constructions. One obvious set of examples are those involving cognate objects or objects that specify the “quality range” or “quantity range” (Halliday 1967: 58ff) of an activity:

(1) a. Chris played two games of tennis.
   b. Pat will sing the song you requested.

And even Goldberg’s “parade example of an intransitive” can be used in transitive constructions:

(2) a. He sneezed a cute baby sneeze.
   b. If I sneezed blood, is this bad?

Of course, English also allows many basically intransitive verbs to be used in a causative construction without any explicit derivation, a feature that’s also true of other European languages, such as Spanish:

(3) a. He walked the dog this morning.
   b. Los corrieron de la casa.
      3plobj run:3plsbj from  the  house.
      ‘They ran them from the house.’

The distinction between “transitive” and “intransitive” verbs in such languages is often very unclear. Dictionaries frequently provide two entries for what appears to be the same verb, differing only in transitivity. The verbs are flexible enough to occur in constructions that don’t match their usual transitivity.

With such malleable argument structure in English, it’s not surprising that a standard intransitive (e.g. sneeze) can occur in a transitive frame or that a transitive verb can be used intransitively. When a verb manifests different argument structures in different syntactic constructions, the most likely conclusion is that the argument structure is primarily determined by the construction and not by a projection of the lexical properties of the verb. The freedom that verbs have in English (and related languages) to be used in either transitive or intransitive frames is surely part of the reason why a construction-based (i.e. non-projectionist) approach to argument structure is so appealing.

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2. Goldberg suggests a likely diachronic development of such flexibility: “if a verb appears frequently in a particular discourse context, which generally allows the omission of the non-subject argument, the omission may over time become a conventional or grammaticalized option for that verb, through a process of reanalysis. Listeners reanalyze the frequently encountered intransitive use of the verb as a lexical option instead of as being licensed by the particular discourse context.” (to appear)
Tepehua: Fully specified transitivity

The situation in Tepehua (Totonacan) languages is noticeably different. Verbs in Totonacan languages, as in a number of strongly head-marking languages manifest fully specified transitivity. This is true to at least some extent of many Mesoamerican languages, including unrelated or distantly related groups: e.g. Zoque (Johnson 2000: 50), Otopame (Palancar 2004), Mixtec (Macaulay 1996: 44f.), Náhuatl (Tuggy 1981: 114). As McQuown reported over seventy years ago, Totonacan verb structure “is based on a verb root that possesses an inherent degree of transitivity” ([1940]1990: 140). After illustrating this, I will show some of its implications for argument structure and the semantics-syntax interface.

As a strongly head-marking language, Tepehua marks both subject and object by pronominal forms on the verb. For third person singular, whether subject or object, the marking is zero.3

(4)  
k-laqts’i-n-aː-n  
1sbj-see-ipfv-2obj  
‘I see you’

(5)  
k-laqts’i-Ø  
1sbj-see-ipfv  
‘I see him/her/it’

(6)  
ta-laqts’i-Ø  
3plsbj-see-ipfv  
‘they see him/her/it’

(7)  
ta-lakawːa-nan-Ø  
ta-see(intr)-ipfv  
‘they see’

Since the third person singular object is zero, there would be no way to tell the difference between (6) “they see him/her/it” from (7) “they see” if the verb’s transitivity wasn’t rigidly specified.

Corresponding intransitive, transitive, and ditransitive verb forms are either distinct lexical items or marked by overt derivational morphology.

(8)  
a.  
wahin-Ø  
eat(intr)-ipfv  
‘s/he eats’

3. All Tepehua forms come from texts and elicited data I have collected off and on during visits in the language area during the last 33 years in both the Tlachichilco and Pisaflorres language areas. When not specified otherwise, the examples are from Tlachichilco Tepehua. I’m grateful to many Tepehua consultants I have had the privilege to work with over the years.
(9) a. *fiqaq-ya*
   give-IPFV
   ‘s/he gives it’

b. *fiqaq-ni-ya*
   give-DAT-IPFV
   ‘s/he gives it to him/her’

(10) a. *maq-ʃaqa-ya*
    hand-wash(INTR)-IPFV
    ‘s/he, washes his/her hands’

b. *maq-ʃaqaaz-ya*
    hand-wash-IPFV
    ‘s/he, washes his/her hands’

As is clear in these examples, when a transitive verb occurs without a direct object NP in Tepehua, it is invariably interpreted as having a definite anaphoric direct object.

RRG distinguishes between syntactic transitivity (S-transitivity) and macrorole transitivity (M-transitivity). Tepehua and other languages of the family demonstrate a rigid S-transitivity. As the examples above demonstrate, a verb stem is clearly syntactically intransitive, transitive or ditransitive. For a transitive verb to be used as an S-intransitive verb, it must be overtly detransitivized with the Unspecified Object suffix, -nVn:

(11) a. *ta-saz-ya*
    3PLSBJ-hit-IPFV
    ‘they hit him/her/it’ (or ‘play music on it’)

b. *ta-saz-nan-Ø*
    3PLSBJ-hit-UO-IPFV
    ‘they hit/play music’

(12) a. *kutʃuː-ʃa*
    heal-IPFV
    ‘s/he heals him/her’

b. *kutʃuː-nun-Ø*
    heal-UO-IPFV
    ‘s/he heals’ (‘is a healer’)

However, as in many other languages (including English and Spanish), a Tepehua verb that is S-transitive may be M-intransitive. In RRG, macrorole arguments...
(Actor and Undergoer) must be referring expressions. Consider the following examples from Tlachichilco Tepehua:

(13) a. \(\tilde{\text{tu}}-\text{ɬ} \ ni \ \text{stapu}\)  
    \(\text{eat-PFV} \ \text{ART} \ \text{beans}\)  
    ‘s/he ate the beans’

   b. \(\tilde{\text{tu}}-\text{ɬ} \ \text{stapu}\)  
    \(\text{eat-PFV} \ \text{beans}\)  
    ‘s/he ate beans’

(14) a. \(\tilde{\text{nif-ʔoq-ya}} \ ni \ \text{ʔtikiti}\)  
    \(\text{pst-drink-IPFV} \ \text{ART} \ \text{atole}\)  
    ‘s/he was drinking the atole’

   b. \(\tilde{\text{nif-ʔoq-ya}} \ \text{ʔtikiti}\)  
    \(\text{pst-drink-IPFV} \ \text{atole}\)  
    ‘s/he was drinking atole’

   c. \(\tilde{\text{nif-ʔoq-ya}}\)  
    \(\text{pst-drink-IPFV}\)  
    ‘s/he was drinking it’

The Undergoer in each of the (a) sentences is a referring expression. However, in the (b) sentences, the syntactic object is non-referential so cannot be the Undergoer. While the (b) sentences are S-transitive, they are M-intransitive. Note in (14c), however, that when the direct object is not expressed by an NP, it invariably has a definite anaphoric reading.

Tepehua intransitive verbs, unlike English, may never be used transitively. To occur in a transitive frame, an intransitive verb must undergo some form of overt derivation such as causativization or the addition of an applicative:

(15) a. \(\text{ɬtan-Ø}\)  
    \(\text{walk/ambulate-IPFV}\)  
    ‘s/he/it walks’

   b. \(\text{ma-ɬtan-}:\text{y}\)  
    \(\text{CAUS-walk/ambulate-IPFV}\)  
    ‘s/he/it drives it’

   c. \(\text{t’a-ɬtan-Ø}\)  
    \(\text{COM-walk-IPFV}\)  
    ‘s/he walks with (accompanies) him/her’

(16) a. \(\text{ka-min-a:}\)  
    \(\text{IRR-come-FUT}\)  
    ‘s/he/it will come’

   b. \(\text{ka-pu-min-a:}\)  
    \(\text{IRR-VIA-come-FUT}\)  
    ‘s/he/it will come by means of it’
Besides the causative \textit{ma:}(-\textit{V:}) (15b), the comitative \textit{t\text{"u}a:-} (15c), and the prefix \textit{pu:}-, glossed \textit{via}^4 (16b), Tepehua has two additional applicative affixes: the dative/benefactive suffix \textit{-ni} and the prefix \textit{t\text{"i}i:-}, glossed \textit{dir}. The following examples demonstrate their use on the same verb stem, \textit{tapasa} “happen, pass by”:

\begin{align*}
(17) & \text{\textit{t\text{"i}i:-tapasa-\text{-y} tu\text{"u}ut\text{\text{"u}un taqan\text{"a}ti}} } \\
& \text{dir\text{-happen\text{-pass-IPFV some sickness}} } \\
& \text{‘some sickness is happening to him/her.’}
\end{align*}

\begin{align*}
(18) & \text{\textit{tapasa-ni-ya:-n} } \\
& \text{happen\text{-pass-\text{-DAT-IPFV-2OBJ}}} \\
& \text{‘s/he passes by you.’}
\end{align*}

The applicative \textit{t\text{"i}i:-} licenses arguments with a wide variety of semantic roles, including reason for the action, direction or orientation or motion, and secondary theme. In some cases, rather than licensing an additional argument, it “overlays” its associated semantic role on a direct argument of the verb.

\begin{align*}
(19) & \text{\textit{kit\text{"i}n fa-k-t\text{"i}i:-laqts\text{"i}n-ta-n=cha} } \\
& \text{I pst\text{-1SBJ-DIR-see-PF-2OBJ =ALREADY}} \\
& \text{‘I had just looked over at you.’}
\end{align*}

In (19), the transitive verb \textit{laqts\text{"i}n}, “see”, does not acquire another object by the presence of the applicative; rather, the “directional” semantics of \textit{t\text{"i}i:-} are overlaid on the direct object, changing “see” to “look toward”.

In Watters 1988 and 1996 I present “frame-internal” and “frame-external” uses of this applicative. For our purposes here, it is sufficient to note that \textit{t\text{"i}i:-} is semantically the least specific of the applicative prefixes. Both \textit{t\text{"i}i:-}, \textit{dir}, and \textit{-ni}, \textit{DAT}, will play a part in the second half of this paper.

Transitivity of borrowed forms

As we have seen, the syntactic transitivity of a Tepehua clause always matches that of the matrix verb. In this section, I will show that the rigid specification of transitivity is so pervasive in Tepehua that it manifests itself even with verbs borrowed from Spanish that are underspecified for transitivity. We will look at examples of borrowing in two Tepehua languages, that spoken in Pisaflorres, Veracruz, and surrounding communities, and that spoken in the muncipios of Tlachichilco and Zontecomatlán, Veracruz.

\footnote{4. “The prefix \textit{pu:}- (~ \textit{pa:-})… on non-stative verbs it registers as a syntactic argument of the verb an argument with the semantic role of ‘route’ or ‘instrument’ (\textit{via})” Watters 1988: 179.}
The Unspecified Object suffix, -$nVn$, mentioned above, is a common feature throughout the Totonac-Tepehua language. It is used productively to convert transitive verbs into intransitives (20) and the same form is also found as the final syllable on a number of intransitive verb stems that don’t have a corresponding transitive form (21a, b):

(20) 

a. $paːstak-ya$
   think-IPFV
   ‘s/he thinks it’

b. $paːstak-nan-Ø$
   ‘s/he thinks’

(21) 

a. $qamaːnan-Ø$
   play-IPFV
   ‘s/he plays’

b. $saqnan-Ø$
   gather.firewood-IPFV
   ‘s/he gathers firewood’

In Pisaflores Tepehua, this stem-final form, a standard marker of intransitivity (22), is productively applied with Spanish infinitive forms when they are used as intransitives (23):

(22) $[[ X ] nVn]_{\text{INTRVERB}}$

(23) $[[ X ]_{\text{SPANINFINITIVE}}-nVn]_{\text{INTRVERB}}$

(24) $ta-ʔestudiar-nan-Ø$
   3PLSBJ-study-nVn-IPFV
   ‘they study’

A semantically empty transitive verb root, $la$, also attested throughout the language family, is typically translated as “do” or “be.able” in Tepehua. Pisaflores Tepehua uses this verb as the second member in a very productive compound construction:

(25) $[[ X ]_{\text{SPANINF}}][la]_{\text{TRANSVERB}}_{\text{TRANSVERB}}$

(26) $ta-[ʔestudiar-la]-y$
   3PLSBJ-[study-do]-IPFV
   ‘they study it’

With these two productive constructions, Pisaflores Tepehua imposes specified transitivity even on verbs borrowed from Spanish that are ambitransitive: $operarnan$, ‘s/he operates’; $operarlay$, ‘s/he operates on him/her’; $saludarnan$, ‘s/he greets’; $saludarlay$, ‘s/he greets him/her’; $regalarnan$, ‘s/he gives/donates’; $regalarlay$, ‘she/he gives/donates it’.
In Tlachichilco Tepehua specification of transitivity in Spanish loanwords is accomplished by two subtypes of a syntactic construction very different from the forms in Pisaflores Tepehua.

Many semantically complex concepts are conveyed in Tepehua by a construction involving a semantically very specific, usually ideophonic, adverb followed by a verb with a very general meaning:

(27) *k'uiksna wa:-t*
    brilliantly become-IPFV
    'it shone'

(28) *sk'uli ñu-y ki-maka:*
    itchily eat-IPFV 1POS-hand
    'it itches my hand'

(29) *spuy tsuku-y xka:*
    in.drops be-IPFV water
    'it’s sprinkling'

(31) *fiay ñan-Ø*
    circularly go-IPFV
    'it rotates'

This nuclear construction can be summarized in the following way, with the added syntactic specification that nothing can intervene between the two constituents:

(32) \[ \begin{array}{c}
\text{[X]} \\
\text{ADV:IDEOPH} \\
\text{[Y]} \\
\text{VERB} \\
\end{array} \]_{NUC}

Tlachichilco Tepehua, when it borrows Spanish verb forms, utilizes two constructions parallel to this, using the verb stems *maka:*, 'to do,' and *hun*, 'to become':

(33) \[ \begin{array}{c}
\text{[X]} \\
\text{ADV:SPANPTCPL} \\
\text{[maka:]TRANSVERB} \\
\end{array} \]_{TRANSVERB}
    to do X (transitive)

(34) \[ \begin{array}{c}
\text{[X]} \\
\text{ADV:SPANPTCPL} \\
\text{[hun]INTRVERB} \\
\end{array} \]_{INTRVERB}
    to do X (intransitive)

Thus, the Pisaflores Tepehua forms in (24) and (26) correspond to the following Tlachichilco Tepehua forms:

(35) a. *ʔestudiado ta-hun-Ø*
    studied 3PLSBJ-become-IPFV
    'They study.'

b. *ʔestudiado ta-maka:-y*
    studied 3PLSBJ-do-IPFV
    'They study it.'

These data vividly demonstrate the rigid transitivity maintained in Tepehua. It is certainly no surprise that both Pisaflores and Tlachichilco Tepehua have borrowed
Spanish forms extensively. What is of interest here is that both languages have incorporated Spanish verbs into constructions that specify transitivity, even if the Spanish verb is ambitransitive.

3. Accommodating argument structure

One of the appealing aspects of CxG in regard to argument structure is its ability to account for apparent mismatches between the argument structure of a verb and the syntactic frame in which it occurs. Michaelis has argued for what she calls the “Override Principle”. It has clear application in nonverbal constructions but we will only consider its relevance for verbal and clausal argument structure:

The Override Principle. If a lexical item is semantically incompatible with its morphosyntactic context, the meaning of the lexical item conforms to the meaning of the structure in which it is embedded. (Michaelis 2004:25)

She demonstrates this with various examples such as the following, in which a verb's aspectual class is shaped by the syntactic construction in which it is placed: ‘She blinked her way into the night.’ Here the Way-construction forces an iterative reading on the verb.

Elsewhere she says,

The construction-based model of argument structure proposed by Goldberg is based on the idea that verb meanings are combined with construction meanings via a fixed number of semantic relations… and the semantic-role list licensed by the verb may accordingly be augmented up to that licensed by the construction. (2009:87)

In constructions in which English verbs appear to have their argument structure augmented by the construction, Tepehua verbs maintain fully regular patterns of argument structure, based in the inherent transitivity of the base verb along with overt morphological processes that alter the verb's valence.

I will present relevant data from two kinds of constructions: the dative construction and the verb-verb compound construction.

Dative construction

In Tepehua (and Totonacan in general), the presence of what can be called the dative suffix, -ni, signals what is usually a marked undergoer choice. The indirect argument associated with -ni may be either part of the semantic frame associated with the verb or a frame-external argument.
It takes an argument with the semantic role of locative (goal or source); e.g. the second argument in `be.at’ (x, y) or not `be.at’ (x, y) or the first argument in (not) `have’ (x, y).

In its frame-internal use it marks that a salient participant in the logical structure of the verb functions as undergoer. In its frame-external use the argument associated with `-ni` marks the benefactive as a direct argument of the verb.

With nonstative verbs, and more specifically verbs that specify a frame with directional motion, the argument of `-ni` is the goal or source. Note the following examples:

(36) `ki-ma:ts’iski-ni-ɬ`

1OBJ-borrow-DAT-IPFV
‘s/he borrowed it from me’

(37) `ka-la:ʔan-i-ya-n`

IRR-take-DAT-FUT-2OBJ
‘s/he will take it to you’

(38) `ki-st’a:-ni-ɬ`

1OBJ-sell-DAT-IPFV
‘s/he sold it to me’

(39) `ka-k- ma:-su: -ni-ya-n`

IRR-1SBJ-CAUS-appear-DAT-FUT-2OBJ
‘I will show it to you’

(40) `ki-ma:t’si:k’i-ni-ɬ`

1OBJ-borrow-DAT-IPFV
‘s/he borrowed it from me’

Besides these frame-internal readings, the argument associated with `-ni` is most commonly the benefactive. Thus note in the following example, the interpretation is potentially ambiguous between a reading in which the object is source and one in which it is benefactive.

(41) `taʔayu: ka-ʔi:-ni-ye-ʔi`

who IRR-buy-DAT-FUT-2SBJ
‘Who will you buy X from?’
or ‘Who will you buy X for?’

If the verb does not have an implicit (frame-internal) goal or source, the argument associated with `-ni` is typically benefactive, as in the second reading in (41) and in the only readings for (42) and (43):

(42) `ka-tapatsa:-ni-ya-n`

IRR-work-DAT-FUT-2OBJ
‘s/he will work for you’
Transitivity, constructions, and the projection of argument structure in RRG

(43)  \textit{ka-lak-maka:-ni-ya: ?aqa-taun skuela}
\textsc{IRR-3PLOBJ-make-DAT-FUT CLF-one school}
\textit{'s/he will make them a school'}

As noted in the introduction, Goldberg has pointed out that a benefactive construction such as “She baked him a cake,” presents a problem for standard projectionist approaches, as it seems to require \textit{bake} be a ditransitive verb.

RRG treats such benefactive constructions as involving a lexical rule altering the LS. In English the syntactic template provides the slot for the benefactive, but in Tepehua, as is typical for languages with applicatives, there is an explicit derivational rule that results in a verb with a benefactive argument. The projection from the LS maps onto the morphosyntactic structures without having to posit separate lexical entries for every verb that can take a benefactive.

Verb-verb compound construction

There are two constructions in Tepehua that appear to be verb-verb compounds. One construction is very productive, with only one morphosyntactic constraint: the first verb cannot be more transitive than the second (the head) verb. Otherwise, the only apparent constraint is pragmatic – the construction has to make sense. I treat this construction as a true verb-verb compound (Watters 1988).

The other construction that appears to be a verb-verb compound does not have the transitivity constraint but has a constraint of a different sort: the second verb is limited to a set of verbs that specify position or change of position. I have argued elsewhere that the second verb in this construction is a verb-as-operator construction:

(44)  \textit{tapatsa:-w/i/l}
\textsc{work-sit(IPFV)}
\textit{'s/he works sitting'}

This verb-as-operator construction not only limits the second verb to positional verbs, the positional verb sometimes has an aspectual rather than a positional meaning:

(45)  \textit{ta-tanu:-ma:nal laka skwe:lah}
\textsc{3PLSBJ-enter-lie(PLPFV) PREP school}
\textit{'they’re in school'}

In fact, in some Totonac languages, the positional verb root \textit{ma:} ‘lying.down’ has become the marker of progressive aspect (from McQuown 1990: 182):

(46)  \textit{k-tfiw:na:-ma:}
\textsc{1SBJ-speak-PROG}
\textit{'I am speaking.'}
Parallel uses in Tepehua of such positional verbs suggest that they have undergone grammaticalization and are now functioning as suffixes rather than as the second members of verb-verb compounds.

In the remainder of this section I will focus on the productive verb-verb compound construction. As we would expect of verb-verb compounds in RRG, these reflect nuclear juncture, in which the verbs “combine to form a single, complex nucleus with a single set of core arguments” (Van Valin 2005: 191). Semantically, the first verb serves as a modifier of the second:

(47) \[[X \text{VERB}][Y \text{VERB}] \text{VERB}\] “to Y while (or as a result of) Xing”

This construction is parallel to serial verbs noted in some other languages in which the verbs appear adjacent to one another, forming a single complex predicate and so sharing arguments. (See Hansell 1993 for different classes of verb-verb constructions in Mandarin within an RRG framework.) In Tepehua if the head (i.e. the second) verb is transitive, the modifying verb can be either transitive or intransitive. However, if the head verb is intransitive, the modifying verb must also be intransitive:

(48) a. \[[X \text{VERB}][Y \text{TRANSVERB}] \text{TRANSVERB}\]
   b. \[[X \text{INTRVERB}][Y \text{INTRVERB}] \text{INTRVERB}\]

(49) a. tsaq-p’uf-a
    cut-pick-IPFV
    ‘s/he prunes it’
   b. kala-p’uf-a
    shake-remove-IPFV
    ‘s/he shakes it off’
   c. milpa:-tapa:tsa:-y
    sing-work-IPFV
    ‘s/he he works singing’
   d. tapasa -ni:-t
    pass-get-IPFV
    ‘s/he got it passing by.’

As noted above, in this construction, the head verb cannot be intransitive if the first verb is transitive. Such a restriction still allows an open-ended list of possible compounds. However, it raises the question about whether a logical structure in which the main predicate is intransitive and the modifying predicate is transitive can map onto the same morphosyntactic construction. Consider the following forms (compounds are marked with square brackets for clarity):

(50) a. tan-ta milpa:-na:
    go-PRF sing-INF
    ‘s/he is going to sing’
b. [miłpa-ʔan]-ta
   [sing-go]-PRF
   ‘s/he is going singing’

(51) a. min-ta tʃa-na: stapu
    come-PRF sow-INF beans
    ‘s/he is coming to sow beans’

b. *[tʃa-an-min]-ta stapu
    [sow-come]-PRF beans
    ‘s/he is coming sowing beans.’

(52) a. ʔan-ta tʃaq-na:
    go-PRF chop-INF
    ‘s/he is going to chop it’

b. *[tʃaq-ʔan]-ta
    chop-go-PRF
    ‘s/he is going chopping it’

The forms in (50a), (51a), and (52a) display another type of nuclear juncture for verbs in Tepehua – the infinitive construction. This has a different reading from the verb-verb compound, as can be seen comparing (50a) and (50b). While both are examples of nuclear juncture, the infinitive has a purpose reading while the verb-verb compound has overlapping or simultaneous event reading, is. As can be seen in (50)–(52), the intransitive motion verb in the infinitive construction can occur with a transitive infinitive. However, the intransitive motion verb may not occur in a verb-verb compound in which the first verb is transitive. These constructions are ungrammatical because they violate the constraint on transitivity, not fitting either of the verb-verb compound constructions listed in (48).

If the Override Principle were operative in a case like this, it’s not clear what the result might be. The Override Principle speaks of the verb conforming “to the meaning of the structure in which it is embedded.” However, in the Tepehua case, the solution is notably different: the verb-verb compound construction conforms to the morphosyntactic requirement while maintaining the semantics of simultaneity:

(53) a. [tʃaʔ-[liː-min]]-Ø
    [sow-DIR-come]-IPFV
    ‘s/he comes, sowing it [the seed].’

b. [tʃaq-[tʃaː-ʔan]]-ta
    [chop-DIR-go]-PRF
    ‘s/he is going chopping it’
In (53) the head verbs, min, ‘come’, and tan, ‘go’, take the applicative prefix $li$-, making it a transitive verb with the result that the compound meets the constraints of the construction given in (48). Recall that in some constructions $li$- does not add an extra argument to a verb’s but rather stands in relation to the direct object that is independently selected by the verb stem. So in these verb-verb constructions the derived head verb is transitive, sharing the direct object argument of the modifying verb.

While investigating the Tepehua verb-verb compound, I described to my Pisaflorres Tepehua consultant the meaning of the English sentence “He sneezed it off the table”. Without hesitation he offered (in the order given below) two translation equivalents in Tepehua, both of which are verb-verb compounds:

(54) 

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>$[\text{aktif}ah-p'uf]\cdot li$</td>
</tr>
<tr>
<td></td>
<td>[sneeze- remove]- pv</td>
</tr>
<tr>
<td></td>
<td>‘s/he removed it, sneezing’</td>
</tr>
<tr>
<td>b.</td>
<td>$[\text{aktif}-[\text{maa-pazahu}]]\cdot li$</td>
</tr>
<tr>
<td></td>
<td>[sneeze-[ discard-fall]]- pv</td>
</tr>
<tr>
<td></td>
<td>‘s/he tossed it down, sneezing’</td>
</tr>
</tbody>
</table>

The second part of the construction in (54b) is an example of the verb-as-operator construction (mentioned above), embedded as the head of the larger verb-verb construction. Both forms, then, are compounds in which the first verb is the intransitive $\text{aktifan}$ and the second is a transitive verb (a monomorphemic verb in (a) and a transitive verb with the verb-as-operator in (b)). As a result, the verb stem is transitive.

Van Valin presents the LS of the corresponding English sentence in the following way:

(55)  

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>$[\text{seml do’ (Chris, [sneeze’ (Chris)])}]\ CAUSE [BECOME NOT be-on’ (table, napkin)]$</td>
<td></td>
</tr>
</tbody>
</table>

He argues that the original English sentence is an example of nuclear juncture and treats this as a resultative construction in which,

Chris is the actor, the napkin is the undergoer, and off the table is the result PP. Note that there is no reason to claim that sneeze has suddenly become transitive in this construction; because the arguments of the component logical structures are pooled to create a composite argument structure in a nuclear juncture, the napkin is an argument of the whole logical structure but not one of sneeze (2005: 239).

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5. In Tlachichilco, the prefix $li$- changes to $la$- before tan, ‘go.’
So, too, the Tepehua translation equivalents are clearly examples of nuclear juncture in which \( \text{taktifan} \) does not become transitive and the direct object is the object of a verb-verb compound.\(^6\)

Goldberg’s challenge to generative grammar is precisely because in the generative tradition the argument structure clause is projected from the verb. Significantly, the RRG analysis of the argument structure in which \( \text{the napkin} \) is undergoer does not treat this undergoer as a result of the projection of the verb. Rather, it is an argument by virtue of a projection from the entire LS rather than from the verb alone.

4. Conclusion

Languages like Tepehua, with rigid transitivity and overt derivational processes to change argument structure are languages in which the syntactic construction does not override the verb’s argument structure. Rather, the argument positions of the construction and the verb must overtly match.

Languages like English, in which the same verb form can be found in different syntactic constructions requiring different argument structures can also be treated as requiring a matching rather than an overriding of argument structure. But the matching is handled differently. By projecting from the LS and utilizing the various juncture and nexus types available within RRG, apparent changes in argument structure can be traced to changes in the composite LS projecting arguments onto the clause.

References


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6. Van Valin presents the LS of the English sentence as a causal construction, i.e. with the operator-connective *cause*. It seems the Tepehua construction may best be analyzed as an *activity-accomplishment*, with causation simply inferred.


Constructions in RRG

A case study of mimetic verbs in Japanese*

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This paper examines the ability of a mimetic verb in Japanese (e.g. *burabura* ‘manner of swinging’ + *suru* ‘do’ → *burabura-suru*) to occur in different morphosyntactic environments. Following Van Valin (2013), it argues that two seemingly contradictory standpoints, a constructionist’s view (Tsujimura 2005) and a projectionist’s view (Kageyama 2007), are actually complementary. While an account of intransitive mimetic verbs requires no postulation of constructional schemas, as these verbs show straightforward cases of linking in simple sentences, the paper utilizes two constructional schemas to cover notable characteristics of transitive mimetic verbs: one for mimetics compounded by *-sase* ‘cause’ and the other for the colloquial alternate of the adverbial mimetic-transitive verb combination.

1. Introduction

This paper is concerned with two purportedly conflicting views on syntax-semantics interface theories, one constructionist and the other projectionist, both of which have been applied to account for the ability of a verb to occur in multiple morphosyntactic environments, as in the English *shatter* in the example below.

(1)  
   a. *The window shattered.*  
   b. *The burglar shattered the window.*  
   c. *The burglar shattered the window with a crowbar.*

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Shatter in (1a) is intransitive, taking an inanimate subject NP, but in (1b–d), it is transitive with an agent (1b, 1c) or an instrument (1d) subject NP. The instrument crowbar can optionally be coded in a prepositional phrase headed by with as in (1c), but this is disallowed with the intransitive use of shatter, as in (1e).

From the standpoint of projectionists, this type of variable occurrence is determined by the specifics lexically encoded in the verb, but from the standpoint of constructionists, it depends on the construction in which the verb occurs. In the latter case, since the verb is postulated to be equipped with only an underspecified or general meaning, more detailed information must be supplied by the construction and the elements that appear within the construction.

This projectionist-constructionist controversy can be extended to Japanese mimetic verbs. Succinctly stated, mimetic verbs refer to a complex predicate that consists of a mimetic base, a sound-symbolic form (Hamano 1998), and a verbalizer suru ’(lit.) do’ such as (2).1

(2) a. urouro-suru ‘loiter’
   (urouro: manner of hanging around aimlessly)
   b. yotiyoti-suru ‘toddle’
   (yotiyoti: manner of walking in small steps)
   c. betabeta-suru ‘feel sticky’
   (betabeta: sticky sensation)

Some mimetic verbs can co-occur with a variety of phrases, in which case, they tend to involve a shift or a change in meaning. For example, in (3), the mimetic base gorogoro can express an uncomfortable sensation in one’s eyes (3a), the abundance of an object (3b), and the rolling motion of an agent (3c).2

   eye-NOM MI-do.NPST
   ‘My eyes feel as if there’s something in them.’

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1. Mimetic verbs may have a reduplicated base (e.g. beta-beta-su ‘feel sticky’), a non-reduplicated base (e.g. betat-to-su ‘feel a sticky sensation’), or a ri-suffixed base (e.g. bettari-su ‘sticking close to someone’).

2. The following abbreviations are used for glosses: ACC=accusative, CAUS=causative, DAT=dative, GEN=genitive, IMP=imperative, LOC=locative, LS=logical structure, MI=mimetic, NEG=negative, NMR=non-macrorole, NOM=nominative, P=particle, PL=plural, POL=polite, PROG=progressive, PST=past, RP=reference phrase, NPST=non-past, STAT=stativizer, and TOP=topic, and A&H=Atoda and Hoshino, for authors’ names.
   hill-LOC-TOP stone-NOM mi-do-STAT-NPST
   ‘There are many stones lying around on the hill.’

c. Kodomo-ga zyuutan-no-ue-o gorogoro-si-tei-ru.
   child-NOM carpet-GEN-on-P mi-do-PROG-NPST
   ‘The child is rolling over on the carpet.’

In her constructionist analysis, Tsujimura (2005) argues that the meanings of such mimetic verbs are vague and can be understood only in the presence of co-occurring elements. By contrast, Kageyama (2007) takes a projectionist stance, claiming that mimetic verbs have specific meanings which can be captured by the Lexical Conceptual Structure “without invoking the notion of Construction” (ibid.: 36). Following Van Valin (2013), this paper argues that these seemingly incompatible positions on mimetic verbs are, in fact, complementary: the constructionist’s analysis represents the hearer’s perspective, and the projectionist’s analysis, the speaker’s perspective. Appealing to RRG’s bilateral syntax-semantics linking algorithm, it offers an account of mimetic verbs from both the speaker’s (i.e. semantics-to-syntax linking) and the hearer’s (i.e. syntax-to-semantics linking) perspective, thereby consolidating the two arguments. The organization of the paper is as follows. Section 2 reviews Tsujimura (2005) and Kageyama (2007). Sections 3 and 4 offer an RRG account: Section 3 treats intransitive mimetic verbs examining the semantics-to-syntax linking; Section 4 turns to transitive mimetic verbs considering the syntax-to-semantics linking; Section 5 offers a conclusion.

2. Previous studies

2.1 Tsujimura (2005)

Tsujimura (2005:145) argues that mimetics are vague: “[M]any mimetic words lack a clear definition of their ‘meaning’ […] and mimetic words are] by definition symbolic or iconic rather than referring to specific objects and concepts”. Thus, “a specific interpretation of a mimetic word’s multiple ‘meaning’ is determined only when global information throughout the sentence is taken into consideration” (ibid.: 147). To support her contention, she discusses examples like (4), which centers on the mimetic burabura:

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3. Adjustments are made to the originals to be consistent with the text: hyphens are added before particles, and some word-for-word glosses are phrased differently. The translations are retained from the original.
(4)  a. Describes the motion of a hanging or drooping object swaying under an external force.
    b. To stroll about in a relaxed way.
    c. To live one's life or pass one's time idly without any particular aim.
    d. *Doa-no totte-ga burabura-suru.*
       door-gen knob-nom mi-do.npst
       ‘The door knob is loose.’
    e. *Taroo-ga kooen-o burabura-si-ja.*
       Taro-nom park-p mi-do-pst
       ‘Taro strolled leisurely in the park.’
    f. *Taroo-ga uti-de burabura-si-tei-ru.*
       Taro-nom home-at mi-do-prog-npst
       ‘Taro is being lazy at home.’
    g. *Taroo-ga asi-o burabura-suru/sase-ru.*
       Taro-nom leg-acc mi-do.npst/do.caus-npst
       ‘Taro swings his legs.’

(adapted from Tsujimura 2005: 147)

In the definitions of *burabura* from Ono (1994: 319) shown in (4a–c), the mimetic has three meanings: swaying (4a), strolling (4b) and idling (4c). In (4e) where it accompanies *kooen* ‘park’, the mimetic verb conveys the sense of strolling. In (4f), *burabura-suru* expresses a lazy lifestyle, where the nominative-marked argument is an agent like *Taro*. In (4g), the mimetic verb expresses a swaying motion; here, the verb co-occurs with an agent and a body part. (4g) also shows that the verb *suru* ‘do’ and its causative counterpart *sase-* ‘cause’ can be used interchangeably to portray the same scene.

Referring to examples like (4), Tsujimura (2005) notes that mimetic verbs involve not only contrasting aspectuality (the verb is a state in (4d) and an activity in (4e)) but also distinct event types ((4d) refers to a non-causative event, whereas (4g) refers to a causative event) to emphasize the semantic multiplicity of mimetic verbs. She concludes:

[W]hile mimetic verbs by themselves cannot be singled out for their specific “meanings,” global information spread throughout a sentence including the number of NPs and their grammatical functions, animacy of the subject, and verbal morphology together gives rise to an explicit interpretation and an event type. […] I contend that these varying “meanings” are not attributed to the mimetic verb alone, but should be deduced from the construction in which it appears.

(ibid.: 147–148)

To draw on Van Valin (2013), comments like the above clearly present the hearer’s perspective, whereby the hearer determines the meaning of the verb on the basis
of morphosyntactic cues and the semantic content of the NPs available in the construction.

2.2 Kageyama (2007)

By way of contrast, Kageyama (2007) takes a projectionist stance, arguing that mimetic verbs have specific meanings. He presents the mimetic verb *guragura-suru* in examples like (5) to contrast it to the meaning of *burabura-suru* discussed in Tsujimura (2005) (cf. (4)). Though both mimetic verbs refer to an oscillating motion and can appear with similar NPs, their syntactic frames are not identical. For convenience, in (6) the relevant examples from Tsujimura (2005) shown in (4) are repeated below.

(5) a. *Doa-no tote-ta ga guragura-suru.*
   *door-gen knob-nom mi-do-npst*  
   *(guragura= wobbling in a spot)*
   [‘The door knob is wobbly.’]

b. *Asi-o guragura si-naide suwari-nasai.*
   *leg-acc mi do-neg sit-imp*
   [‘Sit without shaking your legs.’]

c. *Kooen-o guragura-suru*
   *park-p mi-do-npst*

(6) a. *Doa-no tote-ta ga burabura-suru.*  
   *door-gen knob-nom mi-do-npst*  
   (=(4d))
   ‘The door knob is loose.’

b. *Taro-o asi-o burabura-suru.*  
   *Taro-nom leg-acc mi-do-npst*  
   (=(4g))
   ‘Taro swings his legs.’

c. *Taro-o kooen-o burabura-si-ta.*  
   *Taro-nom park-p mi-do-pst*  
   (=(4e))
   ‘Taro strolled leisurely in the park.’

The (a) and the (b) examples in (5) and (6) show that the mimetic verbs *guragura-suru* and *burabura-suru* can co-occur with the same NP, expressing the similar meaning: (5a) and (6a) contain the nominative-marked *totte* ‘knob’ expressing the door-knob’s unstable condition; (5b) and (6b) both have the accusative-marked argument *asi* ‘leg’ and convey the oscillatory motion of one’s legs. But while *burabura-suru* (6c) can co-occur with the *o*-marked *kooen* ‘park’ expressing the sense of strolling, *guragura-suru* cannot as shown in (5c). Kageyama attributes the unacceptability of (5c) to the difference in the meaning of the type of motion: *burabura-suru* expresses ‘locomotion’ but *guragura-suru* expresses ‘wobbling in a
spot. (5c) is infelicitous because the mimetic verb meaning ‘wobbling in a spot’ is used to express locomotion in the park. Kageyama (2007) says:

The preceding examples [such as (5)] are good illustrations of our proposal that if we succeed in grasping the precise meanings of mimetic words themselves, it is entirely feasible to assimilate the semantics of mimetic verbs into the standard, compositional semantics without invoking the notion of Construction. Mimetic words determine the syntactic constructions they appear in, and not the other way around. (Kageyama 2007:36)

To draw on Van Valin (2013) again, the above comment presents the speaker’s perspective: when a speaker is going to utter a sentence, s/he knows precisely which verb to use because s/he knows precisely what the verb means; s/he has full access to the meaning of the mimetic verb without the aid of a construction.

3. Intransitive mimetic verbs

3.1 Constructions in RRG

In the following, the RRG view on constructions is outlined by Van Valin (2005:131–132):

RRG recognizes the importance of grammatical constructions, and they are represented in terms of constructional schemas. Cross-constructional and cross-linguistic generalizations are captured in terms of the general principles and constrains that constitute the linking algorithms, e.g. the actor-undergoer hierarchy, the layered structure of the clause, the privileged syntactic argument selection hierarchy. Only the idiosyncratic, language-specific features of constructions are represented in constructional schemas.

Put otherwise, RRG makes uses of ‘constructions’. Examples include constructional schemas for the English WH-question, Sama reflexivization, and French causative construction (Van Valin 2005).

But are constructional schemas needed for mimetic verbs in Japanese? I argue in the negative for intransitive mimetic verbs (the large majority of mimetic verbs) and in the affirmative for transitive ones. The following subsection discusses intransitive mimetic verbs and introduces the semantics-to-syntax linking in simple sentences.

3.2 Semantics-to-syntax linking

The first step in semantics-to-syntax linking is to “construct the semantic representation of the sentence, based on the logical structure [(LS)] of the predicator” (Van Valin 2005:136). In the present case, we must select the LS of the mimetic
verb from the lexicon. But what does the LS of a mimetic verb look like? At this point, it would be helpful to review some analyses of the meaning of mimetic verbs.

Little work has tackled the meaning of mimetic verbs. An exception is Kageyama (2007) who develops the representational system termed Lexical Conceptual Structures (LCSs) on the basis of Dowty (1979) and Van Valin (1990). Kageyama (2007) claims that the meaning of mimetic verbs is obtained compositionally from the semantics of the verb *suru* and the mimetic word. Specifically, he proposes seven types of LCS templates for the verb *suru* in (7) with the LCS content of a mimetic word (e.g. (8)) incorporated into one.

(7) LCS templates of the verb *suru*

Type 1: \([\text{EVENT} \times \text{ACT} \langle \ldots \rangle]\)
(activity verbs: e.g. *akuseku suru* ‘busy oneself’)

Type 2: \([\text{EVENT} \times \text{ACT} \langle \ldots \rangle]\)
(impact verbs: e.g. *tonton suru* ‘tap’)

Type 3: \([\text{EVENT} \times \text{CONTROL} \langle \ldots \rangle]\)
(manner-of-motion verbs: e.g. *urouro suru* ‘wander about’)

Type 4: \([\text{EVENT} \times \text{EXPERIENCE} \langle \ldots \rangle]\)
(psychological verbs: e.g. *gakkari suru* ‘be disappointed’)

Types 5–7:
\([\text{EVENT} \times \text{\textsuperscript{^C}COGNIZE} \langle \ldots \rangle]\)\(^4\)
(Type 5: physiological verbs: e.g. *zukizuki suru* ‘throb’)

Type 6: physical perception verbs: *guragura suru* ‘wobble’

Type 7: characterizing predication: *assari suru* ‘taste light’)
(adapted from Kageyama 2007:44–79)

(8) a. *burabura*: move \(\langle_{\text{Manner:}} \text{SWAYINGLY}\rangle\)

b. *akuseku*: act \(\langle_{\text{Manner:}} \text{BUSILY}\rangle\)

c. *assari*: state \(\langle_{\text{Manner:}} \text{SIMPLE AND LIGHT}\rangle\)

d. *puttun*: become \(\langle_{\text{Manner:}} \text{SUDDENLY GETTING BROKEN}\rangle\)
(Kageyama 2007:43)

For instance, (9) shows the composition for a mimetic verb, *akuseku suru* ‘busy oneself’, which incorporates ‘\(\text{ACT} \langle_{\text{Manner:}} \text{BUSILY}\rangle\)’ (8b) into the LCS template for Type 1 *suru*.

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\(^4\) According to Kageyama (2007:65), the symbol ‘\(^^\text{^C}\)’ stands for lexical suppression.
Compositional semantics of mimetic verbs

$suru$’s LCS template: $[\text{EVENT} \times \text{ACT} (\ldots)]$

$\uparrow$

$<\text{Manner } \alpha>$: LCS content of a mimetic word

(Kageyama 2007:42)

While this compositional method accounts for a variety of examples, how it is determined which mimetic word can be combined with $suru$ ‘do’ remains unclear.\(^5\)

Take Type 6 as an example. According to Kageyama (2007:44), Type 6 refers to a category in which “The [Theme] subject moves or behaves in a particular manner” (e.g. $Isu$-ga $guragura$-$suru$ ‘The chair is wobbly.’). However not all mimetics that deal with a motion of an inanimate can be combined with $suru$ ‘do’ as shown below.

(10) a. $Sentakumono$-ga $hirahira$ $yure$-$tei$-$ru$.
laundry-nom mi swing-prog-npast
‘The laundry is swinging fluttering.’

a’. $Sentakumono$-ga $hirahira$-$si$-$tei$-$ru$.
launder-nom mi-do-prog-npast
‘The laundry is fluttering.’

b. $Konoha$-ga $harahara$ $mat$-$tei$-$ru$.
tree.leaves-nom mi dance-prog-npast
‘Tree leaves are dancing fluttering.’

tree.leaves-nom mi-do-prog-npast
(Intended) ‘Tree leaves are fluttering.’

Specifically, (10a) and (10b) show that the two mimetics, $hirahira$ and $harahara$, refer to a similar fluttering motion of an object. Despite this similarity, the former can be compounded with $suru$ ‘do’ (10a’), but the latter cannot (10b’).\(^6\) Similarly, $yoti$-$yoti$ ‘toddling,’ a Type 3 [manner-of-motion] verb, can occur in a $suru$-compounded form, $yotiyoti$-$suru$ ‘toddle,’ but another manner-of-motion verb $tekuteku$ ‘trudging’ does not have a $suru$-compounded counterpart (*$tekuteku$-$suru$).

Kageyama (2007) does not directly consider how to constrain a mimetic from combining with $suru$ freely. It appears that beyond the semantic criteria given in

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\(^5\) An examination of a mid-size mimetic dictionary (Atoda & Hoshino 1995) shows that approximately 35% of the senses of the mimetics can be expressed by a verb but the remaining 65% cannot.

\(^6\) The form $harahara$-$suru$ exists but means ‘feel uneasy’.
(7), a set of general rules is required to account for the combination, or each lexical entry of a mimetic word such as (8) requires an indication of whether it can be incorporated into one of the LCS templates of suru and if so, into which template it can be incorporated.

I agree with Kageyama (2007) that mimetic verbs have meanings and can therefore have specific semantic representations analogously to regular verbs. Departing from Kageyama’s (2007) proposal to combine two types of LCSs (one for suru ‘do’ and the other for the mimetic base), however, I hypothesize that the meanings of mimetic verbs are represented by a single logical structure (LS), on par with regular (i.e. non-mimetic) verbs, which constitutes the verb’s lexical entry.

RRG’s LSs encompass semantic information of the verb, including its valence and lexical aspect. Presently, 12 Aktionsart classes are posited: these consist of state, activity, achievement, semelfactive, accomplishment, and active accomplishment and their causative counterparts. Examples of their LS are shown in Table 1.

Table 1. Aktionsart classes

<table>
<thead>
<tr>
<th>Aktionsart class</th>
<th>Examples of LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Chris is tall.: be’ (Chris, [tall’])</td>
</tr>
<tr>
<td>Activity</td>
<td>Ken walked.: do’ (Ken, [walk’ (Ken)])</td>
</tr>
<tr>
<td>Achievement</td>
<td>The bubble popped.: INGR popped’ (bubble)</td>
</tr>
<tr>
<td>Semelfactive</td>
<td>Pat coughed.: SEMI do’ (Pat, [cough’ (Pat)])</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>The ice melted.: BECOME melted’ (ice)</td>
</tr>
<tr>
<td>Active Accomplishment</td>
<td>Maki ate the cake.: do’ (Maki, [eat’ (Maki, cake)]) &amp; INGR consumed’ (cake)</td>
</tr>
<tr>
<td>CAUSATIVE</td>
<td>a CAUSE β, where a, β are logical structures of any type. Yui melted the butter.: [do’ (Yui, ∅)] CAUSE [BECOME melted’ (butter)]</td>
</tr>
</tbody>
</table>

Syntactic and semantic tests are used to determine the Aktionsart class of a verb. Currently, six tests are used to identify non-causative verbs in English: Test 1: progressive (occurs with progressive), Test 2: dynamic (occurs with adverbs like vigorously, activity), Test 3: duration (occurs with adverbs like quickly, slowly), Test 4: for-phrase (occurs with X for an hour, spend an hour Xing), Test 5: in-phrase (occurs with X in an hour), and Test 6: stative modifier (can be used as stative modifier) (Van Valin 2005: 32–42).

Table 2 summarizes the Japanese equivalents (cf. Hasegawa 1996; Toratani 2007) with the addition of Test 7 (yields a stative reading in the citation form) to further distinguish state from non-state verbs.

Let us now examine the Aktionsart class of a mimetic verb, taking buraburasuru discussed in Tsujimura (2005) (cf. (4)) as an example. As we will turn to
transitive verbs in Section 4, we will now focus on the intransitive mimetic verbs. The relevant examples are repeated as (11).

(11) a. *Doa-no totte-ga burabura-suru.* (=4d))
    door-GEN knob-NOM mi-do.NPST
    ‘The door knob is loose.’

b. *Taroo-ga kooen-o burabura-si-ta.* (=4e))
    Taroo-NOM park-P mi-do-pst
    ‘Taro strolled leisurely in the park.’

c. *Taroo-ga uti-de burabura-si-tei-ru.* (=4f))
    Taroo-NOM home-at mi-do-prog-NPST
    ‘Taro is being lazy at home.’

The Aktionsart class of *burabura-suru* used in the first sense, expressing the door-knob’s unstable condition (11a), is determined as state, since state is the only class in which the verb can occur in the citation form to express the present tense (Test 7: citation form). That the mimetic verb cannot co-occur with adverbials compatible

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7. Although *burabura* expresses a dynamic condition as noted in Kageyama (2007: 35) (“the mimetic word *burabura* by itself conveys a perceptual image … [wherein] an object hanging or dangling from a high point is swaying back and forth”), I assume that the meaning intended in Tsujimura (2005: 147) is the wobbly state and, thus, represent it in the LS.
with dynamism (Test 2: *kappatuni* ‘actively’ and Test 3: *yukkuri* ‘slowly’) supports the interpretation that it is a state verb.

(12) *Doa-no totte-ga *kappatuni/*yukkuri burabura-suru.
    door-gen knob-nom actively/slowly mi-do.npst
    (intended) ‘The door knob is actively/slowly loose.’

In the sense of the leisurely stroll in (11b), the Aktionsart class of *burabura-suru*₂ is determined as activity. Consider the example below.

    Taro-top park-p mi-do-prog-npst
    ‘Taro is strolling leisurely in the park.’

b. *Taro-wa ni-zikan koen-o burabura-si-ta.*
    Taro-top two-hour.for park-p mi-do-pst
    ‘Taro strolled leisurely in the park for two hours.’

First, the mimetic verb gives the progressive reading with *tei-* (Test 1) (13a), which means that the class can be activity, semelfactive, or active accomplishment (see Table 2). Second, among the three classes, activity is the only one which can co-occur with a *for*-phrase without giving rise to an iterative reading (an active accomplishment verb which has the telic component is incompatible with a *for*-phrase; a semelfactive verb would necessarily yield an iterative reading). Thus, the class of *burabura-suru*₂ must be activity.

The Aktionsart class of *burabura-suru*₃ (11c), which expresses the sense of ‘being lazy’, is also determined as activity. It yields the progressive reading (Test 1) when compounded by -tei as (11c) shows, and it can co-occur with a kind of *for*-phrase, *iti-niti-zyuu* ‘all day long’ (14), without giving rise to an iterative reading.

(14) *Taro-wa kinoo iti-niti-zyuu uti-de burabura-si-ta.*
    Taro-top yesterday one-day-all home-at mi-do-pst
    ‘Taro was lazy at home all day long yesterday.’

The mimetic verb is translated as ‘be lazy’ in Tsujimura (2005), possibly leading one to believe that it is a state verb. However, the LS should capture the point that the mimetic verb is an activity, as tested above.

Once the Aktionsart class is determined, the next task is to translate the information into an LS. Ideally, the LS should capture the meanings of mimetics as precisely as possible. This calls for the enriched lexico-semantic representations such as those developed in the Lexical Constructional Model (Jiménez-Briones & Pérez-Cabello de Alba 2008; Jiménez-Briones 2009; Mairal-Usón, Perinán-Pascual & Pérez-Cabello de Alba 2012) or those discussed in Gottschalk (2010). However, since my immediate goal is to show linking between semantics and syntax, I will adopt a more primitive representation, leaving the task of refining the semantic representations of mimetics for future studies.
The three senses of *burabura-suru* are proposed to have the following LSs:

(15) a. *burabura-suru*$_1$: *be* $'$ (x, [wobbly$'$])
    
b. *burabura-suru*$_2$: *do* $'$ (x, [saunter-about$'$ (y, x)]) [MR1]
    
c. *burabura-suru*$_3$: *do* $'$ (x, [loaf.around$'$ (x)])

The feature seen in (15b), ‘MR1’, indicates that the verb takes one macrorole. Between the x and y arguments of *burabura-suru*$_2$, only the x argument is the macrorole, as it is the first argument of *do*; the y argument that appears immediately after the location indicator, -about$, $is a non-macrorole core argument. Such specification is necessary when there is a mismatch between the number of macroroles and the number of arguments in the logical structure of the verb (cf. Van Valin 2005: 63).

Let us consider the linking in (11b) (*Taro-ga kooen-o burabura-si-ta. ‘Taro strolled leisurely in the park.’*) as an example. Figure 1 shows how the sentence is formed from the perspective of the speaker, who knows which message is to be communicated.

![Figure 1. Semantics-to-syntax linking in (11b)](image)

First, the LS in (15b) is selected from the lexicon, on the basis of which, the semantic representation of the sentence can be formed. A simplified semantic representation would look like (16).
Following the Actor-Undergoer Hierarchy (Van Valin 2005: 126), the first argument of do’, which is Taroo, is selected as the actor; the other argument, kooen ‘park’, will be a non-macrorole core argument (NMR) as the verb is MR1 (cf. (15b)). Further, Taroo is assigned the nominative case ga, as it is the privileged syntactic argument (PSA), and kooen ‘park’ receives the place particle (postposition) o (Kuno 1973: Chapter. 5), following one of the case/postposition assignment rules for Japanese which says: “The other core argument may take a postposition” (Imai 1998: 20). Next, as the verb has two arguments, the syntactic template with two reference phrases (RPs) (Van Valin 2008) is selected. Finally, the arguments are assigned to positions in the syntactic representation of the sentence.

4. Transitive mimetic verbs

4.1 Transitivity of mimetic verbs

As noted earlier, RRG uses ‘constructional schemas’ for special structures such as the English WH-question and French causative constructions to specify “the idiosyncratic, language-specific features of constructions” (Van Valin 2005: 132). Section 3 shows how the variation centering on a mimetic verb can be handled without resorting to a constructional schema. The examples involve no idiosyncrasy associated with a particular construction; they are all simple sentences with intransitive verbs which happen to have a mimetic base.

This leads to the question of whether mimetic transitive verbs follow the same pattern as mimetic intransitive verbs. The answer must be “no” because the lexical characteristics of mimetic and regular (i.e. non-mimetic) transitive verbs are quite distinct, unlike the case of mimetic and regular intransitive verbs.

For illustration, consider how native speakers use a regular transitive verb, taking a transitive verb tokas- ‘melt’ as an example. To begin with, the verb must have a stable LS entry in the lexicon which might look like: [do’ (x, ∅)] CAUSE [BECOME melted’ (y)]. When native speakers use it in a sentence, they follow the canonical steps required to link semantics and syntax, such as replacing the variables with the actual reference phrases occurring in the sentence.

Transitive mimetic verbs paint a different picture. First, it is questionable whether all transitive mimetic verbs have LS entries, something corroborated by the fact that a mimetic dictionary (Atoda & Hoshino 1995) (A&H henceforth) lists few of these verbs, as summarized in Table 3.
Specifically, of the total number of 496 tokens (each token corresponding to a distinct sense of a mimetic verb), only 2% constitutes transitive mimetic verbs, with the large majority (98%) comprising intransitive mimetic verbs.  

Second, despite the paucity of entries, in reality, native speakers actively use transitive mimetic verbs, as evidenced by frequent occurrences in blogs and colloquial speech (Wehmeyer 2011). Moreover, the transitive forms are not arbitrarily created. This implies that native speakers know how to productively generate transitive mimetic verbs, while observing constraints.

To account for this gap between the frequent usage and the few dictionary appearances, I posit that transitive mimetic verbs are created following the information specified in two constructional schemas: one for “The body-part + mimetic-sase construction” (see Section 4.2) and the other for “The colloquial mimetic-suru construction” (see Section 4.3).

4.2 The body-part + mimetic-sase construction

The ‘body-part + mimetic-sase construction’ refers to examples like (17), where the causative form of suru ‘(lit.) do’, which is sase- ‘(lit.) make’, is compounded with the mimetic base.\(^9\)

\[
\begin{align*}
\text{(17) a. (Kodomo-wa) ie-no-naka-demo} & \text{ iki-o} \\
\text{child-top} & \text{ house-gen-inside-even breath-acc}
\end{align*}
\]

---

8. The result in Table 3 is consistent with Kageyama’s (2007) point that mimetic verbs are low in transitivity (cf. Hopper & Thompson 1980).

haahaa-sase-te hasiri-mawat-tei-masu.
mi-do.caus-and run-around-prog-pol.npst

‘(The child) is running around even inside the house, letting his breath pant.’

b. Mabuta-o patipati-sase-te-mi-ta.
eyelids-acc mi-do.caus-and-try-pst

‘(I) tried letting my eyes blink.’

c. (Kodomo-wa) te-o hirahira-sase-nagara
child-top hand-acc mi-do.caus-while

haasiri-masu.
run-around-pol.npst

‘(The child) runs while letting his hands flutter.’

d. Aosuzi-o pikupiku-sase-nagara syookoakaigisyo-e.
vein-acc mi-do.caus-while board.of.trade.unit

‘(While I) let my veins twitch, (I went off) to the Board of Trade Unit.’

e. Kyoo-mo… i-o kirikiri-sase-nagara
today-too stomach-acc mi-do.caus-while

syokuba-ni tui-te ...
work.place-loc arrive-and

‘(lit.) Today, too …, I arrived at my office while letting my stomach throb, and …’

f. Gakusee-tati-wa mainiti mune-o
student-pl-top every.day chest-acc
dokidoki-sase-nagara kono mon-o kugurimasu.
mi-do.caus-while this gate-acc cross-pol.npst

‘The students cross this gate every day, while letting their hearts pound.’

g. Atama-o zukizuki-sase-nagara zyugyo-o ukemas-ta.
head-acc mi-do.caus-while class-acc take-pst

‘I attended my class, while letting my head throb.’

Notably, in this construction, the o-marked arguments are limited to those pertaining to physiology such as iki ‘breath’ (17a) or body parts such as mabuta ‘eyelids’ (17b). Moreover, the mimetic verbs refer not only to a dynamic event such as the movement of one’s eyelids (17b) and hands (17c) but also to a state such as the pain felt in one’s stomach (17e) or head (17g). Finally, while sase-often expresses direct causation (e.g. Suwar-ase-ta. ‘(I) made (him) sit.’), it does not apply to (17). Akita (2010: 1207–1208) notes that a mimetic compounded

10. They correspond to “locus NPs” in Akita (2010).
by *sase*- expressing a bodily sensation (“somatopsych-mimetic” in his terms) does not express a sense of causation (e.g. *Ken-wa mune-o wakuwaku-sase-ta* ‘Ken felt his emotion exhilarated’). Building on this point, I propose that *sase*-in this construction conveys a type of permissive causation, ‘*let one’s body part* ... (e.g. *wiggle*), in which the actor (the possessor of the body) is construed as letting the body part engage in an action or remain in a state as if it were in charge of its own function. For instance in (17c), the owner of the hands (the causer) is apparently controlling the fluttering action, but the phrase gives rise to the construal that the body part causee, in this case the hands, controls the action.

In LS, the permissive meaning will be represented as ‘LET’ instead of ‘CAUSE’ (cf. Van Valin 2005:42n5), as in (18) and (19).

(18) \[do’ (x, ∅)] LET [(…)*pred’ (…)[have.as.part’ (x, χ)]\]

Mika-TOP arm-ACC mi-do.caus-prog-npst
‘Mika is letting her arms swing.’
[do’ (Mika, ∅)] LET [do’ (Mika, [swing’ (Mika, [have.as.part’ (Mika, ude)])])]

b. *Watasi-wa i-o kirikiri-sase-nagara...*
I-TOP stomach-ACC mi-do.caus-while
‘While I let my stomach throb ...’
[do’ (watasi, ∅)] LET [throb’ ([have.as.part’ (watasi, i)])]

When read informally, (18) tells us that actor *x* either lets *x’s body part* *y* engage in an activity, such as arm swinging (19a), or allows it to remain in a state, such as throbbing (19b).\(^{11}\)

Given this, the constructional schema for the mimetic-*sase* construction can be posited as shown in Table 4.\(^{12}\)

---

11. The causee is marked by *o ACC and cannot be marked by *ni even though the causee in the regular permissive causative construction is marked by *ni* (e.g. *Mika-ni ik-ase-ta* ‘I let Mika go there’). Further, the bodily sensation type (e.g. (17b)) tends to occur in an embedded clause with a clause linkage marker that indicates durativity such as -*nagara* ‘while’. The simple past form turns out to be infelicitous as Akita (2010:1208) notes; arguably, the past tense coerces the pure direct causation reading (e.g.*Mika-wa i-o kirikiri-sase-ta* ‘Mika made her stomach throb.’).

12. As Table 4 shows, this paper adopts a simple method of representing constructional schemas following the standard model in RRG (Van Valin 2005). Arguably, schemas need to be more encompassing and incorporate more morphosyntactic and semantic information (e.g. Cortés 2009; Diedrichsen 2011; Nolan 2011).
Table 4. Constructional schema for transitive mimetic verbs (I)

<table>
<thead>
<tr>
<th>CONSTRUCTION</th>
<th>Japanese body-part + mimetic-sase construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX</td>
<td>Template(s): Syntactic template selection principle</td>
</tr>
<tr>
<td></td>
<td>(Van Valin (2005: 130))</td>
</tr>
<tr>
<td></td>
<td>PSA: Semantic controller = actor</td>
</tr>
<tr>
<td></td>
<td>Linking: Assign NOM to the actor and ACC to the other core argument</td>
</tr>
<tr>
<td>MORPHOLOGY</td>
<td>– A reduplicated mimetic + -(s)ase or a non-reduplicated mimetic + to + -sase</td>
</tr>
<tr>
<td></td>
<td>– Tends to occur in a non-matrix clause (cf. Note 11).</td>
</tr>
<tr>
<td>SEMANTICS</td>
<td>– Permissive causation where the causer lets his/her body part participate in a condition as if it were in charge of its own function:</td>
</tr>
<tr>
<td></td>
<td>[do’ (x, Ω)] LET [(…) pred’ (…) [have.as.part’ (x, y)]]</td>
</tr>
<tr>
<td>PRAGMATICS</td>
<td>Illocutionary force: Unspecified</td>
</tr>
<tr>
<td></td>
<td>Focus structure: Unspecified</td>
</tr>
</tbody>
</table>

4.3 The colloquial mimetic-suru construction

The second type, the ‘colloquial mimetic-suru construction’, applies to instances like (20).13

(20) a. Yuka-o gosigosi-si-tei-ru-to…
    floor-acc mi-do-prog-npast-when
    ‘When I was scrubbing hard the floor…
    (lit. When I was doing the floor scrub scrub).’
    [cf. gosigosi + kosur- ‘scrub’]

b. irogami-o tyokityoki-si-te kami-ni hari …
    colored.paper-acc mi-do-and paper-onto attach
    ‘(She) made a snip in the colored paper and attached it onto the paper
    (lit. (She) did the colored paper snip snip).’ [cf. tyokityoki + kir- ‘cut’]

c. suutukeesu-o gorogoro-si-te busutee-ni mukai-masi-ta.
    suitcase-acc mi-do-and bus.stop-at head-pl-pst
    ‘I headed toward the bus stop rolling the suitcase.’
    (lit. I did the suitcase roll roll).’
    [cf. gorogoro + hik- ‘pull’]

13. The examples are adopted from instances found on the internet, last accessed on December 9, 2012: (20a) http://yaplog.jp/yummmmy-b/archive/68, (20b), (http://blogs.yahoo.co.jp/yu_ri_a_mama/35189128.html), (20c) (http://my-durian-my.blogspot.ca/2011/08/cantho.html), and (20d) (http://blog.goo.ne.jp/zakka-no-mori5/e/035b37c3f44bb71faflf2658862e5ab6).
Again, this is a construction with certain unique characteristics. First, its mimetic base such as *gosigosi* ‘manner of scrubbing’ (20a) or *kyut-to* ‘manner of squeezing’ (20d) normally functions as an adverb, not a verb. As adverbs, they typically take a companion transitive verb, or the host verb, which comes from their semantic superordinate category (cf. Hirose 1981, Toratani 2012: 118–121). For instance, *gosigosi* ‘manner of scrubbing hard’, typically accompanies a transitive verb of its hyperonym, *kosur* - ‘scrub’, where the verb denotes a general scrubbing event and the mimetic expresses the finer event type, namely, intense scrubbing. When the adverbial mimetic is compounded with -*suru*, the mimetic verb is expected to have the argument structure of the transitive verb which would have otherwise co-occurred with the adverbial mimetic. Put differently, the transitive mimetic verbs such as *gosigosi-suru* roughly replace the semantic content of the adverbial mimetic (*gosigosi* ‘manner of scrubbing hard’) and its host transitive verb (*kosur* - ‘scrub’).

Interestingly, this replacement, or verbalization of the adverbial mimetic, brings about a shift in style, creating a “colloquial and childish” (Kageyama 2007: 39) register of the adverbial mimetic-verb combination. Although this is used widely in informal language (cf. Tsujimura 2009; Wehmeyer 2011), its acceptability varies from fairly to only marginally acceptable (cf. Kageyama 2007: 40).14

Second, these instances concentrate on the mimetic forms which represent a manner of a dynamic action, such as *gosigosi* ‘manner of scrubbing’ (20a), or a sound, as in *tyokityoki* ‘snip snip’ (20b). In other words, the described scenes are necessarily dynamic and typically have a high degree of mimeticity (cf. Tamori & Schourup 1999; Akita 2009). This agrees with the observation that state verbs such as those expressing a bodily sensation cannot enter into this construction as shown below.

(21) a. *Watasi-wa atama-o zukizuki-si-ta (/-/nagara...).*
I-TOP head-ACC mi-do-pst(/-/while)
(lit.) I did my head throb throb (/While I did my head throb throb…’

b. *Watasi-wa me-o kurakura-si-ta (/-/nagara...).*
I-TOP eye-ACC mi-do-pst(/-/while)
(lit.) I did my eyes dizzy dizzy (/While I did my eyes dizzy dizzy…’.

14. *Kimi Akita (p.c.) points out that some of the seemingly non-standard innovative usage of the mimetic-*suru* forms found on internet blogs are conventionally used in dialect.*
The dynamism of examples like (21) suggests that the Aktionsart class of the mimetic transitive verbs with -suru is either activity (do’ (x, [pred’ (x, y)])) or semelfactive (SEML do’ (x, [pred’ (x, y)])). The former covers durative or iterative events such as (20b), and the latter covers a case like (20d) in which an action is performed only once. In light of these two characteristics, the constructional schema for Japanese colloquial mimetic-suru construction is proposed as in Table 5.

Table 5. Constructional schema for transitive mimetic verbs (II)

<table>
<thead>
<tr>
<th>CONSTRUCTION</th>
<th>Japanese colloquial mimetic-suru construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX</td>
<td>Template(s): Syntactic template selection principle</td>
</tr>
<tr>
<td></td>
<td>(Van Valin (2005: 130))</td>
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</tr>
<tr>
<td></td>
<td>Linking: default (assign NOM to the actor and ACC to the other core argument)</td>
</tr>
<tr>
<td>MORPHOLOGY</td>
<td>A reduplicated mimetic + -suru or a non-reduplicated mimetic + to + -suru</td>
</tr>
<tr>
<td></td>
<td>Mimetics that normally occur only as adverbs function as the base.</td>
</tr>
<tr>
<td>SEMANTICS</td>
<td>Covers an atelic dynamic event with a high degree of mimeticity, either non-punctual (do’ (x, [pred’ (x, y)])) or punctual (SEML do’ (x, [pred’ (x, y)]))</td>
</tr>
<tr>
<td>PRAGMATICS</td>
<td>Illocutionary force: Unspecified</td>
</tr>
<tr>
<td></td>
<td>Focus structure: Unspecified</td>
</tr>
</tbody>
</table>

Now that we have introduced these two transitive mimetic constructions, we can turn to an example from Tsujimura (2005) (4g), appearing below as (22a) and (22b).

(22)  a. Taroo-ga asi-o burabura-sase-ru.  
      Taro-NOM leg-ACC mi-do.CAUS-NPST  
      ‘Taro swings his legs.’  

   b. Taroo-ga asi-o burabura-suru.  
      Taro-NOM leg-ACC mi-do.NPST  
      ‘Taro swings his legs.’  

For the two sentences in (22), Tsujimura (2005) provides a single translation, ‘Taro swings his legs’. This raises the question of whether there is any difference between the two mimetic verbs. Kageyama (2007: 50) notes the existence of this type of pair as well. He comments that the -suru version is more marginal in acceptability than the -sase version; he presents an internet search result which indicates that the -sase version is more common (60%–85%) than the -suru version (15%–40%). Following Kageyama (2007), I assume that the -sase version is the norm and the -suru version is the non-conventionalized form, extemporaneously created by native speakers. Further, I propose that the two forms are instantiations of the two
constructions, the body-part + mimetic-\textit{sase} construction (cf. (22a)), and the colloquial mimetic-\textit{suru} construction (cf. (22b)), with the following LSs.

(23)  
  a. \textit{burabura}-sase:  
  \begin{align*}  
  \text{do}'(x, \emptyset) & \text{ LET} \\
  & \text{do}'(x, [\text{swing}'(x, [\text{have.as.part}'(x, y)])])  
  \end{align*}  
  
  b. \textit{burabura}-\textit{suru},:  
  \text{do}'(x, [\text{swing}'(x, [\text{have.as.part}'(x, y)])])

4.4 Syntax-to-semantics linking

The first step in syntax-to-semantics linking is “that the parser outputs a labeled tree structure”; in the second step, the hearer identifies “the predicate, usually a verb, in the nucleus and determine[s] its transitivity” (Van Valin 2013: 99). That is, as the sentence is uttered, the hearer receives morphosyntactic cues as to whether the verb is in the active or passive voice, and what kind of case-markings the arguments have. Take (11b) (\textit{Taro-ga koen-o burabura-si-ta.} “Taro strolled leisurely in the park”) as an example. From the form of the mimetic verb, the hearer knows that it is in the active voice as it carries no passive morphology. From the case-markings of the arguments (one marked by \textit{ga} ‘nominative’ and another marked by \textit{o}) alone, the hearer cannot determine the macrorole-transitivity (M-transitivity) of the verb, as \textit{o} can be the accusative case or the place particle in Japanese; in the former, the verb will be M-transitive, whereas in the latter, it will be M-intransitive. Accordingly, the \textit{ga}-marked argument can be determined to be the actor, but the other argument has no macrorole status at this point.

The next step is to access the LS of the mimetic verb from the lexicon. Among the different senses of \textit{burabura-suru}, the LSs for 1-place predicates are ruled out as the sentence contains two RPs. This leaves two LSs for possible selection. Relevant examples appear below.

(24)  
  a. \textit{Taro-ga} koen-o \textit{burabura-si-ta.} (=\textit{(4e)})  
  \text{Taro-NOM} \text{ park-P} \text{ MI-do-pst}  
  ‘Taro strolled leisurely in the park.’  
  a'. \textit{burabura-suru},: \text{do}'(x, [\text{saunter-about}'(y, x)]) [MR1]  
  b. \textit{Taro-ga asi-o \textit{burabura-suru.} (<\textit{(4g)})  
  \text{Taro-NOM} \text{ leg-ACC} \text{ MI-do-npst}  
  ‘Taro swings his legs.’  
  b'. \textit{burabura-suru},:  
  \text{do}'(x, [\text{swing}'(x, [\text{have.as.part}'(x, y)])])\n
A sense of sauntering is represented by the LS in (24a’), and a sense of swinging is represented by the LS in (24b’). The question is which LS should be selected. Here, the notion of co-composition comes into play; it “describes a structure which allows, superficially, more than one function application” (Pustejovsky 1995: 122).
In the process of co-composition, the lexical structure of a verb is combined with the qualia structure of a noun (Pustejovsky 1991, 1995) in which four different aspects of the meaning (or qualia) of the lexical item are possible: constitutive (“the relation between an object and its constituent parts”), formal (“that which distinguishes it within a larger domain”), telic (“its purpose and function”), and agentive (“factors involved in its origin of ‘bringing it about’”) (Pustejovsky 1995:76). Depending on the verb with which the noun combines, different aspects of the qualia become relevant.

With respect to kooen ‘park’, which the hearer has already heard, the relevant quale is the telic one, which might look like (25).

(25) Telic quale for kooen (a): in’ (a, [do’ (x, [move’ (x)])])

Of the two LSs in (24a’) and (24b’), the LS with which (25) is compatible must be the one in (24a’), do’ (x, [saunter-about’ (y, x)]), since y must be a place and kooen ‘park’ is a place in which actor x moves.

Once the LS is selected, the rest of the linking is straightforward. In the final step, the arguments from the syntactic representations are linked to the variables in the logical structure, leading to the reading that x=Taroo and y=kooen ‘park’. The linking is shown in Figure 2.

![Diagram of Syntax-to-Semantics Linking in (11b)](image-url)

**Figure 2.** Syntax-to-semantics linking in (11b)
We will now consider the syntax-to-semantics linking involved in an M-transitive verb, represented in Figure 3, which is based on the body-part + mimetic-\textit{sase} construction exemplified in (26).

\begin{itemize}
\item[(26) a.] \textit{Mika-ga ude-o burabura-sase-ta}
\textit{Mika-nom arm-acc mi-do.caus-pst}
\textit{Mika let her arms swing.}'
\item[(26) b.] \texttt{[do' (Mika, \emptyset)] LET [do' (Mika, [swing' (Mika, [have.as.part' (Mika, ude)])])]}
\end{itemize}

![Figure 3. Syntax-to-semantics linking in (26)](image)

First, the parser outputs a labeled tree structure which is accessed by the hearer. Second, the predicate \textit{burabura-sase} is determined to be transitive, as it is a causative verb. Since the voice is active, the \textit{ga}-marked argument must be the actor. On the other hand, the \textit{o}-marked argument cannot be determined as the undergoer at this point, as \textit{burabura-sase} can belong to the body-part + mimetic-\textit{sase} construction (cf. Table 4) or to the regular \textit{let}-causative construction, whose LS might look like (27).

\begin{itemize}
\item[(27)] \texttt{[do' (z, \emptyset)] LET [do' (x, [saunter-about' (y, x)])]}
\end{itemize}
In this event, the causer \( z \) lets the causee \( x \) (\( z \neq x \)) move around in \( y \).

To determine which LS should be accessed, the qualia structure of the \( o \)-marked argument can be examined. The co-occurring noun \( ude \) ‘arm’ includes the information “part_of’ (\( x, y: body \)” in its constitutive quale. As the constructional schema (Table 4) specifies that the construction with the transitive mimetic verb + -sase requires a body part in its semantics and the causer must be the owner of the body part, the LS, \([do’ (x, \emptyset)] \) LET \([do’ (x, [swing’ (x, [have. as.part’ (x, y)])])]) \), is selected (instead of (27)). Finally, macroroles are assigned to yield ‘\( x = \)actor’ and ‘\( y = \)undergoer’ and the arguments from the sentence are linked to the LS arguments: i.e. Mika to \( x \), and \( ude \) ‘arm’ to \( y \).

5. Conclusion

This paper offers an RRG account of the ability of a Japanese mimetic verb to occur in different morphosyntactic environments. Following Van Valin (2013), it argues that two rival approaches used to analyze mimetic verbs, namely, a projectionist view (Kageyama 2007) and a constructionist view (Tsujimura 2005), are not irreconcilable but complementary. The paper shows that Van Valin’s (2013) analysis, which covers the valence alterations observed with such examples as English shatter, can be extended to account for the variability derived from polysemy with distinct LS predicate contents of mimetic verbs.

As the large majority of mimetic verbs are syntactically intransitive (Section 4, Kageyama 2007), no postulation of multiple constructions per verb, or ‘constructional schemas’ in RRG terms, is required; they present straightforward cases of linking in simple sentences. However, two constructional schemas are posited to handle transitive mimetic verbs: one involves a body-part causee, and the other involves the colloquial register of the adverbial transitive-mimetic verb combination.

Admittedly, the paper looks at a limited number of mimetics and applies a rather primitive decomposition of the meaning of mimetics. Future study must employ a more sophisticated method of semantic decomposition, possibly using the lexical templates put forward within the Lexical Constructional Model (Mairal Usón & Faber 2007 among others) to capture the intricate and complex semantics of mimetics.

References


A constructional perspective on clefting in Persian

An insight into differentiating between emphatic and deictic in

Farhad Moezzipour
Trinity College Dublin

The goal of this chapter is to provide a Role and Reference Grammar (RRG henceforth) analysis of cleft sentences in Persian with respect to the role of interaction over the domains of syntax, semantics and information structure. Clefting is functionally motivated by thematically marked expression of a single proposition via bi-partition syntax in the sense that a sequence of two clauses including a matrix and a cleft clause is employed in order to bring into focus an element that can be otherwise expressed as a non-focal element in the unmarked predicate-focus structure. This deviation from the unmarked predicate-focus structure feeds cleft sentences with a non-isomorphic/non-compositional feature that can be accounted for in terms of a constructional framework that encompasses the morphosyntactic, semantic and informational properties that a cleft construction has. RRG is equipped with a bi-lateral syntax-semantics representation that is enriched with discourse-pragmatic considerations which enables it to facilitate processing of linguistic properties of cleft constructions by means of constructional schemas. Non-compositionality in a cleft construction implies that the semantic composition of the whole cleft construction is not the “computable sum of the meaning of its parts” (Lambrecht 1994: 230). That is why a construction-based scrutiny will be necessary to explain how the mapping between semantics and information structure in clefting can be elucidated with respect to the syntactic juxtaposition of the constituents. It will be also discussed that there should be a necessity to distinguish between emphatic in in clefting and anaphoric in in extraposition in the Persian language with regard to the role of information structure that is distinctively formalized in the syntactic templates of the two constructions on the basis of the RRG constructional framework.
1. Introduction

The unique architecture along with the level of grammatical complexity and importance of clefting across languages makes this grammatical construction an interesting topic for implementation and validation of various theoretical paradigms surrounding cleft constructions. Although different approaches have been adopted thus far to analyze the true nature of cleft constructions cross-linguistically, there is still a lack of consensus concerning its linguistically complicated behavior because a thorough analysis of cleft sentences necessitates a multi-faceted treatment which takes into account the fundamental morphosyntactic, semantic and discourse-pragmatic properties of the construction, and most importantly exerts a constructional account to explicate the non-compositionality of cleft sentences. In the present paper, an attempt will be made to embark on an RRG framework for the analysis of Persian cleft constructions in terms of the interlink established between syntactic, semantic, and focus structure representations in RRG, which motivates a constructional configuration for clefting in Persian.

This paper is structured as follows. In Section 2, I shall present an overview of the key studies of cleft constructions, which primarily involves the non-derivational analyses that make contributions to the constructional analysis of Persian cleft constructions. Section 3 aims to investigate the syntactic representation of cleft sentences based on the Layered Structure of Clause (LSC) projection of RRG and also the status of the so-called demonstrative cleft pronoun in NP-clefted constructions with respect to the intricacy of the verb agreement in the matrix clause. It will also introduce the logical structure of cleft sentences according to the lexical decomposition of the matrix and embedded predicators. The focus structure representation of cleft sentences in line with the focus structure taxonomy put forth in Lambrecht (1994) will be presented. The formalization of syntax-information structure interface in cleft-like sentences is a pivotal discussion in the Section 4. Grammatical relations and case-assignment rules in cleft sentences will be introduced and constructional schemas will be presented in Section 5.

2. A survey of cleft literature

The initial investigation of cleft sentences commenced with Jespersen's 1927 book, *A Modern English Grammar on Historical principles* (volume 3, Chapter 4 on “Relative clause adjuncts”), where he addressed the issue of relative clause constructions preceded by *it is*. He assumed that the relative clause in cleft sentences is restrictive in the sense that it modifies the sequence of *it is* and it does not restrict the referent of the clefted constituent due to the possible occurrence of definite referring
expressions or proper names in the post-copular predicative slot. Put it differently, the combination of the cleft pronoun plus the cleft clause form a semantic discontinuous unit that is equated or identified with the referent of the clefted constituent via a copula. This assumption shaped the innermost core of the extrapositional approach to the study of cleft sentences according to which they are regarded as a subclass of copular sentences in which the cleft clause is “transposed” to the end of the sentence and interpreted referentially by the cleft pronoun. This extraposition hypothesis is labeled as “transposition analysis” in Jespersen’s treatment and can be summarized as in (1) and diagrammed in (2):

(1) It was the wife who decides.
CLEFT PRONOUN + COPULA + PREDICATIVE COMPLEMENT + RESTRICTIVE RELATIVE CLAUSE

(2) \[ \text{CLEFT PRONOUN + CLEFT CLAUSE} \mid \text{COPULA} \mid \text{PREDICATIVE COMPLEMENT} \]

Jespersen (1937) rejected the transposition analysis in favor of his “intercalation” analysis whereby he proposed that the cleft sentences need to be treated as syntactically identical to their non-clefted counterparts. Essentially, the intercalation analysis pertains to the assumption that the cleft pronoun, copula, and complementizer (as well as relative pronouns in case of wh-relative clauses) are treated as semantically inert elements extraposed to the sentence. An important modification is also suggested in the intercalation analysis regarding the restrictive essence of the relative clauses in cleft sentences because of the close relationship borne between the clefted constituent and the cleft clause; for instance, Jespersen noted that these two elements are intonationally coherent without an intonational pause between them, and that there is an agreement in number between the clefted constituent and the cleft clause (Pavey 2004:62). The notion of extraposition in the intercalation analysis is formally symbolized by [ ] in (3) and (4), where S is the subject not a predicative element according to the transposition analysis and V is the verb whereas the dummy presence of the cleft pronoun and the copula is formalized by the lower-case s and v, what Jespersen calls “lesser subject and verb” (Lambrecht 2001:465). [3’] and [s’] represent respectively the complementizer and relative pronoun.

(3) It is the wife that decides: [sv] S [3’] V

(4) It is the wife who decides: [sv] S [s’] V

On the basis of the examples in (3) and (4), the cleft pronoun is a dummy subject; the copula is a dummy verb; the clefted constituent is the subject and the
cleft clause is the predicate. Hedberg (1990) summarizes the intercalation analysis as in (5).

(5) DUMMY SUBJECT + DUMMY VERB + SUBJECT + PREDICATE

Accordingly, the cleft sentences in (3) and (4) are semantically equivalent to the non-cleft sentence *the wife decides* with this in mind that the two sentences are pragmatically adaptable to the sentence *the WIFE decides* with the subject carrying the phonological nucleus.

However, the extrapositional and expletive approaches, which have precedence in Jespersen’s works on English grammar, are basically concerned with derivations that trace the generative tradition towards grammatical constructions. The generative studies which fall broadly within either the extrapositional approach (Akmajian 1970; Bolinger 1972; Wirth 1978; Emonds 1976; Gundel 1977; among others) or the expletive approach (Chomsky 1977; Delahunty 1982; Rochemont 1986; to name a few) suffer from the shortcoming that in each approach, an in-depth analysis which takes the functional and formal motivations underlying cleft sentences into consideration is missing. For example, in the extrapositional approach the focus of analysis is placed under the copular nature of the matrix clause and the relationship between the clefted constituent and the cleft clause is somehow sidelined. It is also the case that in the expletive approach the matrix elements and the relationship within them are neglected as if they did not exist in the sentence.

As opposed to the generative tradition, there are alternative studies which do not fit neatly to either extraposition or expletive categories. Hedberg (2000) believes that the cleft pronoun is not semantically pleonastic, rather its combination with the cleft clause functions pragmatically as a “discontinuous referring expression”1 in compliance to the application of the Givenness Hierarchy categories of Gundel et al. 1993 (see 6) to cleft constructions where the selection of the cleft pronoun type is bound to the cognitive status of the cleft clause in the discourse model. Hedberg’s attempt to bring into play elements from both the extrapositional and expletive approaches is noticeable when she contends that the cleft clause is “directly related syntactically to the clefted constituent and directly related semantically and pragmatically to the cleft pronoun” (ibid: 907). The central premise in Hedberg’s analysis is that the assembly of the cleft pronoun and the

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1. Pavey (2004:71) takes issue with the equation of definiteness and reference in Hedberg’s analysis with iterative mentions of ‘discontinuous definite descriptions’ and ‘discontinuous referring descriptions’ on the grounds that the application of Givenness Hierarchy categories to propositions designated by clauses rather than referring expressions designated by noun phrases merely by virtue of similarity of the cleft pronoun to the determiner is imperspicuous.
cleft clause is analogous to a referring determiner phrase (DP) from a discourse-pragmatic perspective because the same pragmatic constraints which govern the appropriate selection of the determiner hold true with the selection of a pronominal, i.e. *it* or a demonstrative, i.e. *this, that* cleft pronoun in cleft sentences with regard to the givenness category of the propositional content of the cleft clause in the discourse. This analogy has been diagrammed in Figure 1.

(6) in uniquely type
focus > activated > familiar > identifiable > referential > identifiable
{it} {that} {that N} {the N} {indefinite this N} {a N}

this

this N

Thus, the higher degree of informativeness the cleft clause obtains, the wider the range of the cleft pronoun selection becomes due to the fact that ‘in-focus’ entails other categories on the Givenness Hierarchy, and conversely, meaning that if we move downwards on the hierarchy, the speaker will encounter more restrictions concerning selecting the proper form of the cleft pronoun.

![Diagram](Figure 1. Cleft pronoun and cleft clause combination as a definite DP)

The pragmatic analogy between definite referring expressions and clefts is also semantically captured by the Existential and Exhaustiveness conditions.\(^2\)

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2. The presupposition of existence and exhaustiveness (Collins 1991) are generally regarded as semantic features of cleft sentences. Whether these two semantic features are presuppositions, assertions, conventionally or conversationally implicated are beyond the scope of this paper. However, the former is meant to introduce a presupposition in relation to the existence of an individual that satisfies the backgrounded predicate denoted in the cleft clause. The latter is defined in terms of the exclusiveness of the clefted constituent in the sense that the referent of the clefted constituent is the 'all and only' value that satisfies the variable. Value and
which parallels to the semantic combination of the cleft pronoun and the cleft clause. Therefore, the cleft pronoun acts as a definite quantifier carrying with it the Existential and Exhaustiveness conditions. The syntactic relation between the clefted constituent and the cleft clause is formally depicted by extraposing the latter as a complement clause from the subject DP and adjoining it to the clefted constituent. The adjunction premise goes in tandem with the non-restrictiveness hypothesis of the relative clause in cleft constructions and abandons the conjecture that the relative clause is by nature restrictive.

In her attempt to shed new light on the intriguing case of cleft sentences in English, Davidse (2000) pioneers a constructional framework where a construction is characterized, following the long functional tradition as a “configuration of functions” (Halliday 1985:32), which alludes to a top-down approach in the sense that the functions of grammatical constructions are mirrored by the “higher-level unit in which they play a role, viz. the constructions” (Davidse ibid: 1102). It is also worth mentioning that the composite structure of a construction consisted of its individual components will represent a semiotic form-meaning pairing in which the meaning is encoded by the form. Given that, Davidse asserts that the different patterning of information structure in cleft sentences in comparison to non-clefts will not be enough to tackle the non-canonical syntax of cleft sentences. Hence, she adheres to the constructional semantics analysis of cleft sentences in the light of the two semantic relations, one is coded between the matrix clause elements including the cleft pronoun and the complement, viz. the clefted constituent, and the other one is delineated by the anaphoric relation of the cleft clause to the matrix clause complement. Davidse, to begin with, raises an objection regarding the Huddleston’s 1984 expletive sort of approach according to which the matrix clause does not convey any semantic import and the cleft pronoun and copular verb are considered to be “fully grammaticalized features of the construction whose contribution to the meaning is not directly predictable from their use in other kinds of clause” (ibid: 462).

variable are represented respectively by the clefted constituent and the cleft clause based on the characterization of cleft sentences as specificational sentences following Declerck (1988). The exhaustiveness condition is equivalent to the abstract semantic operator, “exhaustiveness identification” in E. Kiss (1998) that is syntactically realized by the placement of the clefted constituent in the specifier of a Functional Projection. The clefted constituent in her analysis is considered as “identificational focus” that bears the following semantic-communicative role:

(i) The function of identificational focus: An identificational focus represents a subset of the set of contextually or situationally given elements for which the predicate phrase can potentially hold; it is identified as the exhaustive subset of this set for which the predicate phrase actually holds (ibid: 245).
Nonetheless, she stresses that Huddleston’s approach captures delicately a constructional line of reasoning by maintaining that the clefted constituent serves as the antecedent of the cleft clause even though they do not form a grammatical unit. Despite the constructional recognition of clefts, Huddleston by and large advocates the mainstream that cleft sentences do not constitute a construction in their own right and are treated as thematic recast of non-cleft sentences. She proceeds to compare the status of relative clauses in cleft sentences with restrictive relative clauses (RRCs) on one hand, and with non-restrictive relative clauses (NRRCs) on the other. First and foremost, Davidse, in line with Langacker (1991), considers the antecedent of the relative clause in clefts to be the full NP complement, i.e. the nominal head plus the determiner whereas the antecedent of the cleft clause involves the nominal head minus the determiner in RRCs. Following Langacker’s 1991 lead that the various elements in the internal structure of a NP display four distinctive semantic functions, viz. type specification, instantiation, quantification and grounding, Davids (ibid: 1109) claims that the cognitive assembly of the relative clause in RRCs and clefts is captured respectively by the semantic elements of type-specification and grounding, holding that in the former the initial assembly of the relative clause with its antecedent, viz. the nominal head, designating its type or class precedes the grounding of the instances by the determiner, as shown in Figure 2.

3. The semantic notions of “type-specification” and “grounding” can be exemplified by (i) and (ii), taken from Davidse (2000: 1111).

(i) At that meeting last night, I did not like the man who spoke first.
(ii) When God asked why they were wearing clothes, it was the man who spoke first.

The sentence in (i) is an instance of RRC sentences with the RRC referring to the nominal head as the antecedent, namely man, which restricts the ‘type’ of the head noun, and when grounded by the definite article, it allows the hearer to pick up the intended referent of the whole complex NP in the discourse context. Clearly, the relative clause of the cleft sentence in (ii) does hold an anaphoric relation to the full NP the man which corresponds exactly to only one ‘instance’ meeting the description provided in the relative cleft clause. This observation is confirmed by the fact that the complement slot in the matrix clause can be filled by a proper name in (ii), as exemplified in (ii’). But in case of a proper name in (i), as exemplified by (i’), the sentence will be ungrammatical because a proper name cannot function as antecedent of the RRC, for it fails to “symbolize the definite description as a separate element that the relative pronoun can refer back to” (ibid).

(i’) *At the meeting last night, I did not like John who spoke first.
(ii’) When God asked why they were wearing clothes, it was Adam who spoke first.
The comparison between clefts and NRRCs also reveals that the antecedent of the relative clause in the former is always a NP or other grammatical classes, e.g. adjectives, adverbs, prepositional phrases, infinitives, gerunds, clauses that are shifted to a nominal rank. It implies that these rank-shifted units in the complement slot “quote the form of original class but superimpose the functions of a definitely identified NP on them” (Davidse ibid: 1118). In the latter case, the antecedent of NRRCs displays structural congruity with its rank. Accordingly, there is no necessary match between the class of antecedent and the function of the relative pronoun in the relative clause in NRRCs in contrast to clefts in which the rank-shifted antecedent displays the class that matches up with the function of the relative pronoun. To put it in a nutshell, Davidse draws the conclusion that the inclusion of determiners and quantifiers in the antecedent along with the integration of the relative clause with the clefted constituent as a result of a rank-shifting procedure triggers the systematic alternation between clefts and non-clefts.

Davidse also favors the view that the distinct semantics of the matrix clause leads to the appearance of the different types of clefts including it-clefts, there-clefts and have-clefts. In her viewpoint, the matrices of the above-mentioned clefts function respectively as identifying, existential, and possessive clauses sharing the commonality that the matrix clauses enforce a “quantificational value” on their complements such that the complement can potentially bear the role of a specificational element in it-clefts or an enumerative element in there-clefts and have-clefts. The difference between it-clefts and there-clefts lies in that in the former, the cleft definite pronoun, viz. *it* has to do with exhaustive identification, which is per se associated with the inclusion of all the instances satisfying the variable situated in the discourse context by the relative clause. In contrast, in the latter case, the indefinite *there* enumerates leastways one instance of the contextually provided

However, we can find some cases where a proper name can represent a category of people with the name *John*. The use of the determiner, as discussed above, confines this category to a specific instance, as exemplified in (iii).

(iii) I’ve just met the John you used to go out with. (Davidse 2000: 1111).
category in the discourse space while designating a scale on which enumeration
can shift from cardinality to ordinality, as depicted by the example in (7), where
this ‘extension’ is clearly illustrated by the combination of cardinal and enumerative
aspects.

(7) There were two important competitions: first, the Commonwealth Games,
and, then the European Championships. (Davidse 2000: 1122)

As a result, the cleft pronoun and complement in Davidse’s constructional frame-
work are not expletive; they are either postulated to flag relative quantification
that involves “[a] comparison with a reference set or mass, with which the actu-
ally predicated mass coincides completely” (ibid: 1123) as in *it*-clefts or cardinal or
ordinal enumeration of the instances with this default implication that the listing
act may not be exhaustive. Constructionally, the semantic relationship of the clefted
constituent as the antecedent of the relative clause constitutes a value-variable con-
struction, as proposed by Declerck (1988), which is concerned with the specifica-
tion, enumeration and cardinal measuring of the instances grounded by the relative
clause. This is as a result of the distinct quantificational mechanism of the matrix
clauses in cleft sentences as discussed in the preceding lines. To sum up, clefts are
viewed as building up a construction in their own right, which is at odds with
the reductionist trend reinforced by the transformational approaches that tend to
demote one of the coded semantic relations to the promotion of the other.

Lambrecht’s constructional framework bears essential resemblance to the
constructional analysis proposed by Davidse in that cleft constructions in con-
junction with construction grammar (Kay & Fillmore 1999; Goldberg 1995;
Jackendoff 1997, and others) are regarded as “form-function pairings whose
structural and semantic properties cannot, or not entirely be accounted for in
terms other properties of the grammar of a language or of universal grammar and
which therefore require independent explanation” (2001: 466). He underpins his
constructional argumentation of clefts in terms of the coalescence of information
structure into the sentence grammar on a par with syntax and semantics for the
purpose of a grammatical system in which the semantic, pragmatic and grammati-
cal relations in grammatical constructions are interrelated within a complex link-
ing network. Having taken into the picture Jespersen’s 1937 analysis, Lambrecht
supports the view that the matrix clause in cleft constructions plays no semantic
role even though it is not “devoid” of all meanings. Since a cleft construction is a
bi-clausal expression of a single proposition without any change in truth condi-
tions, it must be the case that either the matrix predicador or embedded predicador
is semantically empty. The copula in this viewpoint is semantically regarded as
an empty predicador while the clefted constituent/predicative argument receives
indirectly its theta role from the embedded predicador in the cleft clause via the
coindexation relation with the relativized argument. However, despite the semantically pleonastic substance of the matrix predication that is syntactically realized by the overt or covert pronominal subject and copula, it is interpreted as assigning a pragmatic role to the object of the copula. Given that the object of the copula functions as predicate, and since predicates function as foci, it turns out that the occurrence of the clefted constituent, Focus Phrase in Lambrecht’s terminology, in the object position of the copula instigates a focus relation between the denotatum of the focus phrase and the relative clause proposition in which it plays a semantic argument role. It implies that the copula along with its empty subject takes on informationally the role of a focus marker for the argument of another predicator. Although the syntactic composition of the matrix clause in Jespersen’s analysis has no semantic bearing on the whole construction, it is clearly shown in Lambrecht’s analysis (see Figure 3) that the syntactic predicate-argument structure of the matrix clause with the copula serving as a bivalence predicator affects exclusively the information structure of the sentence. Moreover, the Focus Phrase is treated syntactically as subject in the former analysis whereas it is treated as predicate in the latter.

![Syntactic composition](image)

**Figure 3.** The functional division of labor between the two predicators of a cleft construction

A closer inspection of the non-derivational analyses introduced here reveals that a fine-grained investigation of cleft constructions involves employing an approach that not only copes with the relationship between the clefted constituent and the cleft clause, but also it has to allow for a possibility to encompass the complementary mechanism of the matrix clause and its implementation on the subordinate clause. It has been shown thus far that the treatment of cleft constructions as simply reduced to their non-cleft counterparts or extraposed variants of pseudo-clefts while modifying referentially the cleft pronoun, as can be seen in Akmajian (1970), Gundel (1977), will short fall of the non-isomorphic nature of cleft constructions that can be functionally explained in terms of the function of cleft sentences as “focus-marking devices used to prevent unintended predicate-focus construal of a proposition” (Lambrecht 2001:489). This functional motivation behind the existence of cleft constructions is fulfilled by the particular syntax-semantics correlation according to which the exhaustiveness condition is
projected syntactically as a separate matrix clause that establishes a relationship of identification, not that of predication, between the denotatum of the clefted constituent as identifier and the relative clause open proposition as identified. In the remainder of this paper, I will discuss that it is essentially this functional motivation which creates a construction out of the entire morphosyntax and semantics of the Persian clefts.

3. RRG treatment of clefts in Persian

The notion of construction in RRG is recognized by the postulation of constructional schemas as an amalgamation of morphosyntactic, semantic and pragmatic properties that are found in grammatical constructions. Therefore, the centrality of linguistic interfaces over the separate, albeit interconnected domains of grammar in RRG paves the way for a mapping function between form and meaning, as characterized by Van Valin (2005: 131):

RRG recognizes the importance of grammatical constructions, and they are represented in terms of constructional schemas. Cross-constructional and cross-linguistic generalizations are captured in terms of the general principles and constraints that constitute the linking algorithm, e.g. the actor-undergoer hierarchy, the layered structure of the clause, the privileged syntactic argument selection hierarchy. Only the idiosyncratic, language-specific features of the constructions are represented in the constructional schemas. Hence, constructional schemas, by virtue of their reference to the general principles, permit the capturing of the cross-linguistic generalizations, while at the same time expressing the language-peculiar properties of grammar.

Constructional schemas play a pivotal role in the linking algorithm in RRG such that in semantics-to-syntax linking they supply the morphosyntax of a construction with language-specific and construction-specific details that take the responsibility for the encoding of meaning. In the syntax-to-semantics linking, as such, they are of great importance with respect to the determination of the privileged syntactic argument that may vary from construction to another. The position of constructional schemas in RRG can be sketched out in Figure 4.

![Figure 4. Constructional schemas within RRG](image-url)
Here, I take the Lambrecht's definition of a cleft construction as the point of departure for my RRG analysis of Persian clefts:

“A cleft construction is a complex grammatical structure consisting of a matrix clause headed by a copula and a relative or relative-like clause whose relativized argument is coindexed with the predicative argument of the copula. Taken together, the matrix and relative clause express a logically simple proposition, which can also be expressed in the form of a single clause without a change in truth conditions.”
(2001: 467)

It is also necessary to note that the RRG analysis of Persian cleft constructions to be proposed here is intimately associated with that of the English it-cleft construction introduced by Pavey (2004). Therefore, I will employ the interlink over the syntactic form, semantic meaning, and pragmatic function of the Persian cleft constructions to shed light on their constructional architecture that leads us to the consideration of two individually spelled-out schemas, which will be presented in the final section of this paper. Adopting an interactional approach to cleft constructions in Persian proves inevitably that the non-isomorphic nature of clefts can be constructionally accounted for in terms of linguistic interfaces.

The first step to this end deals with the layered structure of the clause representation of clefts in Persian that captures the nexus-juncture relation regarding the fact that clefts are structurally composed of two clauses; the matrix and subordinate clause. I will present an example of clefting in Persian with an NP occupying the pre-copular slot in (8), where the different components of the cleft sentence are termed as in (9). I would like to postpone labeling and analyzing the status of in ‘this’ because few studies have been undertaken regarding clefting in Persian, and they only suffice to provide a superficial description of the clefts without any detailed attention to the status of in. For instance, Karimi (2005: 91–3) asserts that there is no overt expletive in Persian and the optional presence of in in the cleft sentences is a reminiscence of its deictic function as a demonstrative. Mahootian (1997: 118) in her descriptive grammar of Persian defines clefting and pseudoclefting, pointing out that the clefted constituent slot can be replaced by elements with different grammatical functions, such as subjects, direct objects, and prepositional phrases which contain indirect objects and oblique objects without any mention of in in her examples. Gholamalizade (1998: 232) adopts basically an extrapositional approach that takes the pseudocleft sentences as the derivational basis for the cleft sentences. He considers in to be an expletive element inserted to the sentence by means of the in-insertion transformation rule.

However, the more plausible treatment of in would be of a demonstrative pronoun that ties anaphorically to the subordinate clause, which is still problematic in my viewpoint as far as the perplexity of the verb agreement phenomenon in the
A constructional perspective on clefting in Persian

Matrix clause is concerned. Parentheses signal the arbitrariness of *in* in case of NPs in the pre-copular position.

(8) \( \text{in } \text{farhād} \text{ bud ke širin-rā dust ādāst.} \)
    \( \text{this Farhad be.pst.3sg comp Shirin.acc love have.pst.3sg} \)
    'It was Farhad who loved Shirin.'

(9) \( \text{(in) + clefted constituent + copula (hast-an 'be.PRS-INF'; bud-an} \)
    \( \text{'be.PST-INF') + cleft clause} \)

The nexus-juncture relation in clefts is determined by the peripheral position of the cleft clause in relation to the core status of the matrix clause that can be broadly explained by two reasons: first, the cleft clause carries a pragmatic presupposition in the sense of Lambrecht (2001:474) as “the set of propositions lexico-grammatically evoked in a sentence that the speaker assumes the hearer already knows or believes or is ready to take for granted at the time sentence is uttered”; second, the coindexation relation between the cleft clause and the clefted constituent serving as the complement of the matrix clause imposes a sort of syntactic dependency on the cleft clause. It follows that the pragmatic affiliation between the presupposed and asserted parts of the whole proposition expressed by a cleft sentence is created in part by the syntactic structure of the sentence. Put it differently, the degree of integratedness of the clausal units depends on the semantic relation between the cleft clause and the matrix clause based on the interclausal relations hierarchy (Van Valin 2005:209). Working through the analysis proposed by Pavey (2004), I take the nexus-juncture relation in cleft constructions as ad-core subordination because the subordinate cleft clause modifies the clefted constituent as its antecedent along the lines proposed by Davidse (2000).

In order to illustrate the constituent projection of the matrix clause according to RRG, I refer back to the Lambrecht’s 2001 constructional framework in which it is claimed that the syntactic structure of the matrix clause does not enter into the semantic composition of the clefts and influences only the information structure of it in the fashion that the copula with its overt or covert pronominal subject assigns a pragmatic role to the clefted constituent that is referred to as the Pragmatic Predicate (Lambrecht 1994:231). The pragmatic predicate in his terminology is defined in terms of the argument focus structure of cleft constructions where the clefted constituent is considered simultaneously as an argument on the level of semantics and as a predicate on the level of information structure. The predicative function of the clefted constituent aligns with the value-variable patterning, because the matrix clause in cleft types following Davidse (2000), specifies, enumerates, or cardinally measures instances as values corresponding to variables. Consequently, the clefted constituent in the RRG projection of cleft constructions is placed under the PRED(icate) node to demonstrate its pragmatically predicative function. The
constituent projection in (8) is represented in Figure 5 in which the operator projection is factored out for the sake of simplicity.

![Diagram](image.png)

**Figure 5.** Layered Structure of Clause in Persian clefts

The vexing problem about the Persian cleft sentences is when the clefted constituent is a prepositional phrase, e.g. (12) and (13) or an adverbial, e.g. (14), the sentence is grammatically incorrect if *in* is included; but in case of a noun phrase, e.g. (10) and (11) in the clefted constituent position, the sentence is perfectly fine even if *in* is included. Furthermore, the presence of *in* is optional when NPs are clefted as shown in (9).

(10) *(in)* šomā-hā *bud-in ke* mamlekat-o *be in*
    (this) you-PL be.PST-2PL COMP country-ACC to this
    *ruz andāxt-in.*
    day fall.PST-2PL
    'It was you who brought the country to this state.’

(11) *(in)* kimiyyā *bud ke* tunest bā
    (this) Kimiya be.PST.3SG COMP can.PST.3SG with
    *un be-sāz-e.*
    s/he sbjv-put up.PRS-3SG
    'It was Kimiya who was able to put up with him.’

(12) *(‘in)* be rahju *bud ke* man ketāb-o dād-am.
    (this) DAT Rahju be.PST.3SG COMP I book-ACC give.PST-1SG
    'It was to Rahju that I gave the book.’
Karimi (2005: 92) believes that Persian, as a richly agreeing null-subject language, lacks an overt expletive. Comparing the sentences in (10)–(14), she argues that the optional presence of in (10) and (11) and the impossibility of its occurrence in (12)–(14) advocate the view that in needs to be treated as a demonstrative and not a real expletive. She also maintains that the absence of the impersonal there, as in the existential constructions, is another indication that Persian does not have an overt expletive. I agree in part with Karimi’s viewpoint that in can only be used in the clefts when the clefted constituent is an NP, and also her claim that the inclusive occurrence of in with NPs would necessitate its deictic anaphoricity. However, this view would be problematic in terms of the analysis I will propose subsequently. I now explain the status of in in Persian clefts regarding an RRG account. I raise the same question posed by Karimi (2005: 92): Can in in (10) and (11) be considered as a demonstrative rather than an expletive?

To answer this, I would like to cite the distinction made in RRG with respect to head-marking and dependent-marking languages. It should be pointed out that Persian is a pro-drop language in which the agreement between the verb and subject in number and person is coded by bound morphemes, which are marked on the verb. Correspondingly, Van Valin and La Polla (1997: 331) indicate that in pro-drop dependent-marking languages such as Italian, Spanish, Icelandic, Croatian, etc. the overt independent NPs count as core arguments with the bound morphemes merely being agreement markers. If the independent NPs are absent, the bound morphemes are considered as core arguments. This is the situation in Persian that bound morphemes are considered merely as agreement markers when NP subjects are directly available in the sentence. To illustrate this fact, I represent the layered structure of the clause in the examples in (15) in Figure (6).

(15) a. ānhā šīše-rā ṣekast-and.
    they glass-ACC break.pst-3PL
    ‘They broke the glass.’

b. šīše-rā ṣekast-and.
    glass-ACC break.pst-3PL
    ‘They broke the glass.’

In spite of the straightforward pattern of verb agreement with the initial NP in core transitive and intransitive clauses, as shown in (15), NP-clefted sentences in Persian exhibit agreement inconsistency such that the form of the matrix core verb does not
co-vary with the phi-features of the so-called demonstrative, instead it co-varies with the phi-features of the clefted NP, although it must be the case that agreement correlates with the nominative case assignment in null-subject languages. Moreover, in case of a PP or an adverbial, the so-called demonstrative cannot appear in the clause-initial position, as shown in (12)–(14) and the verb agreement in the matrix core of the cleft sentence appears as the default value of third singular. This inconsistent agreement pattern raises doubt on the axiom that the first NPs in the Persian clauses decide the verb agreement. Clefts do not rule out the possibility that Persian deviates from the generally accepted pattern of the verb agreement with the first NP in the clause. Since the copula agrees with the phi-features of the clefted NPs in Persian, not with the optional *in*, *in* cannot be considered as a direct core argument of matrix predicator. Given that the privileged controller for agreement in the matrix clause is the clefted constituent, one would ask: what is the status of *in* in Persian clefts?

As discussed earlier, Lambrecht's constructional approach analyzes the empty syntactic structure of the matrix clause, namely the sequence of the copula and its overt or covert pronominal subject, to be a kind of focus marker for the argument of another predicator. I believe that the focus-assigning function of the matrix clause holds in Persian with this interesting complication that the so-called demonstrative is not a pronominal subject because the copula fails to agree with it. Apparently, syntax cannot provide an answer to our question. Nonetheless, information structure can account for the status of *in* which appears to be an arbitrary element that plays an ‘emphatic’ role when it is present in the matrix clause. It follows that the copula is the main instigator of the focus-marking function in the cleft constructions and the arbitrary presence of *in* intensifies the focus-marking function of the copula, which fits Figure 7, where the primary role of the copula as a focus marker was displayed in bold type.

Figure 6. Overt NP and bound morpheme as DCA in Persian
It is also the case that Persian as opposed to non-prodrop languages like English does not require a dummy filler to be in the subject position so that the sentence is grammatical. The presence of *in* composes with the pragmatic competence of Persian speakers to maximize the focalizing task of Persian cleft constructions. Thus, I represent the RRG projection of *in* as a periphery to the clefted constituent to highlight these points: first, *in* cannot play as a direct core argument due to the fact that the copula fails to agree with it; second, the peripheral status of *in* signals its arbitrariness as well as its contribution to double the focus marking function of NP-clefted sentences. The syntactic properties of cleft sentences with a NP or an ADV/PP as clefted constituents are stored in the syntactic templates provided respectively by Figures (7) and (8).

![Figure 7](image1.png)

**Figure 7.** Syntactic template for the Persian NP-clefted construction

![Figure 8](image2.png)

**Figure 8.** Syntactic template for Persian PP- or ADV-clefted construction
The hypothesis regarding the emphatic function of *in* can be consolidated by its combinability with *ham-* and *če-* as emphatic prefixes to form what Phillott (1919) terms “emphatic demonstrative pronouns”, i.e. *ham-in* and *čon-in*. The examples in (16), taken from Mace (2003:59) indicate that there is no deictic element in the English gloss of *ham-in*, ‘the same’ and *čon-in* ‘such’. Moreover, the emphatic function of *ham-* and *če-* is clearly observed by stress falling on it. Lazard (1957:145) and Lambton (1966:32) also confirm that the demonstratives in Persian can be strengthened by the emphatic prefix *ham*. Therefore, it seems that *in* in the Persian language can serve an emphatic purpose apart from its predominantly deictic function as a demonstrative. The NP-clefted construction in my study unravels a hidden layer of *in* morphology due to the fact that clefts are in essence focus-marking devices and can set the stage for *in* to put into effect its emphatic function, which has been neglected so far by linguists, even though it has been explicitly cited by some grammarians, such as Shafai (1984:611); Anvari and Ahmadi Givi (1989:263); Kalbasi (1992:97), Nobahar (1993:205), Meshkatoddini (2005:104).4

4. It is interesting to know that Persian can exhibit the possibility that a proper noun is preceded by *in*. In this situation, one would have to consider the demonstrative as an emphatic element which appears to strengthen the emotional load of the sentence, not to help the addressee identify the referent of the NP, because the proper nouns are inherently referential, hence there is no need to make them definite, unless the speaker intends to affect the addressee’s emotion. Consider the following examples by which I attempt to convey what I mean by emotional load. The morpheme-by-morpheme gloss in the first dialogue is factored out in the interest of space.

(i) A: *be farhād goft-am age mašin-eš-o lázem na-dār-e,*  
    *be-het qarz-eš be-d-e, vali alaki goft ke dār-e.*  
    ‘I told Farhad to lend you his car if he didn’t need it, but he told me dishonestly that he did.’

    B: *in farhād ajab ādam-e mozaxrafi-ye.*  
    this Farhad what guy-ez nasty-be.prs.3sg  
    ‘What a nasty guy Farhad is.’

I would like to set up another context in which little Farhad and Neda are quarrelling and Neda asks her father to stop Farhad teasing her.

(ii) Neda: *bābā! Be in farhād ye čizi be-gu, man-o*  
    *daddy dat this farhad one thing imp-tell.2sg I-ACC*  
    *azyat mi-kon-e.*  
    *bother ipfv-do.prs-3sg*  
    ‘Daddy!!! Plz tell Farhad not to tease me.’
   same-this book-ACC buy_pst.3sg
   ‘He bought the same book.’

b. čon-in asb-hā-ye qašang-i tā be hālā did-e-id?
   such-this horse-pl-ez beautiful-def till to now see-ptcp-2pl
   ‘Have you ever seen such beautiful horses?’

In the following lines, I will provide another piece of evidence in favor of the distinction between the emphatic and the deictic in with respect to the [± animate] feature of the clefted constituent. In Persian, plural inanimate subjects may appear with the 3rd/default morphology with no number agreement (Sedighi 2011: 38). Consider the examples in (17).

(17) a. [in tātkīk-hā]_{DP} bud ke irān-rā be jām-e
   this tactics-pl be_pst.3sg comp Iran-acc to cup-ez
   jahānī bord.
   world take_pst.3sg
   ‘It was these tactics that took Iran to the World Cup.’

b. [in tātkīk-hā]_{DP} bud-and ke irān-rā be jām-e
   this tactics-pl be_pst-3pl comp Iran-acc to cup-ez
   jahānī bord-and.
   world take_pst-3pl
   ‘It was these tactics that took Iran to the World Cup.’

A closer look at (17) reveals that in (a) the clefted constituent is an inanimate DP with which neither the matrix clause nor the relative clause verb agrees; however, both appear in the third singular agreement. The reason behind considering the clefted constituent as a DP is the fact that in in (a) and (b) is a demonstrative. Further, prosody can help us identify that the DP is an integrated tonic group with the primary stress falling on the NP, i.e. tātkīk-hā. Now consider the pair in (18).

(18) a. in [tātkīk-hā]_{NP} bud-and ke irān-rā be jām-e
   this tactics-pl be_pst-3pl comp Iran-acc to cup-ez
   jahānī bord-and.
   world take_pst-3pl
   ‘It was the tactics that took Iran to the World Cup.’

b. *in [tātkīk-hā]_{NP} bud ke irān-rā be jām-e
   this tactics-sg be_pst.3sg comp Iran-acc to cup-ez
   jahānī bord.
   world take_pst.3sg

I have illustrated above the emphatic in being separated from the clefted constituent by placing it outside the square brackets, which means prosodically that both
in and the clefted constituents carry the primary stress. In other words, in in (17a) and (17b) is part of the clefted constituent and functions as deixis, whereas in in (18a) and (18b) is separated from the clefted constituent by an intonational pause and functions as an emphatic marker. Moreover, the agreement failure with in in (18b) and agreement success with the clefted constituent in (18a) can support the view that the first NP is in the subject position of the matrix clause along with the fact that the emphatic function of in must be distinguished from its deictic function, which is illuminated by syntactic, prosodic and informational considerations. Thus, I will represent the RRG projection of the clefted constituent in the matrix clauses of (17) in Figure 9.

The next step in the exploration of clefting in Persian involves the semantic representation of clefts. It is incumbent to bear in mind that clefts are specificalional sentences in the sense that they specify a referent as a value satisfying the variable expressed by the cleft clause; therefore, the logical structure of clefts has to mirror this specification function in some sort of way. According to Pavey (2004: 215) and Van Valin (2005: 48), the logical structure of a specificalional sentence can be represented as be’ (x [y']). It turns out that the specificalional predicate, viz. be’
is different from the English auxiliary *be* because the auxiliary is not part of predication in specificational sentences on a par with attributive and identificational sentences. Pavey (2008) shows that the function of noun phrases can alter from reference to predication. NPs that are non-specific and non-referential function as semantic predicates whereas NPs which are specific and referential are referring expressions which probably function as pragmatic predicates in specificational sentences. Nominal semantic predicates are found in identificational sentences (see Footnote 5), which provide descriptions while nominal pragmatic predicates are found in specificational sentences such as clefts and pseudoclefts, which serve to provide the hearer with the full identity of the particular entity the speaker has in mind. She argues convincingly that that it is in the communicative exchange that participants are able to cope with the cognitive and grammatical coding of the discourse referents.

The communication procedure in uttering a specificational sentence operates in a way that the hearer is not able to identify fully a particular referent, although recognizing or guessing somehow, hence the speaker assists the hearer to make a full identification of the underspecified referent. To settle such underspecification, it is necessary for the variable to be specific, non-referential and for the value to predicate something of the variable; the reason why Lambrecht exerts the pragmatic predicate term. The discrepancy between simple specificational sentences like *George is the winner* and specificational cleft sentences like *it is George who is the winner* is explainable with respect to the point that the value in both sentences is expressed as an NP whereas the variable is an NP in the former and a relative clause in the latter. *be* contains two arguments represented as *x* and *y*. *x* represents the semantic content of the cleft clause/variable and *y* corresponds to the clefted constituent/value. Since specification is a remarkable property of clefts, we should envisage that in the syntactic, semantic and information structure representation of the sentences. The copula along with the emphatic element in Persian clefts is the syntactic device for doing so. As for the semantic representation, the internal logical structure of the cleft clause has an unfilled argument that is coindexed with the second argument of the specificational *be*, viz. *x* representing the value. Therefore, I can illustrate the logical structure of the Persian cleft sentence in (8)

---

5. Van Valin (2005:48) represents the logical structure of different types of copular sentences as in (i).

(i) a. Pat is small: *be* (Pat, [small])  
    b. Kim is a lawyer: *be* (Kim, [a lawyer])  
    c. George is the winner: *be* (George, [the winner])  
    d. Kim’s sister is Sandy’s lawyer: *equate* (Kim’s sister, Sandy’s lawyer)
as in (19). The point here is that the emphatic *in* is not represented in the logical structure because this emphatic element in the Persian clefts makes no syntactic or semantic contribution to their analysis; it only cooperates with the copula to affect the information structure of the sentence and strengthen the focus marking nature of Persian clefts.

(19)  \( \text{be}' ([\text{love}' (x, Shirin)], Farhad,') \)

Predicative and non-predicative PPs can be clefted and placed in the focus position of Persian clefts. Based on RRG, argument-adjunct and adjunct prepositions are predicative by their nature; thus, this semantic property must be reflected in the logical structure of the predicative PP-clefted sentences. To this end, Pavey uses the abstract logical structures, which were adopted in RRG by Van Valin and LaPolla (1997). If the clefted constituent is an argument-marking preposition with its NP complement, the NP is coindexed with an unvalued argument in the complex logical structure. This can be seen in the logical structure of the example in (12) represented by (20).

(20)  b.  \( \text{be}' ([\text{do}' (1SG, \emptyset) \text{CAUSE BECOME} \text{have}' (x, ketāb)]), Rahju,') \)

In case the clefted constituent is an argument-adjunct PP, the abstract logical structure \( \text{be-LOC}' \) is used. This has been shown in (21). As can be seen, the variable in the specificalional logical structure contains an abstract logical structure the first argument of which, viz. \( x \), representing the unvalued argument of the predicative preposition, is coindexed with the value as the second argument of the specificalional predicate \( \text{be}' \). The \( y \) in the value element of \( \text{be}' \) flags the second argument of the locative predicate coindexed with it by \( j \).

(21)  a.  \( \text{ruy-e miz bud ke ketāb-o gozāšt-am.} \)
    \( \text{on-gen desk be.pst.3sg copm book-acc put.pst.1sg} \)
    ‘It was on the desk that I put the book.’

    b.  \( \text{be}' ([\text{do}' (1SG, \emptyset) \text{CAUSE BECOME} \text{be-LOC}' (x, ketāb)]), [\text{be-on}' (miz, y)],') \)

When an adjunct PP is clefted, Pavey (2004:225) recommends using locative or temporal abstract logical structures, i.e. \( \text{be-LOC}' \) and \( \text{be-TEMP}' \). According to the logical structure of the adjunct prepositional phrases as clefted constituents, there is no missing argument in the logical structure of the cleft clause, but since clefts are specificalional, it is necessary to identify a value for a variable in the logical structure of the prepositional phrase. The logical structure in (22) illustrates the semantic representation of the adjunct PP, namely \( tu \text{xiyābun} \).

(22)  \( \text{be}' ([\text{be-LOC}' (x, [\text{see}' (1SG, 3SG)] ), [\text{be-in}' (xiyabun, y)],') \)
Temporal adjuncts can also function as foci in Persian clefts. To represent the logical structure of the adverbial-clefted constructions, *be-TEMP’* is used again, such as the example in (23).

(23) a.  
\[
\text{diruz bud ke farhād mahdi-ro be yesterday be.pst.3sg comp Farhad Mahdi-acc to } \\
pār k \text{ take.pst.3sg park} \\
\]

It was yesterday that Farhad took Mahdi to the park.

b.  
\[
\text{be’ ([be-TEMP’ (x, [[do’ (Farhad, Ø)] CAUSE [BECOME be-in’ (park, Mahdi)])]], [yesterday’ (y)])} \\
\]

The final step in the RRG treatment of clefts in Persian with regard to the linguistic interfaces relates to the focus structure representation of cleft constructions. To start with, I will review shortly the taxonomy of focus structure proposed by Lambrecht (1994). He discusses three ways for expressing focus categories: Predicate Focus (PF), Argument Focus (AF) and Sentence Focus (SF). PF is regarded as unmarked whereas AF and SF are regarded as marked for several reasons. For example, Lambrecht (2001: 846) states that PF compared to the other focus types distributionally enjoys more liberty; the AF or SF articulation of a semantic proposition is convertible to the PF articulation, not vice versa; the formal realization of AF and SF entails some certain morphosyntactic features that the PF normally lacks. From a crosslinguistic perspective, it seems to be the case that languages in order to show alternation between focus categories are equipped with grammatical devices that enable them to shift from PF to AF or SF articulation, i.e. prosodic shifts, syntactic shifts and cleft formation. Accordingly, he expresses the functional motivation for the use of clefts as follows:

Cleft constructions are focus-marking devices used to prevent unintended predicate-focus construal of a proposition. Clefts serve to mark as focal an argument that might otherwise be construed as non-focal, or non-focal a predicate that might otherwise be construed as focal, or both.  

(2001: 489)

Having taken a constructional approach to clefts, I follow up the Lambrecht’s focus taxonomy, adopted also in RRG, by maintaining that clefts in Persian are functionally argument focus or narrow focus constructions by which the information structure of sentences can deviate from the unmarked PF. It is plausible that this alternation will bring about certain concomitant changes in the prosody, constituent order and grammatical relations in regard to the unmarked PF articulation such that the clefted constituent rests in the pre-copular position representing the actual focus domain (AFD) so as to enable the addressee to interpret it exhaustively.
as a value holding a focus ‘relationship’ to the pragmatically presupposed proposition expressed by the cleft clause. The actual focus domain only includes the clefted constituent and excludes the cleft clause because it is pragmatically presupposed.

As a result of this, the units in the cleft clause cannot be interrogated, as shown in (24). It is noteworthy that the focus of a proposition is acknowledged not as a referential property of a denotatum in the discourse model, rather as a relation established between the denotatum and the proposition. This means that a focal denotatum may in principle have the same referent as a topical denotatum but what makes it focal is its new relation to the proposition. In other words, a denotatum of the clefted constituent can be referentially given but relationally new in reference to the referential givenness-newness and relational givenness-newness (Gundel 1988, 1999a, b). Strictly speaking, clefting is from a constructional viewpoint a discourse-pragmatic strategy on the side of the speaker to instruct the hearer to establish a pragmatically new relation between a denotatum and a proposition.

\[
\begin{align*}
(24) & \quad A: \text{mahdi bud ke farhād diruz bord-eš pārk?} \\
& \quad \text{Mahdi be.pst.3sg comp Farhad yesterday take.pst.3sg-3sg park} \\
& \quad \text{‘Was it Madi that Farhad took to the park?’} \\
B: & \quad \text{na, mànî (bud)/*na, sinamā/*na, dišab} \\
& \quad \text{no Mani (be)/ no cinema/ no last night} \\
& \quad \text{‘No, it was Mani.’}
\end{align*}
\]

The focus structure projection of clefts has been shown in Figure (10). It should be noted that the RRG projection of \textit{in} is retrieved from the syntactic inventory, where the two syntactic templates (see Figures 7 and 8) belonging to the cleft constructions are stored, if the XP representing the clefted constituent is an NP. Here, the two syntactic templates are merged together in the interest of space. Figure (10) illustrates that the actual focus domain is allocated only to the clefted constituent irrespective of its grammatical category; whether it is an NP, a PP, or an ADV.

The argumentation raised above casts doubt on the distinction made by Prince (1978) between the stressed focused (SF) and informative-presupposition (IP) \textit{it}-clefts. SF \textit{it}-clefts are the cases in which the clefted constituent carries new, often contrastive, information while the cleft clause represents known or old information. This type of \textit{it}-clefts is marked prosodically by the nucleus falling on the clefted constituent. IP \textit{it}-clefts are those with marked information structure such that the cleft clause conveys information which is new in the discourse and possibly unknown to the hearer. The primary stress generally falls inside the cleft clause in these sentences. The hearer is in fact expected to evaluate the informativeness of the cleft clause as a ‘known fact.’
Taking into account that the new information conveyed by the utterance of a sentence, following Lambrecht (2001: 477) is not expressed in the focus denotatum itself but in the relation established between the denotatum and the rest of the sentence, we can claim that all different types of clefts are subsumed under the same category as long as the clefted constituent by virtue of being placed in the actual focus domain, no matter its referential coding, bears a focus relation to the relative clause proposition regardless of its mental or cognitive category in the minds of interlocutors or in the discourse model or in some possible or real world.

The next section will discuss the role of information structure in cleft-like sentences in Persian that provides a criterion by which the functional motivation of the cleft-like sentences is recognized to be different from that of clefts despite the structural similarity between them.

4. Extraposition vs. clefting

Thus far, I have shown that clefts in Persian are classified into two subcategories in terms of the lexical categories to which the clefted constituent belongs. Here, I will develop an argument regarding another group of sentences prevalent in
the Persian discourse that bear remarkable resemblance to the cleft sentences. These sentences are extraposed from the subject DP headed by the demonstrative *in*, which I term *in-extraposition construction*. They are to a great degree similar to NP-clefted sentences with respect to the linear arrangement of the constituents, but they show utterly a different discourse function. In the *in*-extraposition construction, the element placed in the pre-copular slot represents the adjectival category and functions semantically as a predicate in the sense that it predicates an attributive property of the complex NP subject. It will be illustratively discussed that differentiating between the clefting and extraposition will support the distinction already made between the emphatic and deictic *in* in the Persian grammar.

The example in (25) represents a case of *in*-extraposition with its syntactic constituents labelled and compared with the syntactic constituents of a NP-clefted construction according to Calude (2008:20) in (26). Parentheses signal the arbitrariness of *in* in both clefting and extraposition.

(25) *in vāzeh-e ke kimiyā doxtar-e xubi-ye.*

\[ \text{this clear-be.prs.3sg comp Kimiya girl-ez good-be.prs.3sg} \]

‘This is clear that Kimiya is a good girl.’

(26) a. Clefting: (*in* \text{EMPH}) + NP-clefted constituent + copula + cleft clause
b. Extraposition: (*in* \text{DEM}) + remainder predicate + copula + extraposed clause

The ambiguity between clefting and extraposition can be resolved in the first place via the information structure that is the reflection of their discourse functions. As already mentioned, clefts are focus marking devices, highlightening or contrasting bits of information, that is, they are in fact attention markers (Miller & Weinert 1998:301). Extraposition, on the other hand, is associated with the avoidance of having complex subjects at the beginning of the sentence serving the two principles of end-focus and end-weight (Quirk et al. 1985:863). Extraposition in principle patterns with the Given-Before-New principle (Gundel 1985, 1988) and also with the Communicative Dynamism proposed by the Prague School. For instance, in (25), the hearer’s mind is supposed to have been previously impregnated with the presupposition that something is clear and the speaker, because of the syntactic heaviness and the high degree of informativeness in the new element finds it expedient to lighten the load of the element by demoting it from the subject position to the end of the sentence. Extraposition accords with the Persian speakers’ communicative competence because processing a sentence starting with a complex NP of strong informativeness would be high-cost for them communicatively.
This discourse strategy of Persian speakers can be stored in a syntactic template in which the extraposed clause lies in the potential focus domain. It is worth noting that in has been treated as a demonstrative in the syntactic template of extraposition in Figure 11 although in in clefting is an emphatic marker in the syntactic template of clefting in Figure 7. The nexus-juncture relation in extraposition is daughter clausal subordination because the extraposed clause is both informationally and structurally dependent on the matrix clause whereas this relationship in clefting is ad-core subordination and the cleft clause is placed in the periphery of the matrix clause. It should be pointed out that the potential focus domain in complex sentences can extend over the subordinate clause if and only if the subordinate clause is the direct daughter of the clause node which is modified immediately by the IF operator (Van Valin 2005: 214).

Figure 11 shows that the subordinate clause meets this condition and consequently, the focus domain encompasses the extraposed clause. More specifically, the actual focus domain falls inside it because it contains new information. The point here is that the demonstrative in extraposed constructions functions as a core argument due to its agreement with the copula, but the emphatic element in the NP-clefted construction functions as a nominal adjunct in the NP periphery because of its agreement failure with the copula. The optional presence of the demonstrative in extraposition is justified with the pro-drop

![Diagram](image_url)

**Figure 11.** Syntactic template for the Persian in-extraposition construction
parameter of Persian as a null subject language whereas the optional presence of *in* in the cleft sentences needs to be justified by the Persian speakers’ communicative competence to intensify the focus marking function of clefts. In other words, syntax on one hand, prepares the grounds for the deictic *in* in the extraposition to be interpreted anaphorically, viz. the subject position of the demonstrative while discourse-pragmatics takes the responsibility to interpret *in* emphatically in the clefting when it comes to the incapability of syntactic features, viz. agreement failure of the copula with the emphatic *in*. The treatment of *in* as a demonstrative is also confirmed by Karimi (2005: 92). She suggests that subordinate extraposed clauses are indeed headed by an NP viz. the demonstrative *in*, as shown in (27a).

The obligatory presence of *in* in (27a), as the ungrammaticality in (27b) suggests, and the possibility that the demonstrative in Persian can replace the whole DP, as demonstrated in (28), support that *in* is an anaphoric expression in the subject position. From an RRG perspective, the sentence in (25) is an example of daughter clausal subordination whereas the sentence in (27a) represents an example of ad-core NP subordination (Van Valin & LaPolla 1997: 509) where the demonstrative is placed in the NUC and the relative clause is adjoined to the CORE. The syntactic template for ad-core NP subordination in non-extraposed sentences is provided in Figure 12.

![Syntactic template for ad-core subordination in non-extraposition](image)

**Figure 12.** Syntactic template for ad-core subordination in non-extraposition
A constructional perspective on clefting in Persian

27. a. [in [ke kimiyā doxtar-e xubi-ye ] ] vāzeh-e. this RELKimya girl-nz good-be.PRS.3SG clear-be.PRS.3SG

‘That Kimiya is a good girl is clear.’ Non-extraposition

b. *[ke kimiyā doxtar-e xubi-ye ] vāzeh-e.

28. in vāzeh-e.
this clear-be.PRS.3SG

‘This is clear.’

Van Valin and LaPolla (1997:527) assert that since the pronoun in English extraposition contributes to the semantic interpretation of the sentence in the way that it refers to a that-clause outside the core, it must be part of semantic representation. This is the case in the Persian in-extraposition construction where in refers to the subordinate ke-clause participating in the semantic representation whereas in Persian cleft constructions in is not part of semantic representation because of its syntactic and semantic dummy nature, as discussed earlier. Furthermore, the demonstrative indicates the function of the ke-clause as an actor or undergoer.

Logical structures of (25) and (27a) are given in (29) and (30) respectively.

29. be’ ([3SG DEM, [be’ (Kimiya, [good girl’)])], [clear’])

30. be’ ([be’ (3SG DEM, [be’ (Kimiya, [good girl’)])])], [clear’])

6. Aghaei (2006:37) believes that ke in Persian is of two kinds: property-denoting and proposition-denoting. The property-denoting ke-clauses are those in which ke functions as a relative pronoun and the clause modifies the NP occurring before ke. In proposition denoting ke-clauses, ke functions as a complementizer followed by a subordinate clause containing a proposition e.g. the clauses which follow the perception verbs like fekār kardan ‘to think’ and hads zadan ‘to guess’, etc.. It appears that RRG treats both equally as clause linkage markers.

7. To provide further proof in support of in differentiation in clefting and extraposition, I employ a transformational test, partly similar to the one proposed by Calude (2008), according to which the process of reinstating the extraposed clauses to its original position will result in grammaticality while doing the same to the cleft clause will lead to ungrammaticality. Consider the reinstatement test applied respectively to the sentences in (25) and (8).

(i) in vāzeh-e ke kimiyā doxtar-e xubi-ye. (ii) in farhād bud ke širin-rā dust dāšt.

Result: grammatical → extraposition

(i’) in ke kimiyā doxtar-e xubi-ye vāzeh-e. (ii’) *in ke širin-rā dust dāšt farhād bud.

Result: ungrammatical → clefting

One might claim that the result of the reinstatement test on (ii’) is acceptable, but a far closer look reveals that its oddity will be removed if we take the sentence in (iii) into consideration. In other words, the grammatical form should be a pseudocleft sentence.

(iii) un ke širin-rā dust dāšt farhād bud.

the one REL Shirin-ACC love have.PST.3SG Farhad be.PST.3SG

‘The one who loved Shirin was Farhad.’
As a whole, it is vividly clear that syntax-information structure interface, which is represented via the constituent structure and focus structure projections in RRG can explain how extraposition is distinguished from clefting and how in plays two different roles with regard to the agreement phenomenon in the matrix clause of cleft and extraposition constructions. In the following section, I will show how grammatical relations in Persian clefts are justified with respect to the notion of Privileged Syntactic Argument.

5. Grammatical relations in cleft constructions

The Privileged Syntactic Argument (PSA) in RRG is defined in terms of a restricted neutralization of semantic macroroles, i.e. actor and undergoer, for certain syntactic reasons in specific grammatical constructions. The analysis of grammatical relations in the cleft constructions in Persian is bound to determining the PSA in those constructions. A point should be made here that I presented a two level analysis for clefting in Persian whereby we can divide cleft sentences into two groups. The first group includes the cleft sentences that have a NP in pre-copular position and the second group includes the sentences with a PP or an ADV in that position. That is why I assume that speaking of clefting in Persian requires considering two constructional templates, namely the NP-clefted construction and PP/ADV-clefted construction with respect to the agreement features in the matrix clause. I already pointed out that in the former, the copula agrees with the clefted constituent in person and number whereas it appears as default morphology of third singular person in the latter. Regarding that, I will proceed to the PSA selection in the two constructions separately.\(^8\)

In the NP-clefted construction, there is a restricted neutralization of semantic macroroles for syntactic reasons. The nominal clefted constituent first and foremost controls the interpretation of the missing argument in the cleft clause on one hand and it controls the verb agreement morphology in the matrix clause; therefore, the PSA in the matrix clause is regarded as a double controller whereas the

---

\(^8\) If we assign only one constructional template to NP-clefted and PP/ADV-clefted sentences, there will be a neutralization of semantic roles, but it is not restricted to a particular syntactic type of argument because not only a subject or a direct object but also an oblique object or an adjunct can be clefted, which means that there is no privileged argument in this construction, hence no PSA in it. Such an analysis ignores the central role of agreement in the matrix clause of Persian cleft constructions. Moreover, the emphatic function of in is nullified if the clefted constituent is an NP.
PSA in the cleft clause is a syntactic pivot as it shares an argument with the matrix clause. This is illustrated in (31).

(31) (Undergoer of an intransitive verb)
   a. $\text{farzād}_i \text{bud } \text{ke } [i] \text{xaste şod.}$
      Farzad be.pst.3sg comp tired become.pst.3sg
      ‘It was Farzad who became tired.’

(Actor of an intransitive verb)
   b. $\text{mehrdād}_i \text{bud } \text{ke } [i] \text{darāft.}$
      Mehrdad be.pst.3sg comp run.pst.3sg
      ‘It was Mehrdad who ran away.’

(Actor of a transitive verb)
   c. $\text{farhād}_i \text{bud } \text{ke } [i] \text{sar-eš-o şekast.}$
      Farhad be.pst.3sg comp head-poss.3s-acc break.pst.3sg
      ‘It was Farhad who broke his head.’

(Undergoer of a transitive verb)
   d. $\text{nedā}_i \text{bud } \text{ke bačče-hā } [i] \text{mi-zad-an-eš}$
      Neda be.pst.3sg comp kid-pl ipfv-hit.pst-3pl-3sg
      ‘It was Neda that the kids hit.’

The PSA in the PP/ADV-clefted construction is a semantic pivot because there is a neutralization but it is not restricted as the verb agreement in the matrix clause appears as the default third singular and the clefted constituent only controls the interpretation of the missing argument in the cleft clause. Given that, the case assignment rules in the NP-clefted construction are laid down in (32).

(32) Case marking rules for the Persian NP-clefted construction:
   a. Matrix clause
      Assign nominative case to the PSA. Nominative case is morphologi-
      cally zero-marked.
   b. Cleft clause
      Assign accusative case, viz. $rā$ to the non-PSA macrorole in the linked
      core when it is not identical to the PSA in the matrix core, or a pro-
      nominal clitic appears on the verb if the syntactic pivot in the linked
      clause is identical to the one in the matrix clause.

The application of the rules in (32) to the sentences in (8) and (32d) has been depicted in (33) and (34).

(33) $\text{farhād}_i \text{bud } \text{ke } [i] \text{širin-rā dust dāšt.}$

\[ \begin{array}{c}
\text{PSA} \\
\downarrow \\
\text{NOM} \\
\downarrow \\
\text{Non-PSA MR} \\
\downarrow \\
\text{ACC}
\end{array} \]
As stated from the outset, a detailed examination of clefts in Persian depends heavily on a constructional frame in which the idiosyncratic, construction-specific features of clefts are included. Since a construction is a combination of form and meaning incorporated with some discourse-pragmatic specifics, it was attempted to present an interactional approach by which the morphosyntactic, semantic and informational properties of cleft constructions are conflated in order to delineate the non-isomorphic form-meaning mapping inside them. The constructional templates provided in Figures (13) and (14) represent respectively the NP-clefted construction and PP/ADV-clefted construction in Persian.

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<thead>
<tr>
<th>Construction: Persian cleft construction with a NP as the clefted constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syntax:</td>
</tr>
<tr>
<td>Juncture: core</td>
</tr>
<tr>
<td>Nexus: subordination</td>
</tr>
<tr>
<td>Construction type: Specificational</td>
</tr>
<tr>
<td>Unit template(s): matrix and cleft clause</td>
</tr>
<tr>
<td>PSA: double controller in the matrix clause, syntactic pivot in the cleft clause</td>
</tr>
<tr>
<td>Morphology:</td>
</tr>
<tr>
<td>Ke: optional in informal register</td>
</tr>
<tr>
<td>Copula: agrees with the clefted constituent both in number and person</td>
</tr>
<tr>
<td>in: a discourse strategy for intensifying the focus marking function of the construction</td>
</tr>
<tr>
<td>Semantics:</td>
</tr>
<tr>
<td>Specifying a value for a variable with respect to the logical structure ( \text{be}'([\text{pred}'(\ldots x_1, \ldots)], y_i) ); y is the pragmatic predicate coindexed with the unspecified value in the variable</td>
</tr>
<tr>
<td>Pragmatics:</td>
</tr>
<tr>
<td>Illocutionary force: unspecified</td>
</tr>
<tr>
<td>Focus structure: narrow focus on the clefted constituent</td>
</tr>
</tbody>
</table>

**Figure 13.** Constructional template for the NP-clefted construction

6. Conclusion

This chapter was devoted to a constructional framework for the analysis of cleft sentences in Persian in light of the constructional templates in RRG, which are the locus of linguistic interfaces within grammatical constructions. It was
discussed that RRG can resolve unambiguously the complexity of Persian clefts as asymmetrical constructions whose semantic and syntactic properties are not compositionally iconic.

Firstly, I went through the syntactic structure of Persian clefts and illustrated that the copula is the primary instigator for the focus relationship between the referent of the clefted constituent and the relative clause proposition according to Lambrecht (2001), which can be tightened by the presence of the optional emphatic marker, viz. *in* in case of clefted NPs. I argued that *in* in the structure of clefts is an emphatic marker which has no bearing on the semantic and syntactic structure of the sentence because the copula does not agree with it, but it contributes to the information structure of the construction. Therefore, I demonstrated that the emphatic and deictic *in* in the Persian language should be distinguished, and also that the discourse function of clefts as focus-marking devices can disclose a subtle aspect of the *in* morphology as an emphatic element, which is also advocated by discoursal (see ft.4), morphological (see 16), and prosodic (see 17 and 18) observations.

Extraposition in my viewpoint is the hallmark of this distinction whereby the different pattern of information flow and substantial morphosyntactic differences, despite the apparent structural similarities, support the dual function of *in*. The logical structure presented for clefts represented explicitly their specification function through the coindexation of the second argument of the specification predicate *be’* with an element in the logical structure of the embedded predicat.
Despite that, the clefted constituent is a semantic argument, interpreted referentially in the logical structure of the cleft clause; it has a predicative function as a pragmatic predicate in the information structure of the cleft sentence. This absolutely originates from the non-isomorphic nature of the cleft constructions. Persian clefts align with the communicative competence of the speakers in the markedly expressing of propositions that might be otherwise understood as an unmarked subject-predicate ordering. Finally, I showed by means of the constructional templates how the syntax, semantics and pragmatics of cleft constructions can straightforwardly mirror the non-isomorphic mapping between the form and meaning of the constructions and how clefts in Persian constitute constructions in their own right following the tradition started by Davidse (2000) and Lambrecht (2001).

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>EZ</td>
<td>Ezafe</td>
</tr>
<tr>
<td>IMP</td>
<td>Imperative</td>
</tr>
<tr>
<td>IPFV</td>
<td>Imperfective</td>
</tr>
<tr>
<td>PTCP</td>
<td>Participle</td>
</tr>
</tbody>
</table>

References


A constructional perspective on clefting in Persian


Radical Role and Reference Grammar (RRRG)

A sketch for remodelling the Syntax-Semantics-Interface

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Starting from the idea of a “holistic approach” (Van Valin 1980) based on text interpretation and communication analysis, the chapter sketches a radical, i.e. back to the roots, remodelling of standard RRG (Van Valin & LaPolla 1997; Van Valin 2005, 2010). It will be shown that a bidirectional linking algorithm (syntax-to-semantics and semantics-to-syntax), no matter how useful it may be for computational implementation, is not an adequate model of human communication. As Van Valin (2006) himself recognizes, the semantic as well as the syntactic representation are already infiltrated by one another. Thus, RRRG will abandon the linking algorithms and instead advocate for three structural levels of different complexity that assumedly function simultaneously: lexical items, syntactic-semantic event templates and construction schemas. As in standard RRG, general rules and principles operate at all levels. In RRG, the most prominent of these principles is the Actor-Undergoer-Hierarchy which is based on actionsart-driven Logical Structures (LS). However, LS prove to be too coarse-grained to describe the different activity degrees material to argument realization. Therefore, a finer-grained Activity Hierarchy will be introduced. The functioning of this centrepiece of RRRG will be illustrated with verbs of emotion (Kailuweit 2005, 2007, 2012a) at the level of lexical items and with anticausative constructions (Kailuweit 2011b, 2012b) at the level of constructional schemas.

0. Introduction

Since its beginnings in Foley and Van Valin (1984), Role and Reference Grammar (RRG) (Van Valin & LaPolla 1997; Van Valin 2005, 2010) has proved to be a highly successful framework for exploring the syntax-semantics interface. Foley & Van Valin were the first to overcome the imprecise concept of deep cases or theta roles. Instead of the varying lists of thematic relations, they proposed two generalized
semantic roles, actor and undergoer.\footnote{Dowty (1991) seized this suggestion developing his proto-role approach.} Depending on its participant and \textit{aktionsart} properties, each argument of a predicate shows a higher or lower affinity to the actor or undergoer pole. The assignment of macroroles is correlated to the assignment of syntactic functions by linking algorithms that map semantics to syntax and vice-versa. By separating the constituent projection from the operator projection at the level of syntactic representation, RRG clearly distinguishes between referring expressions (constituents) and non-referring expressions (operators). Although the semantic-syntactic interface comes into focus, RRG still is mainly a theory of syntax. RRG claims to explain syntactic variation by taking semantics and pragmatics into account and, thus, considers language a fact of communication and social interaction, not just an independent module situated in the brain of each individual speaker.

As we will see in the course of this chapter, the current organization of RRG does not reflect the principles of the approach in a fully satisfying way. In addition, the formalization used in the Actor-Undergoer-Hierarchy, the centrepiece of the theory, seems to have its limits. The argument structures of several verb classes, such as causatives, verbs of speech and especially verbs of emotion cannot easily be described by the \textit{Aktionsart}-based formalism which only permits the distinction of five activity degrees.

Therefore, the aim of the chapter is to sketch a “radical” alternative to some of RRG’s central descriptive devices. The term \textit{radical} is inspired by William Croft’s Radical Construction Grammar (RCG) (Croft 2001, 2004). However, I will not claim, as Croft did, that my approach is “a dramatic break from prior syntactic theories” (Croft 2001:4), but it is as “radical” as RCG in that it goes “back to the foundations” (ibid.), in my approach the foundations of RRG. The sketch I present here is not yet a full-fledged theory. It consists, as the German term for remodeling \textit{Umbaumaßnahme} suggests, of a \textit{maßnehmen}, i.e. taking measurements for what a radical version of RRG might be.

The first section of this chapter will be dedicated to general theoretical and methodological considerations that will be the background for the discussion of the organization of RRG in Section 2, as it is presented in Van Valin (2005). Section 3 will show that some modifications in accordance with the present critical approach have already been taken into consideration by Van Valin (2006) in an article which, on the basis of psycholinguistic insights, goes beyond standard RRG’s assumptions. Following this line in a more radical way, I shall sketch an alternative to the organization of RRG. In Section 4, I will deal with a more technical problem, namely the elaboration of a finer-grained alternative to the Actor-Undergoer-Hierarchy. I will
show that a feature-based activity hierarchy is more appropriate to describe among other things the whole range of syntactic classes of verbs of emotion at the lexical level and the different anticausative constructions at the level of constructional schemas. Section 5 will sum up the major results.

1. Theoretical and methodological considerations

“Language does not exist even for a moment except as a social fact”
(Saussure [1916] 1983:77)

In 1980, Van Valin published a paper on meaning and interpretation that, on the base of Wittgenstein’s and Heidegger’s philosophy, outlines an alternative to the syntactic approaches that were dominant at the time. At the end of the paper Van Valin points out that:

“if we wish to include communication between interlocutors within the scope of linguistic theory and analysis, then we must start with it and adopt a holistic approach to the description of language rather than an atomistic one. In concrete terms this means that the results of the sociolinguistic analysis of conversation along with the analysis of texts and other forms of discourse, would be the starting point of analysis. If one takes this approach, sentences no longer appear as abstract formal objects independent of speaker, hearer and context, but rather as aspects of situated human communication.” (Van Valin 1980:229).

The “holistic approach” highlighted by Van Valin would consider language a social phenomenon, a phenomenon accessible in the form of world disclosure (Erschlossenheit in Heidegger’s terms) rather than by deductive or inductive methods. Hence, the data that a linguist must understand (and not just compute) comes from “sociolinguistic analysis of conversation” and “analysis of texts and other forms of discourse”. In order to account for the functionality of linguistic units, one must include the context-bound interaction of syntax, semantics and pragmatics. A context-free approach to syntax that suppresses the necessity of interpretation may describe abstract constellations, but it would be unable to explain to what extent syntax is motivated by the semantics of everyday linguistic practice.

At the time, Van Valin’s critique of considering sentences “abstract formal objects independent of speaker, hearer and context” (Van Valin 1980:229) was directed against the dominant paradigm: Chomsky’s Generative Grammar (Chomsky 1965, 1970). Nowadays, Generative Grammar in the form of the Minimalist Program (Chomsky 1995; Boeckx 2006) is still a very important framework, but its erstwhile dominance has faded. A new paradigm has gained importance over the last decade, not least due to the technical progress in
handling big corpora of usage data. The usage-based paradigm is, of course, not a coherent linguistic framework, but rather a current of approaches that believe in the necessity to build linguistic theory upon usage data instead of speculating about an innate linguistic competence (e.g. Bybee 2006, 2007; Croft 2001; Goldberg 1995, 2006; Langacker 1987, 2008; Tomasello 2003). Even more, these approaches take it for granted that the speaker’s competence results from the linguistic material s/he is exposed to. However, as Blumenthal-Dramé (2011:5) points out, it is in fact not that clear whether “the mind or brain of each individual language user” or “objective principles guiding the emergence and dynamics of language in ontogeny, phylogeny and diachrony” should be considered the “locus of usage-based representations”.

This distinction might be a hint that linguistic knowledge is fundamentally a social phenomenon that transcends the individual competence. Hence, the individual speaker does not have privileged access to structure and meaning. This is, of course, one of the central subjects of Wittgenstein’s philosophy. The signs receive their meaning in interpersonal processes that Wittgenstein (1953) calls “language-games”. The ability to successfully interact with others by linguistic means is a prerequisite for the cognitive function of language. The actual certainty of using language for cognition in a stable and meaningful way is always bound to the external interpersonal use. Therefore, Wittgenstein warns against hyperbolizing thinking as a form of internal private language use: “It is misleading then to talk of thinking as of a “mental activity”. We may say that thinking is essentially the activity of operating with signs“ (Wittgenstein 1958:7).

Language is not in the brain. Its structures have to be detected by interpreting chains of tokens in interpersonal use by means of “sociolinguistic analysis of conversation along with the analysis of texts and other forms of discourse”, as Van Valin (1980:229) puts it.

These considerations take us back to the “holistic approach” (Van Valin 1980:229) based on disclosure. Linguistic analysis is nothing that could take place in a sphere that is totally separated from the data in use. Interpreting texts and discourse is in itself a language game to be played not only with experts, but also with competent speakers. Linguistic discourse is no metalanguage strictu sensu, but an iteration of data in a particular context. This process of iteration should be understandable and acceptable not only to experts, but to the speakers themselves. Only then can the analysis obtain validity.

Therefore, interpretation of use should be based on representative corpus data. Patterns that appear frequently in large corpora may meet this criterion, but high frequency is not the only way of defining representativity.

Valuable linguistic analysis does not operate at a meta-level, but is part of the usage chain of the analysed data. Hence, qualitative and quantitative corpus
analysis should be accompanied by an active involvement of the linguist in the language games the data are part of, including participant observation and interviews.

2. Consequences for the organization of RRG

![Diagram of RRG organization]

Figure 1. Organization of Role and Reference Grammar

(cf. Van Valin 2005: 134)

The centre of the schema in Figure 1 is occupied by a bidirectional linking algorithm that connects the semantic and the syntactic representation. Aspects of discourse pragmatics, e.g. an affinity of a constituent to the topic or focus function, may intervene during the linking process. It is also during the linking process that constructional schemas are retrieved. These schemas contain language-specific information at the morphological, syntactic, semantic and pragmatic level. For example, for French passive constructions it will be indicated that the auxiliary is être (‘be’) and that the agent is omitted or realized in the periphery by the prepositions par or de, etc.

The semantic representation of a sentence is centred around the lexical entry of a predicate whose argument slots are filled by referring expressions. The lexical entry of the predicate is formalized by its Logical Structure (LS) comprising lexical semantic, Aktionsart and valence information as illustrated in Example (1) indicating the LS of the verb ‘kill’.

(1) \[
\text{kill [do’ (x, Ø)] CAUSE [BECOME dead’ (y)]}
\]

Lexical semantics: … dead’…
Aktionsart: … do’… ] CAUSE [BECOME…
Valence: … (x, Ø)… (y)

One problematic point of this formalism is the fact that the semantic information is derived from meta-linguistic syntax. As we will see in detail, the activity degree
of the arguments depends on their ordered distribution. The more to the left an argument is represented in the LS, the higher its activity degree. However, the motivation of this meta-syntax remains unclear. Is it just a formal device for the semantics or could we relate it to some extent to the syntactic representation of the sentence? Is it specific for each language or universal? And if we use English predicates for the LS of other object languages, do the English syntax of these predicates determine the meta-linguistic representation? Although the LS-formalization, historically inspired by Generative Semantics and Dowty (1979), seems to be a neat and manageable tool, these are complicated questions and therefore hard to answer. As we will see in Section 4, RRRG will propose a syntax-free alternative to annotate the activity degrees of the arguments avoiding the problems raised by LS’ meta-syntax.

The syntactic representation of a sentence comprises a layered structure that combines different kinds of syntactic templates stored in a language-specific syntactic inventory. At the core level, templates formalize the different morphosyntactic types of core-constituent combinations that a specific language allows (syntactic valence). Example (2) gives a list of French core templates.

(2) French core-templates
   a. V (Il pleut ‘it rains’)
   b. NP V (Pierre dort ‘Peter sleeps’)
   c. NP V NP (Pierre mange une pomme ‘Peter eats an apple’)
   d. NP V PP (Pierre pense à Marie ‘Peter thinks of Mary’)
   e. NP V NP PP (Pierre donne un livre à Marie ‘Peter gives Mary a book’)
   f. NP V PP PP (Pierre parle à Marie de ce livre ‘Peter talks to Mary about this book’)

These core-templates combine with adjuncts that are situated in their “periphery”, which is more a semantic than a syntactic term. Core-templates and periphery are “non-configurational” in the sense that the order of the constituents (predicate, arguments and adjuncts) is not determined by universal syntax, but by language-specific rules that interact with discourse pragmatics. Therefore, peripheral constituents such as pendant un moment (‘for a moment’) in Example (3) could appear in the center of core-template:

(3) Julie fut pendant un moment absorbée par la contemplation de cette figure
    ’Julie was for a moment absorbed in the contemplation of this figure’
    (FRANTEXT: BALZAC)
The core templates are embedded in configurational syntactic templates for wh- and topicalisation constructions which always occupy the right or left margin of the layered structure, depending on the language (see Figure 2).

**Figure 2.** Layered structure of the clause. (The non-configurable zone in shown in grey)

In the following example, a two-place core-template is combined with wh-construction and a comment in a left detached position.

(4) Au fond, que me faisait cette morne in:art.m ground what dat.1sg do:pfv.1sg this mirthless
ville de province?
town of province

'Actually, what did this mirthless provincial town mean to me?'

(FRANTEXT: BARBEY D’AUREVILLY)

Figure 3 illustrates the syntactic representation of this sentence.

One must point out that the layered structure comprises internal semantics, just as the LS comprises internal syntax. It is not only linked to semantics but is actually built upon the semantic organization of the argument structure, as Table 1 illustrates.

It is not the objective of this paper to discuss RRG’s syntactic and semantic representations in detail and the presentation is obviously far from exhaustive. Complex sentences and the whole morpho-syntactic component (operator structure) have not been discussed. What is important in the light of the holistic approach sketched in Section 1 is the fact that both the central components of syntax and semantics are already infiltrated by the other. Hence, the idea to keep them apart by a bidirectional linking algorithm that goes from semantics to syntax and vice-versa seems to be problematic.

The fact that RRG provides a bidirectional linking algorithm is highlighted as an outstanding characteristic of the theory in Van Valin (2005: 129). Both algorithms, from semantics to syntax and from syntax to semantics, are quite complex
because they account for all kind of typological variation. For French, Trajcev (2010:158) proposes a simplified semantics to syntax algorithm that could be adopted for other Romance and Western European languages (see Table 2).

The syntax to semantics algorithm is even more complex as far as typological variation is concerned (cf. Van Valin 2005:149s). However, Van Valin (2006:277) propounds a different and considerably simpler variant, which will be presented in a slightly modified form in Table 3 (cf. Kailuweit 2011a):

**Table 1.** Semantic units underlying the syntactic units of the layered structure of the clause (Van Valin & LaPolla 1997:27)

<table>
<thead>
<tr>
<th>Semantic element(s)</th>
<th>Syntactic unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicate</td>
<td>Nucleus</td>
</tr>
<tr>
<td>Argument in semantic representation of predicate</td>
<td>Core argument</td>
</tr>
<tr>
<td>Non-arguments</td>
<td>Periphery</td>
</tr>
<tr>
<td>Predicates + arguments</td>
<td>Core</td>
</tr>
<tr>
<td>Predicates + arguments + non-arguments</td>
<td>Clause (Core + Periphery)</td>
</tr>
</tbody>
</table>

**Figure 3.** Combination of syntactic templates

---

Table 1. Semantic units underlying the syntactic units of the layered structure of the clause (Van Valin & LaPolla 1997:27)
There is no doubt that the algorithms are quite useful for computational implementation (cf. Staudinger et al. 2008). However, recalling the claim of a holistic approach, a bidirectional linking algorithm seems to be highly reductionist. On the one hand, the semantics to syntax algorithm pretends the existence of a complete semantic and potentially syntax-free representation in the mind/brain of the speaker that will be syntactically coded. On the other hand, the syntax to semantics algorithm creates the illusion that the hearer stores a complete syntactic representation before starting the decoding that, in the end, leads to a syntax-free semantic representation identical with the initial representation of the speaker.

Taking the bidirectional algorithm as a model for human communication contravenes the philosophical tradition referred to by Van Valin (1980). Furthermore, it ignores Saussure’s insight that the two sides of the sign are inseparable and that the process of forming its unit is not a process of representation, but of articulation, “a somewhat mysterious process, according to which, ‘thought-sound’ evolves divisions and a language takes shape” (Saussure [1916] 1983: 110s):2

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2. To some extent, Construction Grammar (CxG) seems to continue this tradition of defining constructions as “conventionalized pairings of form and function” (Goldberg 2006: 3). Nonetheless, for CxG signs, i.e. constructions including lexical items are ‘abstract’ exemplars of form-function pairings stored in the brain (cf. Goldberg 2006: 45–58). Hence, CxG ignores the social dimension of the articulation process without which we would be unable to explain conventionalization.
As we have seen in Section 1, in the light of Wittgenstein’s philosophy, meaning is not a resource of the speaker’s (i.e. thinker’s) brain to which s/he has privileged access. Meaning and form are inseparably produced, fixed and modified in an interpersonal process of interpretation and reinterpretation that articulates the possibilities of human understanding. As far as the individual act of communication is concerned, speakers do not entirely overlook the effects of their speech, and thus neither do they overlook its meanings. Hearers in turn begin their interpretation with the first item without waiting for a full-fledged syntactic representation. This is not only a consequence of the holistic model, but also, as Van Valin himself (2006: 283) recognizes, the overwhelming evidence from psycholinguistic studies.

In conclusion, RRG’s model architecture, centred around a bidirectional linking algorithm that relates a syntactic and a semantic representation, does not match the holistic approach (Van Valin 1980). In addition, both levels, the semantic and the syntactic representation, are not “pure”, but already infiltrated by “the other side”. In the next section, I will show that Van Valin (2006) has already accounted for the hybridity of the two representations to some extent. His considerations will be the starting point for a more radical model. By preserving and enhancing the strengths of RRG, I shall sketch a model of the architecture without linking algorithms.

3. Towards a radical role and reference grammar

As we have seen in the last section, the internal syntax of LS and the underlying semantics of the syntactic inventory are not systematic pairings of syntax and semantics that would spell out articulations of signification (signified) and signal (signifier) in social interaction. However, in Van Valin (2006) we find a further approximation of the two representations. Van Valin (2006: 283) recalls that the “evidence from studies on sentence comprehension is overwhelmingly that speakers do not wait until they hear the entire sentence before they start to interpret. Since parsing and interpretation occur simultaneously” he concludes (ibid.), “it is necessary to integrate the RRG system into the parser as well as the interpretative mechanism”. Therefore, he postulates “for the purpose of parsing there could be macrorole-augmented templates” (ibid.: 284). As far as the LS are concerned, they could be “stored in the lexicon with the macrorole assignment of their arguments precompiled as much as possible, in order to expedite interpretation” (ibid.: 285).

In line with this idea, Staudinger et al. (2008: 413) proposed syntactic templates with macrorole and case information as illustrated e.g. in Figure 4 and in Example (5):

(5)  
Je parle de vous
I speak-prs.1sg of you
‘I speak about you’
Figure 4. Two-place construction of French *parler* (‘speak’) with *Topic of conversation* *(de-ARG)* (Staudinger et al. 2008:413)

To sum up, macroroles and adpositions would no longer be assigned during the linking algorithms, but prior in the lexicon. Hence, verbs permitting flexible undergoer choice, which in standard RRG are represented with one LS for both alternatives as in Example (6) (cf. Van Valin 2005:61; 2006: 271), would obtain two LS-representations (i. and ii.), which could be related by a lexical rule (cf. Van Valin 2006:285). This is the case in Example (7), for instance:

(6) *present*  \[\text{do}' (x, \emptyset)]\text{CAUSE}\text{[BECOME} \text{have}' (y, z)\]

(7) *present*  
  i. \[\text{do}' (A: x, \emptyset)]\text{CAUSE}\text{[BECOME} \text{have}' (U: y, with: z)\]
  ii. \[\text{do}' (A: x, \emptyset)]\text{CAUSE}\text{[BECOME} \text{have}' (to: y, U: z)\]

Referring to the linking algorithms Van Valin (2006:29) infers: “This precompiling reduces the syntax-to-semantics linking to a single step: match the information on the template to the information on the logical structure”, which could be paraphrased in the final analysis: match the syntactic-semantic information to the semantic-syntactic information. On the one hand, both representations contain the coherent semantic and morphosyntactic information (macroroles, syntactic functions and morphosyntactic coding) differing from each other mainly in the type of formal representation (trees or brackets). On the other hand, if the information is almost identical at two points, linking the two representations seems to be dispensable. Let me emphasize again that the algorithms are useful as far as computational implementation is concerned. However, they do not seem to be an adequate model for the process of interpretation.

My proposal for RRRG will be to conflate the precompiled LS and the macrorole-augmented templates into syntactic-semantic event templates which are, to some extent, inspired by the event schemas of Radden & Dirven (2007:298). Syntactic-semantic event templates should contain the syntactic and semantic information to construct prototypical events in a given language, such as action, causation, location, movement, transfer, etc. These templates constitute a medium level of complexity, combining with lexical items at the lower level and
constructional schemas at a higher level. Lexical items are *per se* syntax-free. If the lexical items are predicates they have a basic valence that is an abstraction of the syntactic-semantic event template they are usually used with. However, this does not mean that they could not combine with other event templates under special conditions. There are affinities and restrictions that regulate the usage of a given predicate with a range of event templates. As I shall illustrate below, frequency might play a role, but so do the speaker's attitudes concerning grammaticality.\(^3\) Other affinities and restrictions regulate the combination of event templates and constructional schemas. In French for example, passive constructions can only modify transitive event templates while German allows intransitive passives.\(^4\)

A sketch for the organization of RRRG will be given in Table 4:

**Table 4. Organization of RRRG**

1. Level: Lexical items (predicates with a quantitative and qualitative basic valence)
   Affinities/restrictions
2. Level: Syntactic-semantic event templates
   Affinities/restrictions
3. Level: Constructional schemas
   Universal rules (including rules of discourse pragmatics) operating at all levels

The model is partly in line with other current attempts to strengthen the role of constructions in RRG (Diedrichsen 2011; Nolan 2011). Diedrichsen (2011) advocates the generalization of constructional schemas. Since they provide information on e.g. illocutionary force, she claims they are active during the production and reception of any utterance and are not simply an additional device for treating language-specific information deriving from a universal linking default. I agree with this view. However, she then goes on to claim that constructional schemas are responsible also for argument realization (Diedrichsen 2011: 176). As constructional schemas in her approach provide syntactic information on PSA and case assignment and separately semantic information on thematic relations, Diedrichsen suggests abandoning the concept of macroroles due to its problematic hybrid syntactic-semantic status (ibid.). On the other hand, she does not tackle

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3. I would not consider the speaker's attitudes to be judgments based on unquestionable linguistic competence, but rather as statements about what is usual in the interpersonal language-games they are able to participate in.

4. See Van Valin (2005:115–120) for a RRG account of typological variation of passive constructions.
the RRG’s syntactic inventory that remains an accessible device for constructional schemas (ibid.: 185).

Although I acknowledge the descriptive adequacy of her approach, I do not fully agree with Diedrichsen on these last points. First of all, in RRRG I propose that argument realization takes place at the level of syntactic-semantic event templates which conflate syntactic templates with macrorole and case information. At this level, the hybrid value of macroroles seems to be especially useful to describe the semantic effects of apparent semantic-syntactic mismatches. As far as locative shift verbs are concerned, I have argued in Kailuweit (2008: 348–353) that marked undergoer choice in the location-as-object variant can explain the well-known holistic effect. The location-object of to load is considered completely filled, since the argument that was on this occasion chosen as the undergoer receives the prototypical values of this category. Hence, it is reinterpreted as totally effected.

Secondly, the descriptive simplicity of macroroles is one of the outstanding characteristics of RRG that should not be abandoned. Macroroles help to compare and distinguish in a straightforward manner languages with accusative or ergative alignment. There have even been proposals to expand the number of macroroles to four (Haspelmath 2008) in order to deal with the typological difference between indirective and secundative alignment with the same elegance. Irrespective of whether or not one wishes to accept this expansion, the alternative would consist of the typological insights of RRG becoming lost in an unmanageable amount of descriptively adequate, but highly complex, language-specific construction schemas and is thus not nearly as attractive an option.

To sum up, RRRG proposes three levels of structures that are to an increasing degree syntactic and therefore language-specific. While the syntactically relevant semantic information of lexical items probably differs only to a relatively small extent, semantic-syntactic event templates relate supposedly universal events (acting, causing, giving, etc.) to more differentiated forms of morphosyntactic encoding. Finally, even more language-specific grammatical information is given at the level of construction schemas, ranging from morphological, syntactical and intonational patterns of illocutionary force to idioms and metaphor constructions.\(^5\)

I would like to emphasize that the organization of RRRG is not a model of language processing. I shall not claim that speakers pass through the levels during the articulation and interpretation process. It seems rather plausible to me that the levels operate simultaneously, but these issues are beyond the scope of the theory at present time.

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\(^5\) See Diedrichsen (2011) and Nolan (2011, 2012) for a more formalized engineering of these types of constructional schemas.
To conclude this section, I would like to deepen two aspects of the model architecture: the relation between lexical valence and event templates and the intervention of general rules at the different levels. The affinities between a predicate and certain event templates can be measured out statistically. For example, verbs of precipitation are basically zerovalent. Nonetheless, they appear quite often in constructions with one or two arguments.

(8) *Le ciel pleuvait sur les allées*
the sky:PFV.3SG on the alleys
'The sky rained on the alleys'
(FRANTEXT, MAURIAC)

(9) *Al "perico" blanquiazul le llueven los galardones*
to the expert white and blue DAT.3SG rain-PRS.3PL the awards
'Awards rain down on the white and blue “expert”'
(CREA, LA VANGUARDIA)

On the basis of French data, Heidinger (2004: 86s) measures the frequency of occurrence of *pleuvoir* (‘to rain’), *neiger* (‘to snow’) and *grêler* (‘to hail’) in a zero, mono- or multivalent construction (see Table 5). Logically, a zero valent construction is excluded in non-literal use. But it is not just the difference between literal and figurative that determines the event template. Even in literal use, verbs of precipitation appear in one- and two-place constructions.

<table>
<thead>
<tr>
<th>Literal use</th>
<th>Valence in %</th>
<th>Average number of arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-place</td>
<td>1-place</td>
</tr>
<tr>
<td><em>pleuvoir</em> ‘rain’</td>
<td>94,6</td>
<td>5,1</td>
</tr>
<tr>
<td><em>neiger</em> ‘snow’</td>
<td>99,3</td>
<td>0,7</td>
</tr>
<tr>
<td><em>grêler</em> ‘hail’</td>
<td>76,3</td>
<td>21,1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-literal use</th>
<th>Valence in %</th>
<th>Average number of arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-place</td>
<td>1-place</td>
</tr>
<tr>
<td><em>pleuvoir</em> ‘rain’</td>
<td>–</td>
<td>69,6</td>
</tr>
<tr>
<td><em>neiger</em> ‘snow’</td>
<td>–</td>
<td>85,7</td>
</tr>
<tr>
<td><em>grêler</em> ‘hail’</td>
<td>–</td>
<td>76,5</td>
</tr>
</tbody>
</table>

However, only a finer-grained semantically analysis can show that in (8), French *pleuvoir* (‘to rain’) enters an event template with a *CAUSATOR* role while
in (9), Spanish *lover* (‘to rain’) is combined with a movement event template in which the subject is the moved object.

Last but not least, I shall return to the functioning of general rules and principles intervening at one or several of the three levels. Just like RRG (cf. Van Valin 2007), RRRG differs from Construction Grammar in that it insists on the fact that a linguistic theory should search for general rules. Again, these rules must not necessarily be found in the speaker’s head as part of a linguistic storage device, but describe regularities that can be observed in language as a social system in the same way as, for example, economists look for economic laws.

The central general principle that RRG highlights is the Actor-Undergoer-Hierarchy. Languages all over the world organize their grammatical systems by referring to the activity degree of the predicates’ arguments. As far as the three levels of RRRG are concerned, a hierarchy reflecting the activity degree of the arguments (Activity Hierarchy) determines the basic valence of predicates at the lexical level (macrorole assignment), but also the semantic oppositions between the arguments of event templates (second level) and, for example, the semantic promotion of arguments in certain constructions (third level). I shall give an example of the last case at the end of Section 4. Another set of general rules that operate at the event template level is spelled out, for example, in the principles of accessibility to PSA (cf. Van Valin 2005: 100). The interaction of general rules and language-specific particulars can be best exemplified with voice constructions. The language-specific constructional schemas refer to the general characterization of voice constructions:

(10) General characterization of basic voice constructions (Van Valin 2005: 116)

a. Privileged Syntactic Argument modulation voice: permits an argument other than the default argument […] to function as the privileged syntactic argument.

b. Argument modulation voice: gives non-canonical realization to a macrorole argument.

In this section, I have tried to sketch the organization of RRRG. Linking algorithms of RRG have been substituted by three levels of structural complexity that operate simultaneously within the scope of general rules. The next and final section of this chapter will deal with another important modification. I will show that not only for theoretical but also for empirical reasons, RRG’s Actor-Undergoer-Hierarchy should be replaced by a more flexible and syntax-free Activity Hierarchy.

4. The Activity Hierarchy

In the final section of this chapter I shall argue for a syntax-free and semantically finer-grained Activity Hierarchy. This hierarchy will be the centrepiece of RRRG, substituting the Actor-Undergoer-Hierarchy. The Activity Hierarchy is a principle
that implies several general rules which operate at all three levels of the theory. In the following, only two levels will be taken into consideration. The first part of the section considers how the Activity Hierarchy operates at the lexical level. The basic valence of verbs of emotion will be in the focus of the discussion. Based on Kailuweit (2005), I will show that especially verbs of emotion manifest valence variation that is by far more complex than RRG and other syntactic theories have assumed. A finer-grained semantic component will be needed to describe the different activity degrees of their arguments.

The second part of the section will account for the operating of the Activity Hierarchy at the level of constructional schemas. It will focus on anticausative constructions which vary in the degree of semantic undergoer promotion. In comparison with the undergoer of transitive causative constructions, the undergoer of anticausatives is more active in different degrees. This variation should be described on the grounds of the Activity Hierarchy. If activity promotion is a semantic effect of a constructional schema, one can avoid a stipulation of lexical rules that would lead to a multiplication of lexical entries.

At the second level of the theory, the Activity Hierarchy will help to describe the different argument slots of syntactic-semantic event templates that a predicate could enter. Among the verbs of precipitation for example, the Spanish verb *granizar* (‘to hail’) combines with the transitive template, while in a semantically similar context, French *grêler* (‘to hail’) only enters a movement template:

\[
\text{(11) } \textit{Maintenant que grêlent sur moi les mots glacés} \\
\textit{now comp hail-prs.3pl on me the words frozen} \\
\text{‘Frozen words now hail on me’} \\
\text{(FRANTEXT: BECKETT)}
\]

\[
\text{(12) } \textit{Focos navideños que granizan las avenidas de la ciudad} \\
\textit{Lights Christmas comp hail-prs.3pl the avenues of the city} \\
\text{‘Christmas lights that fill the avenues of the city like hail’} \\
\text{(CREA: DEL CAMPO)}
\]

Nonetheless, it is not necessarily the case that RRG’s Actor-Undergoer-Hierarchy would not also be able to deal with this kind of variation. Hence, I shall not refer to the level of event templates to show that RRG requires a finer-grained semantic hierarchy.

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6. Verbs of emotion are often equated with psych-verbs in the literature (cf. Belletti & Rizzi 1988). However, they are only a subclass. Apart from verbs of emotion, psych-verbs that comprise also verbs of body experience: German *frieren* (‘to be cold’), verbs of cognition: *to know*, etc. verbs of propositional attitude: *to consider*, etc. and verbs of perception: *to hear*, etc.
4.1 The Activity Hierarchy at the lexical level

Previous to Van Valin (2005), RRG was built upon the Actor-Undergoer-Hierarchy as illustrated in Figure 5:

![Actor-Undergoer-Hierarchy](image)

Van Valin (2005: 126) abandons the markedness hypothesis due to the fact that in some languages the location argument seems to be an unmarked choice for undergoer. While most languages follow principle A in (13), some languages follow principle B.

(13) Principles for Undergoer-choice (Van Valin 2005: 126)
Principle A: lowest ranking argument in LS (default)
Principle B: second highest ranking argument in LS

Obviously, one could also apply these principles to different constructions in one language. Hence, the location as an object construction, allowed by English *give*, would no longer be an instance of marked undergoer choice, but of principle B in a language that generally follows principle A.

However, the principles in (13) simply point out the hybrid nature of RRG’s macroroles that exhibit a semantic and a syntactic component. While the actor is always the most active (highest ranking) argument, the undergoer can be either the most passive (lowest ranking) or the second most active (second highest ranking) argument. Therefore, abandoning the markedness criterion does not affect the underlying hierarchy between a prototypical actor and a prototypical undergoer that allows for exactly three intermediate degrees.

A more theoretical problem of macrorole-assignment in RRG is related to causatives. Causative constructions in RRG can be formalized as “α CAUSE β, where α, β are logical structures of any type” (Van Valin 2005: 45). Following the Actor-Undergoer-Hierarchy, in (14) and (15) the position of the highest ranking argument in the α-part of the construction can be the same as the position of the highest ranking argument in the β-part. In addition, in (15) the undergoer argument is an effector, a position that is not accessible for undergoer selection in accordance to the Actor-Undergoer-Hierarchy (see Figure 5).
(14) Bill's owning a gun frightens Mary (causative state)
    [have' (Bill, gun)] CAUSE [feel' (Martha, [afraid'])]

    (Van Valin & LaPolla 1997: 107)

(15) The girl bounced the ball around the room (causative activity)
    [do' (girl, …] CAUSE [do' (ball, [bounce' (ball)])]

    (ibid.: 107)

These are, of course, resolvable problems. The [do' (x, …] position (thematic relation: effector) could be flagged as accessible for undergoer assignment. With the help of an additional rule, one could also stipulate that the actor argument of causative constructions is always located in the α-part, the undergoer argument in the β-part. Nonetheless, it is not clear whether in causatives the whole α-part is the actor or a single argument within the α-part. The first interpretation seems to be appropriate for (14), the second for (15). In any case, causativity is an important factor for macrorole-assignment, a factor that RRG does not account for in a clear and explicit way.

Three-place non-causative predicates constitute a second problematic case for the Actor-Undergoer-Hierarchy. Although Van Valin and LaPolla (1997: 116–118) give a detailed description of English verbs of saying, they do not indicate a LS for to talk. Like its English counterpart, French parler is a non-causative three-place predicate:

(16) J’ai parlé à ma mère de notre nouvelle vie
    I have-prs.1sg talk-ptcp to my mother about our new life
    'I have talked to my mother about our new life'

    In Staudinger et al. (2008), we suggest the following LS:

(17) parler à qn de qc = do’ (x, [talk’ (x,y,z)])

In standard RRG, all three-place verbs are considered causative, but it is clearly the absence of causativity that distinguishes verbs of saying from verbs of telling (cf. Van Valin & LaPolla 1997: 118). Although the type frequency of non-causative three-place predicates is low, the token frequency of verbs of talking is high. Thus, a theory of macrorole-assignment should be able to describe them. If verbs of talking raise a problem for the Actor-Undergoer-Hierarchy, the problem naturally seems to be resolvable. RRG could allow for three-place activities with an argument in each of the three medium positions of the Actor-Undergoer-Hierarchy: do’ (x), pred’ (x, …) and pred’ (…, y).

Unfortunately, there are not only three-place non-causative activities, but also three-place non-causative states. Verbs of envy are a prominent instance of this class, since they show the same argument structure in several languages. A more
language-specific case is the French verb *en vouloir à quelqu’un de quelque chose* ('to be angry with someone about something').

(18) …cette belle figure creuse […] il la lui enviait
this pretty face haggard he ACC.3SG.F DAT.3SG envie:PFV.3SG
'It was this pretty haggard face that he envied him for'
(FRANTEXT: ETCHERELLI)

(19) On peut lui en vouloir de beaucoup de phrases
One can DAT.3SG be angry about many of phrases
'One can resent him for many phrases'
(FRANTEXT: DROIT)

A possible LS for *envier* might be *envy*’ (x,y,z). But the three arguments of this structure do not correspond to the three argument positions in the Actor-Undergoer-Hierarchy, given that the three positions *pred*’ (x, …), *pred*’ (…, y) and *pred*’ (x) distinguish two-place states (*pred*’ (x,y)) from one-place states (*pred*’ (x)). The position *pred*’ (x), i.e. the prototypical undergoer position, is not addable to the positions *pred*’ (x,y), since the structures *pred*’ (x) and *pred*’ (x,y) exclude each other logically. Therefore, the Actor-Undergoer-Hierarchy can definitely not account for three-place states. In the following, I shall prove that three-place states are not the only subclass of verbs of emotion that raise severe problems for the Actor-Undergoer-Hierarchy.

Verbs of emotion have been an intensively discussed field in the last 25 years. Nonetheless, most studies only account for a small subset of constructions. In Kailuweit (2005), I have shown that the syntactic variation of verbs of emotion is highly complex: one can distinguish 16 syntactic classes of one-place, two-place and three-place constructions in French and Italian. In the following, I will deal with nine classes of two-place and three-place constructions in what are mostly Spanish examples (cf. Kailuweit 2007, 2012a).

According to the classical study of Belletti and Rizzi (1988) on Italian, three classes of verbs of emotion in particular have been discussed in the literature:

(20) a. *Gianni teme questo*
    John fear-PRS.3SG this
    ‘John fears this’

---

7. The clitic *en* is a desemanticised part of the lexical realization of the predicate. It is not an argument, because a *de*-complement that can normally be substituted by the clitic *en* appears alongside the clitic in the sentence.

b. *Questo preoccupa* Gianni
   this worry–prs.3sg Gianni
   ‘This worries John’

c. *A Gianni piace* questo
   to John appeal–prs.3sg this
   ‘John likes this’
   (Belletti & Rizzi 1988: 291)

The description of verbs of emotion in standard RRG adds a fourth class of two-place constructions. In line with Nissenbaum (1985) and Pesetsky (1995), Van Valin and LaPolla (1997) distinguish between non-episodic verbs of emotion, i.e. verbs of liking which denote a general subjective judgment, and episodic verbs of emotion, i.e. verbs of anger or fear which refer to a change of an emotional state of the experiencer in a concrete situation (cf. Koch 2001; Kailuweit 2005). Non-episodic verbs of emotion differ in the number of macroroles they assign and therefore in the syntactic function the experiencer is mapped on.

(21) Non-episodic verbs of emotion
   (Van Valin & LaPolla 1997: 107, 115)
   a. Mary loves John
      [love’ (x = emoter => 1. arg. of pred’ => act => PSA, y =
       target => 2. arg. of pred’) => und => DIRECT OBJECT)]
   b. Maria le gusta a Juan
      Mary dat appeal–prs.3sg to John
      1MR [like’ (Juan = emoter => 1. arg. of pred’ (x, y) => INDIRECT
       OBJECT, Maria = target => 2. arg. of pred’ (x, y) => und => PSA)]

(22) Episodic verbs of emotion
   (Van Valin & LaPolla 1997: 156, 402)
   a. The photo in the newspaper upsets James
      [be-in’(newspaper, photo)] cause [feel’(James, [upset-about’
       (be-in’(newspaper, photo)))]
   b. Pat is angry at Kelly
      [feel’(Pat = experiencer => 1. arg. of pred’(x, y) => und => PSA,
       [angry.at’(Kelly)] = sensation => 2. arg. of pred’(x, y))]

The syntax of the non-episodic verbs follows straightforwardly from macrorole assignment. The fact that intransitive verbs of liking (Spanish *gustar*, French *plaire*, Italian *piacere*, German *gefallen*) select only one macrorole is taken for purely syntactic reasons. The opposition of transitive and intransitive liking (French *aimer bien* versus *plaire*; German *mögen* versus *gefallen*) is paralleled in the field of possession by syntactic oppositions such as *to owe* versus *to belong to* (German *besitzen* versus *gehören*, etc.).
Episodic verbs of emotion split into a transitive and an intransitive variant. In line with Grimshaw (1990) and Pesetsky (1995), the transitive variant is considered causative and not unaccusative, as Belletti and Rizzi (1988) claimed. The intransitive variant that is not only represented by copula constructions, but also by full verbs such as to worry about, seems to be a lexicalized anticausative variant of the transitive causative construction. It has to be pointed out that RRG distinguishes between two semantic relations for the person experiencing the emotion: EMOTER (for non-episodic emotions) and EXPERIENCER (for episodic emotions). As far as the second role is concerned, non-episodic emotions are directed at a TARGET (a person or entity), episodic emotions relate the EXPERIENCER to a SENSATION, that is a predicate with an internal argument, i.e. angry at(‘y). In standard RRG, this internal argument is not accessible for macrorole assignment. Therefore, verbs such as to worry about are considered macrorole intransitive states. Their only argument, the EXPERIENCER, assumes the undergoer macrorole and functions as PSA. There is no difference at the level of Actor-Undergoer-Hierarchy between the non-episodic and the episodic class: EMOTER and EXPERIENCER are instances of pred'(x, ...), TARGET and SENSATION instances of pred'(..., y).

On the basis of the findings in Kailuweit (2005, 2007), only the class of transitive non-episodic verbs, i.e. English to love, to hate or to fear, is unproblematic as far as macrorole assignment is concerned. Let me start the discussion of the other classes with episodic transitives. As Primus (1999:70) pointed out in the case of German, this class splits into a causative and a non-causative subclass. With regard to Spanish, Kailuweit (2007) has shown that there are syntactic-semantic tests which prove a clear-cut difference between prototypical verbs of each subclass. Causative verbs such as intimidar (‘to frighten’) or escandalizar (‘to scandalize’) allow (a) passives and (b) tough constructions as well as (c) imperatives and combine (d) with adverbs like de propósito (‘intentionally’), etc. Non-causative verbs such as preocupar (‘to worry’) or two-place interesar (‘to interest’) do not meet any of the four tests in (23) and (24):

(23) Causative object experiencer predicates
   a. María fue escandalizada/intimidada por Juan
      ‘Maria was scandalized/frightened by John’

9. Nonetheless, there are predicates such as German zürnen or Spanish rabiar contra (‘to be angry at’) that do not correspond to a specific transitive causative predicate. Also, as we will see, the corresponding transitive predicates are not always causative. I will distinguish between a causative and a non-causative subclass of transitive accusative-EXPERIENCER predicates and will therefore treat intransitive subject-EXPERIENCER predicates as an independent lexical class and not as anticausative constructions. I shall account for anticausative constructions of change of state verbs that are not verbs of emotion in the next subsection (4.2).
b. Se deja fácilmente escandalizar/intimidar
   ‘She is easy to scandalize/frighten’

c. ¡No me escandalices/intimides!
   ‘Don’t scandalize/frighten me!’

d. Juan escandalizó/intimidó a María de propósito
   ‘John scandalized/frightened Maria intentionally’

(24) Non-causative object experiencer predicates

a. *Juan fue preocupado/interesado por María
   ‘John was worried/interested by Maria’

b. *Se deja fácilmente preocupar/interesar
   ‘He is easy to worry/to interest’

c. *¡No me preocupes! *¡Interésame!
   ‘Don’t worry me!/Interest me!’

d. *María preocupó/interesó Juan de propósito
   ‘Maria worried/frightened John intentionally’

If one proposes a LS \texttt{worry}’(x, y) or \texttt{interest}’(x, y) for the non-causative predicates, the experiencer would have to be an instance of \texttt{pred}’(…, y) in order to assume the undergoer macrorole. However, there is no semantic motivation for such an assumption. Alternatively, one could consider these verbs instances of marked undergoer choice. Nonetheless, marked undergoer choice is restricted to three-place constructions. In transitive two-place constructions, marked undergoer choice would entail marked actor choice. There is no provision for marked actor choice in RRG. In fact, allowing marked actor and undergoer choice for the same structure would annul RRG’s macrorole assignment principles.

It has to be pointed out that the distinction of two types of transitive accusative-experiencer verbs holds only for American Spanish. In American Spanish, the experiencer of the causative class is clearly an accusative complement, while the experiencer of the non-causative class could optionally be realized as a dative complement. In European Spanish it is the other way round. The causative class optionally permits an accusative morphology, while the experiencer of the non-causative class always retrieves the dative case.

(25) American Spanish

a. \textit{Este asunto} *le/lo intimidó, a Juan
   \texttt{this affair DAT.3SG/ACC.3SG.M frighten-pst.3SG PREP John}
   ‘This affair frightened John’

b. \textit{Este asunto} le/lo preocupó, a Juan
   \texttt{this affair DAT.3SG/ACC.3SG.M worry-pst.3SG PREP John}
   ‘This affair worried John’
Thus, in European Spanish the non-causative class is intransitive and seems to equal the non-episodic intransitive class represented prototypically by *gustar* (‘to like’).

By the way, depending on the context, both Spanish *gustar* and Italian *piacere* denote general preferences as well as situation-related, episodic pleasure. Since Spanish and Italian lack a lexical opposition for non-episodic and episodic liking (such as French *aimer* (bien): *plaire* or German *mögen*: *gefallen*), the difference is expressed by means of information structure. The following example illustrates the lexical opposition in French and the information structure opposition in Spanish:

(27) a. *Ce qu’il a fait a plu à Marie* ‘What he has done appealed to Mary’ (Koch 2001: 67)

b. *Mais je l’aimais mieux avec ses cheveux libre* ‘But I liked her better with her hair loose’ (Koch 2001: 67)
As far as I can see, in RRG there is no description for episodic dative-experiencer verbs.

Another problem for the RRG approach to verbs of emotion concerns the intransitive subject-experiencer verbs. Apart from the episodic predicates represented prototypically by worry about, there are also non-episodic predicates such as Spanish confiar en (‘to trust in’), tener a (‘to cherish’) or simpatizar con (‘to sympathize with’). Independently of the general distinction between episodic experiencer predicates and non-episodic emoter predicates, the structure feel(x, pred(y)) will not help us to describe predicates such as Spanish confiar en (‘to trust in’), etc. because it is by no means evident which kind of a sensation predicate should be embedded. In addition, it would be highly problematic to declare an obligatory argument, such as the prepositional object argument of Spanish confiar en (‘to trust in’), tener a (‘to cherish’) or simpatizar con (‘to sympathize with’), not accessible to macrorole assignment.

To sum up, three classes of two-place verbs of emotion must be added to the four classes already accounted for by RRG: non-causative accusative-experiencer predicates, episodic dative-experiencer predicates and non-episodic subject-experiencer predicates. There is no available RRG description for these classes that would fit into the LS-formalism (the basis for the Actor-Undergoer-Hierarchy). At the beginning of the section, I already mentioned the problematic nature of three-place verbs of emotion with regard to RRG’s LS-formalism. As a matter of fact, this class splits into two subclasses: subject-experiencer predicates, such as envy, and accusative-experiencer predicates, such as interesar (a) alguien por algo (‘to interest someone in something’) or incitar (a) alguien contra alguien (‘to incite someone against someone’). I have already shown that three-place subject-experiencer predicates are not describable in terms of LS-formalism.

Three-place accusative-experiencer predicates are causatives. Although the αCAUSE-part would not raise a problem, it is unclear which LS should spell out the CAUSEβ-part. As we have already seen, the structure feel(x, pred(y)) is not appropriate for two obligatory arguments. Thus, in total, five classes out of nine will not find an adequate description in standard RRG. In the following, I shall present an alternative to the LS-based Actor-Undergoer-Hierarchy, an alternative that is not only able to describe the nine classes of two-place and three-place verbs of emotion, but also differs from the LS-formalism in that it avoids an internal syntax.

My proposal is based on the feature-value approaches of Rozwadowska (1988) and Reinhart (2002). Rozwadowska (1988:159) classifies semantic roles on the basis of three features that can take two values + or −: sentient ±, cause ± and change ±. Reinhart’s approach is limited to two features: “cause change”
and “mental state”, but she permits underspecification for the two features. Hence, Rozwadowska (1988) allows for $2^3 = 8$ combinations, Reinhart (2002) for $3^2 = 9$.\textsuperscript{10}

In line with Rozwadowska (1988), Kailuweit (2005) takes three features into account: causative and/or control [c], mental (sentient) [m] and resultative (change of state) [r], thus allowing the features to assume three values $+, −$ and $\pm$. Hence, $3^3 = 27$ combinations are possible. The most important difference between Kailuweit (2005) and the other approaches is the fact that the features are weighted (see Table 6). The feature [c] is a strong actor feature, [m] is a weak actor feature and [r] is a strong undergoer feature. The presence [$+]$ of a strong feature will duplicate the value of the presence of a weak feature. If an argument is underspecified for one feature [$\pm$], the value will be half of the [$+]$ value.

<table>
<thead>
<tr>
<th>+c</th>
<th>±c</th>
<th>–c</th>
<th>+m</th>
<th>±m</th>
<th>–m</th>
<th>–r</th>
<th>±r</th>
<th>+r</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>–2</td>
<td>–4</td>
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Weighing the features entails the hierarchisation of the 27 combinations according to the degree of activity. The combination [+c+m–r] represents the prototypical actor with the value $4+2+0 = 6$, while the prototypical undergoer corresponds to a combination with the value [–c–m+r] $0+0−4 = −4$. Nine intermediate summations are mathematically possible. Therefore, the number of activity degrees rises from five to eleven in comparison with the RRG’s Actor-Undergoer-Hierarchy.

As far as verbs of emotion are concerned, the different types of EXPERIENCER correspond to four feature-value-pairs. Following Ruwet (1993), Kailuweit (2005) considers the TARGET or SENSATION argument a CORRELATE, i.e. the state of affair at which the emotion is directed.\textsuperscript{11} The CORRELATE could at the same time be a CAUSER of the change of the EXPERIENCER’s emotional state, however, this may also not be the case. The corresponding feature-value-clusters are the following: [+c–m–r] or [–c–m–r]. An EXPERIENCER undergoing a change of state in a concrete emotional episode is represented by the feature-value-cluster [–c+m+r]. Hence, the macrorole assignment follows straightforwardly for both classes of episodic accusative-EXPERIENCER predicates:

\textsuperscript{10} For a recent application of Rozwadowska’s approach see Naess (2007). Naess does not take Reinhart (2002) into account.

\textsuperscript{11} Even if you claim to love or hate somebody or something, what you love or hate are actually certain properties of that somebody or something. Hence, you love or hate a state of affair rather than a physical object.
12. Italian disturbare, interessare, scomodare and soddisfare allow for a dative-experiencer construction, apart from the more frequent accusative-experiencer construction. The dative-experiencer is more active in comparison with the accusative-experiencer. For instance, disturbare ‘to disturb’ does not denote actual disturbance if it appears with a dative, but a rather insignificant intrusion that the experiencer is expected to tolerate: i. *Le disturba se fumo?* (‘Would you mind, if I smoke?’) (cf. Kailuweit 2005: 179).
Intransitive subject-experiencer verbs are, in fact, a relatively heterogeneous class. The English *to worry about* corresponds to a pronominal construction in Romance languages, i.e. Spanish *preocuparse por* that I consider an antipassive construction in an accusative language in line with Cresti (1990). The episodic predicates of the *to fear for* or *to be angry at* type do not select a correlate, but a role that Pesetsky (1995) named, rather obscurely, a subject matter of emotion. In Kailuweit (2005), I refer to this role as point of reference. The experiencer directs her or his emotional behaviour to a point of reference through which the unexpressed correlate may be inferred. If you fear for somebody, for example, the correlate of your anxiety is not this person, but the fact that this person is in danger, etc. In Spanish *rabiar contra*, the experiencer directs her or his rage at a person. However, this person might not be the actual cause of the anger, but just a “lightning conductor”. The point of reference is represented by the feature-value-cluster \([-c \pm m-r]\), in which the experiencer shows an active emotional behaviour and assumes the cluster \([\pm c+m\pm r]\). With more or less controlled acting (represented by \([\pm c]\), s/he gradually overcomes the negative emotion s/he is affected by (therefore \([\pm r]\)). As activities, these predicates select an actor as their only macrorole:

(34) \[\textit{rabiar contra} \ ('to be angry at someone')\]
\[(1MP \ [\pm c+m\pm r] \text{EXP} = 2 == \text{act}, \ [-c \pm m-r] \text{POR} = 1)\]

In contrast, non-episodic intransitive subject-experiencer predicates are states. Their experiencer corresponds to the experiencer of non-episodic transitive predicates. This is highlighted by the fact that Portuguese expresses general preferences with *gostar de* that, unlike Spanish *gustar*, assigns the PSA-function to the experiencer. Macrorole assignment of this class is affected by information structure. Because of the high inherent topicality of the experiencer, an actor macrorole is assigned to the experiencer-argument that always functions as PSA:

(35) \[\textit{confiar de} \ ('to trust')\]
\[(1MR \text{Topic} \ [\pm c+m-r] \text{EXP} = 4 == \text{act}, \ [-c-m-r] \text{COR} = 0)\]

Last but not least, the two classes of three-place predicates do not raise problems for the Activity Hierarchy approach. The causative class separates the causer and the correlate, thus realizing a correlate or a point of reference as the third argument. The experiencer undergoes an episodic change of her or his emotional state. Hence, the experiencer is the most passive argument:

(36) \[\textit{interesar (a alguien por algo} \ ('to interest someone in something')/ incitar (a alguien contra alguien) \]
\[(1[\pm c+m-r] \text{CAU} = 6 == \text{act}) \ [-c+m+r] \text{EXP} = -2 == \text{und}, \ [-c-m-r] \text{COR} = 0/[-c\pm m-r] \text{POR} = (1)\]
The non-causative class shows a more active EXPERIENCER expressing a subjective judgment. The other two arguments correspond to the CORRELATE and POINT OF REFERENCE roles that, in contrast to Pesetsky’s (1995) claim, do not categorically exclude each other. The CORRELATE is the most passive argument and assumes the undergoer macrorole:

\[(37) \text{envidiar algo a alguien} ('to envy') \]
\[([±c+m−r]\text{EXP} = 4 => \text{act}, [−c−m−r]\text{COR} = 0 => \text{und}, [−c±m−r]\text{POR} = 1)\]

The objective of this section was not to exhaustively describe the field of verbs of emotion in Romance languages. For lack of space, semantic explanations were given in a rather laconic way. I did not intend to justify in detail the semantic assumptions on which the description is based, but rather to show how the Activity Hierarchy could work at the lexical level. I sought to prove that a complex semantic field, such as the field of verbs of emotion, can be structured by a formalism that is finer-grained than RRG’s Actor-Undergoer-Hierarchy. The 27 possible feature-value-combinations substitute the list of 36 semantic relations in Van Valin and LaPolla (1997: 127). Just like the semantic relations in RRG, the feature-value-combinations in RRRG are only relevant for macrorole assignment if they are brought into a hierarchical order. In RRRG, this is done by weighing the features (Table 6). Eleven degrees of activity replace the five degrees of the Actor-Undergoer-Hierarchy, allowing for more flexible semantic representations that, in addition, are free of an unmotivated internal syntax.

4.2 Activity Hierarchy and constructional schemas

In the second part of this section I will show briefly that the Activity Hierarchy is also highly useful to describe the operating of Constructional Schemas. I shall refer to anticausative constructions that, just like verbs of emotion at the lexical level, show a high degree of semantic and syntactic variation (Kailuweit 2011b, 2012b). Anticausative constructions are the intransitive variants of transitive causative constructions of predicates denoting change of state. Like passive constructions, the undergoer of the transitive construction is syntactically promoted and retrieves the PSA function, whilst the actor is deleted.

\[(38) \quad \begin{align*}
\text{a. Peter opened the door} \\
\text{b. The door opened} \\
\text{c. The door was opened}
\end{align*}\]

---

13. See Kailuweit (2005) for a far more detailed description.
However, in contrast to passive constructions, the undergoer is also semantically promoted. While the passive PSA is a prototypical undergoer, i.e. semantically identical with the corresponding undergoer of the active construction, the anticausative construction hints at certain properties of the undergoer that help to bring about the eventuality. Therefore, the undergoer of anticausative constructions is perceived as more active in comparison with the undergoer of passive constructions.

Haspelmath (1993) accounts for five syntactic types of causative-anticausative pairings. The “causative” type adds an affix to the intransitive variant (causativation) and is not found in Romance languages. The “anticausative” type adjoins an affix to the transitive variant (anticausativation). This type is the most current type in Romance languages: the predicate is accompanied by a pseudo-reflexive pronominal clitic (se or si). The third type is called “labile” in Haspelmath’s terminology and implies no morphological marking whatsoever. The predicate enters the transitive and the intransitive variant without morphological change. This type is frequent in English, but also present in Romance languages. The fourth type, called “equipollent”, necessitates morphological marking of both the transitive and intransitive constructions. It is not found in Romance languages. The fifth and last type, called “suppletive”, takes two different lexical stems for each construction. Since it is a lexical opposition, I shall not take this type into account in the context of Constructional Schemas. In the following, I will call the “anticausative” construction in Haspelmath’s terminology the marked construction. The “labile” construction will be called the unmarked construction.14

At first glance it is surprising that in Romance languages, the marked (“anticausative”) and the unmarked (“labile”) type coexist even for the same verb:

\[(39)\]
\[
\begin{align*}
\text{a. } & \text{Ouroz n’est plus à l’hôpital… Il a cassé une fenêtre et disparu…} \\
& \text{Ouroz neg be-prs.3sg anymore at the hospital he have-prs.3sg break-pTCP a window and disappear-pTCP} \\
& \text{‘O. is not at the hospital anymore. He broke a window and disappeared’} \\
& \text{(FRANTEXT: KESSEL)}
\end{align*}
\]
\[
\begin{align*}
\text{b. } & \text{…le couteau a cassé. Il manquait le manche} \\
& \text{the knife have-prs.3sg break-pTCP it lack.IPFV.3SG the handle} \\
& \text{‘… the knife broke. It was lacking a handle’} \\
& \text{(FRANTEXT: MANCHETTE)}
\end{align*}
\]

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14. Referring to the labile construction as the unmarked construction can be justified only from a morphological and diachronic (Heidinger 2010) point of view, given that the morphologically marked construction is today the most current type in Romance languages.
c. Mais la lumière du bal s’est
   break-PTCP by a single strike
   ‘But the ballroom light suddenly broke’
   (FRANTEXT: DURAS)

In many contexts, the use of the marked or unmarked construction does not seem to be semantically motivated. Nonetheless, if there are cases in which the pronominal element denotes a semantic difference that is by no means arbitrary. Two different semantic contrasts can be expressed by the presence or absence of the pronominal element.

The first semantic difference is highlighted by Rothemberg (1974). The lexical element assuming the function of the subject of the unmarked construction is the host of the process that is seen as developing organically out of it because of its internal qualities. As far as the marked construction is concerned, the internal qualities of the lexical element assuming the function of the subject are considered insufficient on their own to bring about the realization of the action or the process (cf. Rothemberg 1974: 67).

The idea of an internal causation that is due to the inherent properties has been adopted by Levin & Rappaport (1995: 136). These authors claim that internal causation excludes causativisation, but this is clearly not the case in Romance languages. On the contrary, in some contexts it is possible to articulate an opposition between internal and external causation with the same predicate, using the marked construction for external and the unmarked for internal causation. The opposition is stable in the sense that it is never coded the other way round.

Rothemberg (1974) counts 311 French predicates that permit unmarked anticausatives and lists several examples illustrating the contrast between internal and external causation. In Spanish, only approximately 30 predicates allow unmarked anticausatives (Kailuweit 2012b). Examples for the opposition between the two constructions are given in (40) and (41).

(40) a. …un dolor pasmado, increíble, inenarrable,
   que no menguó
   ‘…an ardent, unbelievable, ineffable pain that did not decline’
   (CREA: CUAUHTEMOC SANCHEZ)

b. El agua hirvió
   ‘The water boiled’
a. …sólo una minoría entiende inglés, y dentro de esa minoría las cifras se menguan; a la hora de captar la soltura del inglés o del americano hablados, ‘…only a minority understands English, and within this minority the numbers decline when listening to fluent British or American spoken English’ (CREA: EL PAIS)

b. La leche se hirvió (American Spanish) ‘The milk boiled over’

The opposition between *hervir* (‘to boil’) and *hervirse* (‘to boil over’) in American Spanish entails a secondary contrast that has been observed by Folli (2002). Although it is not the case that the marked constructions are always telic and the unmarked atelic (cf. Schäfer 2008), if an aspectual contrast is coded with the same predicate, the pronominal construction will be interpreted as telic and the bare intransitive construction as atelic.

A third semantic opposition that is articulated by the presence and absence of the pronominal element is a contrast of responsibility. The marked construction can be used to code that the human being denoted by the subject is, to a certain extent, responsible for the eventuality that s/he is affected by. Nonetheless, the person does not control the eventuality or intend its consequences. The same predicate in the unmarked construction would denote an internal causation for which the affected subject is not responsible. A Spanish example is given in (42):

(42) a. *La gente se ensordece […] Eso es rock: la base emocional para que se te abra* ‘People become deaf […] This is rock: the emotional basis to split your head open’ (CREA: CLARIN)

b. …estuvo preso veinticuatro años en Uclés, ‘…was imprisoned for twenty-four years in Uclés,'
donde cegó y ensordeció
where go blind-pst.3sg and deafen-pst.3sg
‘….he was imprisoned for 24 years in Uclés, where he went blind and deaf’
(CREA: LUJAN)

Surprisingly, the pronominal element is used not only to mark a more passive, externally affected argument, but also a more active, responsible, but not controlling one. We can explain this fact by attributing medium degrees of activity to the argument of the various anti-causative constructions in a field that ranges from real reflexives to pronominal passives (cf. Kailuweit 2011b, 2012b). The causative transitive construction, as exemplified in (43), shows the highest possible activity contrast. A prototypical controlling agent and/or causer ([+c+m−r]) brings about a change of state in a prototypical causatively affected patient [−c–m+r].

(43) ¿Quién afeita al barbero?
who shave-prs.3sg acc:art.sg barber
‘Who shaves the barber?’
(CREA: DIARIO EL TELEGRAFO)

In real reflexives, the agent’s semantics does not change. As far as the controlling agent and/or causer is concerned, there is no difference between someone shaving another person or someone shaving oneself.

(44) Antes del amanecer, subió en silencio a su casa, se afeitó y se bañó
before of:art.sg dawn ascend-pst.3sg in silence to his home refl shave-pst.3sg and refl bath-pst.3sg
‘Before dawn, he went up in silence to his home, shaved and took a bath’
(CREA: MARTINEZ)

On the other end of the hierarchy, pronominal passives contain a prototypical undergoer argument [−c–m+r]. The undergoer in (45b) remains semantically unchanged in comparison with the corresponding active construction (45a):

(45) a. …los partidos políticos, cuando en 1977 firmaron los Pactos de la Moncloa…
the parties political when in 1977 sign-pst.3pl the Pacts of the Moncloa
‘…the political parties, when in 1977 they signed the Moncloa Pacts…’
(CREA: GARCIA DE CORTAZAR & GONZALES VESGA)

b. …se firmaron por todos los grupos parlamentarios
refl sign-pst.3pl by all the groups parliamentary
los llamados “Pactos de la Moncloa”
the so-called Pacts of the Moncloa
‘The so-called “Moncloa Pacts” were signed by all parliamentary groups’
(CREA: CASTELLÓ)

In contrast, the people denoted by the argument of the marked variant of ensordecer (‘become deaf’) in (42a) are not prototypical undergoers, but are responsible for the change of state which for them is a consequence they consciously tolerate. Although the direct cause of the deafness is the impact of loud rock music, the listeners are exposing their ears intentionally. Hence, in this construction the undergoer argument of the transitive construction is semantically promoted \([-c–m+r] \Rightarrow [\pm c+m\pm r]\). Notice that the argument takes the value \(\pm\) for the \(r\)-feature as well as for the \(c\)-feature. This corresponds to the fact that people undergo a change of state without being causatively affected in a prototypical way, since they control to a certain extent the bringing about of the eventuality.

In contrast, unmarked anticausative constructions such as ensordecer (‘become deaf’) in (42b) are instances of internal causation and do not code any responsibility of the human being denoted by the subject-argument. This is represented by a \([-\] value for the \([m]\)-feature. It could be argued that a human being has intrinsic properties that lead to deafness in old age. Hence, the argument is neither the prototypical undergoer of the corresponding transitive causative construction, nor a controlling agent or an indirect responsible causer. In the process of anticausativation it retrieves a semantic promotion of a medium degree \([-c–m+r] \Rightarrow [\pm c–m\pm r]\).

Last but not least, a slightly more passive argument appears in the subject position of marked anticausatives that denote external causation, such as meguar (‘to decline’) or hervir (‘to boil’) in (41). Therefore, the \([c]\)-feature takes the \([-\] value: \([-c–m+r] \Rightarrow [-c–m\pm r]\).

Table 7 sums up the different activity degrees according to the Activity Hierarchy:

<table>
<thead>
<tr>
<th>Activity Degree</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>([c+m–r])</td>
<td>Juan se afeitó</td>
<td>Real reflexives</td>
</tr>
<tr>
<td>([\pm c+m\pm r])</td>
<td>El auditorio se ensordeció con el concierto de rock</td>
<td>Responsibility</td>
</tr>
<tr>
<td>([\pm c–m\pm r])</td>
<td>El prisionero ensordeció/El dolor menguó/El agua hirvió</td>
<td>Internal causation</td>
</tr>
<tr>
<td>([-c–m\pm r])</td>
<td>Las cifras se menguaron/La leche se hirvió</td>
<td>External causation</td>
</tr>
<tr>
<td>([-c–m–r])</td>
<td>Los pactos se firmaron</td>
<td>Pronominal passives</td>
</tr>
</tbody>
</table>
Constructional schemas, as established in RRG, could account for the different degrees of undergoer promotion in anticausative constructions. Since in contrast to French, only a small number of Spanish predicates allow unmarked anticausatives, the marked construction could also denote internal causation. Hence, the constructional schema indicates the range of possible promotions that are coded by the pronominal element. Nonetheless, the degree of promotion in a concrete case has to be detected by a context-sensitive interpretation.

(46) Construction: Spanish marked anticausatives

Semantics:
Actor: deleted;
Undergoer \([-c-m+r]\): promoted \(\Rightarrow\) \([-c-m\pm r]\) \(\lor\) \([\pm c-m\pm r]\) \(\lor\) \([\pm c+m\pm r]\);
telicity: (+)

Syntax:
PSA: Undergoer; Intransitivity: unaccusative;
Morphology:
Marking: reflexive
Pragmatics:
...

(47) Construction: Spanish unmarked anticausatives

Semantics:
Actor: deleted;
Undergoer \([-c-m+r]\): promoted \(\Rightarrow\) \([\pm c-m\pm r]\);
telicity: (−)

Syntax:
PSA: Undergoer; Intransitivity: unaccusative;
Morphology
Marking: −
Pragmatics:
...

The objective of this subsection was neither to give a detailed description of the semantics of different anticausative constructions, nor to expose all the information that constructional schemas contain. I simply intended to demonstrate that the finer-grained Activity Hierarchy of RRRG is able to describe three different degrees of construction-based undergoer promotion that could not be displayed in the standard RRG framework (cf. González Vergara 2009). It has been proved that the Activity Hierarchy is not only an indispensable tool at the lexical level, but also at the level of constructional schemas.
5. Conclusion and outlook

In this chapter, I have tried to sketch a “radical” alternative to standard RRG. My objective was to focus on the “holistic approach” advocated by Van Valin (1980) and to overcome some general, but also technical shortcomings of the current RRG framework (cf. Van Valin 2005, 2010). At the level of the model architecture, it has been shown that separating a semantic and a syntactic representation (that have to be mapped onto each other by linking algorithms) may be useful for computational implementation, but does not represent an adequate model for the interpretation process which could capture linguistic structure. In line with the holistic approach, syntactic and semantic information is represented in form of event templates fusing the semantic representation of standard RRG with the syntactic representation. Thus, the modifications introduced by Van Valin (2006) are brought to a successful end. Syntactic-semantic event templates represent a medium level of complexity that provides syntactic structure for lexical information by approving or overriding the basic valence of lexical predicates. Constructional schemas modify event templates syntactically and semantically at the highest level of complexity.

The Activity Hierarchy is the centrepiece of the theory and replaces the less flexible Actor-Undergoer-Hierarchy. In combination with pragmatic constraints, the Activity Hierarchy operates at the three levels of complexity to structure the semantic-syntactic interface. I have shown that weighing semantic role features facilitates a finer-grained semantic analysis that has turned out to be useful to solve several of RRG’s Actor-Undergoer-Hierarchy descriptive problems. At the lexical level for example, the Activity Hierarchy is able to account for all of the syntactic-semantic classes of verbs of emotion. At the level of constructional schemas, the hierarchy can be used to model different degrees of semantic undergoer promotion in anticausative constructions. In both domains, standard RRG’s formalism would come to its limits.

I must again point out that the present chapter is only a sketch and does not provide a full-fledged theory. At the lexical level, the presented modifications only concern valence information. Complete lexical entries will have to be elaborated for predicates and also for other parts of speech in the future. The same holds for the formalization of syntactic-semantic event schemas that has not been dealt with in detail in the present chapter. RRRG is not a fundamental critique of RRG, but a project of theory building that is deeply inspired by the work of RRG’s founder, Robert Van Valin. It is an open question whether RRRG will eventually be an independent theory of grammar or just an impulse for people working in the RRG framework to rethink and maybe remodel the building blocks of the theory.
References


Constructions as grammatical objects

A case study of the prepositional ditransitive construction in Modern Irish

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It is now accepted that constructions exist at all levels in grammar from clausal syntax to word level morphology and even within the lexicon itself where lexical items themselves may be viewed as constructions. Constructions may also encompass lexical, semantic and pragmatic information. The semantics and/or pragmatics are not predictable from the set of lexical items in the construction. There is now recognition that the RRG account of constructions is a significantly under-utilised resource (Nolan 2013, 2012a, b, 2011). As functional linguists, the important empirical questions are: (1) How does the theory understand a construction? (2) What does a construction contain? (3) How do the constructions relate to the grammar and other constructions? (4) To what extent is our grammatical knowledge organized in constructions? (5) Do constructions include information about form, function and meaning? (6) Are constructions organized in a structured network? This paper proposes a view of constructions as structured grammatical objects and we motivate this account with new evidence of constructions from Modern Irish.

1. Introduction

Current linguistic evidence suggests to us that a considerable amount of our grammatical knowledge is organized in constructions and that these constructions may include information about both form and function/meaning. Additionally, it seems that these types of constructions are organized in a structured network, typically an inheritance network of some kind, with other constructions. In addition to syntactic information, constructions may also specify lexical, semantic and pragmatic information. Recently, there has been a growing recognition that the RRG account of constructions is an under-utilised resource that deserves a wider application to problems in linguistic analysis and that we should more robustly
utilise the notion of the construction in RRG, advance the notion theoretically, and apply it to real problems in an linguistic analysis that is RRG compatible. RRG therefore faces a variety of challenges to its claims of descriptive, typological and explanatory adequacy (Butler 2003a, 2009) and these challenges pivot around both the notion and place of a construction within the grammar. The important questions for RRG are therefore (1):

(1) Questions regarding constructions in the RRG model
   a. How does the RRG theory understand a construction?
   b. What information does a construction contain?
   c. How do the constructions relate to other parts of the grammar?
   d. Where do constructions reside within the model?
   e. How do the constructions relate to other constructions?
   f. Is (part of) our grammatical knowledge organized in constructions?
   g. Do the constructions include information about both form and function/meaning?
   h. Are the constructions organized in a structured network with other constructions?

One of the aims of this paper is to motivate a reconsideration of the nature of the RRG construction. In motivating this, we provide evidence of how this would account for a characterisation of variation in ditransitive constructions that impact on the realisation of word order as a consequence of the interplay of issues relating to the intersection of referential hierarchy effects, information structure, and syntactic weight.

We progress this discussion and our argumentation as follows. We present details on an expanded role of constructions within RRG which contextualises the RRG bi-directional linking system within it. Essentially, this account will make constructions more central to RRG while preserving the lexicon in a role as an information provider to the construction. The (revised) view of the linking system will glue this together within the RRG construction model. We argue that RRG needs a construction repository in the theory.

This new perspective, we claim, makes for a richer and better-motivated understanding of constructions in a lexically oriented functional model of grammar, in contrast to the less articulated expressions of the construction found in the various strands of Construction Grammar (CxG). This chapter proposes a view of constructions as structured grammatical objects: (a) with a constructional signature to identify the schema, (b) that a construction schema has an input and output, and (c) contains a local workspace over which the processing of the variables and the various lexical and grammatical rules apply, according to (d) construction constraints. Additionally, (e) the construction has a principled relationship to the lexicon via the
linking system. We suggest that the constructions be understood as residing in a construction repository, with an internal architecture that facilitates the retrieval and activation of a constructional schema based on the identification of a constructional signature for real-time linguistic processing. In motivating this account, we use new evidence of constructions from Modern Irish. We will discuss and explain the behaviour of the theme and recipient in Irish prepositional ditransitive constructions giving due consideration in motivating our account to the factors of syntactic weight, the informational status of referents, animacy of referents, definiteness and the various implicational hierarchies. The resulting view allows for a characterisation of the behaviour of the prepositional ditransitive constructions found in Irish, within a lexicalist functionalist model of grammar.

2. The role of constructions in RRG

In RRG, constructions are used to capture language specific idiosyncratic linguistic behaviours. This position is different to other linguistic models that take constructions as more mainstream and central, as a mapping function between form and meaning. The RRG characterisation of constructions is succinctly characterised by Van Valin (2005:131ff) in (2).

(2)  RRG recognises the importance of grammatical constructions, and they are represented in terms of constructional schemas. Cross-constructional and cross-linguistic generalisations are captured in terms of the general principles and constraints that constitute the linking algorithm, e.g. the actor-undergoer hierarchy, the layered structure of the clause, the privileged syntactic argument selection hierarchy. Only the idiosyncratic, language features of constructions are represented in constructional schemas. Hence constructional schemas, by virtue of their reference to general principles, permit the capturing of cross-linguistic generalisations, while at the same time expressing language-particular properties of grammars.

As this indicates, RRG’s position on constructions retains the centrality of the lexicon within its lexicalist projection framework (see Figure 1). However, it is suggested that the present approach in RRG is not rich enough to sustain a complete process model of a construction as a grammatical object that might characterise real-time processing of metaphor, idioms and other constructions. Additionally, it seems that constructions can contain other constructions. For example, a clausal construction can embed morphological constructions. Therefore, we motivate some additional structure within the construction to facilitate this perspective.
3. Viewing a construction in a construction repository

The RRG approach provides a descriptive approach to constructions without having in depth consideration of how to formalise aspects of the processing of actual constructions. Recent work in Construction Grammar challenges those of us working within RRG to address the issue of the centrality of constructions in the grammar of real language use and the relationship of constructions to the lexicon, whether the construction are at word or clausal level. At this point in time, the present theoretical stance of RRG on constructions appears to be not fully defendable in its present state. It needs to evolve and a revised view of the status of constructions in RRG is proposed in this paper (see Figure 2) with a case study on how this might be done.

Figure 1. Constructional schemata within the RRG model (Van Valin 2005: 134)

Figure 2. The construction repository and the lexicon in grammar

In this study, therefore, we apply a model of constructions as grammatical objects in a construction repository in a view of RRG that is computationally and cognitively plausible, in a approach that gives a general acceptance to an increased centrality of constructions while retaining the importance of the lexicon. Our position allows for a continuum between lexicon and the construction repository.
3.1 Construction internal architecture

We consider the construction as having an internal structure consisting of: (a) a unique **signature**, (b) a set of **constraints** on the signature, (c) an **input** string that is processed in the activated schema, and (d) an **output** of a particular kind (the exact nature of these outputs depends on the direction of execution of the activated schema from, for example, syntax → semantics or semantics → syntax), and (e) a **construction body** (cx-body) that appropriately encodes the relationship between morphosyntax, semantics and pragmatics within (f) a **workspace** local to the construction.

Within this perspective, we can usefully consider the construction as a grammatical object that can be uniquely identified, has internal structure, accepts an input and produces an output. The execution of the construction schema instance is sensitive to the direction of application. We construe a construction within RRG schematically as follows (3), as a structured grammatical object. The workspace can be considered as a construction internal processing area for the application of construction specific linking rules. This internal linking within the construction is activated as an executable process to map between syntax-morphology-semantics-pragmatics etc. according to the internal specification of the particular construction.

(3) Schema of the construction as a grammatical object

<table>
<thead>
<tr>
<th>SIGNATURE: some pattern of [...x₁ y₂ z₃...]</th>
<th>CONSTRUCTION BODY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTRAINTS: C₁ C₂...Cₙ</td>
<td>SYNTAX:</td>
</tr>
<tr>
<td>INPUT: clause (token₁, token₂, tokenₙ)</td>
<td>PSA</td>
</tr>
<tr>
<td></td>
<td>MORPHOLOGY:</td>
</tr>
<tr>
<td></td>
<td>PROSODY:</td>
</tr>
<tr>
<td></td>
<td>PRAGMATICS:</td>
</tr>
<tr>
<td></td>
<td>OUTPUT: [LS]</td>
</tr>
</tbody>
</table>

It can be argued that, from lexicon to grammar, the notion of construction is a basic unit of analysis and representation. In this view, constructions are considered to be conceptual entities out of which speakers build complex expressions. Utterances therefore are the product of the interaction between grammatical constructions and lexical constructions.
3.2 Construction internal processing workspace

In relation to the nature of constructional schema and the linking rules that apply, we might ask the question: where do lexical and/or grammatical rules reside? Are they associated with constructions, or is there some part of the model where these need to be stored for activation as required? Do some of the rules reside within the lexicon in some principled way?

Additionally, if one takes the online computation of the various constructions in real-time at speech act production as something that needs to be accounted for, the question is where do the processing rules that are applied in real-time online computation reside. Obviously, of course, these reside in human memory and have real-time access to a processing workspace. This leads one to consider that an account of real time online computation of the speech act could be motivated as residing within the construction instance that is retrieved from the construction repository and activated each time as a ‘live’ grammatical object, for each construction.

The workspace within each construction construed as a grammatical object offers a robust computational capability that will directly address issues of computational adequacy within our linguistic model. In this account, each construction comes with its own workspace in which the internal linking processes of the construction store in the construction, the workspace memory, the (linguistic/syntactic) items input to the construction. Then, the construction linking processes both address and manipulate this workspace in a principled way. Crucially, in this view, the workspace is local to the particular construction, and an intrinsic part of its internal structure, and partitioned according to the needs of the construction.

By way of illustrating this point we can say that a ditransitive construction will have a workspace with capacity to store the abstract information requirements of the three arguments and all language specific relevant features, such that these can be accessed and processed within the construction as part of the mapping between form and meaning for the computation of meaning.

4. Case study: The modern Irish prepositional ditransitive constructions

In this case study, we examine the effects of the nominal hierarchy on the range of prepositional ditransitive constructions of Irish, a VSO language found in Ireland, on the west coast of Europe. It is strongly a VSOX language. Modern Irish has just one ditransitive form, that is, of the general [V NP NP PP] format. It has no dative shift. Many scholars have claimed that the dual form (alternative dative PP and
Constructions as grammatical objects

Dative NP constructions) and associated syntactic patterns of the ditransitive follow from varying semantics in virtue of a distinction between possession and location/goal considerations. This is not the situation found in Modern Irish, which only uses the prepositional form of the ditransitive. Modern Irish makes very extensive use of prepositions throughout the grammar and uses these to encode the distinction between ‘have’ and ‘be-at’ such that this possessive vs. locative distinction is achieved with a different style of construction in Irish. It therefore has no need of a dual form (alternative dative PP and dative NP constructions).

In the three-place constructions that are the modern Irish prepositional ditransitives, the theme may occur as a full NP or a pronoun (PN) and, additionally, the recipient may be a full NP or a PN. However, the intersection of these referent types causes some constructional changes to become evident in the realisation of the respective syntactic patterns. When, for instance, the recipient is a full NP then it always occurs as the object of the Irish preposition do ‘to’. If on the other hand the recipient is a pronoun then it morphologically fuses with the preposition into a lexical category (unique to Irish and the other Celtic languages), called a prepositional-pronoun (PPN), and can inflect fully for person, number and the two genders found in Irish. If the theme argument is a full NP then it must occur immediately after the grammatical ‘subject’ in the syntax in VSOX position within the construction, as an object. However, if the theme is a PN then it is marked with accusative case and, additionally, occurs in a completely different word order position than heretofore, now following the recipient in clause final position. That is, it is realised within the syntax in a different constructional format.

We claim that this post-positioning of the theme PN is due to alignment effects that can be explained by reference to the nominal hierarchy as explicated in Siewierska (2004) and Haspelmath (2006). We motivate this claim by an analysis of data from Modern Irish of typical ditransitive verbs and their clausal constructions. Within this account we critically support our analysis by reference to effects of the nominal, person, animacy, definiteness and gender hierarchies and, in particular, how they intersect with the principle of ‘syntactic weight’.

It has been argued (Malchukov, Haspelmath & Comrie 2007, 2010) that the ordering of the theme and the recipient with respect to each other is far from being random. They claim that if both theme and recipient are unmarked, the recipient generally precedes the theme. That is, an order of R–T is found. This probably derives from the fact that the recipient is generally human (and often definite) and thus tends to be more topical than the theme, which is typically inanimate (and often indefinite). Based on this consideration, as argued by Malchukov, Haspelmath and Comrie (2007, 2010), one might expect that the R–T order occurs overwhelmingly and that T–R order is quite marginal. Their claims seem to rest on appeal to the primacy of the animacy hierarchy. We will see that this is
not the situation with the Irish ditransitives. Additionally, Primus (1998), Heine and König (2010) have found that the T–R order is the overwhelmingly dominant order in constructions when the R is flagged by an adposition. Broadly, there is truth in this for Irish but we will show that the situation is not as simple as that at all. Hierarchy effects, in particular from the nominal hierarchy, come into play quite significantly as we have seen with respect to Irish ditransitives.

Heine and König (2010:102), in their discussion on Primus (1998), mention that while ‘R arguments follow T while there is no single European language where heavy R precedes light T (=pRnP in the terminology of Primus), and also no language where heavy T precedes light R’. This is not the case for Irish. Additionally, Primus (1998, p. 424) claims the linear order of ditransitive objects in European languages can be explained with reference to two hierarchies, namely the thematic and the case hierarchies. We will show that this also is not the situation found in Irish.

With respect to syntactic weight effects, it has been claimed that this T–R order is favoured in SVO and VSO languages because of the Early Immediate Constituents principle (Hawkins 1994). This, however, is quite definitely not the situation that holds for Irish. We will demonstrate that the realisation of the T and R of the ditransitives constructions goes against the claims of the principle of Early Immediate Constituents. In particular, in Irish ditransitives, the lightest argument, the pronominal T, is clause final.

There is a reasonable claim that might be made in respect of V-initial languages to the effect that they are iconic and reflect temporal sequencing in which the realisation of the event of the verb and its arguments reflect the logical structure of an event such that the actor is realised as grammatical subject immediately after the verb, followed by the theme as direct object and then the indirect object is appropriate if projected from the lexical entry of the verb. This order cannot be motivated by parsing considerations, but, as Haspelmath (Malchukov, Haspelmath & Comrie 2007: 12) notes, Dik (1997) proposes that the order T–R is more iconic than the order R–T, because in the unfolding of the event the T is first involved in the action, which reaches the R only in a second step. So iconicity could be a motivation that competes with topicality and parsing ease. But, as we show in this analysis, the nominal and person hierarchies play a significant role in determining the word order of the T and R arguments in the Irish ditransitive constructions.

Many scholars, including, for instance, Tallerman (1998a: 21ff and 1998b: 599ff) have noted the word order variation of Irish (and the other Celtic languages) and, in particular, the postposed object pronouns of Irish, which migrate to the end of a clause yielding a pattern of VSNPXP0PN rather than the more typical VSOX. Within this typologically interesting clause-final object pronoun behaviour of Irish, full lexical objects occur in the expected position (VSOX) but pronominal objects are found in clause final position. Tallerman correctly points out that this phenomenon seems to provide a counter example to Hawkins’ (1994) Principle
of Early Immediate Constituents, under which the preferred word order is one in which the constituents are recognised as early as possible. As we will discuss, the account is not quite as simple as that. Also of interest to us is the fact that the Irish data runs counter to the general tendency for more topical material and given elements, such as pronouns, to occur early within the clause.

Modern Irish is a VSO language with many interesting features and characteristics and one of these characteristics, for instance, is that, as we will see, the verb and the subject are tightly bound. Another is the word order behaviour of the ditransitive recipient and theme arguments under certain conditions. Irish, or Gaeilge as it is known in the Irish language itself, is, together with Scottish Gaelic and Manx, a member of the Q-Celtic grouping of Insular Celtic. The date of the introduction of the language into Ireland is unknown and many theories have been proposed, for which see Ó Dochartaigh (1992: 11ff) for details. The position of the Irish language within the Celtic family of languages is indicated in Figure 3. Within Modern Irish, there are three distinctive dialect areas, generally called Munster, Connacht, and Ulster or Donegal Irish (Ó Siadhail 1991) after the regions in which they are found. Within the verbal system, Ó Dochartaigh notes that the main diagnostic of dialect is the use of synthetic forms in the Munster dialect, with the other dialects having a preference for analytic constructions with the subject pronoun appearing as a separate morpheme.

\[ \text{Figure 3. The relationship between the Celtic languages (Macaulay 1992: 6)} \]

Irish has common case marking on nouns for nominative, and accusative case, with distinct marking for genitive and vocative cases. The nominative, accusative
and dative case is known as common case in Irish. However, for these, there is no marking on the nouns for these cases as they have the same morphosyntactic form. That is, in Irish linguistic tradition, Irish is considered to have a dative case even though in the contemporary language this case is zero marked and it is syncretic with the nominative and accusative on nominals.

A noun is considered to be in the dative case if it is the object of any of the simple prepositions. We show some representative examples of prepositions of Irish in (4) and we will see some examples of these employed with ditransitive clauses shortly. A noun is usually in the genitive case if it is: (a) the direct object of a verbal noun, (b) preceded by a compound preposition, (c) preceded by phrases that denote indefinite quantity, or (d) governed by a possessive adjective such that possession or ownership is characterised. An interesting complicating factor worthy of note here is that the prepositions of Irish can morphologically conflate with personal pronouns into prepositional pronouns (5) that inflect for person and number.

(4) The set of simple prepositions

<table>
<thead>
<tr>
<th>ag’at’</th>
<th>do ‘to, for’</th>
<th>le ‘with’</th>
</tr>
</thead>
<tbody>
<tr>
<td>ar ‘on’</td>
<td>faoi ‘under, beneath, about’</td>
<td>ó ‘from’</td>
</tr>
<tr>
<td>as ‘out of, from’</td>
<td>gan ‘without’</td>
<td>roimh ‘before, in front of’</td>
</tr>
<tr>
<td>chuig ‘to, towards’</td>
<td>go ‘to’</td>
<td>tras ‘over, across, past’</td>
</tr>
<tr>
<td>de ‘from, off, of’</td>
<td>i ‘in’</td>
<td>tri ‘through’</td>
</tr>
<tr>
<td>idir ‘between’</td>
<td></td>
<td>um ‘about, at’</td>
</tr>
</tbody>
</table>

(5) Examples of prepositional pronoun paradigms

<table>
<thead>
<tr>
<th>a. agam at me</th>
<th>b. liom with me</th>
</tr>
</thead>
<tbody>
<tr>
<td>agat at you</td>
<td>leat with you</td>
</tr>
<tr>
<td>aige at him</td>
<td>leis with him</td>
</tr>
<tr>
<td>aici at her</td>
<td>léi with her</td>
</tr>
<tr>
<td>againn at us</td>
<td>linn with us</td>
</tr>
<tr>
<td>agaibh at you (pl)</td>
<td>libh with you (pl)</td>
</tr>
<tr>
<td>acu at them</td>
<td>leo with them</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c. do for/to</th>
<th>d. ar on</th>
</tr>
</thead>
<tbody>
<tr>
<td>dom for/to me</td>
<td>orm on me</td>
</tr>
<tr>
<td>duit for/to you</td>
<td>ort on you</td>
</tr>
<tr>
<td>dó for/to him</td>
<td>air on him</td>
</tr>
<tr>
<td>di for/to her</td>
<td>uirthi on her</td>
</tr>
<tr>
<td>dúinn for/to us</td>
<td>orainn on us</td>
</tr>
<tr>
<td>daoibh for/to you (pl)</td>
<td>oraibh on you (pl)</td>
</tr>
<tr>
<td>dóibh for/to them</td>
<td>orthu on them</td>
</tr>
</tbody>
</table>
The Irish preposition *do* has two senses as ‘to’ or ‘for’ essentially allowing for a recipient or beneficiary distinction. These prepositional pronouns are productively used as the recipient argument in a prepositional ditransitive construction.

5. The factors that influence word order

The factors that are considered to influence word order cross linguistically include syntactic weight, the informational status of referents, animacy of referents, definiteness and the various referential hierarchies (6).

(6) The hierarchies
   a. Nominal hierarchy: pronoun > proper noun > common noun
   b. Person hierarchy: first > second > third
   c. Animacy hierarchy: human > animate > inanimate
   d. Gender hierarchy: male > female > neuter
   e. Definiteness hierarchy: definite > referential > non-referential

5.1 Syntactic weight

The principle of syntactic weight (Hawkins 1994:214–242, 2004:122ff) maintains that constituents in a clause will occur in an order of increasing weight and that this is an underlying determinant of word order. The weight principle states that the syntactic weight of the components in a phrasal unit of a sentence determines their positional distribution with shorter and lighter constituents before longer and heavier ones. A question that arises, of course, is what is actually understood as syntactic weight. Is it number of words, or number of nodes (broadly construed in some linguistic paradigm), phonological complexity or number of syllables? Complexity of the word or phrasal unit is also significant as counting towards weight. Indeed, the weight principle is assumed by its proponents to be a universal principle of word order and information structure (Siewierska 1994), often measured as (1) the count of the number of words or syllables and (2) the morphosyntactic complexity of these sentence constituents. In English, longer and complex constituents are placed at the end of a clause giving a heavier sentence end-weight. It may be that, following Wasow (2002), a graduated measure of what constitutes syntactic weight is more useful and we should view weight as a scalar concept.

In seems that the syntactic weight principle serves as a useful means to facilitate the parsing and comprehension of syntactic structures. From a psychological viewpoint, one can argue that longer, heavier and more complex constituents delay cognitive interpretation with a corresponding negative impact on comprehensibility and delay in real-time processing. One model that makes strong
claims to account for the interaction of syntactic weight and information structure has been advanced by Hawkins (1994). In this model, Hawkins takes a performance-based, hearer-oriented, perspective to explaining word order variation in terms of language parsing. A key principle for Hawkins is the Principle of Early Immediate Constituents (EIC). Hawkins argues that syntactic weight and not pragmatic weight is decisive in understanding word order variation. Specifically, he claims that constituents are found to occur in the orders they do so that syntactic groupings and their immediate constituents can be recognised and produced as quickly and efficiently as possible. Hawkins suggests that a possible explanation for this preference is that small domain units reduce simultaneous processing in working memory. Hawkins (2004:7) argues that the Greenberg word order correlations point to a principle of efficient parsing, whose preferences appear to be conventionalised in grammars. According to Jaeger and Tily (2010:126, 127) therefore, Hawkins proposes that word orders which minimize constituent recognition domains (roughly, the shortest string of words within which all children of a syntactic constituent can be identified) are processed more efficiently. Specifically, grammatical properties may be observed more often across languages because they improve a language’s utility or decrease its complexity.

In contrast to the claims of Hawkins, Wasow (2002) provides a speaker oriented, production-based account of syntactic weight and claims that weight effects alone in constituent ordering cannot be explained as just the facilitation of parsing. He argues that, from a speaker’s perspective, delaying longer constituents helps the planning process in real-time online production of the sentence. This leads to a conflict between the claims of the two perspectives with an earlier commitment benefiting the hearer versus a late commitment favouring the speaker. Overall then, word-ordering strategies are employed by the language user, within a language community, in order to reduce complexity and to facilitate ease of production and comprehension with other members of that community.

5.2 Information structure

Constituents are also organised around some measure of salience or accessibility to the hearer and speaker, that is, according to information structure considerations. In this, it is generally argued (Birner 1994; Brown 1983; Stefanowitsch & Gries 2002) that given, previously mentioned, information is delivered before new, not yet mentioned, information. Notwithstanding this discrepancy, noted above, regarding the hearer and speaker perspectives, we can state that heavy constituents are more likely to contain new information with old and given information already introduced into the discourse referred to by shorter elements, typically anaphoric pronouns. Subjects of clauses usually express given and activated information with
Constructions as grammatical objects

respect to the speaker and hearer. Therefore, the principle of end-weight intersects with the principle of end-focus and this may in turn lead to word order adjustments. The consequence of this is that this kind of information structuring is assumed to influence the organisation of clauses in some principled way and, as such, to have an impact on word order. Therefore, the preference for given before new is a major ordering principle in many languages.

5.3 Animacy and definiteness of referents

The animacy of referents is an important factor too in the organisation of word order and this is recognised as the ‘animacy hierarchy’ (Croft 1990: 111–117). In this regard, human and animate referents precede inanimate entities in linear word order. Generally, animacy-based ordering preferences can be viewed as part of our more general cognitive accessibility apparatus whereby humans find other humans (and animates) to be highly salient.

Similarly, definiteness is a factor in salience and accessibility and this has been recognised in the literature as the ‘definiteness hierarchy’. This factor plays a role in the determination of the choice of an NP as topic. The relation between definiteness and topicality is motivated by the fact that definite NPs are topics that the speaker assumes the hearer can identify uniquely and is familiar with (Givón 1983: 10). Definite NPs are used when the speaker believes that his hearer will be able to identify, from the possible set of referents, the one he has intended (Chafe 1976: 39). In contrast, indefinite NPs are normally introduced for the first time as new information and, as such, are less familiar and more difficult to identify. Clauses with definite, human agentive subjects/topics are the prototypical unmarked constructions cross-linguistically. Siewierska (1994: 222) holds that these NPs, with the key features of animacy, semantic agency and definiteness, can be considered as having inherent topicality.

In any event, new referents typically need some extra linguistic content to ensure they are identifiable to the hearer in the discourse and this tends to make these new elements heavier, and given elements are lighter. However, differences in weight are suggested to most strongly affect word order in the absence of difference in information status.

5.4 The animacy, thematic and nominal hierarchies

The animacy and thematic hierarchies, as sub-hierarchies within the referential hierarchies, correspond to the human preference to talk about human agents. The most likely candidates for topic will be those with a human referent and an agentive role (Seoane 1999: 117–140). The fact that humans tend to talk more about agents than about patients determines the higher frequency of active clauses over
passive ones. Accordingly, human agents are most commonly chosen as topics and, given that ‘the subject slot is the topic slot’, clauses are most likely to have human agents as subjects, and occur in the active voice (Givón 1979: 58–64).

An obvious minor concern here is what exactly is the thematic hierarchy? This is still a debated area with no agreed definition of either the hierarchy or the thematic roles themselves (Falk 2006: 33–34, Levin & Rappaport Havav 2005: 162–163). Within the literature the following rankings (7), showing a wide range of variation, can be found. We will assume (7d) as most accurate, based on Van Valin (2005) as, within his model, the linking system between syntax and semantics correctly links the agent to grammatical subject, theme to direct object and recipient to indirect object.

(7) Variations in Thematic Hierarchy Ranking
   a. Actor > Patient/Beneficiary > Theme > Location/Source/Goal. (Based on discussion in Jackendoff 1990: 258, and Experiencer and Instrument are not included).
   b. Agent > Beneficiary > Recipient/Experiencer > Instrument > Theme/Patient > Location (Bresnan & Kanerva 1989: 23)
   c. Agent > Dative/Benefactive > Patient > Location > Instrument/Associative > Manner (Givón 1983: 139)
   d. Agent > Effector > Experiencer > Location/Recipient > Theme > Patient (Van Valin 1993)

It has been found across languages that agents and recipients are typically human while patients and themes often are not. On the hierarchy of nominal expression types, pronouns are more prominent than lexical NPs i.e. 1st/2nd > 3rd > proper noun > human > non-human (Silverstein 1976), and 1st and 2nd persons are more prominent than 3rd persons. Indeed, person has been highly correlated with various properties: for example, pronouns are: (1) short, (2) definite, and (3) tend to be given, and 1st and 2nd person pronouns are: (4) animate.

6. The Irish prepositional ditransitive constructions

6.1 Characterising the ditransitive constructions of modern Irish

Before we approach our analysis, we need to discuss the forms that the ditransitive has, and the situation that holds in Irish. As we mentioned earlier, Irish only uses the prepositional form of the ditransitive. Some languages have two forms for the ditransitive. One such language is English and, in respect of which, Bresnan and Nikitina (2009: 1–2) make the point that ‘many ditransitive verbs appear in alternative dative PP and dative NP constructions’. They note, however, that these
different constructions are associated with different semantics. For example, spatial goals normally do not alternate in English, as the contrasting examples in (8) show. They found that human recipients usually resist what they call the spatial interpretation but also that preposition phrases (PP) can be vague or ambiguous between spatial and dative uses (9). Generalising over these examples, the central idea in these approaches is that dative verbs which have possessive semantics as in (10a) are uniquely associated with the (English) dative NP syntax [V NP NP], while datives with locative/goal semantics as in (10b) are uniquely associated with the dative PP syntax [V NP [to: p NP]].

(8) a. I sent a cake to the birthday girl  b. I sent a package to the border.
   a’. I sent the birthday girl a cake.  b’. *I sent the border a package.

(9) a. I sent a book to the library     b. I sent a book to you
   a’. I sent a book there.           b’. I sent a book there.

(10) a. ‘x causes y to have z’ (possessive) → NP V NP NP.
     b. ‘x causes z to go to/be at y’ (locative/allative) → NP V NP [to NP].

On these approaches, the dative NP and PP constructions in (8) are not alternative expressions of the same meaning; they are clearly expressions of different meanings. In Bresnan and Nikitina (2009) it is suggested, for the verb give, that every transfer of possession entails an abstract movement event in the dimension of possession spaces. Their hypothesis is that both dative NP and dative PP syntax can be used to express transfers of possession, but the prototypical descriptions of giving are biased toward the dative NP construction in English. Evans (1997: 398) observes that the dative alternation depends not only on the verb related semantics of the roles of possessor or goal, but also on the properties of the cast of referents that fill the roles, that is, animacy, person, and information status.

We now characterise ditransitive constructions of Modern Irish, which only allows felicitous prepositional ditransitives of the forms in (11) where the marked form is the one with the pronominal T in clause final position. It does not allow ditransitives constructions of the form in (12), which would be ungrammatical. Therefore, when we refer to ditransitives in Irish we always mean this prepositional form of the construction.

(11) The patterns of occurrence of the prepositional ditransitive construction of Irish

a. [V NP^A NP^T [p NP][^R]] : A-T-R
b. [V NP^A NP^T [PPN][^R]] : A-T-R
c. [V NP^A NP^R [PN][^T]] : A-R-T marked form of construction
d. [V NP^A PPN^R [PN][^T]] : A-R-T marked form of construction

(12) *[V NP NP NP]
In order to partly explain why Irish only has one ditransitive form we appeal to the *have* vs. *be-at* semantic distinction underlying the pair of ditransitive forms seen, for example, in English. This distinction is mediated in Irish syntax in virtue of the judicious use of prepositions to encode *have* vs. *be-at*, as appropriate. In Irish, this is related to the conceptualisation in the Irish grammar of the relationship between STATE and LOCATION, and how it motivates the relationship between [have’ (x)] and [be’ (x)]. A preposition is employed to encode this sense of possession, and different prepositions are employed to make the contrasting distinction between possession and ownership. Broadly, the preposition *ag* ‘at’ codes for possession and *le* ‘with’ codes ownership. For example, we see precisely this in (13a) in contrast to (13b). A copula is employed in the construction in (13b), as ownership is less volatile and transient than mere possession and this is the way in which the Irish grammar encodes this fact. Example (14) indicates the network of extensions over these spatial relationships.

(13) a. [Possession]

\[ Tá \textit{ sé } agam. \]

\text{AUX-PRS 3SG.M at+1SG}

LIT: It is at me.
I have it.

b. [Ownership]

\[ Is \textit{ liom } \textit{ é}. \]

\text{COP with+1SG+EMP 3SG.M.ACC}

LIT: It is with me.
I own it.

(14) \text{EXIST be } \rightarrow \text{LOCATION be-at } \rightarrow \text{STATE be-on/be-in/be-with}

\[ \Downarrow \]

.. is extended to..

\[ \Downarrow \]

\text{EXIST be } \rightarrow \text{POSSESSION be-at (=have) } \rightarrow \text{OWNERSHIP be-with}

We will now look at the prepositional ditransitive verbs of Irish to see how they are realised in syntax. We will also discuss some interesting behaviours in respect of the theme and recipient arguments in these constructions under certain conditions. We start our discussion with *thug* ‘give’, following.

6.2 The verb *thug* ‘give’

Some examples of data usages of *thug* ‘give’ are provided in (15) which exhibit the syntactic pattern of occurrence of: V NP NP P-NP and, within which, all the arguments are realised as full lexical nominals. In these, the agent links to grammatical subject, the theme links to direct object and the recipient to indirect object within a prepositional phrase. The word order is VSOX where X represents indirect object. The third argument, *do:p+NP* is the recipient argument. For convenience
the theme is underlined in each example. The word order in this example set with full lexical nominals is A-T-R. The end-weight of the clause here tends to be high irrespective of whether one counts words or syllables in the prepositional phrase containing the recipient. The recipient is \([\text{animate}]\), and generally human. The theme is \([\text{animate}−]\) and is 3\text{.person} in these examples.

**Word order pattern:** V NP NP [P NP] ⇒ A-T-R

   \[\text{Give-pst det Russia whisper to Serbia}\]
   Russia gave a whisper to Serbia.

b. *Thug* Aodh Rua a chaisleán do Mhaolmhuire.
   \[\text{Give-pst Red-Hugh his castle to Mhaolmhuire}\]
   Red Hugh gave his castle to Mhaolmhuire.

c. *Thug* Micheál a anam do Dhia a’s do Mhuire.
   \[\text{Give-pst Michael his soul to God and to Mary}\]
   Michael gave his soul to God and to Mary.

d. *Thug* Peadar oiread de onóir do Bhuck
   \[\text{Give-pst Peter much of honour to Buck}\]
   Peter gave considerable honour to Buck.

e. *Thug* siad cuireadh do Chatal.
   \[\text{Give-pst 3pl invite to Cathal}\]
   They gave an invite to Cathal.

f. *Thug* sé leitir do bhean Mhaituí.
   \[\text{Give-pst 3sg letter to woman (of) Mhaituí}\]
   He gave a letter to Matthew’s wife.

g. *Thug* mé grádh mo chroidhe do bhuaclacht óg.
   \[\text{Give-pst 1sg love (of) my heart to boy young}\]
   I gave my love to a youth.

h. *Thug* mé buidheachas mór d’fhéar an toighe.
   \[\text{Give-pst 1sg thanks big to+man (of) det house}\]
   I gave a big thanks to the man of the house.

i. *Thug* sé comhartha do Bhuck.
   \[\text{Give-pst 3sg.m advice to Buck}\]
   He gave advice to Buck.

Some more examples of *thug* ‘give’ are provided in (16) but in these the agent and theme arguments are realised as full lexical nominals while the recipient is realised with a preposition and conflated into a conjugating prepositional pronoun (PPN). These examples exhibit the syntactic pattern of occurrence of: V NP NP PPN. Again, in these, the agent links to grammatical subject, the theme links
to direct object and the pronominal recipient to indirect object within a prepositional phrase to form a conjugated PPN. The word order is still VSOX where X represents indirectly object. That is, the leftmost argument is selected as agent and the immediately next NP in the linear order is the theme. The third argument, do:p+PN is the recipient argument. Again, for convenience the theme is underlined in each example. The word order in this example set with the pronominal recipient is A-T-R. If the theme argument is a full NP then it must occur immediately after the grammatical ‘subject’ in the syntax in VSOX position within the construction, as an object, within the syntactic pattern of occurrence.

**Word order pattern:** V NP NP [P+PN=PPN] => A-T-R

(16) Thug sé an leabhar dom.
Give-pst 3sg.m det book to+1sg
Actor Theme Recipient
He gave the book to me.

(17) Thug sí comhairle dom.
Give-pst 3sg.f advice to+1sg
Actor Theme Recipient
She gave advice to me.

(18) Tabhairfidh mé ceisteanna dhíbh.
Give-fut 1sg questions to+2pl
Actor Theme Recipient
I’ll give some questions to you.

In Example (16), the preposition do ‘to’ morphologically conflates with the relevant pronoun to form the prepositional pronoun dom ‘to+1sg. The argument is the recipient in this construction. We can see similar examples in (17) and (18). These use the prepositional pronoun as the recipient within the construction. The word order in these constructions with the pronominal recipient is A-T-R. In these, the syntactic end-weight is low even though the PPN is arguably more complex as a morphological entity. However the theme generally consists of multiple words or syllables, and is therefore heavier than the clause final recipient. The recipient is \([\textit{animate}+]\), and definitely human. The theme is \([\textit{animate}−]\) and 3.person in these examples.

In the two sets of examples above we had the theme as a full lexical nominal with the recipient as either a full nominal or a pronominal that conflates into a PPN. We notice something very interesting with the ditransitive construction when the theme and syntactic direct object is a pronominal rather than a full nominal (19)–(20). What we find is that pronominal objects exhibit a clear preference to pattern in clause final position, and this is so even after any string of adverbials
and oblique NPs, as will be seen later in (25)–(26). That is, strongly, the pronominal theme object is right post-positioned as clause final, always, and presents as V S\textsubscript{NP} X O\textsubscript{pronoun}, where X in this syntactic pattern of occurrence represents the indirect object contained within a prepositional phrase or prepositional pronoun.

We see this in these examples. In (19) the recipient is a full nominal (\textit{do} NP) whereas the recipient in (20) is (\textit{do}+PN→PPN). Here, in both of these examples, the theme is \(3\text{SG.M.ACC}\). Importantly, we can observe that the theme argument is now clause final and that it is marked for accusative case (even through nominals exhibit common case). However, this use of 3\text{SG.M.ACC} is ambiguous and the antecedent could indeed be \([\text{animate}±]\). This is because of the fact that Irish only has two genders and the ontological gender is not necessarily the morphosyntactic gender.

\begin{align*}
\text{V NP recipient-NP theme-PN} & \Rightarrow \text{A-R-T} \\
19 & \text{Bhain sé fáinne óir dá mhéar agus thug do Bhean Fhostair é.} \\
& \text{Take-pst 3SG.M ring (of) gold from+his finger and give-pst to woman (of) Fostair 3SG.M.ACC} \\
& \text{He took a ring of gold from his finger and gave it to Foster’s wife.} \\
\end{align*}

\begin{align*}
\text{V NP recipient-PPN theme-PN} & \Rightarrow \text{A-R-T} \\
20 & \text{Thug Aifric dom é} \\
& \text{Give-pst Aifric to+1SG 3SG.M.ACC} \\
& \text{LIT: ‘Aifric gave to me it’} \\
& \text{Aifric gave it to me.} \\
\end{align*}

In Example (19), the linking mechanisms from semantics to syntax (and vice versa) assigns the accusative case on the role involved, but the argument is realised as clause final in syntax. This always happens when the theme argument in the ditransitive is a pronoun but never when it is a full nominal. In these particular ditransitives, the syntactic weight of the pronominal theme is low in that the theme consists of a single word and syllable, and is therefore lighter than the recipient, who is \([\text{animate}+]\), and human. The theme is 3\text{PERSON} in these examples, and typically \([\text{animate}−]\).

\begin{align*}
21 & \text{Thug Máire an leabhar dom} \\
& \text{Give-pst Máire det book to+1SG} \\
& \text{Máire gave the book to me.} \\
\end{align*}
As we have already observed, Tallerman (1998b:617) notes that this interesting fact of Irish is counterintuitive to Hawkins (1994) principle of Early Immediate Constituents, in which he claims that the constituents are presented in word order in a syntactic construction in such a way that facilitates constituent recognition and easy of processing. She notes, too, that it runs counter to the well-known tendency for ‘given’ elements such as pronouns to occur early in the clause (Hawkins 1994, 1998, 2004).

A characteristic of this clause final behaviour with the pronominal theme is that it actually is clause final and, as such, will occur in the clause after, for example, any adverbials of time or location.

### Adverbial of time

(25) *Thug mé do Sheán inné é.*

Give-PST 1SG to Seán yesterday 3SG.M.ACC

Actor Recipient Theme

I gave it to Seán yesterday.

### Adverbial of location

(26) *Thug sé leis go dtí an Ghrianán í*

Give-PST 1SG with+3SG.M to until DET Ghrianán 3SG.F.ACC

Actor Possessor Theme

He gave it to him until (reaching) Ghrianán.
These clause final pronominal themes occur with all of the ditransitives in Irish, not just with *thug* ‘give’. We look at some representative examples of other verbs.

### 6.3 Other three–place causative predicates

We can now look at a different three–place causative predicate and start with one from the class of verbs of removal and dispossession. These three–place predicates of dispossession and removal are exemplified with verbs like *thóg* ‘take’. In relation to the verb *thóg* ‘take’ the different senses of dispossession and removal depend, at the construction level, on the particular preposition that is employed with the encoding of the third argument participant (27)–(30). The prepositional pronoun *dom* ‘to+1sg’ encodes the recipient.

(27) \[ \text{Thóg sì cáca mil dom.} \]
\[ \text{Take–pst 3SG.F cake sweet to+1SG} \]
\[ \text{Actor Theme Recipient} \]
\[ \text{She took sweet cake to me.} \]

(28) \[ \text{Thóg sì dom é.} \]
\[ \text{Take–pst 3SG.F to+1SG 3SG.M.ACC} \]
\[ \text{Actor Recipient Theme} \]
\[ \text{She took it to me.} \]

(29) \[ \text{Thóg sì an leabhar uaidh.} \]
\[ \text{Take–pst 3SG.F det book from+3SG.M} \]
\[ \text{Actor Theme Source} \]
\[ \text{She took the book from him.} \]

(30) \[ \text{Thóg sé leis féin é.} \]
\[ \text{Took–pst 3SG.M.NOM with+3SG.M self 3SG.M.ACC} \]
\[ \text{Actor Recipient Theme} \]
\[ \text{He took it with himself.} \]

In (27) the theme is an NP while, in (28), the theme is a 3.PERSO.N pronoun marked for accusative and, as such it takes clause final position. This clause final realisation of a pronominal theme occurs irrespective of the fact that the recipient is also encoded by a PPN. Again, we can see that the preposition in (29) conflates with its associated pronoun *as* ‘from’ to form a prepositional pronoun, in this instance, *uaidh* ‘from+him’, encoding the source, in which the prepositional pronoun is marked for person, number and gender agreement. We see in (30) an example of this occurring with a reflexive recipient.

The next verbs we look at, *díol* ‘sell’ and *cheannaigh* ‘buy’, are to do with the encoding of events that are transactional, typically commercial, in nature and involve the sense of an entity being transferred for some purpose, probably financial reward or benefit. We look at *díol* ‘sell’ first in (31). In this example, the actor is
Máire, a human animate agent, while the theme is an carr 'the car' and the recipient argument is encoded as the object of the preposition do ‘to/for’ and, in this instance, it conflates with the 2sg pronoun plus an empathic marker (‘-se’) morphologically recorded as a suffix on the prepositional pronoun. In contrast to the perspective encapsulated in the diol ‘sell’ verb, the verb cheannaigh ‘buy’ in (32) illustrates the opposite perspective of this type of transaction, that is, from the buyer’s viewpoint.

(31) a. Díol Máire an carr duitse.
    Sell-pst Maire det car to+2sg+EMP
    Actor Theme Recipient
    Máire sold the car to you.

b. Díol Máire duitse é.
    Sell-pst Maire to+2sg+EMP 3sg.m.acc
    Actor Recipient Theme
    Máire sold it to you.

    Buy-pst+3pl det.pl apples for+2sg+EMP
    Actor Theme Recipient
    We bought the apples for you.

b. Cheannaíomar duitse iad.
    Buy-pst+3pl for+2sg+EMP 3pl.acc
    Actor Recipient Theme
    We bought them for you.

Here, in (32) the actor of the action is a 3pl pronoun morphologically recorded on the verb as a suffix in one of the synthetic forms of the verb allowed in Irish. The theme of the transaction is na húlla 'the apples' and the recipient/beneficiary of the transaction is duitse, the argument that encodes the undergoer 2sg pronoun but in a prepositional-pronoun form where the preposition do ‘for’ conflates morphologically with the 2sg pronoun. The theme takes clause final position when it is a pronoun. We can see the same phenomena occur in a reflexive ditransitive clause in (33).

(33) a. Cheannaigh Aisling brontanais di féin
    Buy-pst Aisling present for+3sg.f self
    Actor Theme Recipient
    Aisling bought a present for herself.

b. Cheannaigh Aisling di féin é
    Buy-pst Aisling for+3sg.f self 3sg.m
    Actor Recipient Theme
    Aisling bought it for herself.
With the verb *thaispeáin* ‘show’, in Example (34), the preposition *do* ‘to’ is used to encode the third argument but the preposition has a full NP as its object and this is indicated as such in the syntax. The preposition *do* ‘to’ conflates with the definite determiner in the NP to form [*den* ‘to+DET NP*]. Again, we can observe that the actor is 1SG and realised as directly conflated into the verb within a synthetic morphology. Again, the theme is ‘the back of the paper’ and the recipient is ‘the presiding officer’, flagged with the preposition *do* ‘to’.

(34) *Taispeánaim cúl an pháipéir don oifigeach ceannais.*

Show-*prs*+1SG back (of) DET paper-*gen* to+DET officer presiding

**Actor** **Theme** **Recipient**

I show the back of the paper to the presiding officer.

(35) *Taispeánaim dóibh é*

Show-*pst*+1SG to+2PL 3SG.M.ACC

**Actor** **Recipient** **Theme**

I showed it to you.

The example in (35) illustrates this ditransitive ‘show’ where the theme is encoded by a 3.PERSON pronoun and the recipient is the object of the preposition *do* ‘to’ and which conflates with a 2PL pronoun to form a prepositional pronoun. The 3.PERSON pronominal theme is clause final.

A verb in the Irish lexicon that exhibits a considerable amount of polysemy is *chuir* ‘put’, another three place predicate. Typically, this verb encodes the caused motion of an entity to a location or state. We will see that the deployment of particular prepositions is critical to the encoding of the third argument and the reading of the intended sense. We first look at instances of where the theme moves to a location and then some examples where movement is to a state. In Examples (36)–(37), the undergoer is caused to move to an actual location. Again, the clause contains three participants, projected by the lexical entry of verb *chuir* ‘put’. The first participant is *sí* ‘she’, an animate human actor that links to the grammatical subject. In (36), the theme argument is *cóiriuighadh* ‘ornament’, an inanimate non-human entity. The third participant, and indirect object, is the target location at which the theme is placed. The preposition used in this construction with the third participant is *ar* ‘on’ and its object is a full NP. In (37) the theme PN is clause final.

(36) *Chuir sí cóiriuighadh úr-nuaidh ar an dreisiúr.*

Put-*pst* 3SG.F.NOM ornament fresh+new on DET dresser

**Actor** **Theme** **Location**

She put an ornament on the dresser.
(37) Chuir sí ar an dreisiúr é.
Put-pst 3sg.f.nom on det dresser 3sg.m.acc
Actor Location Theme
She put it on the dresser.

The clause in (38) is concerned with encoding movement of a participant to a physical location. This example demonstrates caused motion whereby an agent causes the theme, expressed in a proper NP, to move (from an unspecified location) to a different location represented by another proper NP. The change of location involved is a consequence of the caused motion. The preposition employed here is go ‘to’, and this encodes a sense of path or trajectory to a place. The positional object encodes the location as a full NP.

(38) Chuir sé Micheál Ó Cléirigh anall go hÉirinn.
Put-pst 3sg.m.nom Micheál Ó Cléirigh across to Ireland
Actor Theme Location
He sent Micheál Ó Cléirigh across to Ireland.

(39) Chuir sé anall go hÉirinn é.
Put-pst 3sg.m.nom across to Ireland 3sg.m.acc
Actor Location Theme
He sent him across to Ireland.

In Example (39) the first participant, sé ‘he’ is an animate human actor. The theme argument with the animate human referent Micheál Ó Cléirigh, who moves as a consequence of the verbal action. The path of motion of the action is coded by the preposition go ‘to’ and the third argument, the object of the preposition, encodes the target location Éireann ‘Ireland’. The sense of chuir ‘put’ here is more correctly interpreted as ‘sent’ in virtue of the preposition encoding the path to the location. Again, we can see in (39) that the pronominal 3.person theme is clause final. In this instance, its antecedent is [human+], [male+] and which implies [animate+], and we see that the pronominal theme is not affected by animacy. Similarly, in Example (40)–(41), we have caused motion by an actor whereby the undergoer is caused to move from an existing state (of having work) that is schematically expressed as a location in the syntax.

(41) Chuir sin Donnchadh ó obair.
Put-pst 3sg Donnchadh from work
Actor Theme Location
That put Donnchadh out of work.

(42) Chuir sin ó obair é.
Put-pst 3sg from work 3sg.m.acc
Actor Location Theme
That put him out of work.
It is worth mentioning here, even though it is beyond the scope of this paper, that different prepositions license different meanings over and above the core lexical sense for the same lexical verb. This is especially evident with this verb *chuir* 'put' as one of the most polysemic verbs in Irish. Notwithstanding this, a pronominal 3.PRON theme is still found as clause final, as we find in (41).

The next verb we examine is *déan* 'make' and a typical example of this is shown in (42). The theme participant is *cupán tae* 'a cup of tea', a concrete count NP, and inanimate. The recipient is encoded as the prepositional pronoun *duit* 'for+2SG'.

(42) a. Déanfaidh mé cupán tae duit.
   Make-fut 1SG cup (of) tea for+2SG
   Actor Theme Recipient
   I'll make a cup of tea for you.

b. Déanfaidh mé duit é.
   Make-fut 1SG for+2SG 3SG.M.ACC
   Actor Recipient Theme
   I'll make it for you.

We can see that that the pronominal 3.PRON theme is clause final in (42b).

6.4 What about 1.PRON or 2.PRON PN themes?

We have discussed the 3.PRON PNs as theme. What happens when we want to use either a 1.PRON or 2.PRON PN? We find that the behaviour is as before with the clause in a structure with a word order that places the recipient as clause final, except when the theme is pronominal. A typical example of this is shown in (43). In (43b) both *tú* and *thú* are acceptable forms of the 2SG.ACC PN.

(43) a. Chuir sé i n-aithne dá mhnaoi mé.
   Put-pst 3SG.M in recognition to+3SG.POSS women 1SG.ACC
   Actor Recipient Theme
   He introduced me to his wife.

b. Chuir sé i n-aithne dá mhnaoi tú/thú
   Put-pst 3SG.M in recognition to+3SG.POSS women 2SG.ACC
   Actor Recipient Theme
   He introduced you to his wife.

But:

c. Chuir sé tú in aithne di
   Put-pst 3SG.M 2SG.ACC in recognition to+3SG.F
   Actor Theme Recipient
   He introduced you to her.
The preferred structures\(^1\) are (43a) and (43b). Example (43c) does not have a clause final theme. Example (43d) with a clause final theme is ungrammatical because it places the PN theme immediately after a PPN. This particular structure was found to be distinctly ungrammatical and ‘unwieldy’ by native Irish speakers. An alternative strategy available to a speaker produced a structure, (43e) and (43f), with a clause final 3.PN theme instead.

6.5 Evidence from the topicalisation processes in Irish

While we have discussed the ditransitive forms of Irish with respect to the behaviour of the recipient and theme, we find additional evidence to support our observations elsewhere within the Irish grammar. In particular, evidence supporting our analysis of the clause final behaviour of a 3.PERS pronominial direct object is to be found within the topicalisation processes of Irish and the use and distribution of resumptive pronouns. According to Hickey (2008:157ff), the primary mechanism by which a speaker topicalises a discourse element in Modern Irish is via fronting, and this involves dislocation constructions. The dislocation constructions of Modern Irish support topicalisation of information with pre- and postposed information external to the clause but within the sentence.

Extra-clausal left fronted phrases involve the use of constructions in which a phrase to be fronted is placed before the matrix clause in the sentence in a particular way, and with a particular relationship to that clause. The relationship is characterised by the link between the fronted phrase and a pronoun in the matrix clause that uses the fronted extra-clausal phrase as its referential antecedent. Van Valin and LaPolla (1997:36) observe that the tendency is for a resumptive pronoun to

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1. I am grateful to native Irish speaking M.Phil students in Trinity College Dublin who acted as informants on these structures.
be necessary in the clause if the element in the left-detached position is a semantic argument of the clause proper, and that its omission leads to ungrammaticality. (For additional discussion on resumptive pronouns, see Butler 2003b:171). We see this phenomenon in the Irish data where a resumptive pronoun is necessarily found in the clause. Typically, the resumptive pronoun is clause final, and we indicate this with an index in the examples, as seen in (44)–(45).

(44) \textit{An múinteoir óg, chonaic mé ar maidin é}\text{.} \\
\textit{An múinteoir, chonaic mé ar maidin é}\text{.} \\
\text{DET teacher young see-pst 1SG on morning 3SG.M.ACC} \\
\text{The young teacher\text{, I saw him\text{ this morning.}}} \\

(45) \textit{An múinteoir óg, is as Doire é}\text{.} \\
\textit{An múinteoir óg, is as Doire é}\text{.} \\
\text{DET teacher young cop from Derry 3SG.M.ACC} \\
\text{The young teacher\text{, he\text{ is from Derry.}}} \\

We can note the right-most pronoun employed in the constructions in (46) and (47) has an anaphoric function even though it refers to an antecedent outside the clause, but within the sentence. Irish has a fixed word order that cannot be violated if the sentence is to be grammatical. The sentence with the fronted phrase left of the matrix clause respects that constraint.

We have seen that the dislocated phrase may occur in a left fronted position. Ó Siadhail (1991:212) provides some evidence that the dislocated phrase may also optionally occur in a right-most position (47) after the matrix clause within the sentence.

(46) \textit{An fear a bhris an fhuinneoig, chonaic mé ar maidin é}\text{.} \\
\textit{An fear a bhris an fhuinneoig, chonaic mé ar maidin é}\text{.} \\
\text{DET man rel break-pst DET window see-pst 1SG.NOM on} \\
\text{maidin é} \\
\text{morning 3SG.M.ACC} \\
\text{The man who broke the window, I saw him this morning.} \\

(47) \textit{Chonaic mé ar maidin é, an fear a bhris an fhuinneoig,} \\
\textit{Chonaic mé ar maidin é an fear a bhris an fhuinneoig,} \\
\text{see-pst 1SG.NOM on morning 3SG.M.ACC det man rel break-pst} \\
\text{an fhuinneoig,} \\
\text{det window} \\
\text{I saw him this morning, the man who broke the window.} \\

Topicalisation is achieved by left- or right-positioned extra-clausal constructions. Topicalisation of a phrase involves an extra-clausal, left-fronted pre-positioned phrase or, optionally, a right post-positioned phrase together with a matrix clause.
within the sentence. As well, a full clause may be left fronted in a non-copular
sentence, and referred to by a pronoun in the matrix clause. In these examples, as
we can see, the 3.PERSO.N pronominal pronoun is always clause final. Additionally,
it is maximally light as regards syntactic weight.

6.6 Other clause types with clause final theme

In this section we very briefly survey some other clause types in which the PN
theme is to be found in clause final position. We provide some examples of an
impersonal passive of a ditransitive verb in (48) and (49) whereas in (50) we show
an instance of a complex predicate with light and matrix verbs and clause final
3.PERSO.N PN.

(48) \textit{Baineadh asam é.}  
\textit{Took-IMPE.RS-PAS.S-PST from+1SG 3SG.M.ACC}  
\textbf{Recipient Theme}  
Someone took him/it from me.

(49) \textit{Dúradh liom é.}  
\textit{Told-IMPE.RS-PAS.S-PST with+1SG 3SG.M.ACC}  
\textbf{Recipient Theme}  
Somebody told it to me.

(50) \textit{Cuirfidh muid ag snámh iad.}  
\textit{Put-FUT 1PL.NOM at swimming-VN 3PL.ACC}  
\textbf{Actor Theme}  
We will put them swimming.

As we have seen, this is a productive phenomenon across many clause types of
Irish.

7. Discussion and conclusions

Irish has one only form of the ditransitive construction and this is the PP ditran-
sitive. It has no alternation such as the dative shift. As we have seen, it is normal
and productive to have word orders in this ditransitive construction of A-T-R and
A-R-T. This pattern in syntax is not limited to \textit{thug} ‘give’ but occurs with of the
other ditransitive verbs too.

One thing is clear from the set of facts regarding Irish ditransitives. Whether
the constituent is a PN or not is significant in determining what is clause final. A
recipient that can be construed as animate containing heavier new information
with a full lexical noun or noun phrase occurs clause final, irrespective of the syn-
tactic weight of the theme or recipient. A recipient that is animate encoded within
a prepositional pronoun will also occur in clause final position once the theme is an NP. However, once the theme occurs as a pronoun then it is always clause final and the pronoun is in the accusative form.

We can summarize this as follows (51). As the nature of the constituent assists in determining the behaviour of the A-T-R vs. A-R-T syntactic patterns in the Irish ditransitive clauses, we suggest that, for Irish, the nominal hierarchy (52) is more important than syntactic end weight. We have seen clear evidence where we can have either a heavy or light end weight. The theme is almost always 3.person, but may be first or second, whereas the recipient can be first, second or third. The recipient is typically [animate+] while the theme need not be.

(51)

<table>
<thead>
<tr>
<th>Clause final</th>
<th>Constituent</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>R final</td>
<td>Full NP</td>
<td>Recipient is heavier than theme giving heavier end weight Recipient has new information</td>
</tr>
<tr>
<td>A-T-R</td>
<td>Full NP</td>
<td>Recipient and theme are = equal weight giving heavy end weight Recipient has new information</td>
</tr>
<tr>
<td>R final</td>
<td>PPN (=p+pn)</td>
<td>Recipient is lighter than NP theme giving light end weight</td>
</tr>
<tr>
<td>A-T-R</td>
<td>PN</td>
<td>PN Theme is lightest, giving light end weight Theme is given</td>
</tr>
<tr>
<td>T final</td>
<td>PN</td>
<td>PN Theme is lightest, giving light end weight Theme is given</td>
</tr>
</tbody>
</table>

(52) The hierarchies and their dimensions

a. **Nominal hierarchy:** pronoun > proper noun > common noun
b. **Person hierarchy:** first > second > third
c. **Animacy hierarchy:** human > animate > inanimate
d. **Gender hierarchy:** male > female > neuter
e. **Definiteness hierarchy:** definite > referential > non-referential

Additionally, the clause final PN theme contains given information and therefore this goes against the expectation that given information will tend to be clause initial. We have seen that it is in fact always clause final once the theme is a pronoun. We have seen examples of this under topicalisation processes where this manifests itself as a resumptive pronoun that is clause final.

We argue that this post-positioning of the pronominal theme is due to alignment effects that can be explained by reference to the nominal hierarchy rather than syntactic end weight. We argue that, in this construction, this post-positioning of the theme 3.PN is due to alignment effects that can be explained by reference to the referential hierarchies, in particular, the **nominal** and **person**
hierarchies rather than end weight. In order to capture the behaviour of the prepositional ditransitive construction, we present a schematisation of the construction following in (53) indicating the construction signature and the bi-directional linking within the construction body. The respective outputs are triggered according to the status of the tokens within the construction.

(53) Construction for prepositional ditransitive of Irish

<table>
<thead>
<tr>
<th>'Irish prepositional ditransitive' construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIGNATURE:</strong></td>
</tr>
<tr>
<td>a. [V NP(^A) NP(^T) [\text{'prep'} NP](^R)] (\text{OR})</td>
</tr>
<tr>
<td>b. [V NP(^A) NP(^T) [PPN] (^R)] (\text{OR})</td>
</tr>
<tr>
<td>c. [V NP(^A) N(^R) [PN](^T)] (\text{OR})</td>
</tr>
<tr>
<td>d. [V NP(^A) PPN (^R) [PN](^T)]</td>
</tr>
<tr>
<td>as tokens ([1 \ 2 \ 3 (\text{'prep'}) \ 4] \text{or} [2 \ 3 \ (\text{'prep'}) \ 4])</td>
</tr>
<tr>
<td><strong>Constraints:</strong></td>
</tr>
<tr>
<td>C1: Token [4] is marked for accusative case when it is a PN</td>
</tr>
<tr>
<td>C2: C1 applies over active, reflexive voice and impersonal passive constructions</td>
</tr>
<tr>
<td>C3: C1 and C2 applies over all 3place verbs in the Irish lexicon</td>
</tr>
</tbody>
</table>

**Input:**
1. \(V = \text{pred.}[TNS:_\ ]\) 
2. NP\(_1 [\_\ ]\) 
3. NP\(_2 [\_\ ]\) and 4. [\text{'prep'} NP\(_3\) or PPN\(_3\)] \(\text{OR}\) 
4. NP\(_2 [\_\ ]\) or PPN\(_2\) and 4. PN\(_3\)

**WORKSPACE:** input [1], [2], [3] and [4] and output [1] or [2]

**CONSTRUCTION BODY**

**SYNTAX**

Juncture: Clause

PSA: 1st RP after v syntax in canonical word order VSOX

Linking:

[\text{SYN} \rightarrow \text{SEM}]

Shallow parse the input string into token [1] – [4].

Determine the lexical category for each token and its morphological marking for case and agreement.

Retrieve the LS for the v

Assign token [2] to the LS(x) argument according to actor-undergoer hierarchy

If token [4] is PN.acc

Then assign token [4] to the LS(y) argument as theme

and assign token [3] to the LS(z) argument as recipient

generate output [1]

ELSE
As we have indicated at the start of this chapter, it seems that current linguistic evidence may be correct when it tells us that our grammatical knowledge is organized in constructions and that these constructions may include information about both form and function/meaning.

Our view of constructions allows the existing theoretical machinery within RRG to (a) mediate over syntactic relations within constructions and (b) facilitate an account of (possibly unification-based) inheritance between constructions where constructions may be expressed as containing feature structures with matrices of [feature: value], as appropriate and as necessary. The common view within Construction Grammar (Michaelis & Lambrecht 1996: 216) is given in (54):

(54) In Construction Grammar, the grammar represents an inventory of form-meaning-function complexes, in which words are distinguished from grammatical constructions only with regard to their internal complexity. The inventory of constructions is not unstructured; it is more like a map than a shopping list. Elements in this inventory are related through inheritance hierarchies, containing more or less general patterns.

Our view of constructions within RRG (see Figure 4) is close to this but more nuanced and richer, while allowing for granular detailed expression of the inner workings of the construction within a fully functional account that crucially

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<table>
<thead>
<tr>
<th>If token [4] is not PN.ACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Then assign token [3] to the LS(y) argument as theme</td>
</tr>
<tr>
<td>and assign token [4] to the LS(z) argument as recipient</td>
</tr>
<tr>
<td>generate output [1]</td>
</tr>
</tbody>
</table>

[SEM→SYN] Retrieve the DTV predicate from the lexicon
Populate the LS(x) argument with NP1 according to actor-undergoer hierarchy
If theme is PN.ACC
Assign theme argument to token [4] in syntax
and recipient argument to token [3] in syntax
generate output [2]
ELSE
Assign theme argument to token [3] in syntax
and recipient argument to token [4] in syntax
generate output [2]

MORPHOLOGY: if token [4] is PN then it has constraint C1

PRAGMATICS:
Focus: PSA is topic.

OUTPUT: [1] or [2]
[1]: \texttt{do'(x) [pred'(y,z)]}
[2]: ‘Well formed prepositional ditransitive clause’
Brian Nolan

retains and defends the central role for the lexicon. In the view of constructions articulated here, we posit a construction residing in a construction repository with direct structured and principled links to the RRG lexicon and, importantly, utilising the bi-directional linking system. We have therefore presented our approach as to how the important questions posed at the start of this paper might be resolved within RRG. We restate these here for convenience (55).

(55)  a. How does the RRG theory understand a construction?
    b. What information does a construction contain?
    c. How do the constructions relate to other parts of the grammar?
    d. Where do constructions reside within the model?
    e. How do the constructions relate to other constructions?
    f. Is (part of) our grammatical knowledge organized in constructions?
    g. Do the constructions include information about both form and function/meaning?
    h. Are the constructions organized in a structured network with other constructions?

We have indicated how RRG can contextualised a construction within this model and therefore understand the construction and its inner workings. We have clearly expressed in a rigorous way the information contained in a construction and the structured relationships between these pieces of information. Additionally, we have indicated the manner in which the construction relates to other parts of the grammar and, in an RRG context, how constructions relate to other constructions. In our view, the construction can be considered as an object in the RRG grammar. The construction body contains the constraints operating over the morphosyntactic, semantic and pragmatic interfaces. These constraints activate according to a locally instantiated version of the linking system that specialises on the particular requirements of the construction. The linking here is internal as processing instructions within the construction and operate within the workspace on the variables input to deliver the appropriate constructional output, mediated by the direction of the execution direction from syntax to semantics or vice versa.

The lexicon is still, of course, accessed within the construction and a logical structure retrieved and populated based on the input data string. In this view, the lexicon is an information provider to the construction according to the requirements of its internal schema as encoded in the construction body. This is instantiated and computed online in real-time as a construction instance. The lexicon and the logical structures within it can be overridden by the constraints identified within the constructional schema. This manipulation of variables occurs within the local workspace within the construction.
The model proposed here supports a view of the construction in RRG, and its instantiation, considered as a dynamic process perspective in which constructions are posited to be (1) structured grammatical objects with (2) a unique constructional signature that uniquely identifies the schema, that the construction has an (3) input and (4) an output, and that the construction when activated contains (5) a local workspace over which (6), in the construction body, the processing of the variables and the application of the various lexical and grammatical rules apply, according to (7) the constraints and (8) processing requirements that apply schematically in the construction body. Additional, this model of constructions within RRG can be used to characterise real-time computation and processing of speech acts and their various constructions.

It is clear that constructions allow for the representation of complex and larger grammatical patterns. Linking within and across constructions must specify how semantic arguments of lexical constructions unify in a given grammatical pattern. Depending on the particular language analysed, linking constructions may involve case marking, grammatical functions and word order. We see this precisely this in the case study of Modern Irish data presented in this paper. Importantly, it can account for the grammatical behaviour found in the Irish data where the construction intersects with the referential hierarchies.

An empirical question for Construction Grammar is whether the view of constructions in that model could characterise the prepositional ditransitive of Modern Irish. In Constructional Grammar, constructions appear to be horizontally assembled and unified to support the construction of meaning, whereas a
characterisation of the dynamics of the Modern Irish prepositional ditransitive construction requires a different internal structure of the construction supporting the application of construction specific linking rules to accommodate the subtle interplay of grammatical relations, referential hierarchies (in particular the nominal hierarchy), information structure and syntactic weight.

An advantage of the view of constructions motivated here is that it allows for the embedding of a multiplicity of constructions within the larger construction, as needed, with saturation of lexical items from the lexicon along with construction specific linking rules within the linking system that allows the realisation of the correct syntactic word order patterns.

References


Constructions as grammatical objects


Constructions in Role and Reference Grammar

The case of the English resultative*

Rocío Jiménez-Briones & Alba Luzondo-Oyón
Universidad Autónoma de Madrid / Universidad de La Rioja

Framed within Role and Reference Grammar, this chapter provides a finer-grained account of the English resultative constructions (e.g. *He hammered the metal flat/into a knife*), which enriches the constructional schema suggested in Van Valin (2005). In so doing, we mainly follow the work carried out by Nolan (2011a, b) and Diedrichsen (2010, 2011), while also drawing on insights coming from the family of Construction Grammars (e.g. Goldberg 1995; Goldberg & Jackendoff 2004, *inter alios*). In turn, a further step is taken here by proposing the incorporation of additional features such as the motivation of the construction and its family resemblance connection; two essential issues which heavily depend upon the role of metaphor and metonymy (Ruiz de Mendoza & Mairal 2011).

1. Introduction

Role and Reference Grammar (hereafter RRG) is generally classified as a projectionist functional theory of language (Van Valin 2008, 2013). However, the role of constructions (or “constructional templates/schemas” in RRG terminology) was acknowledged since its very beginning in Van Valin’s (1993: 110) work, where two senses of the term were explicitly distinguished: (1) as an abstract structure

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1. In fact, Butler (2009: 139–140) classifies RRG as a constructionist model, since for current RRG (from 2005 onwards) constructional schemas have a central role in the theoretical apparatus of the model as the recipients of those language-specific features that cannot be derived from the general principles of the grammar. Van Valin (2013) also presents the incorporation of the notion of co-composition (Pustejovsky 1995, 1998) into RRG, thus making it more constructionist.
accounting for the key characteristics of complex constructions, e.g. core coordination; (2) as language-specific realizations of the above-mentioned abstract constructions, e.g. core coordination in French. Since this early, somehow tentative account, much has been written on constructions and constructional templates within RRG. Nevertheless, the study of the latter has never been found among the essential RRG topics, but rather relegated to a few oft-quoted examples such as the English passive, the Sama antipassive and reflexivization, and the English and Sama wh-question formation, among others (cf. Van Valin & LaPolla 1997: 433–436; Van Valin 2005: 132–135).

The object of this chapter is to present an RRG account of one of the most widely studied constructions: the English resultative. In order to provide a finer-nuanced description of the resultative than the one currently posited by Van Valin (2005: 239), our study mainly draws on the work on constructional schemas recently carried out by some RRG scholars (i.e. Cortés 2009; Diedrichsen 2010, 2011; Nolan 2011a, b; Van Valin 2011, 2013, inter alios). Additionally, it also takes into consideration part of the semantic and syntactic analyses developed within the family of Construction Grammars (CxG(s)) by Gonzálvez-García (2009, 2011), Goldberg (1995), Goldberg and Jackendoff (2004), and Luzondo (2011), to name but a few, and some of the insights from the Lexical Constructional Model (LCM; Ruiz de Mendoza & Mairal 2008, 2011; Mairal & Ruiz de Mendoza 2009; see Butler 2009 for a critical overview).

The structure of this chapter is as follows. In Section (2), a brief overview of the status of the notion of construction throughout RRG in general, and the account of the resultative construction in particular, is furnished. Section (3) presents a preliminary proposal of an RRG constructional schema for the property English resultative (e.g. The blacksmith hammered the metal flat), which enhances its constructional meaning and its relation with verb meaning. We sustain, with Diedrichsen (2010, 2011) and Nolan (2011a, b), that RRG schemas should become more constructional and incorporate, among others, the construction signature, its constraints, its workspace, and its input and output strings. Furthermore, due to the fundamental role played by metaphor and metonymy in order to explain the data under scrutiny, we advance the addition of two new features to the proposed English resultative schema, namely, the motivation of the construction and the family resemblance connection. This stance on enriching RRG constructional

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2. As Van Valin and LaPolla (1997: Footnote 33, Chapter 2 and Footnote 37, Chapter 7) accurately clarify, the term constructional template is employed in RRG in the same sense as the concept construction is used by Construction Grammar (CxG), that is, to refer to the theoretical representation of the properties of the forms of a language. However, the term construction is utilized in RRG for the forms themselves, to which CxG typically refers as construct.
schemas has immediate and direct consequences for our second goal in this work: what are the connections that the property English resultative establishes with the motion resultative construction (e.g. *He hammered the metal into the shape of a heart*), which we also posit could further be extended to other closely related constructions such as the caused-motion and the *way* construction, etc. Section (4) explores this particularly interesting issue that still remains open in RRG (Van Valin 2011) but where we believe the theoretical apparatus of the LCM, a model which already integrates RRG in its lexical descriptions, could shed some light on. Finally, Section (5) offers some concluding remarks.

2. A brief overview of the status of constructions within RRG: The case of the resultative

As early as Van Valin (1993), the notion of *construction* – employed as a synonym of *grammatical construction* – finds its place within RRG. In particular, according to Van Valin (1993:110) RRG:

> falls between GB [Government and Binding] theory, on the one hand, which specifically denies the validity of the notion of grammatical construction (Chomsky 1988), and Fillmorean Construction Grammar (Fillmore 1988), on the other hand, in which only language-specific construction templates are posited.

This stance explains that constructions were employed both when referring to abstract complex constructions such as nuclear juncture, and to language-particular templates which instantiate those abstract constructions, e.g. nuclear juncture in French.

It is in Van Valin and LaPolla’s (1997) groundbreaking work that the role of constructions starts to be fully acknowledged, moving closer to the proposals put forward by CxG (Fillmore, Kay & O’Connor 1988) than to the denial sustained by GB. It is also here that the term *constructional template* is first introduced in RRG. Particularly, RRG advocates that “grammatical structures are stored as *constructional templates*, each with a specific set of morphosyntactic, semantic and pragmatic properties” (Van Valin & LaPolla 1997:73). However, unlike CxG(s), RRG also envisages *syntactic templates*, that is, a number of configurations that represent the syntactic structure of a particular language or layered structure of the clause and that are stored in what is called the *syntactic inventory*. Each syntactic template can be combined to form more complex structures and is filled with the lexical and grammatical elements that make up utterances.³

³ Among others, the interested reader is referred to Van Valin and LaPolla (1997:74) for a sample of different templates, to Van Valin (2005:15) and Pavey (2010:61) for the English syntactic inventory, and to González Vergara (2006:122–126) for the Spanish inventory.
As for constructional templates, these are presented in the form of a table (Van Valin & LaPolla 1997: 430–436) that specifies the syntactic, morphological, semantic and pragmatic aspects unique to the construction under scrutiny. In other words, templates will not include information that can be derived from the general principles of the theory, such as the Actor-Undergoer Hierarchy. Table 1 reproduces the constructional template for the English be-passive given in Van Valin and LaPolla (1997: 433):

Table 1. The English be-passive constructional template

<table>
<thead>
<tr>
<th>CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>English passive (plain)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SYNTAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Template(s): default core</td>
</tr>
<tr>
<td>PSA: Pragmatic pivot (default)</td>
</tr>
<tr>
<td>Linking Actor ≠ pragmatic pivot; omitted or in peripheral by-PP</td>
</tr>
<tr>
<td>Undergoer = pragmatic pivot (default)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MORPHOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb: past participle</td>
</tr>
<tr>
<td>Auxiliary: be</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEMANTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSA is not instigator or state of affairs but is affected by it (default)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRAGMATICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illocutionary force: Unspecified</td>
</tr>
<tr>
<td>Focus structure: No restrictions; pragmatic pivot = topic (default)</td>
</tr>
</tbody>
</table>

This constructional template provides us with the following type of information:¹

a. Syntax: the syntactic template required is a core template and, since no constraints are included, its selection follows the Syntactic Template Selection Principle of the theory (Van Valin & LaPolla 1997: 324, revised on p. 569). The privileged syntactic argument (PSA) is the default pragmatic pivot in English (the traditional subject). As for the linking, the actor is not the PSA,

¹ Van Valin (2005: 132) presents a minimally different template, where reference is made to the specific principles that rule the selection of the syntactic template, the accessibility to PSA, and the linking of the actor and undergoer, following the PSA and argument modulation voice postulates of the theory. The morphological, semantic, and pragmatic features remain the same.
being omitted or in the periphery in a prepositional phase or PP headed by *by*, whereas the undergoer does function as PSA.5

b. Morphology: the template specifies the form of the predicate: *be* + past participle.

c. Semantics: a non-exhaustive characterization of the meaning of the English passive is provided.

d. Pragmatics: no particular information about the construction’s illocutionary force type and focus structure is recorded.

As Van Valin and LaPolla mention, the format employed for the constructional templates is not highly elaborated, since it is not intended to be a formalism, but rather a collection of the key properties of particular forms of a language:

[...] the characterizations of the various properties of the construction are not as formal as the syntactic, semantic and other representations they refer to; in particular, the specification of the general meaning of the construction is informal and is meant to express the semantic properties that would have to be captured by a more formal theory of constructional meaning. (Van Valin & LaPolla 1997:432)

As Sections 3 and 4 develop, it is our goal to enrich the semantic specifications that RRG constructional templates include. We do so inspired by the work carried out by construction grammarians like Gonzálvez-García (2009, 2011), Goldberg (1995), Goldberg and Jackendoff (2004), Luzondo (2011), and by LCM practitioners (Ruiz de Mendoza & Mairal 2007, 2008, 2011; Mairal & Ruiz de Mendoza 2009, among others), while employing the overall formalism for the representation of constructions proposed in Diedrichsen (2010, 2011) and Nolan (2011a, b).

In Van Valin (2005: 131), the term constructional template is replaced by *constructional schema*, but nothing is changed about its format or the type of information supplied. However, its status in RRG is now highlighted as a crucial element in the linking since schemas record vital specific details particular to a language or to a construction, such as the PSA, which are required in the semantics-to-syntax

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5. It is worth noting that constructional templates for complex sentences are slightly different from those for simple sentences such as the passive. Thus, they require the incorporation of new features like the juncture and nexus types, the construction type, the unit templates or the clause-linkage marker (see Van Valin & LaPolla 1997:521–522). As Table 2 displays, these features play a role in the description of the English resultative, which is a complex construction (Van Valin 2005:238–239).
linking as well as in the syntax-to-semantics linking. Therefore, constructional schemas are incorporated for the first time in the general organization of the theory, as Figure 1 shows:

![Figure 1. The architecture of RRG (Van Valin 2005:134)](image)

The resultative construction, to the best of our knowledge, is firstly mentioned to support the non-universality of grammatical relations as opposed to semantic roles like actor and undergoer (Van Valin 1993:50–54). For instance, the resultative construction in Acehnese can only be explained in relation to the actor-undergoer contrast, since the omission of the clitic of the first verb is allowed if the arguments are undergoers.

Similar resultatives, i.e. the Mandarin Chinese complement constructions, are thoroughly discussed in Hansell (1993:203–205), where widely-agreed distinguishing properties, such as nuclear juncture, the combination of an action verb and its result or achievement verb, or the relative order and the causality relationship between both verbs, are accounted for. Its constructional template is provided in Van Valin & LaPolla (1997:531), where its syntactic, morphological, semantic and pragmatic properties are recorded.

As for the English resultative construction, which Boas (2003:1) describes as “the state of an argument resulting from the action denoted by the verb” (e.g. Tobias ate the bowl empty), its study within RRG is first carried out along with the above-mentioned treatment of the Mandarin Chinese complement constructions in Van Valin and LaPolla (1997:442–444, 529), although no constructional template is included. This is supplied in Van Valin (2005:239) and reproduced in Table 2:

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6. Kailuweit (2008:198–200) integrates constructional schemas into the semantics-to-syntax linking algorithm, specifically he provides the pro-drop constructional schema and the schema for Spanish object clitics, detailing that, for the linking algorithm to be fulfilled, the information of these schemas would need to be retrieved and processed at point 3 of the so mentioned algorithm (cf. Van Valin 2005:136).
Table 2. The English resultative constructional schema

CONSTRUCTION: English resultative construction

SYNTAX:

- Juncture: nuclear
- Nexus: cosubordination
- Construction type: serial verb
- \[ \text{CORE} \{ \text{NUC} \{ \text{NUC1} \ldots \} \text{NP} \{ \text{NUC2} \ldots \} \} \], \text{NUC2} \neq \text{V}
- Unit template(s): (5.2)
- PSA: none
- Linking: default

MORPHOLOGY: none

SEMANTICS: [PRED\text{NUC1}] \text{CAUSE} [PRED\text{NUC2}], PRED\text{NUC2}[+static]

PRAGMATICS:

- Illocutionary force: unspecified
- Focus structure: unspecified

Being the English resultative a complex construction, its schema incorporates a number of syntactic features that are not present in simple constructions (cf. Table 1 for the English passive). Among these, we can notice:

a. The specification of the juncture and nexus types, which here corresponds to nuclear cosubordination.

b. Its construction type, i.e. an abstract syntactic representation of the constituents of the construction. In this particular case, it follows the order of a serial verb construction in which the second NP, the undergoer, appears between the two nuclei, the second of which cannot be a verb (nuc2 \neq V).

c. Its unit template, that is, specifications of any particular feature of the core syntactic templates from the inventory of a language. For the English resultative, the unit template will be selected according to the syntactic template selection principles detailed at (5.2) in Van Valin (2005: 130).

As for the rest of information included in the schema, since there are no relevant morphological markers and the pragmatics is unspecified, the most remarkable feature has to do with the semantics of the construction. By means of the abstract configuration [PRED\text{NUC1}] \text{CAUSE} [PRED\text{NUC2}], the causative meaning the construction displays is captured, whereas the arrangement PRED\text{NUC2}[+static] explicitly specifies that the second nucleus must express a new resulting state.

Furthermore, Van Valin (2005: 239) supports the validity of the English resultative constructional schema in Table 2, since it provides an elegant explanation for Goldberg's (1995: 9) oft-quoted example Chris sneezed the napkin off the table. Even though the first nucleus is an intransitive verb (sneeze) and the second one a PP (off the table), the basic information contained in the schema can account for this example: there exists a first event that causes a static change in the second
one. The linking is then unproblematic, as Chris is selected for actor, the napkin for undergoer, and off the table as the PP marking the new result. Consequently,

[…] there is no reason to claim that sneeze has suddenly become transitive in this construction; because the arguments of the component logical structures are pooled to create a composite argument structure in a nuclear juncture, the napkin is an argument of the whole logical structure but not one of sneeze.

Therefore, Van Valin’s viewpoint gives constructional schemas a more central and complex role in the grammar than they used to have because the arguments now need not be selected by the verb but by the construction, much in the line of what CxG(s) propose (especially, Goldberg 1995, 2005; Goldberg & Jackendoff 2004). However, nothing is said in RRG about where or how “the arguments of the component logical structures are pooled to create a composite argument structure” (ibid.) when there exists a mismatch between the argument positions in the logical structure (hereafter LS) of the verb and the arguments of the construction. It is true that Van Valin (2005: 161) envisages an area in the lexicon that he calls workshop where “the semantic representation of a sentence would be composed, based on the logical structure of the predicking element”, but there is no reference to this place in the constructional schema. Thus, a constructionist approach is called upon to explain, among other things, the speaker’s actual processing of syntax. As Diedrichsen (2011: 180) puts forward “an incremental, ‘on-line’ analysis of a syntactic structure requires an early projection of the emerging structure”. Yet this is not fully attainable in RRG because, as already mentioned, constructions come into play only when general argument realization principles of the grammar fail.

Furthermore, the morphosyntactic and semantic information of Table 2 certainly needs to be enhanced to accommodate all the nuances the English resultative construction displays. In the following sections, we adopt a more constructionist approach where constructional schemas are regarded as highly elaborate “grammatical objects” (Nolan 2011b).

3. An RRG enriched constructional schema for the English resultative

Despite being only a (more or less) partially productive construction (cf. Goldberg & Jackendoff 2004; Boas 2005 for a discussion), the complexity of the resultative has generated a considerable number of studies from different perspectives, among which we may mention the work by authors such as Simpson (1983), Hoekstra (1988), Carrier and Randall (1992), Rappaport and Levin (2001), Levin (2006), Boas (2003), Broccias (2003), Goldberg (1995, 2001), Goldberg and Jackendoff (2004), Wechsler (2001), Iwata (2006), Peña (2009), Ruiz de Mendoza and Luzondo (2012), inter alios.
The resultative is a goal-oriented, telic transitivity pattern that designates the outcome of a change of state. The result ingredient (BECOME pred’ in RRG notation) may be realized by an Adjectival Phrase (AP), as in the oft-quoted example *The blacksmith hammered the metal flat*, or through figurative motion by a PP, e.g. *The teacher talked us into a stupor* (example taken from Goldberg & Jackendoff 2004: 536). We refer to the former case as the *property* resultative, and to the latter as the *motion* resultative. Collectively, they are labeled *the resultative*.

Verbs belonging to most Aktionsart classes can take part in this construction: (i) achievements: *The door popped open* (The Corpus of Contemporary American English, 2003; hereafter COCA); (ii) causative achievements: *A shot struck the canoe and shattered it to pieces* (Google Books American English Corpus, 2008; GBC hereafter); (iii) semelfactives: *Lightning flashed blindly bright* (COCA, 2011); (iv) accomplishments: *Fallingwater’s waterfall froze solid* (COCA, 2003); (v) activities: *They ate themselves sick* (GBC, 1998); *He drank himself into a coma* (COCA, 2004), etc. Levin (1993: 101, our emphasis) claims that:

>a wide range of verbs is found in the resultative construction, so no specific classes of verbs are identified here. However, there are also some clearly semantic constraints on the verbs found in the resultative construction: *stative verbs* and *directed motion verbs* are excluded.

Despite Levin’s affirmation, state verbs can also participate in the resultative, as evidenced by the following realizations: *He loved her to distraction* (GBC, 1992), *I love you to bits* (GBC, 2002), *He loved us into being* (GBC, 2009) or *He loved her to pieces* (COCA, 2008). Besides, whereas some instances of the resultative may sometimes display an optional resultative element (e.g. (1a–c)), other cases require the presence of an object and the resultative AP/PP in order for the utterance to be grammatical (e.g. (2a–b)):

(1) a. I froze the ice cream (solid) (example taken from Iwata 2006: 471)
    b. The river froze (solid) (GBC, 2006)
    c. She bled (to death) (COCA, 2011)

(2) a. James ran *(his feet sore)* (example taken from Boas 2003: 120)
    b. Sue swept *(the broom to pieces)* (example taken from Boas 2003: 7)

Likewise, the high variability of the construction in question is evidenced in the type of objects that the construction takes, which range from prototypical

7. See Goldberg and Jackendoff (2004: 542) for a discussion on the issue of telicity in examples like *For hours the mixture got hotter and hotter* (i.e. the “A-er and A-er” AP pattern). According to these authors, such a pattern creates atelic resultatives.
patients (e.g. (3a)), going through metonymically exploited objects (e.g. (3c)), to realizations employing fake-reflexives (e.g. (3b)) or non-subcategorized objects (e.g. (3d)) whose inclusion renders the whole utterance figurative:

(3) a. He hammered the metal flat/He hammered the hot iron into knives (COCA, 1991)

   b. The puppy barked himself hoarse (COCA, 1998)/We danced ourselves to death (GBC, 2008) (where a person does not “dance oneself” but rather dances to the music)

   c. Tobias ate his plate clean (where the plate stands for its contents) (example taken from Boas 2003: 113)

   d. Sue swept the broom to pieces (where one cannot actually “sweep a broom”)

To conclude this necessarily cursory overview of the resultative, we have yet to illustrate the intricate distribution of resultative phrases that may occur in post-verbal position (see Boas (2003) for more details on this issue), as well as the nature or type of possible object referents. Some examples are given in (4)–(6) below:

(4) a. Mary ate herself {sick/silly/to death/??to sickness/to fame/*to pieces}

   b. Tobias ate the bowl {clean/empty/*sick/*silly/*to death/*to sickness/*to pieces}

(5) a. Jaime ran {his Adidas/?his socks/*his headband/*the pavement} threadbare

   b. Jaime ran {the pavement/*his iPod} thin

(6) Richard painted {the house/himself} {red/*expensive}

At present, constructions under the scope of RRG bear some resemblance to the “lumper” approach (cf. González-García 2008: 350–351) put forward by Goldberg (1995), where argument structure constructions are abstract configurations (e.g. X CAUSES Y TO MOVE Z) that carry meaning independently of the lexical items (especially the verbs) that fill them in, also being capable of augmenting the valence of the verbs that fuse with them (e.g. the napkin and off the table are contributed by the construction in the caused-motion realization Chris sneezed the napkin off the table).8 In other words, constructions supply meaning, as in (3a), where the resultative component (i.e. BECOME flat’) is not to be attributed to yet another implausible sense of the verb at hand. Additionally, in Goldberg’s (1995)

8. See Goldberg (2006: 5) for a definition of the notion of construction.
approach both general constraints (i.e. the ‘Semantic Coherence Principle’ and the ‘Correspondence Principle’; *ibid.*: 50) and construction-specific constraints (e.g. “only animate instigators are acceptable as subjects of two-argument resultative constructions”; *ibid.*: 193) are posited to delimit the fusion between the verb and the construction. Nevertheless, authors like Boas (2013) contend that Goldberg’s abstract meaningful configurations tend to overgenerate unattested sentences, since: (i) some of Goldberg’s constraints are insufficient to block out unacceptable examples; (ii) the rich information codified by the verb is merely reduced to a set of participant roles (e.g. *talk* ⟨*talker*⟩, *eat* ⟨*eater* eaten⟩). By way of illustration, in Goldberg’s (1995) framework semantically related verbs like *talk, grumble* or *whisper* share an identical structure (i.e. *talk* ⟨*talker*⟩, *grumble* ⟨*grumbler*⟩, *whisper* ⟨*whisperer*⟩). However, whereas the first one can be successfully incorporated into the resultative, e.g. *Miriam talked herself blue in the face*, the other two are more problematic: *Miriam whispered herself blue in the face*, *Miriam grumbled herself blue in the face* (examples and acceptability judgments taken from Boas 2008: 121). We thus concur with Boas’s claim that some of Goldberg’s constraints are insufficient to discard some ungrammatical utterances, while also being incapable of explaining why, for instance, *run* can collocate with a non-subcategorized object like *his Adidas* but not with *his headband* (cf. Example (5a)).

To make room for a finer-grained analysis of the English resultative in RRG, we follow the line of research recently developed by Diedrichsen (2010, 2011) and Nolan (2011a, b). For these authors, constructional schemas should be viewed as full-fledged structured grammatical entities indispensable not only to the linking algorithm but to the very lexicon, as the LSs stored in the latter could be accessed and manipulated according to the constraints encoded in the schemas. Therefore, constructions will now be kept in a specific repository that establishes connections with the lexicon and the LSs when needed, as Figure 2 clearly depicts:

9. For Goldberg (1995: 44), lexically profiled participants (i.e. those that appear in bold letters) are obligatorily accessed entities which “function as focal points within the scene, achieving a special degree of prominence”.

10. For example, Boas (2011: 1273–1275) demonstrates that none of the four semantic constraints posited by Goldberg (1995: 193–197) to regulate fusion processes within the AP resultative construction are capable of ruling out odd or apparently unacceptable sentences such as *Ed hammered the metal safe.*
Below is a summary of the properties these new enriched constructions include (Diedrichsen 2010, 2011; Nolan 2011a, b):

1. The construction signature: this is the information that will identify the construction as unique among the others in the construction repository. It is expressed using morphosyntactic patterns of occurrence. Associated with the signature, a number of constraints are also contemplated so that over-generation is kept to a minimum.\textsuperscript{11} Besides, the input and output sequences are acknowledged as key elements of the constructional schemas:

   [...] a construction has an input. For example, from syntax, a clause is received for processing when the construction schema is activated following a schema retrieval based on the uniquely identifying signature match. Once the construction is activated and the various criteria at the syntax-semantics-pragmatics interfaces are applied within the construction in the tokens within the syntactic string, an output is generated. This will deliver, assuming a construction executing in the syntax-semantics direction, a rich populated logical structure.

   (Nolan 2011a: 68–69)

2. A workspace: this is the area where the mechanisms for processing the structures take place, i.e. the place where the input is processed, much in the same vein of Van Valin’s workshop mentioned above. Each constructional schema, then, is endowed with its own workspace where processing instructions activate and operate according to the constraints included in the construction body.

\textsuperscript{11} For Diedrichsen (2011: 185), the constraints may be linguistically and non-linguistically grounded, that is, the speaker’s general and cultural knowledge also counts as an indicator to determine if the constructional meaning will be activated or not (e.g. the \textit{anticipation of adherence-request} construction discussed in Diedrichsen (2012)).
3. The construction body: this is the place where the morphosyntactic, semantic and pragmatic properties of the construction are encoded in as much as they influence the RRG linking system. By incorporating some of the insights from the LCM (cf. Section 4), we here propose to substantially enrich the semantic properties of each construction in order to account for the above-mentioned nuances exhibited by the English resultative.

Employing the format of these new constructional schemas, Table 3 records the relevant features for the English property resultative construction:

**Table 3. The English property resultative construction**

<table>
<thead>
<tr>
<th>Signature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\text{RP}_1$ $\text{Actor}$ V $\text{RP}_2$ Undergoer (AP) or $\text{RP}_2$ Actor/Undergoer V (AP) or $\text{RP}_1$ $\text{Actor}$ V $\text{RP}_2$ [fake reflexive] Undergoer AP or $\text{RP}_1$ $\text{Actor}$ V $\text{RP}_2$ [non-prototypical] Undergoer AP</td>
</tr>
</tbody>
</table>

as tokens [1 2 3 4]

**CONSTRAINTS:**
- C1: AP is $[-\text{gradable}, +\text{stative}]$ and functions as predicate
- C2: AP is optional as token 4 and 3 in signatures a and b
- C3: Tokens 3 and 4 are obligatory in signatures c and d

**Input:**
1. $\text{RP}_1$ $\text{Actor}$ or $\text{RP}_1$ Undergoer
2. $V = \text{pred1}$ and $\text{RP}_2$ Undergoer or $[]$
3. $\text{AP} = \text{pred2} [-\text{gradable}]$ or $\text{AP} = \text{pred2} [-\text{gradable}, +\text{stative}]$
4. $\text{AP} = \text{pred2} [-\text{gradable}, +\text{stative}]$

**WORKSPACE:** input [1], [2], [3], [4] and output [1] or [2]

**Construction body:**
- Syntax: Juncture: nuclear
  Nexus: cosubordination
  Unit template: 5.2
  PSA: none
- Linking: syntax $\rightarrow$ semantics:
  Parse the input into tokens [1], [2], [3], [4]; [1], [2], [4]
  Then follow the default steps of (7.74) (Van Valin 2005: 280)
  Generate output [1]
  If retrieving a one argument or optionally transitive activity LS in Step 2, make room for token 3 (fake reflexive or $\text{RP}[\text{non-prototypical}]$)
Table 3. The English property resultative construction (Continued)

Generate output [2]
semantics → syntax:
Retrieve the LS for the V
If LS is one argument or optionally transitive activity, the construction must add token 3 (fake reflexive or RP[non-prototypical])
Then follow the default steps of (7.73) (Van Valin 2005: 279)
Generate output [2]
ELSE
Default linking
Generate output [1]
Semantics: [LS₁] CAUSE [BECOME LS₂], where LS₁ is the means to obtain LS₂
Morphology: None
Prosody: None
Pragmatics:
Illocutionary force: unspecified
Focus structure: unspecified
Output:
1. [LS₁] CAUSE BECOME[pred']₂(x/y)
2. [do'(x, [pred',y(x, fake reflexive/RP[non-prototypical])))] CAUSE BECOME[pred']₂
   (fake reflexive/RP)
Motivation: Signatures (c) and (d) require a figurative interpretation
Family resemblance: resultative 2, 3, etc.

As previously explained, the signature singles out the English property resultative construction among the rest of constructions in the repository through four morphosyntactic patterns of occurrence which, respectively, account for Examples (1a), (1b), (3b) and (5a) above. The schema also incorporates three constraints on the construction signatures. The first one characterizes the nature of the AP that functions as second predicate as being non-gradable and expressing a new state, since Example (7) is, in line with Goldberg (1995: 195), odd:

(7) ??He ate himself a little sick

The second and third constraints account for the fact that the AP may be optionally realized in the first two signatures, while it is compulsory in the last two, which, as output [2] codifies, is directly linked to the obligatory presence of the fake reflexive (Simpson 1983) or another Referential Phrase (RP) (cf. unselected transitive resultatives in Goldberg and Jackendoff’s (2004: 536) notation). It is worth pointing out that this second RP is marked as non-prototypical to deal with those non-subcategorized objects incorporated by the construction (cf. Example (5a)). In fact, if a two-place verbal predicate occurs in signature (d), that is, in the pattern RP₁[Actor V RP₂[non-prototypical]Undergoer] AP, the verb’s prototypical argument cannot be realized, as shown in (8b) below:

(8) a. They drank the pub dry (example taken from Broccias 2003: 198)
   b. *They drank the beer dry
The incorporation of this non-prototypical or non-subcategorized RP in the verbal LS could be grounded in the nominal qualia annotations that RRG posits to represent the selectional restrictions of predicates (Van Valin 2005:52). Drawing on Pustejovsky’s (1995) Generative Lexicon theory, RRG details the semantic properties of nominals by means of the well-known four qualia roles: constitutive, formal, telic, and agentive (q.v. Pustejovsky 1991:426–427). Since not every RP qualifies as a constructional argument of the resultative (e.g. *They drank the window dry), through the process of co-composition (Pustejovsky 1995, 1998; Van Valin 2012), we believe that the telic role, which specifies the purpose and function of an object, could motivate the occurrence of the pub in (8a) through the inclusion of the LS do’ (x, [drink’ (x, (y))]) among its qualia to show that pubs are places where people drink.12

After this brief excursus, we return to the explanation of Table 3. The constructional schema incorporates the input sequences that activate it, as well as the output strings generated once the criteria spelled out in the construction body are applied. In other words, when the input comprises the first four tokens, the output LS is (1), where any LS brings about the new state of the second argument (y) if the LS is transitive or the new state of a one argument LS(x). However, when the input strings correspond with the last four tokens, the output LS is (2), where it is codified the fact that the y argument is an argument of the construction (either a fake reflexive or a non-prototypical RP) not an argument of the verb, as in That man worked himself sick (COCA, 2011) or in the well-known instance The joggers ran the pavement thin. The mechanisms required to process and operate on these variables are located in the workspace of the construction.

Moreover, the construction body presents the syntactic, semantic, morphological, prosodic, and pragmatic features of the English property resultative. We concur with Van Valin (2005:239) that, in the case of the English language, there appears to be no relevant morphological markers or pragmatic properties for this construction (cf. Table 2). Likewise, information about the juncture and nexus types, the unit template and the PSA remain the same. It is in the syntax-semantics-syntax linking and the semantics where our proposal differs. As for the syntax-semantics linking, if the default steps of the algorithm contemplated in Van Valin (2005:280) are followed through, the first output LS is generated. However,

12. Likewise, co-composition or any of the other processes of the Generative Lexicon theory (i.e. type coercion and selective binding) could validate or block the occurrence of the resultative predicate in post-verbal position with certain arguments (e.g. (4)–(6)). It is beyond the scope of this study to provide the exact mechanisms regulating these processes but, for instance, in an example such as (4b), Tobias ate the bowl {clean/empty/*sick/*silly/*to death/*to sickness/*to pieces}, the qualia defining bowl must somehow allow its composition with the predicates clean and empty but block it out with sick, silly or to death.
if in step 2 of the linking algorithm the retrieved LS of the verb is that of a one-place activity LS, in order not to violate the Completeness Constraint (Van Valin & LaPolla 1997; Van Valin 2005), the fake reflexive or non-prototypical RP of the input string must be accommodated in the LS, thus generating the output LS [2].

In the semantics-to-syntax linking, on the other hand, the obligatory presence of the fake reflexive or non-prototypical RP contributed by the construction must be correctly identified at the very beginning of the linking algorithm, that is, when accessing the LS of the verb.

As for the semantics of the construction, the construction under scrutiny displays two separable subevents or LSs, namely, the verbal subevent or LS$_1$, logically determined by the verb, and the constructional subevent or LS$_2$, which is brought about by means of the verbal subevent (cf. Goldberg & Jackendoff 2004: 538). For instance, in the property resultative par excellence or signature (a) exemplified in (3a) (cf. *He hammered the metal flat*) he, which is the actor, causes the undergoer (*the metal*) to result in a state of flatness by means of the hammering activity. Suffice it to say that the same rationale applies to the rest of resultative configurations, i.e. signatures (b), (c), and (d).

Finally, unlike the constructional schema proposed by Diedrichsen (2010, 2011) and Nolan (2011a, b), the present proposal incorporates two additional key features, namely, the motivation and the family resemblance connection. By way of illustration, whereas an instance like *They painted the walls red* or the one given in (3a) are non-figurative, examples realizing, say, signature (c), e.g. *He drank himself sick* (COCA, 2003) or *We laughed ourselves silly* (COCA, 2004), require a metaphorical interpretation of the whole sentence, according to which the activities of drinking or laughing (target domain) are treated as effectual actions (source domain) causing changes of state. In other words, it is through the recategorization of these...
verbs into verbs denoting effectual actions (e.g. push, kick, etc.) that their fusion with the construction at hand is licensed.

But the AP resultative is not the only way in which resulting events can be expressed in English. For example, one may employ figurative motion to talk about a result (e.g. He drank himself into a coma (COCA, 2004)), we may simply refer to the object referent resulting in a different location, whether metaphorically or not (e.g. They laughed the actor off the stage or The kid kicked the ball into the net.), or we can specify the whole figurative path of change from beginning to end, as in The witch turned him from a prince into a frog (Levin 1993: 57), to name but a few cases. Since all these examples are not completely alike but do share certain aspects, the feature labeled family resemblance in Table 3 is meant to capture relations among constructions in the construction repository (cf. Figure 2). The remainder of this chapter discusses these issues in some depth.

4. A family of constructions: A preliminary proposal

To the extent of our knowledge, the resultative as a group of constructions connected in a family resemblance fashion has only been treated by Goldberg and Jackendoff (2004). More concretely, for these authors (ibid.: 536), the notion of family resemblance is explicitly used to refer to “the sort of family resemblances recognized to exist in non-linguistic categories” (e.g. Wittgenstein 1955). Other authors such as Gonzálvez-García (2009, 2011) have provided an in-depth examination of object-related depictives (e.g. He thinks himself virtuous) following a family resemblance approach in which a number of (sub)constructions group together on the basis of a shared, albeit not identical, syntax and semantics. Drawing on these authors, the present study also aims to employ family resemblance with a view to organizing the RRG construction repository. In so doing, Figure 3 presents a preliminary proposal of the way in which the family of the resultative could be structured.

The highly abstract pattern located on the left in Figure 3 branches into various semantically and syntactically related structures. Thus, whereas the property

15. Gonzálvez-García argues that, instead of a constructional polysemy analysis, a family resemblance analysis seems more adequate to capture commonalities as well as the idiosyncratic particulars of object related depictives in English and Spanish. In his own words: “a family resemblance analysis may well be, on both descriptive and explanatory grounds, more adequate than a constructional polysemy analysis, especially if information from decoding alone (rather than in conjunction with that from encoding) is taken into account” (Gonzálvez-García 2009:22).
resultative realizes the result slot through an AP, the PP or motion resultative expresses changes of state as if they were figurative motion towards a different location. In turn, while in the caused-motion construction one of the entities changes or is caused to change location, the way construction focalizes on the creation of a path through obstacles until a result is reached (e.g. They've all elbowed their way into the lucrative worlds of NYC real estate (COCA, 2007)). Nonetheless, because space constraints preclude a lengthy description of each of these configurations, we will only be dealing here with the motion variant of the previously-introduced property resultative, i.e. the motion resultative in Table 4.

At this point, we need to stress the fact that although we agree with construction grammarians like Boas (2003), Broccias (2003), Goldberg and Jackendoff (2004) or Peña (2009) on considering the AP and PP resultatives as a unified phenomenon, the current architecture of RRG schemas requires a separate table for each of them.

The constructional schema for the English PP resultative or motion resultative in Table 4 displays very similar information to the one found in the English property resultative construction discussed in Section 3, namely, the signature, input,
Table 4. The English PP or motion resultative construction

2. English PP resultative or motion resultative construction

<table>
<thead>
<tr>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\text{RP}_1^\text{Actor} \text{V} \text{RP}_2^\text{Undergoer} (\text{PP})$ or</td>
</tr>
<tr>
<td>b. $\text{RP}^\text{Actor/Undergoer} \text{V} (\text{PP})$ or</td>
</tr>
<tr>
<td>c. $\text{RP}_1^\text{Actor} \text{V} \text{RP}_2^\text{[fake reflexive]} \text{Undergoer} \text{PP}$ or</td>
</tr>
<tr>
<td>d. $\text{RP}_1^\text{Actor} \text{V} \text{RP}_2^\text{[non-prototypical]} \text{Undergoer} \text{PP}$</td>
</tr>
</tbody>
</table>

as tokens $[1 \ 2 \ 3 \ 4]$

**CONSTRAINTS:**
- C1: PP functions as predicate
- C2: PP is optional as token 4 and 3 in signatures a and b
- C3: Tokens 3 and 4 are obligatory in signatures c and d

**Input:**
1. $\text{RP}_1^\text{Actor}$ or $\text{RP}_1^\text{Undergoer}$
2. $\text{V} = \text{pred1}$ and 3. $\text{RP}_2^\text{Undergoer}$ or $[\_]$
4. $\text{PP} = \text{pred2}$
   - Or
1. $\text{RP}_1^\text{Actor}$
2. $\text{V} = \text{pred1}$
3. $\text{RP}_2^\text{Undergoer} = \text{fake reflexive or RP[non-prototypical]}$
4. $\text{PP} = \text{pred2}$

**WORKSPACE:** input [1], [2], [3], [4] and output [1] or [2]

**Construction body:**

**Syntax:**
- Juncture: nuclear
- Nexus: cosubordination
- Unit template: 5.2
- PSA: none
- Linking:
  - syntax $\rightarrow$ semantics:
  - Parse the input into tokens [1], [2], [3], [4]; [1], [2], [4]
  - Then follow the default steps of (7.74) (Van Valin 2005: 280)
  - Generate output [1]
  - If retrieving a one argument or optionally transitive activity LS in Step 2, make room for token 3 (fake reflexive or RP[non-prototypical])
  - Generate output [2]
  - semantics $\rightarrow$ syntax:
  - Retrieve the LS for the V
  - If LS is one argument or optionally transitive activity, the construction must add token 3 (fake reflexive or RP[non-prototypical])
  - Then follow the default steps of (7.73) (Van Valin 2005: 279)
  - Generate output [2]
  - ELSE
  - Default linking
  - Generate output [1]

**Semantics:** $[\text{LS}_1] \text{ CAUSE [BECOME LS}_2$], $\text{LS}_1$ is the means to obtain $\text{LS}_2$ and $\text{LS}_2$ is figurative motion

(Continued)
workspace, and construction body features. Therefore, we will only concentrate on detailing those aspects where they differ, i.e. the semantics, the output, the motivation, and the family resemblance. Below are some examples for each of the signatures of the construction under study:

(9) He broke the glass (to pieces) (GBC, 2005) (signature (a))
(10) The vessel broke (to pieces) (GBC, 2009) (signature (b))
(11) I walked *(myself into exhaustion) (COCA, 1992) (signature (c))
(12) Sue swept *(the broom to pieces) (signature (d))

In relation to the semantics of this construction, we again find two separable subevents. The constructional subevent or \( \text{LS}_2 \) is determined by means of the verbal subevent or \( \text{LS}_1 \), but the constructional subevent (i.e. the new attained state) is understood as involving figurative motion. This particular fact is also codified in the two output LSs by means of the location predicate be-LOC’ and the tag [figurative]. But, how can we support the existence of this figurative motion component? Here is where, once again, the addition of the key motivation to the constructional schema is called upon. Hence, on the grounds of the metaphor A CHANGE OF STATE IS A CHANGE OF LOCATION, the motion component of the PP resultative is tackled. This metaphor, amply studied in Lakoff and Johnson (1999), is, as its name suggests, utilized to understand a change of state (target domain) as if it were a change of location (source domain) and it applies to all signatures in Table 4 (Examples (9)–(12) above). Such a metaphor, however, is not operational in cases of the property resultative (cf. Chris hammered the metal flat) since there is no linguistic marking of motion of the type “into Z”, “out of Z”, “to Z”, etc. on the basis of which one could interpret the metal becoming flat as if it were motion towards a location. Nonetheless, as briefly addressed at the end of Section 3, this does not

<table>
<thead>
<tr>
<th>Table 4. The English PP or motion resultative construction (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morphology:</strong> None</td>
</tr>
<tr>
<td><strong>Prosody:</strong> None</td>
</tr>
<tr>
<td><strong>Pragmatics:</strong></td>
</tr>
<tr>
<td>Illocutionary force: unspecified</td>
</tr>
<tr>
<td>Focus structure: unspecified</td>
</tr>
<tr>
<td><strong>Output:</strong></td>
</tr>
<tr>
<td>1. [( \text{LS}_1 )] CAUSE BECOME be-LOC'[figurative] (z, x/y)</td>
</tr>
<tr>
<td>2. [( \text{do}'(x, \text{pred}_1'(x, \text{fake reflexive}/\text{RP[non-prototypical]})) )] CAUSE BECOME be-LOC'[figurative] (z, fake reflexive/\text{RP[non-prototypical]})</td>
</tr>
<tr>
<td><strong>Motivation:</strong> A CHANGE OF STATE IS A CHANGE OF LOCATION</td>
</tr>
<tr>
<td>Signatures (c) and (d) require a further figurative interpretation</td>
</tr>
<tr>
<td><strong>Family resemblance:</strong> resultative 1, 3, etc.</td>
</tr>
</tbody>
</table>
mean that specific instances of the property resultative do not involve any kind of
figurative understanding. Cases in point are those of *He laughed himself silly* (signature (c) in Table (3)) or *He ran his Nikes threadbare* (signature (d) in Table (3)).
Seemingly, realizations representing signatures (c) and (d) in Table 4, respectively exemplified by (11) and (12) above, also call for an additional metaphorical reading (besides that of A CHANGE OF STATE IS A CHANGE OF LOCATION). Take instance (12), which we can elaborate as follows: “Sue caused the broom to break into pieces by using it to sweep the floor”. Here, the two subevents, namely, “Sue sweeping with a broom” and “the broom breaking to pieces”, are integrated into a single composite event through a causal frame (as required by the construction at hand) where sweeping causes the broom to break. Consequently, thanks to the metaphor AN ACTIVITY IS AN EFFECTUAL ACTION, we can understand the activity of sweeping as if it were an action with an impact on the object (i.e. the instrument used to perform the activity (the broom) is conceptualized as the object of a causal action). Hence, the feature labeled motivation in Tables 3 and 4 can account for situations in which a metaphor underlies all signatures (cf. A CHANGE OF STATE IS A CHANGE OF LOCATION), and/or cases in which specific signatures are in need of a figurative analysis.

With regard to the family resemblance slot, as we would like the construction repository to attain a certain degree of structured organization, it turns out to be indispensable the inclusion of pointers to the other members of the family a particular construction belongs to. In Tables 3 and 4, this information is recorded with the name of the family of the English resultative, followed by the number of the constructional schemas that are part of it (1, 2, 3, etc. 1 being the property, 2 being the PP resultative, 3 the caused-motion, etc.). However, relations among constructions should not be merely described. Rather, the underlying reasons, if any, that motivate each of the constructions presented, as well as the relations holding among them, are to be explicitly stated. From our point of view, this cannot be done without acknowledging the role of metaphor and metonymy. In the meaning construction model known as the LCM, cognitive phenomena like high-level metaphor and high-level metonymy are viewed as so-called external constraining factors whose recurrent presence in many of the argument structure constructions discussed in the literature affect fusion processes either permitting or disallowing them (see Ruiz de Mendoza & Pérez 2001, 2011; Ruiz de Mendoza & Mairal 2007; Ruiz de Mendoza & Peña 2008; Peña 2009; Ruiz de Mendoza this volume, for examples and details).16 A case in point is that of STATES ARE LOCATIONS which,
according to Ruiz de Mendoza and Pérez (2011:14), is one of the various high-level metaphors underlying grammatical phenomena. Thus, in line with Luzondo (2011), we argue that the full gamut of constructions presented herein, all of which express result (with or without a motion component), relate on the grounds of the high-level metaphor STATES ARE LOCATIONS, which works by triggering a whole network of dependency relations (rather than a mere combination of individual metaphors into more complex ones) that motivate the existing connections among various members of the family. Drawing on Lakoff and Johnson (1999:52), if STATES are conceptualized as LOCATIONS, then changes of state are naturally seen as changes of location. Following this rationale, the metaphor STATES ARE LOCATIONS defines a whole natural logic system according to which CHANGES OF STATE ARE CHANGES OF LOCATION, CHANGING IS MOVING, CAUSING A CHANGE OF STATE IS CAUSING A CHANGE OF LOCATION, etc. Much in the same vein, specific cases like the creation/transformation constructions (e.g. Martha carved a piece of wood into a toy) outlined in Figure 3 are motivated by the high-level metaphor A CAUSED CHANGE OF STATE IS A CHANGE OF LOCATION. By the same token, the high-level metaphor AN EXPERIENTIAL ACTION IS AN EFFECTUAL ACTION is at work in some realizations of the caused-motion construction (e.g. They laughed the actor off the stage), whereas the high-level metonymy INSTRUMENT FOR ACTION motivates some realizations of the way construction like He elbowed his way into the mythical room (COCA, 2010). In sum, these factors demonstrate that the paramount role played by (high-level) metaphor and metonymy in argument structure constructions of this kind cannot be avoided if a fine-nuanced analysis is to be pursued.

5. Concluding remarks

In this chapter we have presented how a projectionist theory like RRG can benefit from constructionist views by enriching the constructional schemas already available in the theory. Our work then, although preliminary, concurs with Van Valin (2013) in the necessary compatibility between the projectionist and the constructionist worlds.

‘cause’, ‘effect’, ‘process’, ‘result’, etc.). It is worth emphasizing that the LCM turns out to fit in perfectly with Diedrichsen’s (2011) idea of maintaining constraints to a minimum since, on the basis of a reduced set of delimiting factors (i.e. high-level metaphor and metonymy), one can account for large sets of data, regardless of the constructions under scrutiny (cf. Ruiz de Mendoza this volume for a detailed account).
Inspired by the studies carried out within CxG(s) and the LCM, we have put forward two schemas to account for the morphosyntactic, semantic and pragmatic features of the English property and motion resultative constructions. In particular, employing the overall formalism for the representation of constructions proposed in Diedrichsen (2010, 2011) and Nolan (2011a, b), we endow each schema with a specific signature, a number of constraints on the signature, input and output strings, a workspace, and a construction body. Furthermore, we also venture the inclusion of two new features, namely, information about the motivation and the family resemblance of the construction. Precisely, these new aspects allow us to give a glimpse of what a structured construction repository may look like if the family-resemblance approach were exploited in RRG.

Because the role played by metaphor and metonymy is crucial to motivating each of the constructions presented, as well as the relations among them, we have tentatively proposed the incorporation of the LCM apparatus of external constraints into RRG schemas. Two would be the main advantages: first, being only two cognitive operations, their assimilation would not interfere with the desire to keep constraints to a minimum. Second, RRG schemas would gain a greater degree of descriptive and explanatory power when handling the complexity of argument structure constructions.

Although for construction grammarians the schemas presented here would be far from encompassing all the characteristics the English resultative displays, much has certainly been obtained within the RRG realm, as a quick glance at Table 2, and Tables 3 and 4 shows. Needless to say that more research is needed to corroborate this line of cooperative work between projectionist and constructionist views. This chapter sustains that such collaboration is indeed feasible and fruitful.

References


Towards a model of constructional meaning for natural language understanding

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Few researchers in natural language processing are nowadays concerned with linguistically-aware applications. On the contrary, the prevailing trend is towards the search of engineering solutions to practical problems, where researchers are motivated by the immediate gratification from the stochastic paradigm. As a result, there have been few attempts to confront the new challenges in linguistics from the natural language processing approach. The goal of this chapter is to introduce the theoretical foundation underlying ARTEMIS, a knowledge-based system which is intended to simulate natural language understanding in the framework of Role and Reference Grammar. More specifically, we will focus on how to enhance this functional model in order to make argumental constructions play a decisive role in the computational analysis of the deep semantics in the text.

1. Introduction

Natural language understanding constitutes a research field of increasing interest in different disciplines, such as linguistics, cognitive science or natural language processing (NLP). From the NLP perspective, the goal of natural language understanding was early described in the realm of artificial intelligence:

We can describe the process of understanding language as a conversion from a string of sounds or letters to an internal representation of ‘meaning’. In order to do this, a language-understanding system must have some formal way to express its knowledge to a subject, and must be able to represent the ‘meaning’ of a sentence in this formalism. The formalism must be structured so the system can use its knowledge in conjunction with a problem-solving system to make deductions, accept new information, answer questions, and interpret commands. (Winograd 1972: 23–24)
Obviously, it is much easier to build this type of NLP systems when linguistic theories are neglected, but those systems will unavoidably fail from a semantic point of view (Raskin 1987). NLP applications which can work with no foundation in any linguistic theory are deceptively intelligent (Halvorsen 1988), since they don’t really allow natural language understanding. Therefore, robust NLP systems require a sound linguistic model, but what model turns out to be the most beneficial if we intend to convert a sentence into a text meaning representation?

In this regard, we have developed a prototype of NLP system which is grounded in the theoretical model of Role and Reference Grammar (RRG) (Van Valin & LaPolla 1997; Van Valin 2005) and which exploits FunGramKB as its knowledge base (Periñán-Pascual & Arcas-Túnez 2004, 2005, 2007, 2008, 2010a, 2010b; Periñán-Pascual & Mairal-Usón 2009, 2010, 2011; Mairal-Usón & Periñán-Pascual 2009). Although RRG was not devised within computational linguistics, this functional model turns out to be very useful for text meaning representation, which can be described in terms of a logical structure. However, we had to fully integrate constructional meaning into RRG to deepen semantic processing by incorporating the fine-grained constructional schemata from the Lexical Constructional Model (LCM) (Ruiz de Mendoza & Mairal-Usón 2008; Mairal-Usón & Ruiz de Mendoza 2008, 2009) into FunGramKB. In this way, the knowledge base provides a lexico-conceptual architecture in which to anchor a comprehensive model of constructional meaning like the LCM. The aim of this chapter is to describe how an NLP system can derive the semantic representation of a sentence within the RRG framework when argumental constructions occur in the cognitive-linguistic interface. As a result, not only can we gain a better understanding of how language comprehension works, but we can also apply our research to develop enhanced text-based systems (e.g. information extraction, machine translation or automatic summarizing) and dialogue-based applications (e.g. question-answering or tutoring systems). In essence, we argue that some adjustments of RRG are required in order to make the theory applicable in computational language processing, and particularly in natural language understanding. Further considerations on whether these adjustments are also motivated by the way speakers and hearers process language are out of the scope of this paper, but we expect that future research will address this issue. This chapter is structured as follows. Section 2 briefly describes the two theoretical models which support the linguistic level in FunGramKB, whose main features are in turn presented in Section 3. Finally, Section 4 gives an account of the way in which the RRG parser manages to integrate constructional meaning by means of FunGramKB.
2. Role and reference grammar and the lexical-constructional model

RRG is one of the most relevant functional models of language in current linguistics. RRG was not actually designed for computational linguistics, but this model presents three characteristics which make it suitable for NLP:

a. RRG is a model where morphosyntactic structures and grammatical rules are explained in relation to their semantic and communicative functions.

b. RRG is a monostratal theory, where the syntactic and semantic components are directly connected through a bidirectional “linking algorithm”.

c. RRG is a model that makes strong claims to typological adequacy.

These features are essential for a computational model which aims to provide natural language understanding. First, a functional view of language allows us to capture syntactic-semantic generalizations which are fundamental to explaining the semantic motivation of grammatical phenomena. Second, the system is more effectively designed if an algorithm is able to account for both the comprehension and the production of linguistic expressions. Third, typological adequacy becomes an added value when working in a multilingual environment.

RRG is a projectionist theory of language, where many features in the syntactic realization of clause arguments are mapped from the lexical entries of verbs. However, it is important to bear in mind that in the syntax-semantics interface the meaning of the verb is undoubtedly shaped by the meaning of the constructions in which the verb appears. As a result, the meaning of the sentence is determined compositionally by both lexical and constructional meanings. In this respect, the LCM – a usage-based constructionist model of language which goes beyond the core grammar – allows a bridge between projectionist theories, and more particularly RRG, and constructional theories (Goldberg 1995, 2006; Croft 2001). Indeed, the LCM recognizes the following four levels of constructional meaning:

a. Level 1, or argumental layer, accounts for the core grammatical properties of lexical items, as well as argument structure constructions like those postulated by Goldberg (1995, 2006).

1. Interested readers can get more information on the RRG framework in Van Valin and LaPolla (1997) and Van Valin (2005).

2. Up to now, the bulk of the work on the LCM has been concerned with the argumental layer (e.g. Baicchi 2007, 2011; Pérez Hernández & Peña Cervel 2009; Peña Cervel 2009; Ruiz de Mendoza & Luzondo Oyón in press) with only some preliminary work on the rest of the levels (e.g. Del Campo Martínez 2011; Ruiz de Mendoza & Gonzálvez 2011).
b. Level 2, or implicational layer, is concerned with constructional configurations (such as *What's X doing Y?*) based on low-level situational cognitive models (or specific scenarios), giving rise to meaning interpretations which carry a heavily conventionalized implication.

c. Level 3, or illocutionary layer, deals with illocutionary constructions (e.g. *Can you (please) X?*), which are considered a matter of high-level situational models (or generic scenarios).

d. Level 4, or discourse layer, addresses discourse constructions based on high-level non-situational cognitive models (such as reason-result or condition-consequence), with particular emphasis on cohesion and coherence phenomena.

The LCM demonstrates that, although projectionist and constructional approaches are often apparently opposed to each other, “the reality of grammar lies somewhere in the middle between two extremes” (Sugayama 2011: 64–65). Therefore, we have chosen to implement a hybrid model in the linguistic level of FunGramKB, where the bridge is now built between the Lexicon and the Grammaticon.

3. **FunGramKB**

FunGramKB is a multipurpose lexico-conceptual knowledge base to be implemented in NLP systems, and more particularly for natural language understanding. On the one hand, FunGramKB is multipurpose in the sense that it is both multifunctional and multilingual. Thus, FunGramKB has been designed to be potentially reused in many NLP tasks (e.g. information retrieval and extraction, machine translation, dialogue-based systems, etc.) and with many natural languages. On the other hand, our knowledge base comprises three major knowledge levels, consisting of several independent but interrelated modules:

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3. We use the name “FunGramKB Suite” to refer to our knowledge-engineering tool (www.fungramkb.com) and “FunGramKB” to the resulting knowledge base. FunGramKB Suite was developed in C# using the ASP.NET 2.0 platform and a MySQL database.

4. English and Spanish are fully supported in the current version of FunGramKB Suite, although we have just begun to work with other languages, such as German, French, Italian, Bulgarian and Catalan.
Lexical level:

- The Lexicon stores morphosyntactic and collocational information about lexical units. The FunGramKB lexical model is not a literal implementation of the RRG lexicon, although the major linguistic assumptions of RRG are still preserved, i.e. logical structures, macroroles, and the rest of the linking algorithm.
- The Morphicon helps our system to handle cases of inflectional morphology.

Grammatical level:

- The Grammaticon stores the constructional schemata which help RRG to construct the syntax-to-semantics linking algorithm. More particularly, the Grammaticon is composed of several Constructicon modules that are inspired in the four levels of the LCM.

Conceptual level:

- The Ontology is presented as a hierarchical catalogue of the concepts that a person has in mind, so here is where semantic knowledge is stored in the form of meaning postulates. The Ontology consists of a general-purpose module (i.e. Core Ontology) and several domain-specific terminological modules (i.e. Satellite Ontologies).
- The Cognicon stores procedural knowledge by means of scripts, i.e. schemata in which a sequence of stereotypical actions is organised on the basis of temporal continuity, and more particularly on Allen’s temporal model (Allen 1983; Allen & Ferguson 1994).
- The Onomasticon stores information about instances of entities and events, such as Bill Gates or 9/11. This module stores two different types of schemata (i.e. snapshots and stories), since instances can be portrayed synchronically or diachronically.

In the FunGramKB architecture, every lexical or grammatical module is language-dependent, whereas every conceptual module is shared by all languages. In other

5. In this chapter, the term “lexical unit” is used as a synonym of “predicate”, i.e. content words to which morphosyntactic and semantic properties are assigned.

6. Terms such as “class”, “category” or “semantic type” are often used in ontology engineering to refer to elements such as FunGramKB “concepts”. However, we prefer the latter, since it better describes the domain of processing in the three-tier model of our NLP knowledge base, i.e. lexical, constructional and conceptual levels.
words, linguists must develop one Lexicon, one Morphicon and one Grammaticon for English, one Lexicon, one Morphicon and one Grammaticon for Spanish and so on, but knowledge engineers build just one Ontology, one Cognicon and one Onomasticon to process any language input conceptually. In this scenario, FunGramKB adopts a conceptualist approach, since the Ontology becomes the pivotal module for the whole architecture.

3.1 Thematic frames and meaning postulates

The FunGramKB ontological concepts are not stored as atomic symbols but are provided with semantic properties such as the thematic frame and the meaning postulate. Both of them are conceptual schemata, since they employ concepts – and not words – as the building blocks for the formal description of meaning. Thus, thematic frames as well as meaning postulates become language-independent semantic knowledge representations.

On the one hand, every event in the Ontology is assigned one single thematic frame, i.e. a conceptual construct which states the number and type of participants involved in the prototypical cognitive situation portrayed by the event. To illustrate, we present the thematic frame of +FREEZE\_00, to which lexical units such as freeze [Eng], helar, congelar [Spa], gelare, congelare [Ita], or geler, congeler [Fre] are linked:

\[(1) \text{(x1)Theme (x2)Referent}\]

Thus, the thematic frame (1) describes a prototypical cognitive scenario in which “an entity (Theme) freezes another entity (Referent)”\(^8\). In FunGramKB, thematic roles are not specific to a given conceptual dimension, or metaconcept, in the Ontology (e.g. #COGNITION, #EMOTION, #POSSESSION or #TRANSFER, among many others), but the metaconcept itself enriches the meaning of thematic roles. In other words, the participants in the thematic frame acquire different interpretations according to the metaconcept under which the given concept is placed. For example, #PERCEPTION involves that Theme refers to the entity that perceives another entity (Referent), whereas #CONSTITUTION implies that Theme refers to the entity that is made up of other entities (Referent). In this way, the inventory of thematic roles is dramatically minimized while preserving their semantic informativeness. In this regard, a key requirement for objectivity is to

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7. Strictly speaking, this is true for any input from the range of languages which are considered to be culturally similar.

8. It should not be forgotten that, although one or more subcategorization frames can be assigned to a single lexical unit, every concept is provided with just one thematic frame.
provide thematic roles with accurate definitions on the basis of the location of thematic frames within the Ontology. In contrast to RRG, FunGramKB thematic roles do have an independent status from the logical structure. They even play a paramount role in the text meaning representation; indeed, the lexi-co-conceptual linkage can only be performed once the constituents in the parse tree are tagged with the FunGramKB thematic roles, as described in Section 4. Neither RRG nor FunGramKB thematic relations are assigned on an arbitrary basis, but their nature and scope are distinctly different. Whereas RRG establishes the thematic roles of the verb through the argument positions in the logical structure, which is created on the basis of the Aktionsart resulting from the application of linguistic tests, FunGramKB thematic roles are determined once the concept to which the verb has been linked is placed into a given ontological metaconcept. As a result, RRG logical structures do only take into account the thematic relations which have an impact on the syntax of the verb (i.e. grammatical relevance), whereas FunGramKB thematic frames encapsulate the thematic roles which are assigned to participants whose presence is required by the cognitive scenario portrayed by the event (i.e. conceptual relevance). This is why a verb of motion such as march in ‘Troops also marched to burn an armoury’ has a single argument position (i.e. Mover) in the logical structure, but the whole event could not be understood cognitively unless the Origin, Location and Goal are also born in mind. Therefore, since argument variables in logical structures cannot be automatically linked to variables in thematic frames, the mapping should take place in the lexical entry, as described in the next section.

On the other hand, a meaning postulate is a set of one or more logically connected predications \( (e_1, e_2, \ldots, e_n) \), i.e. cognitive constructs carrying the generic features of concepts. Consider (2) as a representation of the meaning postulate of +FREEZE_00:

\[
(2) \quad +\left( e_1: +COOL_00 (x1)\text{Theme} \ (x2)\text{Referent} \ (f1: +MUCH_00)\text{Quantity} \ (f2: (e2: +BECOME_00 (x2)\text{Theme} (x3: +SOLID_00)\text{Attribute}))\text{Result} \right)
\]

That is, an entity (Theme) cools another entity (Referent) so much that the latter becomes solid. Unlike some other approaches in NLP (e.g. WordNet, among many others), FunGramKB adopts a deep semantic approach which strongly emphasizes the commitment to provide meaning definitions via meaning postulates. At first sight, thematic frames could be deemed to be redundant because they are indeed fully integrated into meaning postulates, i.e. every participant in the


thematic frame is referenced by co-indexation to some participant in the meaning postulate. However, the motivation for explicitly building thematic frames lies in the need to bring to the fore those participants which will be potentially involved in the mapping between RRG logical structures (linguistic level) and FunGramKB thematic frames (cognitive level). In fact, if thematic frames did not exist, it would not be possible for linguists and knowledge engineers to perform this mapping, and consequently the lexico-conceptual linkage would eventually be non-existent. In this sense, the relevance of thematic frames becomes manifest.

3.2 Lexical entries

In the FunGramKB Lexicon, lexical entries are provided with the following types of information:11

a. Basic: headword, index, and language.

b. Morphosyntax: graphical variant, abbreviation, phrase constituents, category, number, gender, countability, degree, adjectival position, verb paradigm and constraints, and pronominalization.

c. Core grammar: Aktionsart, lexical template and constructions.

d. Miscellaneous: dialect, style, domain, example and translation.

In the case of verbs, the most important lexical component is the core grammar, which contains those attributes whose values allow the system to build the basic logical structure of verbs automatically. Table 1 presents a brief description of these attributes.

Table 1. Attributes in the core grammar

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aktionsart</td>
<td>The most representative RRG verb class in which the verb can occur</td>
</tr>
<tr>
<td>Variables</td>
<td>Variables $x$, $y$ and $z$ represent the prototypical arguments of the verb</td>
</tr>
<tr>
<td>Lexical Template</td>
<td>Thematic-frame mapping</td>
</tr>
<tr>
<td></td>
<td>Variables $x$, $y$, and $z$ represent the prototypical arguments of the verb</td>
</tr>
<tr>
<td>Idiosyncratic features</td>
<td>Exceptions to the RRG Default Macrorole Assignment Principle</td>
</tr>
<tr>
<td>Constructions</td>
<td>Inventory of argumental constructions in which the verb can take part</td>
</tr>
</tbody>
</table>

11. Mairal-Usón and Periñán-Pascual (2009) presented the anatomy of the FunGramKB Lexicon by describing the different types of features which form part of a predicate's lexical entry.
To illustrate, Table 2 presents the core grammar of the lexical unit freeze.

Table 2. The core grammar of freeze

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aktionsart</td>
<td>Causative accomplishment</td>
</tr>
<tr>
<td>Variables</td>
<td>x, y</td>
</tr>
<tr>
<td>Thematic-frame mapping</td>
<td>x = Theme, y = Referent</td>
</tr>
<tr>
<td>Idiosyncratic features</td>
<td>MR2</td>
</tr>
<tr>
<td>Constructions</td>
<td>INCH (Inchoative Construction)</td>
</tr>
<tr>
<td></td>
<td>MIDD (Middle Construction)</td>
</tr>
<tr>
<td></td>
<td>RESU (Transitive Resultative Construction)</td>
</tr>
<tr>
<td></td>
<td>RESI (Intransitive Resultative Construction)</td>
</tr>
</tbody>
</table>

It should be noticed that knowledge on constructions is not stored in the Lexicon. As described in the following section, it is the Grammaticon that holds the constructional schemata, i.e. machine-tractable representations of constructions, but the lexical entry should have pointers to all those constructions in which a given verb can take part. Thus, FunGramKB enables efficient management of cross-linguistic constructional generalizations – i.e. the Grammaticon is a repository of types of constructions – and constructional variability – i.e. those types of constructions can be instantiated in some languages by means of the pointers located in the lexical entries.

In addition to the constructions derived from the Grammaticon, every verb in the Lexicon is provided with one and only one Kernel Construction, which is built on the basis of the knowledge in the core grammar, primarily the Aktionsart and the lexical template. Depending on the number of variables in the lexical template, the verb will typically occur in a Kernel-1, Kernel-2 or Kernel-3 Construction.\(^{12}\) For instance, the system can directly derive the Kernel-2 Construction from the core grammar of freeze.

### 3.3 Constructional schemata

Constructional schemata are stored in the FunGramKB Grammaticon, which enables a multi-tiered approach to represent the various dimensions of text meaning. A key issue in this module is the definition of “construction”. In the Goldbergian

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\(^{12}\) In fact, these Kernel Constructions correspond to intransitive, monotransitive and ditransitive constructions respectively.
model, practically any linguistic pattern is recognized as a construction, being made up of a “form” linked to a “meaning”, as can be seen in the following definitions:

C is a CONSTRUCTION iff \( C \) is a form-meaning pair \( \langle F_i, S_i \rangle \), such that some aspect of the form \( F_i \) or some aspect of \( S_i \) is not strictly predictable from \( C \)'s component parts or from other previously established constructions.

(Goldberg 1995: 4)

Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency. (Goldberg 2006: 5)

In fact, constructions serve to capture “our grammatical knowledge in toto” (Goldberg 2006: 18). Thus, a sentence such as “He fried the egg in the pan” comprises the constructions “the egg” and “in the pan”, but every single word in the sentence as well as the suffix -ed can also be seen as constructions. As this example demonstrates, it is arguable that “construction” is such a broad a term that an accurate definition is not possible. Moreover:

There is no precise definition of (i) the notion of a productive unit in CxG, (ii) the way productive units are acquired step by step from incoming input utterances, and (iii) the combination operations that combine constructions into (an open-ended number of) new utterances. (Bod 2009: 130)

This criticism is compounded by the fact that frequency serves to determine the stability of any form-meaning pairing as a construction:

(…) what if a form-meaning pairing is produced only once by a communicatively competent native speaker and not only understood but also regarded as highly natural output by other equally competent native speakers within a community of speakers? Would that not be a construction? (Ruiz de Mendoza this volume)

Indeed, it is precisely Ruiz de Mendoza (this volume) who proposes the usage-based notion of construction underlying the LCM:

(…) the LCM defines a construction as a form-meaning (or function) pairing where form affords access to meaning and meaning is realized by form to the extent that such processes have become entrenched, through sufficient use, in the speaker's mind and are generally recognized by competent speakers of the language in question to be stably associated or are at least potentially replicable by other competent speakers of the same language with immaterial variation in its form and meaning.

We share this view which highlights productivity, bi-univocity and replicability as crucial properties to determine whether a form-meaning pairing is regarded as a
construction, but our computational approach to constructional meaning requires, first and foremost, a clear-cut distinction between “construct” and “construction”. On the one hand, a construct refers to any form-meaning pairing which serves as a building block in the compositionality of the sentential semantics. Therefore, the FunGramKB constructs can be found in both the linguistic realization (i.e. the input text) and the conceptual representation (i.e. the COREL scheme), where the minimal constructs take the form of lexical units and ontological concepts respectively. On the other hand, a construction refers to any linguistic construct whose meaning cannot be fully derived from the sum of the lexical meanings of the individual constructs taking part in the utterance. Therefore, the notion of construction is viewed from a holistic approach, since “the meaning of the whole is greater than the meaning of the parts” (Lakoff 1977: 239). We can claim that any construction is a construct itself, but not all constructs can be deemed to be constructions. Accordingly, constructs can be categorized as constructional and non-constructional; however, we prefer to use the term construct to exclusively refer to the latter subtype, and construction to the former. Therefore, from the FunGramKB approach, the sentence “He fried the egg in the pan” only consists of the Kernel-2 Construction. The remaining components can only be perceived as constructs, whose meanings are directly derived from their meaning postulates.

Contrary to Construction Grammar, the building blocks of linguistic realizations are constructs, where some of them can attain a constructional status. More clarity is also required regarding the scope of constructions in our model of language. As Rappaport Hovav and Levin (1998) stated, both projectionist and constructivist accounts of language acknowledge the existence of constructional meaning and lexical meaning; whereas the former helps to determine the structuring of argument realization, the latter becomes an idiosyncratic part of the word and serves to distinguish that word from others in the same semantic class. However, the main difference between these two approaches actually lies in the interface between syntax and semantics: morphosyntactic structures can be mapped from the lexical semantics of the verb or, by contrast, the meaning of the sentence is derived from constructions which can override the typical verbal semantics. In terms of the FunGramKB model, constructs get their meaning from the meaning postulates stored in the Ontology, whereas constructional meaning is obtained from the schemata in the Grammaticon. Therefore, the constructional schema serves as a machine-tractable representation of the construction. In contrast to

13. In FunGramKB, lexical units include simple and derived words as well as multi-word expressions such as idioms. Derivative morphemes are not processed as linguistic objects up to now, but we do not rule out the possibility of treating both inflectional and derivational morphology in the Morphicon.
Goldberg’s Construction Grammar, in which the formalization of constructional knowledge is rather underspecified, the FunGramKB constructional schemata are defined in terms of descriptors and constraints, where the latter licenses compositionality with other constructs or constructions. In the L1-Constructicon, for instance, every constructional schema is described by means of an Aktionsart, the number and type of variables in the logical structure, the thematic role corresponding to the new variables, the macroroles which cannot be inherited from the core grammar of the verb, and the conceptual contribution to the COREL scheme of the sentence in which the construction is embedded. With regard to the variables in the logical structure, the constraints are focused on phrase realizations and selectional preferences. Figure 1 serves to illustrate the interface of the Intransitive Resultative Construction, whose corresponding attribute-value matrix is presented in Figure 2.

Figure 1. The interface of the L1-Constructicon

As can be seen, argumental constructions are formalized by means of descriptors and constraints which are oriented to the logical structure and the COREL

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14. In the case of prepositional phrases, the most typical prepositions can also be stated.
15. These selectional preferences take the form of concepts from the FunGramKB Ontology.
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scheme, since variation in the syntactic context of the verb should eventually involve a variation in the aspectual meaning (i.e. Aktionsart) and/or in the conceptual meaning (i.e. COREL scheme). By contrast, higher-level constructions (i.e. implicational, illocutionary and discursive), which are correspondingly exemplified in (3), do not alter the logical structure but can only extend their corresponding COREL scheme.

(3) a. What's the child doing in the kitchen with the carving knife? [L2-construction]
    b. I wonder if you could give me the dictionary. [L3-construction]
    c. You can have the day off tomorrow on condition that you work on Saturday. [L4-construction]

The LCM constructions are essentially meaning-bearing devices, regardless of whether their semantic burden lies in the Aktionsart or the COREL scheme. Therefore, the raison d'être of a construction is its semantic contribution to that meaning of the sentence which cannot be derived from the lexical units.

We can conclude that FunGramKB adopts a hybrid approach to constructional meaning, i.e. halfway between projectionism and constructivism. On the one hand, FunGramKB shows a clear-cut separation between the linguistic modules, i.e. the Lexicon and the Grammaticon, where the projection from syntax to semantics goes through the pointers in the lexical entries. Moreover, the assumption that “all levels of grammatical analysis involve constructions” (Goldberg 2006: 5) cannot be applied in our model of language, since constructional meaning should be located at one of the four levels of the LCM, where constructions are not found below the argumental layer. On the other hand, the Grammaticon provides meaningful

Figure 2. The attribute-value matrix of the Intransitive Resultative Construction
abstract representations of constructions, rather independent from language so as to determine cross-linguistic generalizations, where morphosyntactic constraints on the variables in the logical structure serve to license a given construction. In this framework, the meaning of the sentence is determined by the core grammar of the verb, together with the meaning of argumental, implicational, illocutionary and discursive constructions. In the following section, we portray how constructional meaning from the LCM can be fully integrated into the RRG semantic representation through the lexico-constructional knowledge in FunGramKB. Due to space limitations, the section focuses on argumental constructions.

4. Building constructional meaning in RRG with FunGramKB

One of the major contributions of FunGramKB to the RRG theoretical model consists in the shift of the logical structure into the conceptual logical structure (CLS), i.e. a language-independent formalism whose role is to be a text meaning representation serving as the bridge between the linguistic realization and the conceptual realm. To illustrate, we present the RRG logical structure (4) and the FunGramKB CLS (5), which are derived from the sentence “The juice froze black in the refrigerator”:

(4) \(<_{\text{IF}}\) DEC \(<_{\text{TNS}}\) PAST \(\{\text{be-in'} (\text{refrigerator, [do' (juice, [freeze' (juice)])])}\)\)
\(\text{CAUSE [BECOME black'} (juice)])\)

(5) \(<_{\text{IF}}\) DECL \(<_{\text{Tense}}\) past \(<_{\text{CONSTR-L1}}\) RESI \(<_{\text{CONSTR-L1}}\) INCH
\(\langle_{\text{AKT}}\) ACC \(+\text{FREEZE}_00 (+\text{JUICE}_00-\text{Referent, +BLACK}_00-\text{Result})\)
\(+\text{REFRIGERATOR}_00-\text{Location}) \rangle\)

This conceptual shift involves a number of changes affecting the standard model of semantic representation:

a. The instantiation of variables does not take the form of predicates but ontological concepts (e.g. +FREEZE_00 or +BLACK_00). As a result, CLSs now become real language-independent representations.

b. Every concept linked to a variable is assigned a thematic role – e.g. +JUICE_00 is the Referent and +REFRIGERATOR_00 is the Location in the cognitive scenario introduced by the event. Thus, the CLS can be mapped into a COREL scheme via the thematic frame of the event.

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16. This lexico-constructional stance is in line with Boas's (2008) proposal to pay careful attention to individual verb senses in order to solve the problem of constructional overgeneration.
c. The constructional operator is incorporated (i.e. CONSTR-L1), which plays a prominent role in the syntax-semantics linkage.  

17. Indeed, every argumental construction is embodied in a constructional operator whose scope is the core in the RRG layered structure of the clause.

d. Since an Aktionsart operator has also been introduced (i.e. AKT), the semantic skeleton originating in the Aktionsart is now replaced by an argument pattern headed by the event (i.e. [+FREEZE_00 (+JUICE_00-Referent, +BLACK_00-Result)]).  

18. Despite the name of “argument pattern”, a further nucleus can also be introduced in the case of nuclear cosubordination, just as occurs in the Resultative Construction.

Feature (d) was motivated by the fact that the RRG decompositional system turns out to be excessively noisy from a computational view, since the semantic burden of the sentence is not actually carried by the CLS but by its corresponding COREL scheme. That is, when some kind of reasoning with the input is required, the CLS should be transduced into a COREL representation, so that it can be enriched by the conceptual knowledge from any cognitive module in FunGramKB. In this COREL mapping process, the operators, the concepts and their thematic roles are the only CLS elements taken into account. Thus, the CLS (5) is modeled into the COREL scheme (6), which can be extended to (7) through the meaning postulate of the verb.

\[
(6) \quad +(e1: \text{past} +\text{FREEZE}_00 (x1)\text{Theme} (x2: +\text{JUICE}_00)\text{Referent} \\
(f1: (e2: +\text{BECOME}_00 (x2)\text{Theme} (x3: +\text{BLACK}_00)\text{Attribute}))\text{Result} \\
(f2: +\text{REFRIGERATOR}_00)\text{Location})
\]

\[
(7) \quad +(e1: \text{past} +\text{COOL}_00 (x1)\text{Theme} (x2: +\text{JUICE}_00)\text{Referent} \\
(f1: +\text{MUCH}_00)\text{Quantity} (f2: (e2: +\text{BECOME}_00 (x2)\text{Theme} \\
(x3: +\text{SOLID}_00 \& +\text{BLACK})\text{Attribute}))\text{Result} (f3: +\text{REFRIGERATOR}_00)\text{Location})
\]

According to Figure 2, the Intransitive Resultative Construction has contributed with the predication (8) to the COREL scheme (6). Thus, we demonstrate that the meaning of the construction is independent from the meaning of the verb.

\[
(8) \quad (f1: (e2: +\text{BECOME}_00 (x2)\text{Theme} (x3: +\text{BLACK}_00)\text{Attribute}))\text{Result}
\]

As can be noticed, the process of extending the meaning postulate of the verb with conceptual knowledge from constructional schemata can involve the readjustment of indices for variables \(e\) (predication), \(x\) (argument) and \(f\) (satellite) as the result of unification.

Consequently, the CLS, which is able to account for a wide range of linguistic phenomena within the RRG framework, serves as the pivot language between the
input text and the COREL representation, whereas the COREL scheme, which provides the background knowledge from the FunGramKB conceptual modules, serves as the pivot language between the CLS and the automated reasoner. Thus, the division of labor between the conceptual and the linguistic level is still maintained as one of the central methodological axioms in FunGramKB.

In order to build automatically the CLS (5) and the COREL scheme (6), we developed FunGramKB ARTEMIS, whose interface is shown in Appendix 1. ARTEMIS is an NLP prototype whose current goal is to demonstrate that argumental constructions can be captured in the CLS, so that constructional meaning contributes to modeling the COREL scheme of the sentence. ARTEMIS consists of three main components, i.e. the Grammar Development Environment (GDE), the CLS Constructor, and the COREL-scheme Builder. The remainder of this section deals with the construction of the CLS from the RRG approach.

As described above, the CLS involved a number of changes in the RRG framework, affecting especially the layered structure of the clause (LSC), the syntactic templates, and the semantic roles. First, it was essential to incorporate the construction as a category of grammar, so we integrated the L1-CONSTRUCTION node into the LSC. More particularly, the clause is configured as one or more L1-constructions which are recursively arranged, serving to address the issue of constructional compositionality. As shown in Figure 3, the innermost construction introduces the core, which can be modeled by other L1-constructions, typically contributing with a further argument.

In fact, the integration of the L1-CONSTRUCTION node into the LSC is in line with the condition that “a theory of clause structure should capture all of the universal features of clauses” (Van Valin 2005: 3). Structurally, although the parse

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19. FunGramKB ARTEMIS, which stands for “Automatically Representing TExt Meaning via an Interlingua-based System”, is also part of the FunGramKB Suite.

20. In this prototype, we considerably reduced the syntactic complexity of the input. In fact, the system is confined to the universal aspects of a single-clause sentence, i.e. the core and the periphery, where the former is affected by argumental constructions. Moreover, with regard to clausal operators, only present and past tenses are adequately treated.

21. The computational implementation of the CLS Constructor and the COREL-scheme Builder remains out of the scope of this study. We further refer the reader to Periñán-Pascual and Arcas-Túnez (in press) for the technical details inside ARTEMIS.

22. However, there is the possibility for some constructions to incorporate another nucleus, resulting in nuclear cosubordination.

23. Although the category of “construction” is universal as such, it is important to bear in mind that a given construction can be specific only to one or a few languages, e.g. the Time-away Construction evidenced in the English sentence “Twistin’ the night away” (Jackendoff 1997).
tree may appear to differ from the standard model, the differences are indeed not so remarkable, since those arguments that constructions bring forward are really part of the core from a logical perspective. In this way, Figures 3 and 4 should be deemed to be identical after tree refinement.

As in the case of RRG, we do not aim to build a representation in terms of purely syntactic features, so we chose to build the parser upon a feature-based

![Figure 3. Enhanced model of LSC (unrefined tree)](image1)

![Figure 4. Enhanced model of LSC (refined tree)](image2)
grammar.\(^{24}\) As a result, nodes in the parse tree are represented by means of feature structures. For example, Appendix 2 shows the feature-based parse tree corresponding to the sentence “The juice froze black in the refrigerator”.\(^{25}\)

Second, the RRG syntactic analysis is based on an inventory of templates, i.e. syntactic trees which do not explicitly state the order of constituents but just their hierarchical organization. On the contrary, the GDE relies on feature-based production rules, which are subject to the linear order of their constituents.\(^{26}\) One of the main problems was certainly how to handle those peripheral adjuncts which can be located between core constituents (e.g. nucleus or argument) according to the linearity of the text. The solution was simply to allow the system to generate the tree and then to reconstruct its organization by relocating the displaced constituents (i.e. tree refinement).

The grammar in the GDE consists of three types of production rules: \(^{27}\)

- **Syntactic rules**, which build the enhanced framework of the LSC (Figure 4), provided with syntactic units such as nucleus, core, construction, periphery and clause. For example:

  (9) \[
  \text{PP}[p=?p] \rightarrow p[p=?p] \text{NP} \\
  \text{NP}[\text{Num}=?n] \rightarrow n[\text{Num}=?n] | \text{det}[\text{Num}=?n] \text{n[Num}=?n] | \text{det}[\text{Num}=?n] \text{adj} n[\text{Num}=?n]
  \]

- **Constructional rules**, which serve to embed constructional schemata into the LSC. To illustrate, we present the rules for the Intransitive Resultative Construction, whose scheme was shown in Figure 1:

  (10) \[
  \text{CONSTR-L1}[\text{Tense}=?t, \text{Template}=\text{RESI}, \text{Akt}=\text{ACC}, \text{Weight}=3] \rightarrow \text{CORE}[\text{Tense}=?t, \text{Template}=\text{RESI}] \text{NUC-S}[\text{Phrase}=\text{ADJP}], \text{Role}=\text{Result}, \text{Macrorole}=n] | \text{CONSTR-L1}[\text{Tense}=?t] \text{NUC-S}[\text{Phrase}=\text{ADJP}], \text{Role}=\text{Result}, \text{Macrorole}=n]
  \]

\(^{24}\) Computationally speaking, the feature-based grammar was parsed by using the well-known Earley chart parser.

\(^{25}\) Although feature structures are usually represented as attribute-value matrices or directed acyclic graphs, ARTEMIS employs the bracketed notation, as shown in Appendix 3.

\(^{26}\) We chose this type of rules due to their ability to model more complex phenomena than context-free grammars.

\(^{27}\) For the sake of clarity, we have simplified the production rules shown in this section.
c. Lexical rules, which provide morphosyntactic and semantic information about words. For example:

\[
\begin{align*}
\text{n}[\text{Num}=\text{sg}, \text{Concept}='+\text{JUICE}_00'] & \rightarrow 'juice' \\
\text{n}[\text{Num}=\text{sg}, \text{Concept}='+\text{REFRIGERATOR}_00'] & \rightarrow 'refrigerator' \\
\text{v}[\text{Tense}=\text{past}, \text{Template}=\text{RESI}, \text{Concept}='+\text{FREEZE}_00'] & \rightarrow 'froze' \\
\text{adj}[\text{Concept}='+\text{BLACK}_00'] & \rightarrow 'black' \\
\text{p}[\text{p}=\text{in}] & \rightarrow 'in'
\end{align*}
\]

Whereas syntactic rules are pre-defined through the GDE, constructional and lexical rules are created in runtime in accordance with the tokens from the input stream. This dynamic process of rule elaboration, which expedites significantly the syntactic parsing, needs to retrieve knowledge from the database in order to complete the attribute-value features. More particularly, constructional rules are generated with the aid of the Lexicon and the Grammaticon (i.e. the core grammar of the verb together with all its constructional schemata), and lexical rules mainly require the Lexicon and the Ontology.

In the elaboration of the constructional rules, another relevant aspect was the assignment of macroroles according to the Default Macrorole Assignment Principle (Van Valin 2005: 63), which was slightly adapted to the characteristics of the CLS. However, default values can be overridden by those previously assigned in the Lexicon core grammar – e.g. in the lexical entry of kick, the y variable is the Undergoer – or in the Grammaticon constructional schemata – e.g. the Inchoative Construction assigns the Undergoer to the y variable.

It is important to note that, just as every language has its own inventory of RRG syntactic templates, our formal grammar consists of language-specific rules. As an example of this we may take the constructional rules: constructional schemata in the Grammaticon are shared by all languages in FunGramKB Suite, but constructional rules also state the ordering of nuclei and arguments, so they should be language-specific.

Third, in contrast to RRG, thematic roles do play a paramount role in the CLS. Indeed, only by tagging the constituents in the parse tree with the FunGramKB
thematic roles can ARTEMIS perform the lexico-conceptual linkage, i.e. the construction of a fully-fledged conceptual representation in the form of a COREL scheme.

After the parser returns a feature-based tree of the input sentence, the CLS basically results from the extraction of the most relevant semantic units together with their attributes. In other words, the syntax-driven semantics is so embedded in the parse tree itself, certainly much more than in the RRG model, that the system will do nothing but remove the morphosyntactic units of the LSC and relocate the operators according to their scope.

5. Conclusions and future research

In this chapter, we have described how argumental constructions can be fully integrated into the RRG model with the aim to develop knowledge-based NLP systems for language comprehension. As it is widely accepted in the linguistic literature, the verb plays a key role in determining the meaning of the clause, but this meaning is usually shaped by argumental constructions. By implementing the LCM into the linguistic level of FunGramKB, and more particularly in the realm of the Lexicon and the Grammaticon, we have succeeded in narrowing the gap between the so-called projectionist and constructivist approaches to language processing. This has given rise to the CLS, which involves a conceptual shift of the RRG logical structure, allowing now to deal with argumental constructions as a key component of the semantic representation. To reach this goal, the CLS Constructor requires a constraint-based parser that relies on a robust knowledge base, such as FunGramKB. It is well known that RRG also allows argumental constructions to be represented in terms of constructional schemata. The problem lies in the fact that sentential semantics relies solely on the logical structure. RRG can be semantically enriched by means of CLSs, which construct a bridge between FunGramKB conceptual knowledge, i.e. common-sense, cultural and personal knowledge, and the particular idiosyncrasies as coded in linguistic expressions. This conceptualist shift to language processing affects not only the standard model of logical structure but also that of the constructional schema. Despite these modifications, we intend to keep our computational model of language processing close to RRG functional premises, since we also aim to interpret and analyse linguistic realizations in the framework of communication and cognition.

In the last few years we tested our theoretical assumptions on the CLS as a paper prototype, but now ARTEMIS has been released as a proof-of-concept

29. Mairal-Usón, Periñán-Pascual and Pérez Cabello de Alba (2012) described the benefits of adopting an ontological approach to the RRG logical structure.
prototype application which intends to demonstrate the feasibility of our approach. As it needs to be thoroughly tested, directions of future research should aim to provide suitable treatment for complex syntactic phenomena. For example, we should extend the scope of the parser to include both the pre- and post-core slots and the right and left detached positions, as well as giving a wider coverage to operators, particularly in the nucleus (e.g. aspect and negation) and in the core (e.g. modality). Moreover, our stratificational approach to argumental constructions in the LSC undoubtedly simplifies constructional merger, but further analysis of the constraint-based operations is required to restrict the co-occurrence of constructions. Finally, there is still a need to develop a linguistically-aware model which can solve prepositional sense disambiguation problems. This research should focus on the semantic interpretation of predicative prepositional phrases acting as adjuncts, since the remaining cases are already dealt by FunGramKB, through the core grammar of the verb or through the constructional schemata. The semantic interpretation of this type of prepositional phrase clearly involves two issues: the thematic role to be assigned to the adjunct, and the way in which the semantic burden of the preposition will affect the COREL scheme of the sentence.

To conclude, it should be noted that our incipient experimentation with ARTEMIS has yielded such promising results that we expect the CLS to bring numerous benefits to many different NLP fields, from information retrieval to machine translation.

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References


Appendix 1. FunGramKB ARTEMIS interface
Towards a model of constructional meaning for natural language understanding

Appendix 2. Graphical representation of the parse tree of the sentence "The juice froze black in the refrigerator"
Appendix 3. Bracketed representation of the parse tree of the sentence “The juice froze black in the refrigerator”
Meaning construction, meaning interpretation and formal expression in the Lexical Constructional Model*

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This paper discusses how the Lexical Constructional Model (LCM) contributes to our understanding of how meaning is constructed, interpreted and expressed. It especially addresses the role of constructional meaning in this complex process, while making critical revisions of other constructionist accounts of language, whether cognitivist or functionalist. It includes the notion of replicability into the definition of construction. According to this notion, a form-meaning pairing can be considered a construction, even if the pairing is not frequent, provided that it can be felt by competent native speakers as being 'potentially replicable', i.e. as being naturally meaningful without doing any violence to the nature of the language to which the construction belongs. The paper further argues that constructional structure mediates the syntactic realization of verbal meaning. In this view, meaning is not composed by assembling concepts, as postulated in Cognitive Grammar, but rather by making use of the conceptual scaffolding provided by constructions. Then, the paper relates the architecture of the LCM to a taxonomy of cognitive models and addresses meaning construction from the point of view of the descriptive and explanatory tools of the LCM. These tools include the definition of several central processes: subsumption, amalgamation, and saturation of variables. The role of each process is assessed at the various descriptive levels of the LCM. Finally, the paper relates formal expression to meaning representation in terms of idiomatic and non-idiomatic constructions. In this connection it specifies the requirements for full formal expression and relates such requirements to the format of constructional templates in the LCM.

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1. Introduction

The Lexical Constructional Model or LCM is a comprehensive model of meaning construction through language in context. The reader may find two complementary descriptions of the model in Ruiz de Mendoza and Mairal (2008) and Mairal and Ruiz de Mendoza (2009). Some examples of work within different areas of the LCM are Jiménez & Pérez (2008) and Mairal and Ruiz de Mendoza (2008), for lexical representation, Peña (2009), Baicchi (2011) and Galera and Ruiz de Mendoza (2012), Ruiz de Mendoza and Gonzálvez (2011a), for argument structure issues, and Del Campo (2011), Ruiz de Mendoza and Gonzálvez (2011b) and Pérez and Ruiz de Mendoza (2011), for illocution. Critical overviews of the LCM are provided in Butler (2009, this volume).

The LCM makes use of descriptive and explanatory tools from other linguistic accounts. Among them, the following figure prominently: (i) functionalist approaches such as Dik’s Functional Grammar (FG; Dik 1997a/b), Systemic Functional Grammar (SFG; Halliday & Matthiessen 2004), and Role and Reference Grammar (RRG; Van Valin & LaPolla 1997; Van Valin 2005); (ii) Cognitive Linguistics (CL), especially the Lakoffian strand of Cognitive Semantics (Lakoff 1987; Lakoff & Johnson 1999) and Goldberg’s Cognitive Construction Grammar (CxG; Goldberg 1995, 2002, 2006); (iii) Natural Semantic Metalanguage (NSM; Wierzbicka 1996, 1999; Goddard & Wierzbicka 1994, 2002) and Explanatory and Combinatorial Lexicology (ECL; Mel’čuk 1989; Mel’čuk & Wanner, 1996). However, the LCM does not fully identify itself with any of these approaches or other postulates within the functionalist and cognitivist camps. Thus, while it is willing to make use of analytical resources coming from these and other fields of linguistic enquiry (especially from cognitive and functional linguistics, pragmatics, discourse theory and the cognitive sciences in general), it only does so to the extent that such resources prove effective to account for meaning construction and interpretation and for the formal realization of conceptual structure.

Furthermore, the LCM has built its own set of tools for linguistic description and explanation. In the domain of description, four meaning construction layers or levels are distinguished: level 1 deals with basic predicate-argument relationships and the way they are put into different perspectives in terms of tense, aspect and modality; levels 2 and 3 respectively address non-illocutionary and illocutionary (constructional or implicational) structure; finally, level 4 is concerned with discourse structure. In the domain of linguistic explanation, the LCM specifies the conditions for the integration of level-internal and level-external structure plus the conditions for the activation of implicit conceptual structure.

At whatever level of description, the LCM contemplates the complementariness of inferential and non-inferential meaning construction processes. Inferential
meaning construction is supported by the activity of *representational cognitive operations* (RCOs) on cognitive models or on meaning representations at any level of meaning construction. An RCO is a mental mechanism whose purpose is to derive a full semantic representation out of a linguistic expression (or of other symbolic device, such as a drawing) in order to make it fully meaningful in the context in which it is to be interpreted. RCOs work either in isolation or in combination on cognitive models of different types thus giving rise to predictable meaning effects. They are thus different from other cognitive operations whose role is to store and retrieve memories and information, or to recognize and/or construe objects, events or situations. A detailed account of RCOs is found in Ruiz de Mendoza and Pérez (2003), Ruiz de Mendoza and Peña (2005), and Ruiz de Mendoza (2011). Non-inferential meaning construction is based on lexical-constructional integration at level 1 of the LCM and on the instantiation of constructional variables at levels 2, 3 and 4 with lower-level representations (see Section 5.1).

Within this descriptive and explanatory context, the purpose of this chapter is to provide readers with a description of the constructional apparatus of the LCM and of the way in which it is put to use in conveying meaning through language. As we proceed in our account, we will make contrasts with other cognitivist and functionalist accounts of language, where the notion of construction plays a relevant theoretical role, especially Goldberg’s CxG (Goldberg 1995, 2006) and Van Valin’s (2005) RRG.

2. **What is a construction in the LCM?**

Essential to the LCM is the notion of construction, which, as is well known, has become central to CL over the past two decades on the basis of seminal work by Lakoff (1987) and Fillmore, Kay and O’Connor (1988), with elaborations by various cognitive linguists, more prominently Goldberg (1995, 2006), Croft (2001), and Bergen and Chang (2005). Fillmore’s original approach, unlike the others, is not fully committed to the vision of language as part of more general cognitive abilities, which makes it only partly compatible with CL. Some developments of Fillmore’s formulation of Construction Grammar are found in Fillmore, Kay and O’Connor (1988), Fillmore and Atkins (2000), Kay and Fillmore (1999) and Boas and Sag (2012). Lakoff’s proposals, which are fully in line with the central tenets of CL, especially the assumption that linguistic structure is grounded in bodily experience, have been taken up and developed by Goldberg (1995, 2002, 2006) and also by Bergen and Chang (2005).

Originally, a construction was understood as a non-compositional form-meaning (or form-function) pairing where the meaning of the whole exceeds the
sum of the meaning of the parts. Two clear cases are the What’s X Doing Y? construction, analyzed by Kay and Fillmore (1999), and the caused-motion construction, studied in detail by Goldberg (1995:152–179). A compositional analysis of What’s X Doing Y? would merely yield a question about what someone is doing. But in fact What’s X Doing Y? sentences usually involve the idea that there is something wrong about whatever is being described. This is evident from the sentence What’s the child doing in his room now? Much the same can be said about the caused-motion construction, which involves setting an object in motion from a source through space to a destination. There are caused-motion verbal predicates in English such as push, pull and kick (e.g. He pushed me into the room; The dentist pulled my tooth out easily; The boy kicked the ball into the net). However, caused motion can be expressed without making use of predicates of this kind. A classical example of the construction is the sentence The child sneezed the leaf off the window sill. While it may be argued that the motion component can be derived compositionally from the preposition off, it is not clear how this preposition can combine compositionally with the verb sneeze, which is not a motion verb. Of course, we need to invoke world knowledge to solve the problem, but this strategy goes beyond what the compositional assembly of the parts can predict. In turn, the causal component is another issue. There is no way we can say that the verb sneeze is intrinsically causal (cf. He’s been sneezing the whole afternoon), which is why we cannot derive the causal ingredient in The child sneezed the leaf off the window sill by simply looking into the semantic configuration of the verb. Because of this, CxG postulates that the causal ingredient is more likely than not brought into interpretation from the caused-motion construction, i.e. it does not arise from combining the meaning of the different parts of the sentence.

More recently, cognitive linguists (e.g. Langacker 2005; Goldberg 2006) are beginning to recognize the constructional status of any form-meaning pairings provided that the association is frequent or at least somehow stable (e.g. How are you?). On the grounds of the original definition of construction, according to which constructional meaning exceeds compositional meaning, the use of the ditransitive verb give in the sentence John gave his sister a nice birthday present is not to be considered a matter of the ditransitive construction. By contrast, the ditransitive use of fax, as in the sentence I faxed her the whole chapter, would have to be postulated to import additional meaning from the ditransitive construction. The verb fax is a “send” verb involving the electronic transmission of information, but in I faxed her the whole chapter there is more than just conveying information: there is “possession” of the information by the receiver, who is also seen as the beneficiary. However, Bencini & Goldberg (2000:642) explicitly claim that when give and verbs like send, mail and hand are used with the ditransitive construction, “the construction is fully redundant with the meaning of the verb”. This new view
of constructional meaning is consonant with Goldberg’s (2006) later criterion that any stable form-meaning pairing can be a construction.

Other strands of CL have given rise to slightly different ways of understanding the notion of construction (see Gonzálvez & Butler 2006, and Dirven & Ruiz de Mendoza 2010, for updated overviews). For example, Croft’s (2001) Radical Construction Grammar (RCG), which has a strong typological focus, argues for the need to postulate low-level constructions arising from verb classes and from verbal predicates. A complementary position is held by Boas (2003, 2008, 2011), who, in the case of the resultative construction, postulates the existence of form-meaning pairings for each sense of a verb, i.e. so-called mini-constructions. However, this position, which is heavily influenced by the treatment of lexical polysemy in Frame Semantics (Fillmore & Atkins 2000), loses generalization power while leading to an over-proliferation of descriptive categories (cf. Luzondo 2014). We will come back to this point below.

Of special interest is Langacker’s Cognitive Grammar (CG) approach (cf. Langacker 1987, 2000, 2008). For example, for Langacker (2000: 13) constructions are “conventional symbolic units” that pair phonological structure (rather than morphosyntactic realizations) with lower-level schematic configurations of semantic structure and proposes compositionality as a key factor in meaning construction (see also Langacker 2003). There can be full, partial or no compositionality. An example of full compositionality can be the symbolic assembly involved in the intransitive sentence *She usually weeps at funerals*, where we know that the protagonist is a female person that has the habit of weeping when she is at a funeral. However, contrast *She wept her soul away during the funeral*. There are some small problems for full compositionality to be postulated for this sentence. One is that weeping is an intransitive verb, so it cannot have an object. A second problem has to do with composing the meaning of *weep away*. It can be argued that *away* is a polysemous adverb one of whose meanings evokes the idea of ‘completeness’, so *weep away* would mean ‘weep to the limit of her strength or ability’. However, this brings in one more problem, i.e. that of how to interpret *soul*, which could be a metonymy for a person’s emotions and her inner strength. But it would not work in the same way to say *She wept her emotions away*. In other cases of metonymy, the substitution of the intended referent for the one given by the expression seems to be more felicitous: *The buses/the bus drivers are on strike; We need a new hand/worker on our farm*. These two examples of metonymy are not a problem for compositionality. It could be argued that *soul* combines with *weep away* in roughly the same way as *heart* combines with *break* in *She broke my heart*, where ‘heart’ stands for feelings. Since feelings cannot be physically broken but they can be non-physically hurt, this situation calls for an analysis in terms of metaphor and metonymy in combination: the heart with its associated feelings
is seen as an object that can be broken and breaking the speaker’s heart is seen as hurting his feelings (cf. Ruiz de Mendoza & Díez 2002). However, this solution cannot be carried over to the analysis of weep away in the sentence above for two reasons: one is that here there is real weeping while in ‘break someone’s heart’ there is no real breaking; the other is that weeping is seen as the manner in which another unmentioned action is carried out (i.e. releasing emotional tension).

In view of this discussion, what all these problems boil down to is the need to deal with the sentence She wept her soul away during the funeral mostly in non-compositional terms. In order to come up with the best possible explanation, we first need to consider the meaning implications of the sentence. The most relevant ones for our discussion are:

i. The protagonist wept abundantly.
ii. By weeping the protagonist released most, if not all, her emotional tension (i.e. there is a change of state).
iii. The protagonist’s weeping lasted at least from the beginning to the end of the funeral.

While implication (iii) can be derived compositionally from the combination of the “during” PP and the rest of the sentence, (i) and (ii) need a different explanation. So, our second step is to see if these two meaning implications may arise from a meaning pattern associated to some formal expression mechanism. This is easy to do by finding other linguistic expressions where the configuration V + O + away captures a similar range of meaning implications (cf. Jackendoff 1997). Some examples are: He cried his heart/life away, He drank his mind/life/sorrows away, He slept/snored his stress/cares/headache/days/life away, He sang/danced/giggled his heart away, He chatted his time away. Obviously, even this partial sample of realizations is enough to identify a productive pattern that preserves implications similar to those in (i) and (ii) above: there is an explicit action (e.g. crying, drinking, sleeping, singing, etc.) which takes place for a long time thus being instrumental for another resultative action or process to take place in its entirety (e.g. releasing tensions or emotions, alleviating sorrows, having leisure time in order to feel better). These implications act as constraints on the elements that can realize the verb and object in the pattern: not any verb and object are possible, but only verbs involving ways of releasing emotional tension and objects denoting the relevant emotion directly, metonymically or through other conceptual connections (e.g. frame structure; cf. Fillmore 1982). Evidently, there is a non-compositional productive association between the formal configuration V + O + away and the ‘manner of releasing emotional-tension’ meaning described above, where the meaning characterization places constraints on the kind of elements that can realize each
form item. Because of this nature, we can safely argue for the constructional status of such a form-meaning pairing.

This discussion brings us to the definition of the notion of construction. There are three crucial properties of constructions that we have highlighted so far: (i) a construction is a form-meaning pairing where form consists of a morphosyntactic arrangement of elements; (ii) the form-meaning pairing needs to be productive, i.e. it gives rise to a pattern whose formal part can be realized by predicates that obey the requirements of the meaning part of the pairing; (iii) the nature of the relationship between the form and the meaning part is bi-univocal: form cues for meaning and meaning is realized by form.

There is one more property of constructions that has not come up in our discussion as yet. As we mentioned above, in recent cognitive-linguistic accounts it is assumed that frequency is a valid criterion to assign constructional status to a form-meaning pairing. On the face of it, this criterion may look like a valid one, but it is faced with two problems. First, we may wonder how frequency is to be measured. According to Bybee (2006), this is simply an empirical question that will be solved with time, as more phenomena are identified and low, medium and high frequency ranges specified for them. However, one objection to Bybee’s reaction to the problem is precisely that setting up upper and lower limits on each frequency range is in itself an arbitrary decision. In fact, frequency will vary with the usefulness of a construction to convey meaning within certain contexts. The greater the amount of times that a given situation type occurs, the greater the likelihood of occurrence for constructions related to that context. Other variables that can affect the frequency of a construction are the social context, register, gender, and age. A construction can have very low frequency on the basis of situational and other contextual factors and still be recognizable by speakers as well formed and meaningful. Besides, what if a form-meaning pairing is produced only once by a communicatively competent native speaker and not only understood but also regarded as highly natural output by other equally competent native speakers within a community of speakers? Would that not be a construction? If such a form-meaning pairing could qualify as a construction, then we need a different criterion than frequency.

Within the LCM, which is a usage-based account of language, we contend that frequency is a natural side-effect of a form-meaning pairing catching on within a community of speakers for a given communicative purpose within a given context. The LCM thus proposes replicability as a more realistic criterion to determine whether a form-meaning pairing can be regarded as a construction. A construction is replicable to the extent that it can be understood as meaningful and reproduced with minimum (i.e. immaterial) variation by other competent speakers of the same language to convey the same meaning implications within
similar context types. Replicability is thus to be added to properties (i)–(iii) above. In sum, the LCM defines a construction as a form-meaning (or function) pairing where form affords access to meaning and meaning is realized by form to the extent that such processes have become entrenched, through sufficient use, in the speaker’s mind and are generally recognized by competent speakers of the language in question to be stably associated or are at least potentially replicable by other competent speakers of the same language with immaterial variation in its form and meaning.

3. Mediated compositionality

Now, let us go back to compositionality. Langacker (1987, 2000) seems to be in favor of recognizing that some form-meaning pairings cannot be constructed on the basis of compositionality thus requiring a constructional treatment. But if an expression can be explained compositionally, it is not necessary to postulate an extra level of meaning description. A relatively similar position is held in Van Valin’s (2005) RRG, which postulates the existence of constructional schemas (previously called constructional templates in Van Valin & LaPolla 1997) in order to provide theoretical backup for those situations in which linguistic output does not arise from the valence of the verb and from the general linguistic realization principles postulated in RRG. Constructional schemas are the equivalent of constructions in cognitive-linguistic accounts, that is, they are theoretical postulates that capture the language-specific features of the actual manifestations of non-lexical form-meaning pairings, which is what in RRG are called constructions (Van Valin 2005: 132). The similarities are obvious at the constructional end: both Langacker and Van Valin favor the idea that meaning is constructed bottom-up rather than top-down, i.e. whenever meaning can be derived from lower-level representations it seems unnecessary to make use of higher-level constructs like those postulated in Goldberg’s CxG. But this is where the similarities end, since RRG is much more explicit than Langacker’s CG as to the role of constructional schemas in meaning interpretation and about how semantics and syntax are interrelated. Furthermore, constructional schemas in RRG include syntactic, morphological, semantic and pragmatic information that uniquely characterize the construction in question.

The LCM differs from CG in its rejection of compositionality as a non-mediated assembly of meaning representations. On the other hand, the LCM agrees with RRG and other functionalist accounts (e.g. Dik’s FG) that lexical structure is projected into syntax. But the way in which this happens is different
from what CG and RRG postulate. In fact, what the LCM offers is a new view of linguistically and inferentially guided compositionality. Take a very simple transitive sentence: *The blacksmith hammered the metal for hours.* In this case, RRG, FG, CG, and the original Goldbergian CxG would see no need to postulate a transitive construction, since *hammer* is a transitive verb with two arguments: one has the role of agent (or actor) and another of patient (or undergoer). This is truly so. However, the need to postulate the existence of the transitive construction arises from cases of transitivization of inherently intransitive verbs. For example, the verb *walk* can be used transitively in *She walked me to the station* and *You need to walk your dog more often.* In the first sentence, *walk* is used with the meaning of ‘go with’ or ‘accompany’. In the second, the same verb adds a causal ingredient to the idea of company. We can ask ourselves why transitivization is polysemous. One possible solution is to invoke world knowledge: people are not generally expected to compel other people to walk with them, while a pet dog has to be led. This solution, however, leaves unexplained why *walk* and other motion verbs can be transitivized, while others that could have a company and a causal reading cannot: *He ran me to the station; She strolled me to the front door,* but *He rambled me to the park.* This means that we need a more complex solution that takes into account relevant world knowledge associated to the logical structure of lexical predicates together with the conditions for the integration of all this meaning structure into the structure of the transitive construction. But before we take this direction, we need to understand what characterizes the transitive construction.

One simple of way of characterizing the transitive construction is to say that it is a relationship between two predicate arguments such that one of them is the object of the other’s eventive experience. For the sake of illustration, think of the nature of the object in the sentence above, *The blacksmith hammered the metal,* which is an affected entity (or patient) that can undergo a change of state (it can change its shape), in comparison with the nature of other objects: *The cat killed the mouse,* where the affected object necessarily undergoes a change of state (i.e. the mouse dies); *The team climbed the mountain,* which has an actor (the team) but no patient, since ‘mountain’ is simply the object used to develop the action of climbing; *Ron really loves that girl,* which has no actor, but rather an experiencer of love, and where the object is not an affected entity, but simply the entity that causes Ron to feel love and a target of Ron’s love.

To some extent, the basic meaning structure of two-argument transitive characterizations is related to the consideration of Aktionsart distinctions in grammar. In this connection, RRG postulates that for every verbal predicate there is a logical structure description that captures the type of relationship that holds between
verbal arguments. Thus, *hammer* is an active accomplishment, *kill* a causative accomplishment, *climb* an activity, and *love* a state (cf. Van Valin 2005:45):

\[
\begin{align*}
\text{hammer}': & \text{ do' (x, [hammer (x, y)]) & BECOME hammered' (y) (active accomplishment)} \\
\text{kill}': & \text{ [do' (x, ø)] CAUSE [BECOME [dead' (y)](causative accomplishment)} \\
\text{climb}': & \text{ do' (x, [climb (x, y)] (activity)} \\
\text{love}': & \text{ love' (x, y) (state)}
\end{align*}
\]

However, these characterizations do not tell us what kind of object we have in the different cases of transitivity. Compare the use of *climb* in *The team climbed the mountain*, with *paint* in *Picasso painted the Guernica*. The Guernica is the result of the activity of painting, but the mountain does not result from the activity of climbing. Even the same predicate can have different logical structure characterizations. We can thus contrast the telic use of *paint* in the Picasso example above with its non-telic use in *He paints a lot*. In the former case *paint* is active accomplishment, whereas in the latter case this predicate denotes an activity.

The existence of different kinds of transitive use and logical structure associated with two-place verbal predicates not only points in the direction of a highly abstract notion of transitivity, as we have defended above, but also suggests that it is necessary to endow lexical-predicate meaning structure with world-knowledge components. Additionally, it draws a picture of how meaning is constructed that differs from the one given by projectionist, compositional and constructionist accounts. In the LCM, there is projection of enriched lexical meaning (i.e. lexical meaning that binds world knowledge meaning elements with event-structure meaning) through constructional meaning into syntax. That is, lexical meaning elements are combined with one another through the mediation of constructional meaning. As we will see later on, this process is a constrained one: some combinations are made possible while others are discarded on the grounds of a number of conditions that regulate the interaction between lexical and constructional meaning. This means, for example, that the meaning of *The blacksmith hammered the metal* is composed by incorporating the meaning and argument structure of *hammer* into the transitive construction, which requires two arguments, one that acts as the object or target of the other’s eventive experience. The object in this case is the metal and the other argument is an actor within the eventive experience of hammering the metal.

In this view of mediated compositionality, meaning is not necessarily constructed either bottom-up or top-down, since in actual use speakers can combine the two strategies or opt for one or the other depending on personal styles or on their online reaction to specific communicative situations. By way of illustration, consider the different levels of meaning construction involved in *I would never ignore your*
advice, much less break your rules. The context for this utterance is one where the speaker feels the hearer is upset because the speaker has broken the hearer’s rules and disregarded his advice. The speaker’s choice of the construction with “much less” is strategic for the speaker to alleviate the hearer’s emotional distress by reassuringly placing himself in a submissive, fully compliant position. So, on pragmatic grounds, it is very likely that the construction $X \text{ Much Less } Y$, which calls for a contrast between ‘ignoring the hearer’s advice’ and ‘breaking the hearer’s rules’, is the first choice made by the speaker; other constructional options, such as the choice of $I$ would never, which enhances the idea of submissiveness, would come second, while the expression of the two contrasting propositions would take the third place.

In the LCM, the overall illocutionary intention for this utterance is a matter inferred illocution within a given illocutionary scenario type (cf. Ruiz de Mendoza & Baicchi 2007; Pérez & Ruiz de Mendoza 2011). The configuration $X \text{ Much Less } Y$ is used to achieve the overall illocutionary purpose, but its $X$ and $Y$ variables are constrained by some requirements: the situation described in $X$ is not likely to happen and, in any event, it is less likely to occur than the situation depicted in $Y$. This means that $X$ and $Y$ need to be negative statements, which is another illocutionary category. The configuration $I$ Would Never VP is an illocutionary construction that serves this purpose. The VP variable in this construction is realized by the first argument-structure level complex combining the verb “ignore” and its object. Another contrasting VP fills in the $Y$ variable of the initial discourse construction. This is a fully top-down strategy in the construction of a meaningful message for the context specified above: the speaker starts from an overall illocutionary intention and goes down the descriptive levels of discourse and local illocutionary structure up to argument-structure combinations. However, other meaning construction strategies are possible. For example, the speaker might have opted for one where he or she quickly reacts to the rule-breaking accusation and then, on another step, denies the accusation on the basis of a different discourse strategy: Break the rules? $I$ would never do that! And I’d never ignore your advice either! Here the speaker first shows astonishment by repeating the more serious hearer’s accusation with a questioning tone, then proceeds to deny it and finally decides to address the less serious accusation too. There is no initial discourse choice but rather the piecemeal construction of the overall discourse structure of the message through the sequential addition of discourse stretches each of which is consistent with the preceding one.

Finally, the LCM view of mediated compositionality also allows for meaning to be incorporated into a representation (thus being combined with other meaning elements) on the basis of linguistically, i.e. lexically or constructionally, cued inferences (see Mairal & Ruiz de Mendoza 2009: 181–184 for details). Lexis-based cueing occurs in the case of lexical presupposition or when the meaning of a lexical item is shifted or re-construed on the basis of inference-triggering
mechanisms such as metaphor or metonymy. A presupposition is but an implicit assertion that is to be combined with what is explicitly said. For example, the verb regret, as used in We all regretted Annie's misdemeanor, presupposes that the speaker takes it as fact that Annie has committed a misdemeanor. Metaphor and metonymy can work at various levels of meaning construction (cf. Ruiz de Mendoza & Mairal 2007, 2008; Ruiz de Mendoza 2011; Ruiz de Mendoza & Pérez 2011) including lexical structure. Lexical metonymy works by expanding or reducing the meaning structure focus of a lexical item in a way that is consistent with our knowledge of the world. For example, when we ask people to tie their shoes, we understand that they will tie their shoelaces, rather than any other part of their shoes, to another object. The focus of attention is thus reduced from the shoes to the shoelaces. Conversely, the scope of attention can be expanded when we are cued to use part of a concept to access the whole. This is the case of the use of shoes to refer to a situation in which a person finds himself or herself, as in the sentence If I were in your shoes, I wouldn't go into business with him. Lexical metaphor, on the other hand, works by making us understand an item (or set of related conceptual items) as if it were another item (or set of items). For example, we can understand someone's cowardly behavior in terms of comparable behavior when a chicken, which is a weak animal, is frightened and runs away. Following this rationale, You are a chicken! does not simply mean ‘You are a coward’, but adds a number of extra meaning implications about the addressee’s weakness, lack of self-confidence, and inability to rise up to challenging situations. It is this complex conceptual package, rather than just the idea of ‘cowardice’, that is brought into meaning composition.

Construction-based cueing takes place in a broader range of situations. First, since a construction is a form-meaning pairing, it follows that cueing can be directed to retrieve either formal or meaning elements. Formal structure retrieval happens in the case of ellipsis. Consider: [Would I ever] break the rules? and [Can you] see what I mean? In these two clauses the elided material, which is part of the formal pole of the construction, is obtained, together with its associated meaning, by finding compatible form elements that realize meaning that is consistent with the context of situation or with world-knowledge assumptions. Constructional meaning structure retrieval is based on:

i. Constructional presupposition: When did you stop beating your wife? inserts the implicit assertion that the addressee used to beat his wife into an egressive phasal aspect construction X Stop Y).

ii. Saturation or completion of underdetermined linguistic expressions (cf. Recanati, 1989; Bach 1994; Sperber & Wilson 1995): He just stopped [singing], We are all ready [to go to the wedding], She has just started [reading]. These
expressions can only make full sense if completed with information derived from the context.

iii. Subsentential utterances (Carston 2002, 2004), also called minor clauses (Halliday & Matthiessen 2004). Some examples are: Nice day; Morning!; A spider! Minor clauses have no verb or predicator and are used to realize conversational functions that draw attention to the speaker’s emotions or attitude to a certain state of affairs (e.g. exclaiming, calling, greeting). In meaning construction, the speaker-related overtones are added to the matter-of-fact description of a state of affairs on the basis of argument-structure representations.

The picture of mediated meaning composition that we have presented here places the LCM midway between projectionist and constructionist accounts of language. However, this does not mean that the LCM takes any theoretical weight off the role of constructions in linguistic description and explanation. In fact, constructions are given a highly prominent place in the LCM, since they are present at all levels of description as a possible meaning construction pathway alternating and/or being complemented with inferential activity. Thus, lexical structure is always projected through constructional structure at the level of argument structure representations. Then, the output of this process is built into implicational, illocutionary and discourse constructions. In the following sections, we will deal with the role of constructions in this complex process at the descriptive and explanatory levels of adequacy.

4. Descriptive tools

As part of its descriptive apparatus, the LCM features:

i. A typology of cognitive models, which it divides up into low-level and high-level situational and non-situational cognitive models (cf. Ruiz de Mendoza 2007). These models underlie not only the semantic base of lexical predicates and constructions but also language users’ inferential ability, which is also an essential part of the dynamics of meaning construction. Furthermore, this typology determines the four descriptive levels of the LCM: the argument structure level or level 1; the implicational structure level or level 2; the illocutionary structure level or level 3; and the discourse structure level or level 4.

ii. Predicate-structure and argument-structure constructional templates, initially inspired by analogous Aktionsart-based descriptive tools in RRG, but later developed into richer characterizations incorporating world knowledge through a combination of lexical primes and functions adapted from NSM and ECL.
iii. Idiomatic configurations, which can range from having the nature of a lexical predicate (e.g. *kick the bucket* ‘die’) to that of a construction with variable elements (e.g. *Can You X, Please?*, used to make requests; or *X Let Alone Y*, used to contrast two unlikely situations or events where the second one is even less likely to take place than the first; cf. Fillmore, Kay & O’Connor 1988).

Sections 4.1, 4.2 and 4.3 discuss these descriptive constructs.

4.1 A typology of cognitive models

The LCM makes use of the notion of *idealized cognitive model* or ICM, first proposed by Lakoff (1987), and recognizes ICMs as the repository of world knowledge, which is crucial not only to create a coherent discourse flow, as has been emphasized by text linguists and discourse analysts ever since the inception of their work (e.g. De Beaugrande & Dressler 1981; Van Dijk & Kintsch 1983; cf. Trappes-Lomax 2004: 150), but also to account for all aspects of meaning construction, including mediated composition and cued inferencing. An ICM is an internally coherent conceptual structure arising from the way we construe the world of our experience. Lakoff (1987) distinguished four organizing principles that give rise to different kinds of ICM: (i) predicate-argument relationships or propositional structure, which is used to describe objects, states, situations, and events (Fillmore’s FrameNet is an exhaustive attempt to deal with such structure; cf. Fillmore et al. 2003); (ii) image-schematic or topological relationships, such as part-whole relations and force dynamic notions, as originally described by Johnson (1987) (cf. Peña 2008); (iii) metaphorical mappings, i.e. sets of correspondences across discrete conceptual domains where one of the domains, the source, allows us to reason about another domain, the target (e.g. *The little hamlets were all strung up along the valley*, where the source domain is the image-schematic structure arising from a set of objects threaded together into a string and the target domain the imaginary line formed by the hamlets) (cf. Ruiz de Mendoza & Pérez 2011); (iv) metonymic mappings or source-target relationships within a conceptual domain, where the source affords access to the target, with which it is conceptually related (e.g. *Two heads are better than one*, where the ‘head’ stands for a person’s intellectual abilities; cf. Barnden 2010; Ruiz de Mendoza 2011).

Lakoff’s (1987) classification has been made by taking into account four basic structuring principles of ICMs. However, there are at least three other complementary taxonomic criteria: (i) the degree of genericity of an ICM; (ii) its situational or non-situational nature; and (iii) whether the concept is scalar or not. Table 1 below supplies an exemplified summary of possibilities:
Table 1. A taxonomy of cognitive models

<table>
<thead>
<tr>
<th></th>
<th>Situational</th>
<th>Propositional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-scalar</td>
<td>Scalar</td>
</tr>
<tr>
<td>Primary-level</td>
<td>–</td>
<td>Shape, container, part-whole, path</td>
</tr>
<tr>
<td>Low-level</td>
<td>Going to a party, reading a magazine</td>
<td>Dog, picture, kill, die, run</td>
</tr>
<tr>
<td>High-level</td>
<td>Begging, promising, thanking</td>
<td>Action, process, result, cause, consequence</td>
</tr>
</tbody>
</table>

At the primary level, we have knowledge constructs that arise directly from sensorimotor experience. Such constructs include but are not limited to image schemas, which the LCM defines as topological conceptual characterizations abstracted away from low-level conceptual structure arising from (i) the way we perceive objects by themselves and in their interaction with other objects, and (ii) from the way we interact with such objects on the basis of motor programs.

Low-level ICMs are non-topological knowledge constructs created on the basis of our experience with objects, situations, events and their properties and relations. Low-level cognitive models are schematizations of experience that can be enriched *ad hoc* as demanded by a number of cognitive tasks, such as recognition, memory retrieval, and various construal operations including those pertaining to language production and interpretation.

High-level ICMs are non-topological knowledge constructs created by deriving properties and relations common to low-level cognitive models. High-level cognitive models can be parametrized in application of the GENERIC FOR SPECIFIC metonymy.

Situational cognitive models or scenarios are conventional series of events (i.e. dynamic states of affairs) that are coherently related to one another. They are constructed on the basis of propositional cognitive models that combine to create more complex scenarios.

Non-situational cognitive models are those that capture information pertaining to entities, their properties and their relations in non-situational contexts.

Scalar cognitive models are primary cognitive models based on a system of ordered marks at fixed intervals that can be used as a reference standard in measurement. They arise from our experience with (i) physical entities and their (subjectively or objectively) measurable properties in such domains as size (*big, medium, small*), temperature (*hot, warm, tepid, cold*), speed (*fast, slow*), weight (*heavy, light*), quantity (*much, little, many, few*), quality (*good, bad*), and strength
ICMs play a role at all descriptive levels in meaning construction. This means that, at any level of description, conceptual structure is exploited either inferentially or through lexical and constructional mechanisms. For example, at the argument-structure level, the Y part of the construction X Be Ready Y, where Y is either a For-PP or an infinitival clause, may need completion through cued inferencing: The cult members were getting ready can be completed with for a new spiritual awakening/ to take part in a new spiritual awakening. Evidently, the way the Y variable is realized has to be conceptually compatible with the information instantiating the X variable. The role of ICMs is also evident at the rest of the descriptive levels. Think of the origin of the conventional construction Don’t You X Me, as in Don’t you daddy/honey/hello me!, which is used when the speaker feels upset at the addressee’s behavior, who uses familiar appellatives and related forms of address as if nothing were wrong. This construction, which works at the level of the implicational-structure of utterances, requires an underlying scenario (a low-level situational ICM) where people who have acted wrongly may behave in a casual way in order to pretend that they are unaware of any mistake they may have made. The same scenario can be exploited inferentially: And you still call me honey/daddy! At the illocutionary level, a request can be made on fully inferential grounds (e.g. I have a terrible headache) or through a conventionalized construction (e.g. Could you give me an aspirin, please?). In the two cases, there is an underlying high-level situational ICM that helps us make sense of the request: when people are in trouble or in need, other people are expected to help them. This is the reason why a statement of need can easily be interpreted as a request, but also the reason why a question about someone’s ability to perform an action can be routinely used to make requests thus giving rise to an illocutionary construction such as Could You X, Please? (cf. Ruiz de Mendoza & Baicchi 2007). Finally, at the level of discourse structure, think of the following attested sentence: Gabriel washed the dishes while his father blew out the candles (COCA 2006). The construction X While Y sets up a partial or total temporal overlap connection between X and Y. In this example, temporal overlap will normally be conceived as partial since washing dishes usually takes longer than blowing out candles. Given the necessary contextual conditions, the discourse sequence Gabriel washed the dishes; his father blew out the candles can also be interpreted as being partially simultaneous by virtue of plausible inferences made on the same world-knowledge basis.

From this brief discussion of examples, it is evident that each descriptive level in the LCM is based on a different kind of world-knowledge structure that gives shape to the semantic pole of lexical and constructional characterizations:
Level–1 lexical structure makes use of either primary or low-level non-situational ICMs.

Level–1 argument-structure constructions make use of high-level non-situational ICMs.

Level–2 implicational constructions are based on low-level situational ICMs.

Level–3 illocutionary constructions are based on high-level situational ICMs.

Level–4 discourse constructions involve high-level non-situational cognitive models establishing logical connections (e.g. cause-consequence), temporal relations (e.g. precedence, simultaneity) and conceptual relations (e.g. similarity, contrast, conditioning, and concession).

As shown above, each of these ICM types can be used, within its level of description, to derive inferences.

4.2 Argument-structure lexical and constructional templates

In order to account for the eventive structure of lexical items that can act as predicates, the LCM makes use of the logical structure (LS) characterizations of verb classes postulated within RRG. These are listed and exemplified in Table 2.

Table 2. Aktionsart characterizations in RRG

<table>
<thead>
<tr>
<th>Verb class</th>
<th>Logical structure</th>
<th>Example</th>
<th>Instantiation of LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>predicate’ (x) or (x,y)</td>
<td>see</td>
<td>see’ (x,y)</td>
</tr>
<tr>
<td>Activity</td>
<td>do’ (x, [predicate’ (x) or (x,y)])</td>
<td>run</td>
<td>do’ (x, [run’ (x)])</td>
</tr>
<tr>
<td>Achievement</td>
<td>INGR predicate’ (x) or (x,y), or INGR do’ (x, [predicate’ (x) or (x,y)])</td>
<td>pop,</td>
<td>INGR popped’ (x)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>burst into</td>
<td></td>
</tr>
<tr>
<td>Semelfactive</td>
<td>SEML predicate’ (x) or (x,y)</td>
<td>glimpse,</td>
<td>SEML see’ (x,y)</td>
</tr>
<tr>
<td></td>
<td>SEML do’ (x, [predicate’ (x) or (x,y)])</td>
<td>cough</td>
<td></td>
</tr>
<tr>
<td>Accomplishment</td>
<td>BECOME predicate’ (x) or (x,y), or BECOME do’ (x, [predicate’ (x) or (x,y)])</td>
<td>receive</td>
<td>BECOME have’ (x,y)</td>
</tr>
<tr>
<td>Active accomplishment</td>
<td>do’ (x, [predicate’ (x, (y))] &amp; BECOME predicate’ (z,x) or (y))</td>
<td>drink</td>
<td>do’ (x, [drink’ (x,y)]) &amp; INGR consumed’ (y)</td>
</tr>
<tr>
<td>Causative</td>
<td>α CAUSES β where α, β are LS of any type</td>
<td>kill</td>
<td>[do’ (x, Ø)] CAUSE [BECOME [dead’ (y)]]</td>
</tr>
<tr>
<td>accomplishment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each verb or its semantic and syntactic equivalent is described in terms of its logical structure. However, there is more than just this characterization. The LCM
has incorporated into its descriptive apparatus an enriched version of the original notion of lexical template in RRG. Van Valin and La Polla (1997: 117) give the following template for speech act verbs:

\[ \text{do'} (x, [\text{express}(\alpha).\text{to}(\beta).\text{in}.\text{language}.(\gamma)' (x,y))] \]

This template, which simply captures the idea that speech act verbs are used to perform actions by expressing meaning in language, can be further specified when applied to a specific speech act verb, as is the case of promise, which is seen as a causative accomplishment (Van Valin & La Polla 1997: 551):

\[ \text{do'} (x, [\text{express}(\alpha).\text{to}(\beta).\text{in}.\text{language}.(\gamma)' (x,y))] \text{ CAUSE [BECOME obligated]}^\prime (x,w) \]

This representation binds the logical (or Aktionsart) structure capturing the eventive nature of the lexical predicate in question (the speaker causes himself or herself to become obligated to a course of action) with the non-eventive idea that the predicate is used to convey meaning through language. However, the amount of conceptual material that is encoded into this representation is not sufficient to account for all the knowledge that is relevant in the case of ‘promise’: speakers making promises do more than just express self-imposed obligation; they are also able and willing to perform the action and they generally make promises in order to comply with the addressee’s wishes or expectations in a reassuring way. This knowledge is necessary for linguistic interpretation: I promise to cancel the card if I don’t find it in a few days strongly suggests that the hearer is worried about the card being misused by someone else if it has actually been lost rather than just misplaced. There is no way in which this (default) interpretation can be derived on the basis of Van Valin and La Polla’s representation.

In order to solve problems like this, Mairal and Faber (2002, 2005, 2007) have proposed a system of capturing world knowledge through conceptual amalgams of lexical functions and conceptual primitives. Such amalgams can then be bound with logical structures like those put forward in RRG by correlating argument-structure variables (represented by Roman alphabet letters such as x, y, z) with the variables associated to specific world knowledge structure amalgams (represented by numerals like 1, 2, 3). The following representation captures essential world-knowledge structure described before for the verb promise:

\[
[MANNER_1 \text{reassuring} \& \text{LOC}_{\text{TEMP}} \rightarrow \text{FACT}_3 \& \text{PURP}_1 \text{BECOME know'} (3, 2)]
\]

\[ \text{do'} (x, [\text{CAUSE [BECOME obligated']} (x, z)] x=1, y = 2, z = 3 \]

A lexical function (e.g. MANNER, PURP) is an operator over lexical content, which can be broken down into amalgams of conceptual primitives and event-structure characterizations. Lexical functions can also combine, as in LOC_{TEMP} \rightarrow FACT above. Lexical functions have been adapted from Mel’cuk’s *Explanatory and
Combinatorial Lexicology (ECL) (cf. Mel'cuk 1989; Mel'cuk & Wanner 1996), while conceptual primitives have been drawn from Wierzbicka’s *Natural Semantic Metalanguage* because of its solid typological grounding (cf. Wierzbicka 1999; Goddard & Wierzbicka 1994, 2002).

One of the areas of emphasis of the LCM is on grouping lexical items into lexical classes with the view of systematizing lexical description (cf. Faber & Mairal 1999). Consider the way in which this is done by looking into the conceptual structure of verbs meaning ‘do something badly’ such as the following:

- **spoil**: \( \text{do}' (x, o) \text{CAUSE BECOME bad'} (y) \)
- **botch**: \( \langle \text{infml} \rangle \text{do}' (x, o) \text{CAUSE BECOME bad'} (y) \)
- **bungle**: \( \left[ \text{MANNER}_1 \text{do}_\text{bad} \right] \text{do}' (x, [\text{do}' (x,y)]) \& \text{INGR} \text{done}' (y) \quad x = 1, y = 2 \)
- **flub**: \( \langle \text{infml} \rangle \left[ \text{MANNER}_1 \text{do}_\text{bad} \right] \text{do}' (x, [\text{do}' (x,y)]) \& \text{INGR} \text{done}' (y) \quad x = 1, y = 2 \)

The parameter of informality and the manner specification (a lexical function) are crucial to produce the correct representations. *Botch* and *flub* are informal ways of conveying the same meaning as *spoil* and *bungle*. In turn, the notion of ineptness associated with the manner of performing the action in the verbs *bungle* and *flub* is captured by the combination of primitives ‘do_bad’.

Now we come to argument-structure constructional templates. We will devote this part of the present section to the meaning pole of constructions, while Section 6 later on will outline the question of formal expression. The first aspect of constructions to note is that their semantic configuration makes use of the same descriptive metalanguage as lexical templates. This is a reasonable consequence of the fact that the semantic pole of argument-structure constructions derives from generalizations over low-level non-situational structure. The result of such generalizations is the creation of high-level propositional (or non-situational) cognitive models. This may be seen from a brief overview of the so-called manipulative subjective-transitive construction (e.g. *I want you in my office now*), which is a member of the subjective-transitive family (Gonzálvez 2009). Other members of this family are: (i) the evaluative subjective-transitive construction (*I find their research very interesting*); (ii) the declarative subjective-transitive construction (*They call me arrogant*); (iii) the generic subjective-transitive (*I like my meat rare*). These are sister constructions within their class, so their general arrangement is parallel to the one we have for lexical classes, as we have exemplified above. Each construction is characterized by a number of features that are essential to determine the structure of its corresponding template. The manipulative subjective-transitive construction has the following properties:

- The first participant (which is realized as the syntactic subject) is prototypically human or it can be metonymically interpreted as such: *The BBC wants the audience happy.*
The constructional element acting as a predicative complement of the object must be characterizing but not identifying: *I want you happy/*Marilyn Monroe.

The event denoted by the predicative complement must be sensitive to either direct or indirect manipulation by the speaker: *I want you out of my house/*tall.

The following constructional representation, which is paraphrased right below for convenience, captures the characteristics that we have just listed:

\[
\text{[INSTR1 authority & INVOLV1 think LOC TEMP → PROP2 subjective & 1 = human] do’ (x, [say’(x, y)]) CAUSE BECOME be’ (y, [pred’]); x = 1, y = 2}
\]

‘The first participant, x, which is human (1 = human) expresses to another participant y a future property or state (be’ (y, [pred’])), whose nature is determined by his position of authority (INSTR1 authority), which involves that the first participant regards such a property or state as necessarily subjective (PROP2 subjective)’.

Consider now, by way of contrast, the features and representation of the declarative subjective-transitive construction:

– The first participant (which is realized as the syntactic subject) is prototypically human or it can be metonymically interpreted as such: *The BBC considers this proposal viable.

– The constructional element acting as a predicative complement of the object must be characterizing but not identifying: *He considers her a nice person/*the woman sitting over there.

– The predicative complement must express the speaker’s assessment: *I consider her beautiful/*in room 6.

Evidently, it differs from its sister manipulative construction in the lack of the manipulative ingredient. The rest of the properties coincide. Below is the template for the semantic pole of this construction, together with its paraphrase:

\[
\text{[INVOLV1 think PROP2 subjective & 1 = human] do’ (x, (x,[say’(x, y)]) & be’ (y, [pred’])); x = 1, y = 2}
\]

‘The first participant, which is human, says something, (y), which describes a property or state (be’ (y, [pred’])); this involves that the first participant regards such a property or state as necessarily subjective (PROP2 subjective)’.

Two constructions that have been discussed extensively in the literature are the resultative and the caused-motion constructions (see Ruiz de Mendoza & Luzondo this volume; Jiménez & Luzondo this volume). Goldberg (1995) gives a very simplified meaning representation for both: X CAUSES Y TO BECOME Z (e.g. The blacksmith hammered the metal flat) and X CAUSES Y TO MOVE Z (e.g. She sneezed the napkin off the table). However, the two constructions have a number
of variants that point to a greater degree of delicacy in their meaning representation, so regularities (similarities and differences) can be captured adequately (see, for example, Goldberg & Jackendoff 2004, and Jiménez & Luzondo this volume, for details on the complexities of the various resultative constructions). For example, She cried herself hoarse differs from She wiped the table clean in the degree of conscious involvement of the first participant in the result of the action, which is greater for the latter than for the former sentence. There is a lexical function, INVOLV, which is used to express situations in which the state of affairs designated by a predicate involves the bringing about of another state of affairs that depends on the former. This lexical function can be optionally combined with the lexical function MAGN, which denotes intensification. This optional combination can be built into the following representation for resultative constructions:

\[(MAGN)\ INVOLV\ MEANSE_1\ [do'(x, \emptyset)]\ CAUSE [BECOME\ pred'(y)], x = 1\]

‘The first participant acts in such a way that the first participant causes a new state to come about’

This representation shares part of its eventive structure with the caused-motion construction, which is evident from the following template:

\[\INVOLV\ MEANSE_1\ [[do' (x, \emptyset)]\ CAUSE [(PROC+) [move' (y)] \& INGR <<NOT>> be-LOC (z, y)], x \neq 1\]

‘The first participant acts in such a way that the first participant causes an entity to move to a new location’

The reader will by now be aware that the difference between argument-structure constructions and lexical-predicate descriptions is merely a matter of the greater degree of genericity of the former over the latter. What this means is that lexical structure is constructional, which is why it is ready to combine with non-lexical argument-structure characterizations to the extent that there is conceptual compatibility. The problem for the analyst is to determine the conditions for such compatibility. There are two sources of difficulty: one is the fact that lexical and constructional structure, as evident from the description of lexical and constructional templates, is complex, i.e. it binds conceptual-primitive amalgams modified by lexical functions with event structure specifications; the other is that conceptual compatibility can be overridden through event re-construal processes thus giving rise to a rich array of lexical-constructional integration possibilities. Section 5 addresses these issues in some more detail. We now turn our attention to idiomatic constructions.

4.3 Idiomatic constructions

Argument-structure constructions, like lexical-predicate configurations, are the building blocks of meaning construction. For this reason, they are basic to language
production and interpretation. Sometimes, specific combinations of lexical and constructional structure of this kind become fixed through frequent repetition. This happens when the mediated meaning composition process is partially based on cued inferencing and the resulting inferences become stably associated with the overall combination. This is the origin of idiomatic constructions. These are fixed form-meaning pairings that range from predicate-argument configurations (e.g. *kick the bucket* ‘die’) to full clauses (e.g. *An apple a day keeps the doctor away*, used to advice people to eat healthy). The LCM classifies idiomatic constructions along two axes: (i) their degree of fixity, i.e. whether they are fully fixed or they contain some variable elements; (ii) their meaning function, which is essential to determine the level of description that they belong.

The first dimension allows us to differentiate between proverbs (or sayings) and the rest of idiomatic expressions. Proverbs are fully fixed idiomatic constructions that have a clear interpersonal function. For example, at the implicational level, they can be used to call attention to some aspect of a situation (*First come, first served*) or of human behavior (*e.g. A burnt child dreads fire*) or, at the illocutionary level, they can act as directive acts such as requesting (*e.g. Charity begins at home*), warning (*e.g. A great talker is a great liar*) or advising (*e.g. All that glitters is not gold*).

The second dimension is useful to distinguish implicational, illocutionary and discourse structure constructions, as briefly described in Section 4.1, to which we add predicational-structure idiomatic constructions. We give some examples below:

- Predicational-structure constructions: these are the functional equivalent of lexical predicates; *e.g. X kick the bucket (Y) ‘die’, X pushing up the daisies (Y) ‘dead’, X spick and span (Y) ‘completely new, unused, flawless’.
- Implicational structure constructions: *What’s X Doing Y?* (e.g. *What’s the child doing here now?*; cf. Kay & Fillmore 1999), which suggests that the situation the speaker is asking about is wrong; *Don’t You X me!* (e.g. *Don’t you ‘honey’ me!*), used to indicate annoyance at the addressee’s unawareness that he or she has done something wrong; *Who’s Been VP-ing Y?* (e.g. *Who’s been messing up the bulletin board*?), which conveys the meaning implication that someone has done something that irritates the speaker.
- Illocutionary structure constructions: *You Shall Have X* (e.g. *You shall have a bicycle*), which is used to make promises; *Would You Mind If I X?*, which can be used to ask form permission (e.g. *Would you mind if I sat next to you?*); *I Won’t X* (e.g. *I won’t give up!*), which generally involves a refusal.
- Discourse structure constructions: *X Let Alone Y* (Fillmore, Kay & O’Connor 1988) (e.g. *I won’t eat that garbage, let alone pay for it*), which, as discussed
above, is used to refer to two unlikely states of affairs where the second one is even less likely to be the case than the first; *Just Because X Doesn't Mean Y* (e.g. *Just because we don’t talk doesn’t mean I don’t think about you*; cf. Bender & Kathol 2001) sets up and evidence-conclusion relationship according to which Y does not necessarily follow from X. More discourse constructions are discussed in Mairal & Ruiz de Mendoza (2009) in connection to general semantic relations.

These constructions are made up of fixed and variable elements in different degrees of fixity and variability. The fixed elements impose formal and meaning constraints on the variable elements. We will give an example of how this takes place. Consider again the implicational construction *Who’s Been VP-ing Y?*, as exemplified by the sentence *Who’s been messing up the bulletin board?* As we have already noted, this construction conveys the meaning implication that there is a situation that bothers or irritates the speaker. The situation results from some previous event that is described in the VP-ing Y variable part. In the example given above, someone has left the bulletin board in a disordered condition, which is the consequence of someone inefficiently handling the notices on it. The VP-ing component is necessarily a progressive form in order to complete the past perfect form of the fixed part, thus indicating that the action has taken place in the recent past and is of consequence to the present moment.

4.4 Summary

The overview of the descriptive levels of the LCM that has been given in the preceding subsections is summarized in Table 3, for convenience.

5. Explanatory tools

At the explanatory level, the LCM postulates two basic meaning construction processes: one of them, *cued inferencing* or *cueing*, consists in the activation of implicit conceptual structure through some inferential mechanism on the basis of textual and contextual cues; the other is the *integration* of conceptual structure.

Cueing does not directly involve lexical or constructional structure, but the selective activation of conceptual structure organized in terms of an ICM type, as described in Section 4.1. The intricacies of cueing, together with the principles that constrain its activity, go beyond the scope of the present paper. The interested reader may find a thorough account in Ruiz de Mendoza (2011). Here we will give one example of how cueing is constrained. For the sake of simplicity, consider an
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implicature-derivation task based on a hunting scenario, i.e. a low-level situational model specifying the typical characters, setting and sequences of actions arising from the activity of pursuing and usually killing game for food or sport. Imagine a friend of the speaker’s, Jim, has gone hunting with some friends. After the hunting event, the speaker comments *Jim is a great shot* with the intention of conveying the idea that the hunt was very successful. This kind of implication can be obtained on the basis of a chained premise-conclusion analysis:

Premise (implicit assumption): A great shot is likely to hit all his targets while hunting.  
Explicit assumption: Jim is a great shot.  
Conclusion (implicated assumption): Jim probably hit all his targets.  

Premise (implicit assumption): Hitting all targets makes a hunt successful.  
Previous implicated assumption: Jim probably hit all his targets.  
Conclusion (implicated assumption): The hunt was successful.

The two chained reasoning schemas, from the perspective of cognitive operations, are grounded in metonymy. Through metonymic expansion, the idea that Jim has great skills as a hunter gives access to a more complex hunting scenario where Jim uses his skills to actually hit all his targets. This first metonymy is a case of ability for action. In turn, this richer action scenario, through metonymic reduction, provides access to its most relevant subdomain in the context of the question about the success of the hunt: the assessment about how successful it was. This second metonymy, which is chained to the first, can be labeled action for result. There is an underlying principle, called the Correlation Principle (Ruiz de Mendoza & Pérez 2011:181), which, in its application to metonymy, leads speakers to select the most relevant source domain in terms of its potential to afford access to the intended target domain. The implicit premises in the two reasoning schemas are constructed on the basis of this principle, which makes them adequate source domains for their metonymic targets, which are the implicated conclusions.

Conceptual integration can take three forms: (i) subsumption, which consists in building lexical-predicate structure into argument structure constructions (e.g. *laugh* can be subsumed into the intransitive construction in *He laughs a lot*, but also into the caused-motion construction, as in *The child was laughed out of the school yard*; cf. Ruiz de Mendoza & Mairal 2008); (ii) amalgamation, which is a matter of combining either lexical-predicate structure or constructional structure belonging to the same descriptive level (e.g. the active and passive realizations of the transitive, resultative and caused-motion constructions; Ruiz de Mendoza & Gonzálvez 2011a); (iii) saturation, which realizes variables from either idiomatic or non-idiomatic constructional characterizations through lower-level representations (e.g. *Can You X, Please?* realizes X with a predication arising from the argument-structure level).
5.1 Constraints of subsumption

Subsumption has been described in great detail in Ruiz de Mendoza & Mairal (2008, 2011) and Mairal & Ruiz de Mendoza (2009). These papers spell out the main constraining factors on subsumption, which have been applied to a number of lexical classes and constructions in Pérez and Peña (2009), Peña (2009), Baicchi (2011), and Galera and Ruiz de Mendoza (2012). In this work, constraints on subsumption have been divided into internal and external. The former work on the basis of the compatibility between the conceptual characterizations of lexical predicates and argument-structure constructions. The latter are based on how lexical structure can be re-construed to make it fit into a non-lexical construction. Internal constraints can be further subdivided into two types: (i) constructional constraints on lexical structure; (ii) lexical constraints on the instantiation of constructional variables. We now discuss the different types of constraint.

There is widespread consensus among constructionists (cf. Michaelis 2003; Goldberg 2006) that constructional structure “coerces” lexical structure when there are discrepancies between the two. This phenomenon has been labeled coercion and it is regulated by the Override Principle, according to which the meaning of a lexical item is adapted to the meaning of the structure in which it is embedded. LCM proponents have argued (cf. Ruiz de Mendoza & Mairal 2008: 378) that this principle is not specific enough to account for how coercion takes place.

In the LCM coercion is accounted for as a side effect of different kinds of construal of ICMs taking place at high levels of cognitive activity. To give some illustration, consider the sentence The students all but giggled him out of the room.1 The verb giggle is not causative, which means that its causative use in this sentence comes from somewhere else. In constructionist accounts, the assumption is that the caused-motion construction adds that meaning ingredient to the verb, which is thus adapted into this constructional requirement. However, not any verb can be coerced in this way into the caused-motion construction. For example owe, kill, die, eat, sleep, and split, among many others, would not fit into the caused-motion construction. The reason why giggle above, and other verbs like stare (She stared me out of the hallway), smile (She smiled him out of sight), and chase (The gang chased him out of the country) can occur in this construction is to be found in the possibility of construing the basic scenario invoked by the verb as one where self-instigated motion of the target of the action can take place or not. The caused-motion construction requires physical impact that sets an object into motion. When self-instigated motion happens, this is not the result of physical impact, but simply of

psychological or emotional “impact”, i.e. the target of the action feels affected psychologically or emotionally and reacts accordingly by moving to a different location. This re-construal of the basic scenarios provided by verbs like stare, smile and chase is metaphorical: we treat the psychologically affected target of a non-physical action as if it were the physically affected object of a physical action.

Another way of “coercing” lexical structure into a construction is supplied by metonymy (Ruiz de Mendoza & Mairal 2007). Think of the inchoative construction: The flask opened with a little ‘pop’.2 In this example, it is evident that either there is a human agent or a non-human force that causes the flask to open. However, the scenario is presented as if the opening action were non-causal, i.e. it happened by itself. The scenario depicted by the linguistic expression thus stands for (i.e. is metonymic for) the actual scenario where there are human or natural causes behind the flask opening. The verb open, which is causal and transitive, can be used non-causally and intransitively through this re-construal of the opening scenario where some elements are given prominence (the ‘become opened’ part of the Aktionsart description of open) and others are backgrounded (the agent and instrument of the action).

Both metaphor and metonymy allow us to reinterpret a scenario in such a way that the lexical-predicate invoking it can be adapted into a construction with which the lexical item only shares part of its event structure. Metaphor and metonymy thus act as licensing factors on lexical-constructional subsumption.

Internal constraints, by contrast, are not based on construal; they act as blocking factors. There are vertical and horizontal internal constraints. The former kind regulates the way in which lexical structure is built into constructional structure on the basis of (high and low-level) conceptual compatibility. The latter kind deals with the combinatorial properties of lexical predicates; such properties determine the ability of constructional elements to be co-instantiated. Let us discuss some cases of both internal constraint types.

5.1.1 Vertical constraints
Lexical structure consists of low-level and high-level (i.e. event or logical structure) non-situational specifications. Low-level structure is encyclopedic and is connected coherently in terms of networks of relations. For example, we know that a cat chases mice, that it has whiskers and a tail, that it purrs, and so on. Because of this, in default contexts, it is odd to say that a cat can become involved in actions that are implausible for cats: #My cat chased your elephant; #Your cat drives better than mine; #When will our cat stop braying? Since oddities of this kind

2. 〈http://www.fictionalley.org/authors/elais/NTHG01a.html〉 (27 August 2012).
arise from the nature of the lexical structure that is associated with the internal (or world knowledge) variables of a lexical template, we call this the Internal Variable Compatibility constraint.

High-level non-situational structure constitutes the logical structure of lexical templates. It is connected coherently on the basis of so-called inheritance relations. Such relations have been the object of systematic study in lexematic accounts of language in terms of lexical classes (cf. Faber & Mairal 1999). To give one straightforward example, think of the (high-level) notion of ‘change of state.’ In English verbs denoting changes of state share the constructional property of being subsumable into the inchoative construction: *The mirror broke into tiny little pieces, The bubble has just burst, The meeting has not started yet. The verbs destroy and demolish share part of their low-level semantic structure with the verb break (i.e. they involve reducing an object to fragments) but they do not share their high-level structure, since destroy and demolish are verbs indicating ‘cessation of existence.’ For this reason, they cannot be used in the inchoative pattern: *The building destroyed/demolished. Put in other words, the verbs destroy and demolish belong to the lexical class of ‘cessation of existence,’ while break belongs to the lexical class of ‘change of state.’ Since different lexical classes show different constraints, the LCM postulates the existence of Lexical Class constraints (cf. Galera & Ruiz de Mendoza 2012; Rosca 2012).

High-level or logical structure also underlies the Event Identification Condition. The event structure of a lexical template and a constructional template must be the same for subsumption to be possible. This constraint, however, can be overridden through (metaphorical or metonymic) re-construal, i.e. through the activity of an external constraint, as we have seen above in connection to the caused-motion use of activity verbs such as giggle, stare, smile and chase or the inchoative use of open. However, external re-construal can be prevented by the linguistic system creating a suppletive predicate that captures part of the event structure of a lexical item. This is the case of the change-of-state verb kill, which, unlike other verbs of its class, cannot be used in the inchoative construction: *The mouse killed (as an alternate of The cat killed the mouse). This use is not possible because English has lexicalized the BECOME dead’ component of kill into the verb die (*The cat killed the mouse > The mouse died). It may be observed that this constraint, which is called Lexical Blocking, can be at least partially overridden through meaning specialization. Consider the case of take and go, where the latter predicate captures only the telic part of the former, the causal ingredient being left out: She took John to the station/John went to the station. The first sentence is based on the caused-motion construction, while the second sentence makes use of the intransitive motion construction. Despite the existence of go, which acts as a suppletive predicate for take, it is possible to use take intransitively, as in John took to the station, which also codes telicity, simply because it contains more
specific non-eventive meaning: *John took to the station* suggests that John went to the station for some purpose other than taking a train, such as looking for safety or in order to satisfy some specific need. This means that intransitive *take* is not necessarily blocked by *go* if there is extra non-eventive meaning. We call this phenomenon, which arises from lexical meaning, as *Lexical Blocking Override*. In the example that we have just discussed, *take* is subsumed into the intransitive motion construction through the licensing activity of a now conventionalized metonymic chain: from ‘grasping with the hands’ (*He took her hands in his*) to ‘carrying in one’s hands’ (*He used to take his umbrella with him everywhere*), to ‘causing to go to another place’ (*This bus takes you to Central Station*), to ‘causing to go to another place for safety’ (*He took me to the shelter*), to ‘going to another place for safety’ (*He took to the shelter for safety*). All the links in the chain work on low-level lexical structure, except for the last one, which is a matter of high-level metonymy grounded in high-level metaphor (cf. Ruiz de Mendoza & Mairal 2007; Ruiz de Mendoza & Pérez 2011). In this metonymy, a causative accomplishment (causing someone to move along to a destination) is first presented as if it were an active accomplishment (someone moves along to a destination). This is the metaphor. Then, the active accomplishment, which is expressed linguistically, is made to stand for the causative accomplishment (since the actor is known to be the causer of his own motion to a place for a specific purpose). This is the metonymy, which has the function of highlighting the non-causal part of the event chain by making it implicit, although recoverable.

One last constraint to consider in this section is the *Focal Compatibility Constraint*. One of the differences in constructional behavior between the verb *give* and *contribute* arises from this constraint. While *give* can be used both in the dative and the ditransitive constructions (e.g. *He gave the charity all his money/He gave all his money to the charity*), *contribute* is only possible with the dative (*He contributed all his money to the charity*; cf. *He contributed the charity all his money*). *Contribute* involves the existence of multiple donors to a common fund. In fact, this predicate highlights the existence of multiple donors over the object and the recipient of the contribution. While the dative construction is compatible with such focal prominence factor, the ditransitive is not. This is so because the ditransitive construction focalizes the possession relationship between the recipient and the given object. This clash between lexical and constructional focal requirements blocks out subsumption of *contribute* into the ditransitive construction.

5.1.2 *Horizontal constraints*

There are three such constraints. The first two have been described in Ruiz de Mendoza & Mairal (2008). The third one, which derives from work on constructional behavior carried out by Gonzálvez (2009), is a new proposal.
The first horizontal constraint is *Predicate-Argument Conditioning*. This constraint requires co-instantiation consistency between (i) a predicate and all of its arguments, and (ii) among arguments. Let us take the simplified representation of the caused-motion construction: X CAUSES Y TO MOVE Z. In this construction the argument Y (the object of motion) can be either human or non-human: *She pushed her husband out of the way; She pushed the table into a corner*. However, in the figurative use of the caused-motion construction, the nature of the Z element, which involves a resultant state, places constraints on the kind of Y element that we can have: *She drove her husband into despair*, but *She drove the book into despair*. In this case, the co-instantiation of the predicate (‘drive’) and the PP slot (‘into despair’) calls for a human Y argument.

The second horizontal constraint is called *Internal Variable Conditioning*. Internal variables, as we pointed out before, are the part of a lexical template that captures low-level (i.e. non-eventive) meaning elements, some of which are derived from world knowledge. For example, the verb *swell* involves the increase in size of an entity: *Membership in the club swelled*. When this verb is used figuratively in the caused-motion construction, its Y element needs to be consistent with this fact: *Its membership swelled into the millions* (but cf. *Its membership swelled into a smaller amount*).

The third horizontal constraint, which we will call *Constructional Variable Conditioning*, derives from constructional requirements. Gonzálvez (2009) has made an exhaustive description of such elements for verbs taking part in the subjective-transitive construction. Consider *I found John an efficient plumber* versus *I found John a plumber*. The verb *find*, as used in this construction, calls for a characterizing evaluative element as the predicate complement of its object.

### 5.2 Amalgamation

Amalgamation is a level-internal process. It can have a lexical function. Thus, through amalgamation it is possible to combine lexical items to one another giving rise to lexical (entrenched) complexes of various kinds, generally known as compounds. These can have different degrees of fixity. For example, *toothpaste* (‘a paste used for cleaning teeth’) is more fixed than *tomato paste* (‘a paste made by cooking tomatoes whose skin and seeds have been removed’). Other compounds combine adjectives and nouns (*monthly ticket*), verbs and nouns (*bathing costume*), prepositions and nouns (*underwear*), prepositions and verbs (*overhear*), nouns and verbs (*hairdo*), adverbs and adjectives (*evergreen*), and adjectives and verbs (*dry-clean*). For a lexical amalgam to be such, the combination of predicates needs to denote an entity, an event or a situation that is differentiable from the one denoted by its component parts. The differentiation arises from the use of world knowledge to determine in what way the predicates combine. Since the overall meaning of a
lexical amalgam is not necessarily predictable from the individual meaning of its component parts, each amalgam is assigned a lexical template of its own.

Another function of level-internal amalgams is grammatical. A case in point is the treatment of tense, aspect and modality. These classical grammatical phenomena are a matter of expressing how we envisage a state of affairs: tense places what we say within a framework of relative temporal relationships; aspect sees the content of an utterance as beginning, developing or ending; modality assesses such content in terms of what people say (epistemic modality), what the speaker believes (subjective modality), what we think should be the case (deontic modality) or the ability and willingness of a participant to make get a state of affairs to hold (inherent modality) (cf. Dik 1997a). Language systems have different ways of conveying tense, aspect, and modality, which can also be left implicit. For example, expressing self-imposed obligation, which is a matter of deontic modality, can stand for the desire to do something, which pertains to inherent modality, as in *I must speak to you, please* 'I want to speak to you, please' (cf. Ruiz de Mendoza & Pérez 2001: 347). When modality is marked explicitly, this is done by combining specific grammatical configurations with argument-structure representations. For example, the past simple *The cat chased the mouse* makes an amalgam of the regular past simple construction in English (*V*- ed) and the verb. Irregular pasts are considered fixed lexical constructions (e.g. *ran*) that are directly retrieved from the lexicon for lexical-constructional integration. Another way of signaling tense, aspect and modality is through level-1 idiomatic constructions that become amalgamated with argument-structure representations. Consider the assessment of possibility through the use of *may*. The form is *X May VP*_ NON-TO-INF, where *X* is an NP or a sentence that is functionally equivalent to an NP: *What she said may be troubling to you*. The item “what she said” is obtained by subsuming the verb *say* into the *What*-X$_{NP}$-VP transitive construction and then saturating the constructional variable with a conceptually compatible NP. The item “be troubling to you” takes the ‘non-to’ infinitival form as a requirement of the *X May Y* construction. It subsumes the verb *be* into an argument-structure predicative construction that can further be optionally amalgamated with a *to-PP*.

5.3 Saturation of constructional variables

A constructional variable is an empty slot in a construction that requires saturation by a conceptual construct denoting an entity or a state of affairs that is construed as if it were an entity. Saturation can take place either through lexical mechanisms (e.g. the first participant in *The teacher came*), through constructional mechanisms (e.g. *What he saw terrified him*, whose subject is a whole proposition based on the *What-transitive* construction) or through cued inferencing, as we discussed at the end of Section 3 above. For example, in the caused-motion construction, which we
have characterized in 4.2 above, there are prototypically three variables $x$, $y$, and $z$ (source and path variables can be added too). The first two are necessarily realized in formal expression, while the third variable can be left implicit. This means that this third one can be recovered inferentially. This is evident from the comparison of *The player kicked the ball [off the line], where $z$ can be implicit, with *The player kicked off the line, which is incorrect since the $y$ variable has not been saturated.

In the case of argument-structure constructions, saturation takes place in accordance with principles of conceptual consistency. For example, *My roommate kicked the ball off the line is feasible, although non-prototypical, while *The sunshine kicked the ball off the line does not make sense. With idiomatic constructions containing variable elements, there is more than just mere conceptual consistency. Kay and Fillmore’s (1999) analysis of the What’s X Doing Y? construction, which conveys an incongruity sense (e.g. What’s the child doing in the kitchen?; What's that doing in my library?; What’s your social doing in my mobile?) bears this point out. As these authors have noted, in this construction the verb form doing appears as complement of the copula be. For example, What did the child keep doing in the kitchen? does not convey the same sense of incongruity as What’s the child doing in the kitchen? Furthermore, even though the verb doing is used in its progressive form, the construction can be used to refer to events that do not really involve progressive aspect (What’s that scratch doing on the table?).

6. Meaning construction, meaning interpretation and formal expression

Despite its focus on “meaning construction” the LCM does not exclude considerations of formal expression including the syntactic arrangement of utterances. In fact, the LCM has made provision for the projection of semantic structure into syntax through its argument structure characterizations, as we have already noted. The notion of meaning construction does not exclude interpretation issues either. Thus, in specifying how meaning representations are created and expressed through formal structure in contexts of use, the LCM also gives an indirect account of how linguistic interpretation takes place. This does not mean that putting thoughts into linguistic expressions and deriving thoughts from linguistic expressions are exactly converse processes. What it means is that there is mutual feedback between the two: formal expression in language is the result of realizing conceptual representation; helping hearers to construct an intended conceptual
representation is, in turn, the goal of specific formal arrangements, which are always planned in connection to the speaker's assessment of what contextual variables are manifest to the hearer, i.e. of what contextual information is mentally accessible to the hearer (cf. Sperber & Wilson 1995, for a detailed discussion of the notion of mutual manifestness in speaker-hearer interaction).

Following up on the basic distinction that we have made between idiomatic and non-idiomatic constructions, we can distinguish two cases of formal realization: idiomatic and non-idiomatic. The former involves no special discussion since it is highly fixed. Its variable elements, when they are present, once saturated from a meaning perspective, are realized on the basis of non-idiomatic formal expression, which will be the concern of this section.

Non-idiomatic formal expression is a matter of, first, morphological and phonological/graphic realization, and, second, of syntactic arrangement as specified in the form part of integrated lexical and constructional templates. We shall not address phonological realization, since we assume that, except in the case of meaning-carrying suprasegmental phonology (e.g. stress patterns and intonational contours, which are themselves constructional thus being the object of constructional amalgamation with idiomatic constructions at the implicational, illocutionary and discourse levels), segmental phonology, like graphic representation, is not constructional per se.

The LCM recognizes the descriptive adequacy of postulating constructional templates (or schemas) explicitly coupling semantic and pragmatic meaning with a specification of morphological and syntactic patterns, as is done in RRG (e.g. Van Valin & La Polla 1997; Van Valin 2005; see also the developments in Diedrichsen 2011; Nolan 2011, and Jiménez & Luzondo this volume). For example, the English resultative construction, according to Van Valin (2005:239), contains the following specifications:

**SYNTAX**
- Juncture: nuclear
- Nexus: cosubordination
- Construction type: serial verb
- \[[\text{CL} [\text{CORE} \text{NP}]_{\text{NUC1}} \ldots \text{NP}] \{[\text{NUC2} \ldots] \}, \text{NUC2} \neq \text{V} \]
- Unit template(s): selected according to the syntactic template selection principles in (Van Valin 2005:130)
- Privileged Syntactic Position (PSA): none
- Linking: default

**MORPHOLOGY:** none

**SEMANTICS:** \[\text{PRED}_{\text{NUC1}}\] \text{CAUSE} \[\text{PRED}_{\text{NUC2}}\], \text{PRED}_{\text{NUC2}} [+static]

**PRAGMATICS:**
- Illocutionary force: unspecified
- Focus structure: unspecified
This constructional template or schema responds to many of the requirements for a meaning construction/interpretation account of the canonical English resultative. In its formal part, unlike other constructions like the be-passive, which has idiosyncratic passive verb morphology, the resultative has no specific morphological marking, but it has a special syntax where the undergoer NP is between two nuclei and only the first nucleus is a verbal predicate. In its meaning part, there is an abstract semantic representation, which captures the causative and resultative aspects of the construction. Illocutionary force and focus structure are left unspecified. The pairing of form and function is carried out by the ascription of semantic and syntactic roles to the two nuclei.

There are, however, some essential differences with the LCM treatment of constructional templates. The first difference concerns the illocutionary and discourse values, which in the LCM are obtained though cued inferencing or subsumption into levels 3 and 4 of its architecture. The second is that the LCM, as is evident from our discussion in Section 4.2, provides a richer semantic specification for constructional templates. Thus, the meaning part of the resultative template takes into account several non-trivial facts about resultative constructions: (i) the instrumentality of the action is given conceptual prominence, which is captured by the amalgam of constructional functions INVOLV1MEANSe1; (ii) the actor’s action can be intense enough to achieve the desired outcome, as captured by the optional intensifying function MAGN; (iii) the resultant state is the endpoint of a process, which is captured by the primitive BECOME in connection to the resultant state. These facts are present in the description given in 4.2, which we repeat here for convenience:

\[
\text{[(MAGN) INVOLV1M} \text{EANSe1]}[\text{do} (x, \emptyset)] \text{ CAUSE [BECOME pred'}(y)], x = 1 \\
\text{‘The first participant acts in such a way that the first participant causes a new state to come about’}
\]

In the LCM the formal part of the template is realizational. Its function is to specify the range of grammatical resources available for each meaning element in the event-structure characterization of the template, which is responsible for syntactic projection:

\[
x \Rightarrow \text{NP} \\
\emptyset \Rightarrow \text{unspecified (either an NP or none)} \\
y \Rightarrow \text{AP}_{\text{RESULT}/\text{PP}_{\text{RESULT}}}
\]

The arrow is to be read as “is realized by” and the slash/as “either … or”. A non-amalgamated realization of the resultative has a canonical arrangement, which takes the following form:

\[
\text{NP} (x) + [\text{V+NP}_{\text{OBJ}} (\emptyset)]_{\text{VP}} + \text{AP}_{\text{RESULT}/\text{PP}_{\text{RESULT}}} (y)
\]
The full constructional template can be thus summarized as follows:

\[(\text{MAGN}) \text{INVOLVE}1\text{MEANSe}1\]  
\[\text{do'}(x,\emptyset) \text{ CAUSE } \text{BECOME pred'}(y)\], \(x = 1\)

\(x \Rightarrow \text{NP}\)
\(\emptyset \Rightarrow \text{unspecified (either an NP or none)}\)
\(y \Rightarrow \text{AP}_{\text{RESULT}}/\text{PP}_{\text{RESULT}}\)

\(\text{NP}(x) + [\text{V} + \text{NP}_{\text{OBJ}}(\emptyset)]_{\text{VP}} + \text{AP}_{\text{RESULT}}/\text{PP}_{\text{RESULT}}(y)\)

Full formal expression requires (in this order): (i) subsumption of a verbal predicate into the construction; (ii) obligatory amalgamation with tense and aspect constructions, and optionally with modality constructions and with other level-1 constructions conveying time, location, instrument, manner, etc. (iii) external variable saturation; (iv) optionally, subsuming the output of (i)–(iii) into level-2, level-3, and level-4 constructions. It must be remembered that representations can be left incomplete even at level 1, to be completed through cued inferencing in order to endow them with full meaning import at the levels of argument-structure, pragmatic implication, illocution and discourse. For example, from an illocutionary perspective \textit{You are going to eat yourself to death} is more than a statement of fact, which is the default illocutionary force of the argument-structure canonical resultative construction. At level 3 of the LCM, through cued inferencing, it can easily be taken as a warning. Then, at level 4, we may make it, through completion, part of a condition-consequence sequence (cf. Mairal & Ruiz de Mendoza 2009): e.g. \textit{You are going to eat yourself to death} [if you keep eating at that rate]. Finally, this sentence, from the point of view of pragmatic implication, carries with it an obvious hyperbolic ingredient, which is treated at level 2 through converse reinforcement/mitigation operations working on the scalar cognitive model of quantity (cf. Ruiz de Mendoza 2011, for details on the pragmatic treatment of hyperbole on the basis of cognitive operations).

7. Conclusion

This paper has given an overview of the contribution of the LCM to our understanding of meaning construction, meaning interpretation and formal expression. It has placed emphasis on the role of constructional meaning in this process, while making critical revisions of other constructionist accounts of language in use, whether cognitivist or functionalist. In so doing, it has gone beyond the frequency criterion to determine whether a form-meaning pairing can be considered a construction; in its place, it has posited the notion of replicability, which allows the analyst to give constructional status to non-frequent form-meaning pairings provided that
they can be felt by competent native speakers as not doing violence to the nature of the language to which the construction belongs. The paper has also argued that verbal meaning is always projected into syntax through constructional meaning. This leads to a view of compositionality that is markedly different from the one in Langacker’s Cognitive Grammar: meaning is not composed by means of assemblies of concepts, but rather by making use of the conceptual scaffolding provided by constructions. Then, the paper has discussed the architecture of the LCM in terms of the kinds of cognitive models that it exploits in order to make meaning, and it has described this process from the point of view of the descriptive and explanatory tools of the LCM. It has thus dealt with processes such as subsumption, amalgamation, and saturation of variables, while discussing the specific role of each process at the various descriptive levels of the model. Finally, it has related formal expression to meaning representation in terms of idiomatic and non-idiomatic constructions. In this connection it has specified the requirements for full formal expression and related them to the format of constructional templates in the LCM.

References


Constructions in the Lexical Constructional Model

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This article discusses the concept of construction in the Lexical Constructional Model, focusing on tensions, concerned largely with the relationship between meaning and form in constructions, which have arisen in the model as a result of contributions from three different groups of scholars: functionalists, cognitivists and computational linguists/computer scientists. The article examines precursors of the LCM which made use of ideas from Role and Reference Grammar, and then assesses the influence of the cognitivist contribution and the later input from the computational knowledge base, FunGramKB, also based partly on RRG. Finally, it summarises recent work in RRG, suggesting that the new proposals for treating constructional schemas as central to RRG could prove useful in working towards solutions of the problems arising within the LCM.

1. Introduction: Aims*

The aims of the present article are to discuss the concept of construction within the Lexical Constructional Model (henceforth LCM) in relation to the development of functionalist, cognitivist and computational strands in the model, and in particular to analyse the tensions created by differences in the perspectives of scholars from the three strands. As it is important to understand the history of the model in order to see why these tensions have arisen, a basically chronological approach is adopted. Finally, possible ways of resolving the tensions are discussed.

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2. A brief introduction to the LCM and its history

The LCM (for overviews see Ruiz de Mendoza Ibáñez & Mairal Usón 2008; Mairal Usón & Ruiz de Mendoza Ibáñez 2009), was originally developed as a model of meaning construction. We shall see later that it has now also gained a computational dimension, and that this inevitably introduces the necessity to go beyond meaning construction as such, to include the precise ways in which meanings are related to forms.

One of the main claims of the model, which will be important for the discussion in the present paper, is that it bridges the gap between lexicalist/projectionist and constructionist views on the importance of argument structure for the determination of sentence meaning, and on the relationship between semantics and morphosyntax. The projectionist view is centred on the lexical semantic representation of predicates and their arguments, which is projected on to the morphosyntax by means of a set of linking rules. The constructionist view, on the other hand, emphasises the role of constructions in sentence meaning and maintains that there is no need for linking rules. The LCM position (see Ruiz de Mendoza Ibáñez & Mairal Usón 2006a, 2006b) is that both positions have their weaknesses: functional projectionist approaches do not take enough account of the importance of constructions for sentence meaning and for the morphosyntax, while constructionist accounts do not give enough attention to constraints on the ways in which lexical entries can combine with constructions. The LCM aims to give due weight to both lexemes and constructions, and also to the factors influencing their combinability. A further important aspect of the LCM is that it goes beyond argument structure to examine inferential meaning, illocutionary meaning and discourse-related meaning.

The history of the LCM up to around 2008 is described in Butler (2009) and will also emerge from the discussion in the current paper. The model has its origins in the Functional Lexematic Model (henceforth FLM: for work by the founder of this model see Martin Mingorance 1998), which in turn was influenced by Dik’s Functional Grammar (henceforth FG: Dik 1997) and Coseriu’s Lexematics (Coseriu 1981). Introduction of ideas from Role and Reference Grammar (henceforth RRG: see Van Valin & LaPolla 1997; Van Valin 2005) led to the formulation of the Lexical Grammar Model (Mairal Usón & Faber 2002; Mairal Usón 2002). Enrichment of the semantic side of the model was then achieved by importing meaning descriptions based on the Natural Semantic Metalanguage (henceforth NSM) of Wierzbicka (see e.g. Goddard & Wierzbicka 2002) and from Meaning Text Theory (henceforth MTT: Mel’čuk 1981, 1988, 1989). When MTT lexical functions proved inadequate to express all the semantic distinctions required, solutions were sought in the qualia of Pustejovsky’s (1995, 1998) Generative
Lexicon theory. Then came the crucial stage in which the previous functionalist work was combined with contributions from cognitive linguistics, especially important being Goldbergian Construction Grammar (Goldberg 1995, 2006) and accounts of metaphor, metonymy and other types of cognitive operation. Finally, collaboration with computational linguists/computer scientists led to the incorporation of aspects of the computational knowledge base FunGramKB (for early work on this see Periñán-Pascual and Arcas-Túnez 2004, 2005), which has itself developed through work with the originators of the LCM.

3. A cognitively-oriented functionalist precursor: The lexical grammar model

We begin our survey of the origins of the LCM with the development of the FLM into the Lexical Grammar Model. By the turn of the century, the FLM, particularly in the hands of Faber and Mairal Usón, had attained the status of a sophisticated model of lexemes and their relationship with the syntax of complementation (see Faber & Mairal Usón 1999). Hierarchical lexical networks were established on the basis of similarities and differences of meaning in the definitions of individual lexemes in dictionaries, each hierarchy having a superordinate predicate and a number of subordinate predicates (e.g. *drink* as superordinate of *imbibe*, *gulp* (*down*), *quaff*, *swig*, *swill*, *guzzle*, *tipple*, *sip*). Lexical information was encoded in predicate schemata, which considerably enriched the information available in the predicate frames of Dik's FG. These schemata, though linguistically motivated, aimed to reflect our perceptions of reality.

The FLM, however, had no explicit mapping of semantics on to syntax, and its precursor, FG, had no syntactic level *per se*. Mairal Usón and his colleagues therefore turned to RRG, which has a semantic level comprising the Logical Structures (henceforth LSs) of predicates, a syntactic level represented by the Layered Structure of the Clause, and explicit mapping rules linking the two levels. As we shall see later, the importation of ideas from RRG was to prove highly influential for the development of the LCM, and is the source of some of the tensions in that model.

Crucial for the new RRG-oriented model, and also eventually for the LCM, was the concept of the lexical template (henceforth LT), which characterises each lexical class and includes both syntactically-relevant aspects of meaning and semantic features which distinguish one class from others, these two sets of features being parallel to the external and internal variables of RRG. LTs thus refined and re-expressed the meaning definitions of the FLM, using the RRG formalisms of LSs and internal and external variables. Mairal Usón and Faber (2002: 87) proposed a LT modelling process which regulated the combination of lexical templates...
with particular constructions, giving rise to the various alternations in which a verb can appear: for instance, it would not be possible to combine an atelic LT with a middle or resultative construction because this would cause a clash between the information in the two components. It is thus clear that constructions played an important part in the model even at this stage.

A further innovation which would later prove highly significant for the LCM was the proposal (Mairal Usón & Faber 2002: 68–75) that each LT should be linked to a conceptual ontology such as the Mikrokosmos ontology developed by Nirenburg and his colleagues (see Nirenburg & Rankin 2004).

In an unpublished work, Mairal Usón (2002) took a number of important steps forward. He provided an overall architecture for what was now labelled the Lexical Grammar Model, and reconceptualised the LT modelling process in terms of two different kinds of template: LTs for particular lexical classes, and constructional templates (henceforth CTs) for the various types of construction into which verbs can enter. We shall see that this proposal was later taken forward into the LCM. A parallel set of templates was proposed for word formation. Mairal Usón still entertained the possibility of an ontology feeding into the LT modelling process, but also suggested an alternative, viz. the use of primitives from the NSM, as he saw these as more linguistically-oriented and less culturally biased.

Finally, the output from the Lexical Grammar Model, which is a fully specified semantic representation, was fed into the RRG semantics-to-syntax mapping algorithm, and again this will be important when we are considering the present-day LCM and the tensions created by differing perspectives on the model.

4. Further semantic enrichment

A problem with the adoption of RRG as a component of the Lexical Grammar Model was that it lacked a detailed and principled semantic decomposition of predicates. Mairal Usón and Faber (2007) therefore revisited the proposal to enrich the semantics by using primitives similar to those in the NSM, which were not too different from those used originally in the FLM. The NSM, however, was seen as too highly content-oriented, and furthermore did not make explicit links with the syntax. On these grounds, representations in terms of the lexical functions of MTT were used in order to state the semantic properties distinguishing one lexeme from another, while grammatically-relevant properties were specified in terms of the LSs of RRG. An example of a LT from Mairal Usón and Faber (2007: 149) is shown in (1) and represents the meaning of regret.

\[
\begin{align*}
\text{[sympt} \text{sadness)} & \text{ involv}_{1,2} \text{ (want) degrad } (do)_{2} \text{ loc}_{\text{tempe}^-} / \text{(become)}_{2} \\
\text{ LOC}_{\text{in} \text{tempe}^-} & \text{ feel'} (x, y)
\end{align*}
\]
The LS on the right of the definition uses the predicate *feel*′ which is the superordinate term, and the part in square brackets represents the information which differentiates *regret* from other verbs of feeling: *x* feels sad about *y*, and *x* would prefer that the event had not (degrad) happened (become) in the past (temp). This model of the lexical template survived in the LCM, as shown by the example in (2), for the Spanish verb *captar* (‘grasp’ in the sense of ‘understand’) (Mairal Usón & Ruiz de Mendoza Ibáñez 2009: 164):

(2)  
\[
\text{captar}: [\text{MagnObstr} \& \text{Culm}_{1,2[\text{ALL}]}) \text{ know}^\prime (x, y) x = 1; y = 2
\]

The verb *captar* is distinguished from other verbs of knowing by means of two lexical functions, one of which expresses the fact that knowing is achieved with great difficulty, the other encoding the culmination of knowing the propositional meaning of something. The indices 1 and 2 serve to link the participants involved in the Culm function to the arguments of the LS.

It soon became apparent that lexical functions, originally intended to account for syntagmatic (collocational) lexical relations rather than paradigmatic contrasts, were not adequate to capture all the semantic properties needed in LTs. At that stage, it was suggested that Pustejovsky’s (1995) qualia characterisations might provide a more adequate representation, since they are capable of showing relationships between the two halves of the LT, viz. the semantic and Aktionsart modules. Cortés Rodríguez (2009: 254) proposes to replace the entry for Spanish *captar* given in (2) by the structure shown in (3), where $Q_F$ is a formal quale distinguishing the lexeme within a wider domain, and $Q_T$ is a telic quale, stating purpose or function.

(3)  
\[
\text{captar:} \\
\text{know}^\prime (x, y (\text{ALL})) \\
\{Q_F: \text{MagnObstr think}^\prime (x, y) \\
\text{Q}_T: \text{Culm know}^\prime (x, y)\}
\]

For a more detailed account of the initial use of lexical functions and the transition to qualia, see Mairal Usón, Periñán-Pascual & Pérez Cabello de Alba (2011).

5. Synthesis with cognitive/constructionist approaches: The LCM

So far, we have seen that the model was strongly functionalist in orientation, though it was intended to capture our cognitive perceptions of reality. We come now to the crucial phase in which Mairal Usón began to collaborate with colleagues with a strongly cognitive and/or constructionist background, foremost among whom was Francisco Ruiz de Mendoza, leader of a group at the University
of La Rioja, Spain, the members of which had already published widely in the area of cognitive semantics. This development marks the inception of the LCM as such, and can be seen as making it a truly functional-cognitive model. The incorporation of ideas from cognitive linguistics had two major consequences, which we shall deal with in turn.

Firstly, it led to a rise in the profile of constructions within the model, and in particular to the further development of CTs, which had been discussed only informally in Mairal Usón (2002), with no explicit connection to proposals made in Construction Grammars. The variety of Construction Grammar which has most influenced the LCM is the model of Goldberg (1995, 2006), now known as Cognitive Construction Grammar, selected because of its strong compatibility with the cognitive semantics of Lakoff, and because it already made use of a decompositional technique in postulating semantic structures such as (X CAUSE Y TO BECOME Z). The LCM differs from Goldberg's approach in that while the latter postulates that words and even morphemes are constructions, the LCM reserves the notion of 'construction' for one of the levels of grammatical description, i.e. the one that deals with all aspects of meaning in a semantic representation that cannot be predicted by mere composition of the different lexical specifications that are presented as syntactically related in a sentence. (Ruiz de Mendoza Ibáñez & Mairal Usón 2006b: 123)

However, the model takes over the inventory of constructions, such as the ditransitive, caused motion, resultative, conative, etc. discussed by Goldberg and accepts the definition of a construction in terms of a pairing of a form and a meaning/function. The most recent definition from cognitivist scholars working in the LCM is as follows (see also Ruiz de Mendoza Ibáñez, this volume):

A constructional characterization is understood as a pairing of form and meaning where form affords access to meaning and meaning is realized by form to the extent that such processes have become entrenched in the speaker's mind and are generally recognized by the speech community to be stably associated. For a construction to be such it needs to be potentially replicable by other speakers with minimal variation in its form and meaning. (Ruiz de Mendoza Ibáñez & Galera Masegosa 2012)

We shall return to this point later, but for now let us consider how the information in LTs and CTs is combined. In order to facilitate this process, both types of template are expressed in the same formalism, derived from the RRG LS. The process of combination is known as lexical-constructional subsumption, and is an example of a general procedure in which lower-level cognitive structures are taken up by, or subsumed into, higher-level ones (see Ruiz de Mendoza Ibáñez & Diez Velasco 2002).
As an example of lexical-constructional subsumption, consider Example (4) (for a similar example see Ruiz de Mendoza Ibáñez & Mairal Usón 2008: 382):

(4) ... they would have laughed you out of town (British National Corpus, World Edition, ADR 208)

This is an example of coercion, in which a construction, here the caused motion construction, forces a verb into an argument structure it does not normally have. The LT \textit{laugh-at'} (x, y) is coerced by the construction into a modified form \textit{laugh'} (x, y), as shown in Figure 1 (note that the italicisation of the predicate is meant to indicate that these are not semantic primitives, but require further decomposition).

The fact that not every verb can be combined with the caused motion construction in this way (\textit{they would have *killed/*caught you out of town}) is accounted for by external and internal constraints on the subsumption process. External constraints are concerned with cognitive processes such as metaphor and metonymy. For instance, in Figure 1 the conversion of the activity predicate to a causative accomplishment predicate is licensed by the high-level metaphor ‘experiential action is effectual action’. Internal constraints deal with conditions on the internal constitution of the LT and CT. Full details of both kinds of constraint can be found in Ruiz de Mendoza Ibáñez and Mairal Usón (2008: 378–390).

Figure 1. Lexical-constructional subsumption: the caused motion construction
The second important consequence of the incorporation of ideas from cognitive linguistics was to expand the LCM beyond the core grammar, to include constructional phenomena right up to the level of discourse. As shown in Figure 2, the model now has four levels: level 1 is the core grammar, where argument structures are dealt with; level 2 is concerned with “pragmatically guided and linguistically

Figure 2. The architecture of the LCM (where: LT = lexical template; IT= idiomatic template CT = constructional template; CS = Conceptual Structure)
Constructions in the Lexical Constructional Model

guided situation-based low-level inferencing” (Ruiz de Mendoza Ibáñez & Mairal Usón 2008: 369), a case in point being the ‘What's X doing Y’ construction, which conveys the implication of incongruity in the situation; level 3 deals with illocutionary meaning, for instance the constructional ambiguity of can you …? questions in English, as representing either a question or a request; finally, level 4 is concerned with conventional implications which involve more than one clause, such as the well-studied let alone construction. Relationships between levels are conceived in terms of the subsumption of output from a lower level into a higher level, and also in terms of conceptual cueing, defined as follows:

> Conceptual cueing is a meaning derivation process whereby a meaning representation – of levels 1 to 3 – acts as a prompt for the metonymic activation of a related conceptual structure that is either the final meaning representation of a linguistic expression or contains all the meaning ingredients to become the output for the next level of interpretation. The conceptual structure thus activated consists of one or more cognitive models either in isolation or in principled interaction. (Ruiz de Mendoza Ibáñez & Mairal Usón 2008: 391)

In the case of the ‘What's X doing Y’ construction, asking the question acts as a way of making the addressee aware of the problem so that s/he can act in accordance with the metonymically activated high level Cost Benefit Model proposed by Ruiz de Mendoza Ibáñez and Baicchi (2007).

There can be no doubt that the expansion of the LCM through the importation of work in cognitive linguistics has enriched the model and rendered it capable of accounting for many phenomena beyond mere argument structures. Also, in accordance with the equipollence hypothesis, which states that “unless there are well-evidenced reasons to the contrary, all levels of linguistic description and explanation make use of the same or at least comparable cognitive processes” (Mairal Usón & Ruiz de Mendoza Ibáñez 2009: 154; see also Ruiz de Mendoza Ibáñez 2007), the operations of subsumption and cueing, operating throughout the model and involving cognitive processes such as metaphor and metonymy, give a welcome level of coherence.

However, the strongly cognitive orientation of the model has also introduced a problem. As we have seen, the LCM is described as a model of meaning construction. This orientation has led to a reduction in the attention given to the morphosyntactic realisation of meaning, compared with the predecessors of the model. Work by cognitive linguists is heavily skewed towards meaning, and that of the LCM cognitivists is no exception. The downgrading of morphosyntax obscures a significant problem concerned with the projectionism/constructionism debate. It is important to remember that this debate is not solely about the relative contributions to sentence meaning made by lexical semantics and by constructional
semantics, but is also concerned with the relationship between meaning and form. The projectionist view, as we have seen, is that the two are related via mapping rules or algorithms, whereas the constructionist view is that such rules are not required, constraint satisfaction mechanisms operating on constructions being sufficient.

Papers on the cognitive strand of the LCM often do not discuss the morphosyntactic side of constructions at all, but concentrate on meaning. Note that the CTs proposed in the LCM are purely meaning specifications, with no associated morphosyntactic realisation, and so do not count as full constructions, since all definitions of the term ‘construction’ in the cognitive literature, including that of Ruiz de Mendoza Ibáñez and Galera Masegosa quoted earlier, stipulate that a construction is a pairing of a form with a meaning/function. There are publications (e.g. González-García 2009) which approvingly invoke the LCM and do provide diagrammatic representations of constructions which include morphosyntactic realisation, but these are modelled closely on the work of Goldberg, in which the syntax consists of simple clause structures involving the verb, noun phrases, adjectival, prepositional and adverbial phrases, with particular syntactic functions (Subject, Object, XPComp), presumably involving unspecified constraint satisfaction mechanisms.

Are we then to conclude that the projectionist orientation of the earlier functionalist precursors with regard to the realisation of meaning in form has been replaced by a constructionist orientation? Such an interpretation is strongly suggested by, for instance, a recent paper with the title ‘Constructional integration in the Lexical-Constructional Model’ (Ruiz de Mendoza Ibáñez & González-García 2011), which cites Goldberg’s original (1995) definition and her revised, expanded (2006) definition of a construction, does not offer any examples of how constructions might be formalised, and briefly discusses lexico-syntactic constraints on constructions without indicating any precise details about the kind of relationship which is claimed to exist between meaning and form. The difference between constructionist and functionalist perspectives becomes even more important when we consider the computational strand of the LCM, which we turn to in the next section.

6. The computational strand of the model: FunGramKB

In the past few years, understandably mindful of issues relating to visibility and funding, proponents of the LCM have emphasised its potential for applications in Natural Language Processing (NLP). To this end, they initiated a collaboration with computational linguist Carlos Periñán Pascual and computer scientist Francisco
Arcas Túnez, who had already begun to develop a linguistically grounded knowledge base for NLP, FunGramKB, oriented towards language understanding. Influence here has been, and continues to be, mutual, in that much of the FunGramKB linguistic level is based on the LCM, while the LCM had benefited from the ontological approach to meaning which is at the heart of FunGramKB. A particularly important aspect of this collaboration, from the viewpoint of the present paper, is the fact, mentioned earlier, that an NLP system clearly requires explicit links between meanings and their morphosyntactic realisation.

FunGramKB distinguishes lexical, grammatical and conceptual levels (see Periñán-Pascual & Arcas-Túnez 2010). The lexical level comprises a lexicon and a morphicon. The lexicon stores morphosyntactic, pragmatic and collocational information about lexemes and has pointers which link lexemes to concepts in a hierarchical ontology which will be described below. The morphicon deals with inflectional morphology. The grammatical level consists of a grammaticon which stores the constructional schemata that represent the various types of construction into which lexemes can enter. These schemata help in the implementation of the RRG-based algorithm which links semantics to morphosyntax. The conceptual level consists of three parts, the ontology, the cognicon and the onomasticon. The ontology stores a hierarchically-arranged set of concepts, and has a general purpose core and specialised satellite terminological components. The cognicon stores procedural knowledge about situations by means of scripts. The onomasticon stores knowledge about instances of entities or events. A crucial aspect of the design of FunGramKB is that the linguistic (i.e. lexical and grammatical) levels are language-dependent, but the modules of the conceptual level are claimed to be language-independent, across a range of culturally-related languages: at present the English and Spanish lexical and grammatical levels are well-developed, and other languages are in the process of being added, including French, German, Italian, Catalan and Bulgarian.

It will be remembered that linking lexemes to an ontology was one of the proposals made in the 2002 paper by Mairal Usón and Faber, although Mairal Usón (2002) then retreated somewhat from this position, first preferring the more linguistically-based alternative of enriching lexical semantics using functions from MTT and primitives which recalled those of the NSM approach, and then turning to qualia as a possible representational format (see §3). With the advent of FunGramKB, in which the ontology is central, the LCM returns to an ontologically-based approach to meaning. This is not such a dramatic change as it might seem, since the semantic descriptors used in FunGramKB are based on an extended version of Pustejovsky’s qualia structures (see Periñán-Pascual, 2013). One key aspect of this change is the replacement of the RRG concept of LS by that of the Conceptual Logical Structure (CLS). The two are compared in the
representations in (6) and (7), adapted from Periñán-Pascual (this volume), for the example in (5).

(5)  ... their blood froze black in the snow. (http://books.google.co.uk/books?id=aLCI01qpURUC&pg=PA62&dq=froze+black+in+&source=bl&ots=7rJA3CDwny&sig=dGeoG5TXkSipjda_jWnAeaikM5o&hl=en&sa=X&ei=gT0JUMnCF5CyhAen7pmECg&ved=0CEkQ6AEwAg#v=onepage&q=%22froze%20black%20in%22&f=false)

(6)  \(<_{\text{IF}} \text{DEC} \prec_{\text{TNS}} \text{PAST} \prec \text{be-in'} \text{(snow, [[do' (blood, [freeze' (blood))]])} \text{CAUSE} \text{[BECOME black'}} \text{(blood))}>>>> \text{(LS)}

(7)  \(<_{\text{IF}} \text{DECL} \prec_{\text{Tense} \text{past}} \prec_{\text{CONSTR-L1}} \text{RESI} \prec_{\text{CONSTR-L1}} \text{INCH} \prec_{\text{AKT \text{ACC}}} \text{[+FREEZE_00 (+BLOOD_00-Referent, +BLACK_00-Result)]} \prec_{\text{CONSTR-L1}} \text{INCH} \text{[+SNOW_00-Location]} >>>>> \text{(CLS)}

In the CLS in (7), +FREEZE_00, +BLOOD_00, +BLACK_00 and +SNOW_00 are all basic level concepts from the ontology, relevant to the analysis of lexemes in all the languages covered. The CLS also builds in information on the construction (CONSTR-L1 RESI indicates that we are dealing with a level 1 intransitive resultative construction, and CONSTR-L1 INCH that a level 1 inchoative construction is embedded within the resultative construction) and the Aktionsart (AKT ACC) shows that we are dealing with an accomplishment here.

The advantages of the CLS over the RRG LS are set out by Mairal Usón, Periñán-Pascual & Pérez Cabello de Alba (2011) and also discussed briefly by Periñán-Pascual & Arcas-Túnez (2010: 2671). In a CLS the primitives for semantic description are concepts taken from a language-independent ontology. This mode of representation thus gives access to world knowledge, through the ontology. It also minimises redundancy and maximises informativeness. Finally, a CLS can be transduced into a form in which it can be used for inferential operations performed by a reasoning engine. The CLS is a meaning representation which is oriented towards the syntax of the sentence, while the COnceptual REpresentational Language (COREL) is a cognitive schema providing semantic knowledge for the operation of additional processing. Following Periñán-Pascual (this volume), the COREL scheme corresponding to the CLS in (7) is as shown in (8):

(8)  +(e1: past +FREEZE_00 (x1)Theme (x2: +BLOOD_00)Referent (f1: (e2: +BECOME_00 (x2)Theme (x3: +BLACK_00)Attribute))Result (f2: +SNOW_00)Location)

We must now consider the relationship between the LTs of the old model and the CLSs of the new computationally-implementable model. As we might expect, the semantic module of the old LTs, as well as the Aktionsart module as explained
above, is now re-expressed in terms of concepts from the ontology. Each lexeme in a given language which represents an event now has a Thematic Frame (TF) showing the conceptual arguments it takes, and a Meaning Postulate (MP) setting out its individual meaning, again using concepts from the ontology. In (9) are shown the TF and MP for the concept +FREEZE_00.

(9) CONCEPT: +FREEZE_00

THEMATIC FRAME:
(x1)Theme
(x2)Referent

MEANING POSTULATE:
+(e1: +COOL_00 (x1)Theme (x2)Referent (f1: +MUCH_00)Quantity
(f2: (e2: +BECOME_00 (x2)Theme (x3: +SOLID_00)Attribute))Result)

The TF shows that the concept of freezing something has associated with it a Theme and a Referent, while the MP indicates that freezing something consists of cooling it down to a high degree, so that it becomes solid as a result.

Now that we have the MP for +FREEZE_00, we can expand the COREL schema in (8) even further, to give (10):

(10) +(e1: past +COOL_00 (x1)Theme (x2: +BLOOD_00)Referent (f1: +MUCH_00)Quantity
(f2: (e2: +BECOME_00 (x2)Theme (x3: +SOLID_00 & +BLACK)Attribute))Result (f3: +SNOW_00)Location)

We are now finally in a position to discuss the handling of constructional information in FunGramKB. As we have seen, constructions are housed in the grammaticon. This consists of four constructicons, each corresponding to one level in the LCM model. The level 1 constructicon contains constructional schemata related to argument structure, the level 2 constructicon schemata concerned with implicational meanings, the level 3 constructicon schemata used in relation to illocution, and the level 4 constructicon schemata involved in discourse-level phenomena (see Mairal Usón, Ruiz de Mendoza Ibáñez & Periñán Pascual, forthcoming, for an up to date summary of the grammaticon).

The term ‘construction’ is defined, in Periñán-Pascual (this volume) in terms of the more basic term ‘construct’, this being “any form-meaning pairing which serves as a building block in the compositionality of the sentential semantics”. A construction is then a holistic linguistic construct whose meaning cannot be fully derived from that of the lexical constructs which are contained within it. It is important to note here that since a construct is a pairing of form and meaning, and a construction is a kind of construct, it follows that a construction is also a pairing of form with meaning. This is, of course, a constructionist definition of what a construction is. On the other hand, we shall see in what follows that FunGramKB does not in fact state pairings of form and meaning as the
constructionists do, but rather generates forms from meanings, or *vice versa*, by means of projection rules.

Constructional schemas at each level “are defined in terms of descriptors and constraints, where the latter licenses [sic] compositionality with other constructs or constructions” (Periñán-Pascual, this volume). Such a schema can be represented in terms of an attribute-value matrix which, in the case of level 1 argument structure constructions, specifies (i) the type of construction involved (e.g. Intransitive Resultative, as in the *freeze* example given earlier), (ii) the CLS, with information on the number and type of variables in the semantic structure, including their syntactic realisation, the thematic role of new variables, any macroroles which cannot be inherited from the core grammar of the verb, and (iii) the contribution made to the COREL structure (for details see Periñán-Pascual, this volume). A CLS for a sentence with a particular construction can be generated automatically from information about the core argument structure of a lexeme (e.g. *freeze*) and information from the L1 constructicon (e.g. about the Intransitive Resultative construction) (Periñán-Pascual & Arcas-Túnez 2010: 2672). The CLS from level 1 can then be converted into a COREL representation, which can be successively augmented by information from the constructicons at levels 2, 3 and 4. These changes do not alter the logical structure of the original CLS, but rather expand the COREL schema.

We now turn to the generation of the CLS from the textual input in a language understanding system, by means of a parser housed in the FunGramKB ARTEMIS module, which consists of a Grammar Development Environment (GDE), the CLS Constructor and the COREL-schema Builder (see Periñán-Pascual, this volume). For our purposes here, the important point is that the parsing procedure is based on RRG, though making some important changes to the standard linguistic model. We have already seen that an L1-CONSTRUCTION node is added to the LSC. Also, the GDE does not work with an inventory of syntactic templates, as in the standard model of RRG, but rather with a set of feature-based production rules of three kinds: syntactic rules which build the enhanced LSC, with its units nucleus, core, periphery, clause, construction; constructional rules which embed constructional schemata into the LSC, and are generated, as we have seen, from the lexicon and the grammaticon (core grammar plus all relevant constructional schemata); and lexical rules providing morphosyntactic and semantic information about words. A further change to the standard RRG model is that thematic roles, which have no autonomous theoretical status in RRG but are derived as specialisations of macroroles, are necessary for tagging constituents in the parse tree. The output from the parser is a feature-based tree structure for the sentence, from which the most relevant semantic units and their attributes can be extracted to give the CLS.
7. Discussion: A possible way forward

Let us at this point take stock of what we have discovered about the LCM and its relationship with FunGramKB. At present the model reveals some internal tensions, due to the very different perspectives of scholars in the three strands which contribute to the approach: functionalist, cognitivist and computational.

We have seen that the predecessors of the LCM were models with a very strong functionalist orientation, although they by no means ignored cognitive and constructional matters: the FLM, in its late form as set out in Faber and Mairal Usón (1999) aimed to probe the cognitive organisation of the lexicon through a detailed study of lexical relations in their various domains, and the Lexical Grammar Model first postulated the idea of combining templates setting out lexical structures with other templates for constructions.

With the advent of collaboration with the cognitivist partners in the LCM, we see a number of publications which take a strongly cognitive, constructionist view. This is to some extent understandable: firstly, it is natural that the cognitivists should write about areas within their particular expertise, and secondly, the sociology and politics of linguistics is bound to come into play. It seems to me that while some functionalists are open to cognitive considerations, many cognitivists would resist the combination of cognitive linguistics with a model such as RRG which is towards the formal end of the functionalist spectrum.

At the present time, although most papers from the cognitivists tend to ignore both the influence of RRG and the computational angle, there are some indications that the cognitive scholars are beginning to engage directly with FunGramKB. For instance, Garrido García and Ruiz de Mendoza Ibáñez (2011) discuss the relationship of the LCM with FunGramKB and in particular the modelling of procedural knowledge in the cognicon.

The computational scholars are of course very much interested in the cognitive angle as far as the conceptual basis of FunGramKB is concerned, and also with respect to the cognicon, which houses scripts for familiar situations. However, it has to be recognised that the computational implementation of cognitive operations such as metaphor and metonymy raises difficult problems.

The differences in orientation among the three strands of the LCM are particularly clear within the area of the projectionist/constructionist debate. It bears repeating here that this debate has two facets, both of which are important in relation to the LCM. Firstly, projectionists emphasise the role of verbal semantics in the meaning of sentences, while constructionists focus on the contribution made by constructions, which can be shown to constitute a separate source of meaning which can actually override the normal lexical semantics in cases of coercion. Secondly, projectionists make use of linking rules of one sort or another to relate
semantics to syntax, whether in the productive (semantics-to-syntax) direction or in relation to language understanding (syntax-to-semantics); constructionists, on the other hand, claim that no such rules are needed, since meanings are paired directly with forms in the constitution of a construction. As far as the first aspect is concerned, all strands with the LCM strive to give due weight to both lexical semantics and constructional semantics. It is with respect to the second aspect of the debate that the differences between the strands of the LCM arise.

In general, the cognitivists tend to avoid detailed discussion of the way in which meanings and forms are to be related, but when they do make allusion to this, there is some inconsistency between publications. At times, a clearly constructionist perspective is adopted, as for example in the work of Gonzálvez-García, including the recent (2011) paper with Ruiz de Mendoza mentioned earlier. In other work, the possibility of a projectionist position is admitted: for instance in Garrido García and Ruiz de Mendoza Ibáñez (2011: 106) the LCM is presented as a model of meaning construction producing “representaciones exhaustivas de significado que estén listas para proyecciones o realizaciones morfosintácticas” (‘exhaustive meaning representations which are ready for projection or morphosyntactic realisation’, CSB’s translation). This is thus a clear recognition here of a projectionist component in the LCM, but the ways in which meanings are mapped on to forms still remain unspecified.

The computational scholars, on the other hand, pace the claim of Periñán-Pascual (this volume) and Ruiz de Mendoza Ibáñez (this volume) that the LCM adopts a position midway between projectionism and constructionism, take a basically projectionist stance on meaning/form connections, relating semantic and morphosyntactic structures by means of rules which are based on the mapping rules of RRG, though with important changes.

Some way of reconciling these viewpoints needs to be found if the LCM is to achieve recognition as an internally coherent and consistent model. One theoretically available option would be for the LCM to revert to its status as purely a theory of meaning construction, without explicit consideration of how meaning is linked to form. FunGramKB could then be regarded as a separate enterprise, which takes from the LCM what is useful for it, but does not feed back into the linguistic model. This would be very unattractive for two reasons: firstly, it would mean reversing the fruitful links with RRG which were made in the precursors of the LCM; secondly, the LCM and FunGramKB have already shown themselves to be of considerable benefit to one another, and aspects of FunGramKB have enriched the inner workings of the LCM, especially with regard to its current ontologically-based semantics, which facilitates the application of the model across different culturally similar languages. A less radical position would be to accept the ontological basis of the semantics but to reject FunGramKB’s essentially projectionist view of
the relationship between semantics/pragmatics and morphosyntax, in favour of a constructionist view.

At the other end of the spectrum of possibilities, the LCM could opt firmly for the projectionist principle of linking rules mediating between form and meaning, while still, of course, maintaining a balanced view on the contributions of lexical semantics and constructions to sentence meaning. As we have seen, there is some evidence that the cognitivists might be willing to accept this solution, though they have so far remained silent on the mechanisms for relating semantics and pragmatics to morphosyntax, and in particular on the role to be played by RRG.

I believe that there is a middle way which could prove useful in achieving an acceptable solution to the problem we have been discussing. There is recent work in RRG which brings this model closer to constructionist approaches in some respects, while still retaining its projectionist view of meaning/form relations. Van Valin (2013) has suggested that the projectionist view of the construction of sentence meaning represents the speaker’s perspective, while the constructionist view represents the hearer’s perspective. That is, while the mapping of semantics on to syntax in language production should still be seen as projecting lexical semantics on to the morphosyntax, the mapping of syntax to semantics needed in parsing could be viewed in terms of the principles of co-composition postulated in the Generative Lexicon model of Pustejovsky (1995, 1998). The RRG mechanism of mapping rules is still preserved, however; it is just that the principles of co-composition are built into those rules in the syntax-to-semantics direction.

Even more relevant to the problems of the LCM is the recent work of Brian Nolan and Elke Diedrichsen (see Nolan 2011a, 2011b, 2012; Diedrichsen 2011, 2012a). Nolan (2011a) starts from the premise that RRG needs to confront a number of challenges in relation to descriptive, explanatory and typological adequacy, and that these centre around the concept of construction. Specifically, he points out that mainstream RRG currently does not give a satisfactory account of idioms and metaphor, in which the principle of compositionality does not hold. He poses a number of questions regarding constructions and RRG which need to be answered, relating to what RRG means by a construction, what information constructions should contain, how constructions relate to other parts of the grammar, where they reside in the model, how constructions relate to one another, whether (part of) our grammatical knowledge is organised in constructions, whether constructions include information about both form and meaning/function, and whether constructions are organised in a structured network. His thesis is that constructions, although they do currently figure in the form of constructional schemas which help to guide the linking rules, are an under-used resource in RRG and need to be given a more central place in the theory.
Currently, “only the idiosyncratic, language-specific features of constructions are represented in constructional schemas” (Van Valin 2005: 132), a position which Nolan finds reminiscent of the early Chomskyan view that the lexicon was a repository for information on the idiosyncratic behaviour of lexemes. RRG constructional schemas, containing information on syntax, semantics, morphology and pragmatics, are housed in an inventory, which would need to be sequentially searched during processing, a position which is neither cognitively adequate, since it does not accord with the extreme rapidity of processing, nor computationally desirable. Nolan goes on to propose a new approach to constructions which makes them very much more central within the model.

Constructions in Nolan’s model are treated as grammatical objects and are contained within a repository, but their retrieval is accomplished not by serial searching but by means of a signature, which is a morphosyntactic template through which instances of a construction may be identified. For instance, the signature for the ‘way’ construction in English (as in He fumbled his way into the chair provided for visitors, British National Corpus, World Edition, ADY 3063) is \[NP \_ V \_ [PN1 WAY (PP .path)]]\]. Signatures are coupled with a set of constraints which prevent overgeneralisation of productivity.

Constructions also have an input and generate an output, and these will differ in kind depending on whether we are linking semantics to syntax or vice versa. When the input is a string of words which matches the construction signature, an instance of the construction is activated in the mind, and the executable process contained in the construction body, encoding the relationship between the morphosyntax and semantics/pragmatics, is brought into play to generate the output. The process specified in the construction body calls upon the lexicon to provide information about the particular lexical items involved. This whole process, which encompasses the RRG linking algorithm, occurs within a workspace (cf. the mental ‘workshop’ proposed by Van Valin 2005: 161). Nolan (2011a) discusses the implications of his model for the linking algorithm and gives three detailed worked examples of schemata for particular constructions, both non-idiomatic and idiomatic, from English and Irish. Where there is both a literal and an idiomatic interpretation, as with kick the bucket, the correct reading must be determined from the discourse context. Nolan (2011b) applies the new model to morphological constructions in Irish. Nolan (2012), after presenting an account of the Irish prepositional ditransitive construction, points out that it an empirical question whether the LCM and FunGramKB could give a satisfactory account of this construction.

Diedrichsen (2011) takes over Nolan’s concept of the construction as a grammatical object and applies it to semantics-to-syntax linking, with German as the language under description. She begins by pointing to some problems with the mapping of basic LSs and possible thematic relations in RRG, and then goes on
to argue that macroroles, the generalised semantic functions of RRG, are both inadequate and also unnecessary, if constructions are taken to be responsible for argument realisation. Thus constructional schemas are, as in Nolan’s work, elevated to a much more central status in the model, rather than being invoked only for language-specific idiosyncratic phenomena.

By means of examples from German, Diedrichsen demonstrates that a lexical approach to argument structure is unable to explain the creative use of constructions, for example the ditransitive construction with loan verbs such as twittern (used only in connection with the social networking service Twitter), or the use of novel verbs created from other sources (e.g. the past participle eingeflext, derived from the name of a system, FlexNow, for an online grading system in one German university).

However, Diedrichsen also points to difficulties with constructionist accounts of argument selection, in particular with the positing of a tight bond between form and meaning/function. She claims that neither form nor function is entirely predictable for a construction, and that a direct mapping between them is also problematic at times. Polysemy is rife, not only with individual words, but also with constructions: see e.g. Goldberg 1995 on the ditransitive construction and Diedrichsen (2012b, in press) on ambiguity of constructional function in the German bekommen- and haben-passives, respectively. There is also a problem with defining meaning/function in many cases: for instance, Diedrichsen poses the question of whether the V2 sentence structure of German declaratives can be taken to have a particular meaning. She also points out the clash between, on the one hand, the claim that form/function complexes are stored in memory as units, and on the other hand the large degree of variability they display. She cites Jackendoff’s (2002: 152f.) remarks to the effect that the memorability of linguistic units is a gradient property.

Diedrichsen therefore rejects the concept of the construction as a fixed form/function unit, in favour of an interpretation in which it is a pattern which can be learned, with a variety of variables, which can again be learned. She argues that this approach can be used for argument structure, where the variables are the positions in the argument structure. Thus the constructional schema becomes a mechanism for the description of constructions throughout the grammar.

Finally, Diedrichsen provides a detailed construction-based description of the semantics-to-syntact linking in a simple German transitive declarative clause, and for a German W-question combined with a ditransitive construction, using Nolan’s model of the construction.

Diedrichsen (2012a) provides not only an analysis of the bekommen- passive in German according to Nolan’s model of the constructional schema, but also an account of how lexical-constructional subsumption would work with respect to
this construction, showing that she believes the two approaches to be compatible. She also suggests that constructions invoking cultural background can be described within her model and are potentially compatible with the LCM, illustrating this claim with respect to the ‘anticipation of adherence-request’ construction exemplified by a sign in a Chilean metro station saying *Gracias por no fumar* (‘Thank you for not smoking’) (see also Diedrichsen 2013).

It seems to me that the Nolan/Diedrichsen proposals offer an attractive way forward in trying to find a solution for the problems, concerned with the nature of the construction and the projectionist/constructionist debate, which I have discussed in this article. The new proposals give constructions a central role in RRG theory, but the arguments for the loosening of the form/function bond, if accepted, would provide a solid basis for adopting a more indirect relationship between form and meaning/function than currently posited by the constructionists, and yet one in which constructions are intimately involved. If the LCM is to increase its level of consistency and coherence, as it surely must, then its proponents would do well to scrutinise the new proposals with a view to working towards solutions of some of its problems. For maximum coherence and consistency, it would also be necessary for the computational scholars to consider adapting the mapping between semantics/pragmatics and morphosyntax in FunGramKB so that it came more into line with Nolan's recent computational work. This would entail some important changes: for instance, macroroles are central to the mechanisms used in FunGramKB, while Diedrichsen, as we have seen, argues that they are dispensable, and the UniArab machine translation system developed by Nolan and Salem (2011), which uses RRG, also works perfectly well without them. I hope, then, that members of the functionalist, cognitivist and computational strands of the LCM will not only work more closely together to resolve the tensions which are apparent in the current model, but also enter into dialogue with those who are developing RRG in a more centrally constructional direction.

References


Garrido García, Nazaret & Ruiz de Mendoza Ibáñez, Francisco J. 2011. La modelación del conocimiento procedimental en el Cognicón de FunGramKB: una propuesta desde los supuestos del Modelo Léxico Construccional. ANGLOGERMANICA ONLINE 2011, 106–120.


Mairal Usón, Ricardo, Periñán-Pascual, Carlos & Pérez Cabello de Alba, María Beatriz (2011). La representación léxica: Hacia un enfoque ontológico. In El funcionalismo en la teoría...


Periñán-Pascual, Carlos. This volume. Towards a model of constructional meaning for natural language understanding.


Ruiz de Mendoza Ibáñez, Francisco J. This volume. Meaning construction, meaning interpretation and formal expression in the Lexical Constructional Model.


From idioms to sentence structures and beyond

The theoretical scope of the concept “Construction”

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The paper will explore the theoretical scope of the concept “construction”, as envisaged in Constructional approaches to grammar. Starting from the Role and Reference Grammar notion of Constructions, as represented in “Constructional Schemas”, it will be argued that Constructional Schemas as representations of linguistic knowledge can be used not only for language specific constructions, but for the wide range of argument structure and sentence structure constructions as well. This will be exemplified by extensive discussions of two well known German construction types, which are the bekommen-passive, a passive three-place argument structure construction, and the bracket structure, which is a sentence structure pattern that forms the basis of many syntactic phenomena in German. It will be argued that the Construction in this sense is to be treated as a “grammatical object”, whose use is systematically constrained by context factors and also by lexical-semantic factors. The Constructional Schemas give an extensive representation of the constructions by providing the constraints of their use, the constraints for their recognition in a stream of speech or writing, their syntax, their semantics, morphology and pragmatics. The model of constructional schemas caters for real-time processing in a workspace. The notion of constructional knowledge for the processing of linguistic utterances is then taken a step further and expanded to include constructions whose use and functionality is not mainly based on grammatical knowledge, but rather on cultural knowledge. Some “idioms” do not “work” on their own, but require a very subtle mix of culturally acquired background knowledge and situational factors, and their use is deeply embedded in basic behavioural patterns in a society of speakers. I will introduce three speech act constructions, which do not exhibit the form-function correlation that is generally described for the linguistic realisation of illocutionary force, and explain their pragmatic effects by adhering to Dawkin's notion of the cultural unit “meme” and Wittgenstein's idea of “life form”.
1. Introduction

Constructional approaches have a number of advantages over projectionist accounts as they can explain phenomena that are not projectable from the lexicon. Construction Grammar defines constructions as linguistic signs with a strong “form/function”-correlation (Goldberg 1995, 2006). Constructions are described in terms of idioms, and also at the level of argument structure and sentence structure. To cover the scope of the concept, an account is needed that allows some variability in the architecture of linguistic constructions. In Role and Reference Grammar (RRG, e.g. Van Valin 2005), features of constructions are represented by the use of Constructional Schemas which display the knowledge associated with constructions in terms of semantics, syntax, morphology, pragmatics. They are flexible enough for the description of a great variety of construction types, as they allow for the semantics, syntax etc. slots to be filled with features to variable degrees.

However, Constructional Schemas are claimed to be relevant for the linking only in cases where “idiosyncratic, language-specific features of constructions” (Van Valin 2005:132) apply. It is assumed that generally, the argument structure of a construction follows from the semantics, i.e. the logical structure of a verb.

In the paper, it will be proposed to use Constructional Schemas from RRG as descriptive tools for constructions in general, which includes argument structure constructions and also grammatical patterns for word- and sentence structure formation. The construction is presented as a grammatical object with a signature that identifies it and a context constraint that distinguishes it in cases of constructional ambiguity (Diedrichsen 2011, 2012b, 2012c, 2013).

It will be shown also that Constructional Schemas can be used to describe the knowledge associated with linguistic structures where more than mere linguistic knowledge is involved. Following Dawkin’s approach to “memes” as units of cultural knowledge and Wittgenstein’s notion of “life form”, some examples of linguistic expressions will be analysed that involve a substantial cultural background for their usage in a linguistic community. They will be explained using Constructional Schemas as well. It will be shown that for the use and understanding of the pragmatic side of linguistic constructions, cultural conventions have to be taken into account, as these form the background for the emergence and also the sustainability of these structures within a linguistic community.

Thus, Constructional Schemas are utilised for the description of constructions themselves, their emergence, and also the extra-linguistic knowledge associated with them. The paper will proceed as follows:

Sections two and three will give a basic introduction to RRG and make particular reference to its approach to argument structure and constructions.
Section four will provide a lexical-constructional account of the German *bekommen*-passive construction. It will be shown that the representation of a passive ditransitive argument structure construction can benefit from a constructional approach, in that a constructional schema can be provided that informs about its features, including the semantics of the construction as a whole. It will be pointed out as well that there are lexical constraints for the formation of the *bekommen*-passive construction.

Section five will give an extensive discussion of a very basic phenomenon in German syntax, which is the bracket structure construction. It will be argued that this construction, while very formal and hardly idiomatic, can be treated as a construction in its own right, and not as a component part of a particular sentence type in German.

Section six will introduce the idea of “cultural objects” as an extension to the “grammatical objects” which can be represented in constructional schemas. It will be argued that constructional schemas as knowledge representations are flexible enough to capture the complex cultural background knowledge that is necessarily associated with the use of certain conventionalised speech act constructions, in particular those where the illocutionary force is not reflected in the sentence type. The notion of “cultural object” will be based on Dawkin’s notion of “meme” and Wittgenstein’s notion of “life form”.

Section seven will give a summary and conclusion of the discussion.

2. Role and reference grammar: A lexical approach to linguistic structure

In lexical theories of grammar, it is posited that certain aspects of the verb meaning determine the number and the grammatical status of the arguments that will appear in a linguistic construction. Thus, verbs are classified according to the semantic features which in effect constitute the argument structure realisation. Broadly, the following semantic factors are at issue: Causal notions, aspectual notions, event complexity and factors like sentience and volitionality (Levin & Rappaport Hovav 2005: 128). These are considered to be “grammatically relevant facets of meaning” (Levin & Rappaport Hovav 2005: 9) of the verb.

The first step in the mapping is to decompose the relevant verb meanings. In Role and Reference Grammar [RRG], the verb meanings are decomposed with respect to a combination of “causal” and “aspectual” features. The aspectual features are assigned on the basis of the Aktionsarten-classification carried out by Vendler (1967), according to which features like telicity, punctuality, stativity and dynamicity are distinguished. The basic semantic predicates are connected by the use of do’ and operators like CAUSE and BECOME.
RRG distinguishes six Aktionsart classes, all of which have additional causative counterparts.

**Table 1.** Lexical representation for Aktionsart classes (Table 2.3 in Van Valin 2005:45)

<table>
<thead>
<tr>
<th>Verb class</th>
<th>Logical structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>predicate′(x) or (x, y)</td>
</tr>
<tr>
<td>Activity</td>
<td>do′(x, [predicate′(x) or (x, y)])</td>
</tr>
<tr>
<td>Achievement</td>
<td>INGR predicate′(x) or (x, y)</td>
</tr>
<tr>
<td>Semelfactive</td>
<td>SEML predicate′(x) or (x, y)</td>
</tr>
<tr>
<td></td>
<td>SEML do′(x, [predicate′(x) or (x, y)])</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>BECOME predicate′(x) or (x, y)</td>
</tr>
<tr>
<td></td>
<td>BECOME do′(x, [predicate′(x) or (x, y)])</td>
</tr>
<tr>
<td>Active Accomplishment</td>
<td>do′(x, [predicate′(x, (y)]) &amp; INGR predicate′(z, x) or (y)</td>
</tr>
<tr>
<td>Causative</td>
<td>α CAUSE β; α and β are logical structures of any type.</td>
</tr>
</tbody>
</table>

The thematic relations continuum given in Figure 1 (Figure 2.3 in Van Valin 2005:58) lists the thematic relations that are possibly placed in the logical structure argument positions of the basic predicates. Agent and patient are presented as the endpoints of the continuum.

![Figure 1](image-url)

**Figure 1.** Thematic relations continuum in terms of logical structure argument positions; after Van Valin (2005:58; Figure 2.3)

RRG considers certain generalisations, like the Thematic relations continuum and the logical structures, to apply across constructions and across languages.
They are captured in general principles. The language and construction specific features, however, are recorded in constructional schemas, which are related to the general principles, but may override them. In RRG, thus, linguistic descriptions based on the construction will only be used if the basic principles do not apply because a language specific form-function correlation is on hand.

3. Constructional schemas

RRG recognizes the importance of constructions by positing constructional schemas, but only for the “idiosyncratic, language-specific features of constructions” (Van Valin 2005:132). Thus, there are constructional schemas for passives, antipassives, conjunction reduction and wh-questions. These schemas are considered to be stored and applied in cases where the construction is not a direct consequence of the valence of the verb and the general argument realisation principles applied in RRG.

The general idea of a constructional schema is that it informs about the features of a construction and thus reflects the knowledge that is stored with respect to a conventionalized construction in a language community. It includes syntactic, semantic and pragmatic properties of a construction.

My suggestion is to use the constructional schema as a general descriptive tool for constructions. It contains explicit information about the fixed structural elements that would help the speaker/hearer recover the construction in the online production of utterances.

According to a new approach from Nolan (2012a, 2012b) the construction can be viewed as a “grammatical object” that is saved in a structured repository of constructions. This repository represents the linguistic knowledge of an individual in a linguistic community. A constructional schema is the representative of a grammatical object in linguistic theory. The construction as a grammatical object is highly complex and variable. It includes mechanisms for the processing of structures, which are considered to apply in a “workspace” that is part of the operational potential of the construction (Nolan 2012a, 2012b; cf. also Van Valin 2005). Each grammatical object has a “signature” (term after Nolan 2012a, 2012b, personal communication) that identifies the construction and activates the constructional schema, i.e. the functions, the language-specific properties and the processing mechanism. This “key” is based on morphosyntactic information; it is a morphosyntactic pattern. The “constructional signature” is unique to the construction and should therefore be distinctive. In an ideal case, there is a 1:1 correspondence between the morphosyntactic pattern and the function assigned to it. But in many cases there is no clear form-function correlation, and thus, there has to be another way of determining a given construction, when the signature is not univocal.
As speakers are able to determine linguistic constructions despite their formal ambiguity, I suggest one needs to add a “constraint” to the “signature” that determines the construction in the particular situation of use (Diedrichsen 2011, 2012b, 2012c, 2013). The constraint is a condition for the identification of a construction. It is effective on the basis of the immediate speech situation in terms of its linguistic and non-linguistic surroundings. By use of context-related knowledge, general knowledge and linguistic knowledge, the recipient of an utterance has to understand that the constraint is fulfilled, in order to process the construction in the way that is intended by the speaker. The determination of the meaning of signs is generally related to the situation of use, and therefore, such a “context constraint” for the determination of constructional functions is considered to be adequate.

There is another important “constraint” that has to be satisfied for the functionality of a construction. The Lexical Constructional Model [LCM] (Ruiz de Mendoza Ibáñez & Mairal Usón 2007, Mairal Usón & Ruiz de Mendoza Ibáñez 2009, Ruiz de Mendoza Ibáñez, Francisco & Mairal 2008, Ruiz de Mendoza Ibáñez) acknowledges constructions in general, but recognises also that constructional models do not explain the constraints that apply in the combination of lexical entries with constructions (Ruiz de Mendoza & Mairal Usón 2007; Butler 2009).

Even though the freedom to use constructions is greater than assumed by many advocates of lexical theories of grammar, it is not the case that any construction is principally open to any verb. The RRG-oriented Lexical Constructional Model [LCM] assumes that there is a unification process between a lexical entry and a construction. “Meaning construction” (Ruiz de Mendoza & Mairal Usón 2007:37) is achieved by the unification of a lexical template and a constructional template. The unification is ruled by internal constraints, which are the metalinguistic parts of the lexical template, and external constraints, which include mappings of templates based on metaphor and metonymy. Figure 2 gives a graphical representation of the LCM.

![Figure 2. The Lexical Constructional Model](image-url)
In the following sections, the theory of the construction as a grammatical object will be outlined using examples from German. The next section will examine a German argument structure construction from the lexical-constructional perspective outlined in this section.

4. A lexical-constructional account of the German bekommen-passive

The German bekommen-passive construction is a recipient passive. The construction is used with the auxiliaries bekommen, kriegen and erhalten. The subject is semantically the receiver, benefactive or malefactive in the event.

(1) Man kriegt ja sonst nichts geschenkt. Als BahnCard-Kunde schon!
One get/receive.pres3sg part otherwise nothing give.pstp (But you do as a BahnCard customer)
You never get anything for free. But you do as a BahnCard customer!
(Newsletter, Die Bahn (German Railway service company))

The construction is called “passive” because the recipient would be the dative argument in a ditransitive active structure (Diedrichsen to appear c). The bekommen-passive construction is semantically equivalent with its corresponding ditransitive active structure, as active and passive “versions” of a proposition are generally considered to involve a change in perspective, but equivalent semantics.

The bekommen-passive construction is possible with various scenarios in which a person is a recipient, benefactive, or malefactive of something.

(2) Sie kann etwas, was wir gleich hoffentlich bewiesen bekommen.
3Fsgnom can.pres3sg something 1plnom soon hopeful.adv prove.pstp get/receive.pres1pl
She can do something that we will hopefully get/receive proved in a minute.
(T.Gottschalk, Wetten, dass? (TV entertainment), ZDF 22.1.05)

(3) Ick will ja hier keinen Denkmal jesetzt kriegen
1sgnom want.pres1sg part here no.sgacc monument.sgacc put.uppstp get/receive.inf
I do not want to get/receive a monument (of myself) put up here.
(Berlin dialect)
(H. Juhnke in “Der Hauptmann von Köpenick“ (Movie after play by C. Zuckmayer, 1997))
Figure 3 shows the Constructional schema for the *bekommen*-passive construction.

| CONSTRUCTION: German passive (recipient), aka *bekommen*-passive | SIGNATURE: *Bekommen, kriegen, erhalten* + perfect participle, 1-3 arguments, mostly 2 arguments; one argument appears in a von-phrase |
| CONSTRAINT: |
| 1. *bekommen* (kriegen, erhalten) are used as auxiliaries. |
| 2. Subject is not agent. |
| WORKSPACE: *Real-time processing according to the following construction-specific rules*: |
| SYNTAX: |
| Variables: 3 arguments; x, y, z; one may either appear in a prepositional phrase or be omitted |
| PSA [‘subject’]: Dative argument of active ditransitive structure |
| Linking: Non-default; Recipient/benefactive/malefactive will be nominative; Patient/Theme will be accusative (default), Agent will be omitted or appear in propositional phrase |
| MORPHOLOGY: |
| NPs: Case marking subject to noun type and declension class |
| Verb: past participle |
| Auxiliary: *bekommen, kriegen, erhalten* (latter restricted to concrete transfer meaning) |
| SEMANTICS: |
| PSA is not instigator of state of affairs but is recipient benefactive or malefactive of it (default) |
| PRAGMATICS: |
| Illocutionary force: Unspecified |
| Focus structure: No restrictions; PSA = topic (default) |

Figure 3. Constructional Schema for German recipient passive (cf. Diedrichsen 2008a, 2012a)

There are semantic restrictions on the kind of verbs that can form a *bekommen*-passive. Some verbs are not acceptable, even though they appear in active ditransitive structures.

### 4.1 Lexical constraints for the *bekommen*-passive

In a constructional approach to ditransitive constructions in English, Goldberg (1995: 31 ff.) suggests that there is a basic constructional meaning for the ditransitive construction, but, as a linguistic sign, the construction is polysemous, so that various related senses of it can be described. For English, six classes of senses of the ditransitive construction are distinguished. According to this approach, ‘transfer’ is the basic meaning that can be associated with every use of the ditransitive construction, and the others are related to this central sense.

Goldberg (1995: 38) distinguishes the following six related senses of the ditransitive construction. They all make reference to specific verb classes.

1. **Central sense**: Successful transfer of an object to a recipient, involving a wilful agent: *give, present*
B. Transfer is implied by conditions of satisfaction: promise, guarantee
C. Refused transfer: refuse, deny.
D. Transfer is accomplished in the future: send, leave, reserve, grant
E. Agent enables recipient to receive patient (no actual transfer): permit, allow
F. Agent intends to cause recipient to receive patient. These are the verbs that would not be described as ditransitive in a lexicalist account: bake, build, make, also verbs of obtaining: buy

The meaning in A is the basic meaning. The other senses suggested by Goldberg are based on metonymical inferences and entailment relations (cf. Michaelis & Ruppenhofer 2001: 68 ff.).

In Goldberg’s approach, possible metaphorical extensions are not listed, as they are believed to arise from the basic sense, which is the “source domain” (Goldberg 1995: 33 f.). In cases of metaphorical transfer, the “recipient” “receives” something that is not concrete. The event of giving may involve transfer of abstract “goods”, so that even in the most commonly used version of the construction, the event of actual “giving” is not necessarily involved. The metaphorical mapping from ‘Transfer of a physical object’ to ‘Transfer of perceptive/cognitive/intellectual content’ is familiar; there are many examples for metaphorical extension of this type in German and English: begreifen (‘uptake’), auffassen (‘grasp’), Dank, Entschuldigung annehmen (‘accept thank/excuse’).

When Goldberg introduces her semantic classes, she explicitly bases her distinction on “classes of verbs” which are supposed to be suitable for the ditransitive construction. The introduction and discussion of “semantic classes of verbs” contradicts the verdict generally posed by Construction Grammar, and by Goldberg in the same book (Goldberg 1995, Chapter 2), which is that the construction is supposed to provide the semantics, and not the verb itself. From my view, there is a hidden confession to lexical semantics in this approach, whose message resembles the one suggested by the LCM: There are semantic constraints that regulate which verbs may appear in a certain construction and which may not.

Goldberg’s insights about semantic conditions of ditransitive constructions can be applied to the German bekommen-passive (cf. Diedrichsen 2012a for full discussion). As pointed out above, the bekommen passive is very flexible in accommodating verbs with variable senses of transfer, including benefaction and malfeasance in a metaphorical sense, i.e. receiving honours instead of goods or getting information, which is transfer of perceptive/cognitive content (cf. Examples 2 and 3). The bekommen-passive construction is, however, not free for any kind of three-place-verb, as the examples in (5) show. The notion of transfer is obviously very important for the formation of the construction. This is a lexical constraint in the sense proposed by the LCM.
The examples are from Cook (2006) 158, 160.

(5) a. Er ha-t den 3MSG.NOM have-PRES.3SG DEF.MSG.ACC
    Verbrecher der gerecht-en criminal DEF.FSG.DAT fitting-FSG.DAT
    Strafe zu-ge-führ-t. Punishment.SG to-PSTP-lead-PSTP
    ‘He has submitted the criminal to the fitting punishment.’

b. *Die gerecht-e Strafe krieg-t def.FSG.NOM fitting.FSG.NOM punishment.SG get/receive-PRES.3SG
den Verbrecher zu-ge-führ-t.
   def.MSG.ACC criminal to-PSTP-lead-PSTP
   Lit.: ‘The fitting punishment gets/receives the criminal brought’.

The entry provided in the “Semantics” section of the Constructional schema is therefore not only a descriptive feature, but also a prerequisite for the use of the construction. It is a lexical constraint that applies before the construction is selected.

In the full representation of the constructional schema in Figure 4, this LCM based constraint is therefore placed in a box that precedes the constructional schema. This is done in order to visualise that lexical knowledge plays a role in the selection of the construction, and that the construction with its full feature and functionality set can only be used if the lexical constraint is satisfied.

The contents of the constructional schema include the features of the construction that will be used by the speech act participants when they parse the construction. The syntactic, semantic and pragmatic features are of issue when the construction is interpreted as a linguistic sign. Only people who have knowledge of these features will understand the construction in the intended way, and in order for the construction to be used, the language user must be aware of semantic restrictions on its components.

Consider the following attested example:

(6) er bekommt diese Aktion aber 3MSG.NOM get/receive.PRES3SG DEMFSG.ACC action.SG ACC but(PART)
    abgepfiffen, weil … blow-the-whistle-to-stop.PSTP because
    He gets/receives this action stopped (by the referee’s whistle), because …
    (DFB-Semifinal Schalke 04 vs. Werder Bremen, ARD, 19.4.05)

The meaning of this construction is a combination of different possible metaphorical extensions of transfer. There is a transfer of information, and additionally, there
is a metaphorical version of denied transfer, as it has been described for class C:
'He is denied the success of the action' (cf. also Goldberg 1995: 38). The meaning of the construction here thus has to be specified in terms of a combination of (metaphorical) transfer of information and the denial of a metaphorical transfer (cf. Diedrichsen 2012a for discussion). The example is very unusual in that two meaning components add to the overall meaning of the construction, especially as both components involve metaphorical transfer, one of them being denied. This may be a borderline case of the use of the bekommen-passive, but as there is a sense of transfer involved, the construction can be produced like this and parsed accordingly.
4.2 Conclusion

The *bekommen*-passive is a passive argument structure construction whose use and functionality is based on a lexical constraint, which requires that the verbs used in it express a notion of transfer, which is to be understood in a very broad sense. Otherwise, the structure and semantics of the construction as a whole is systematically representable in a constructional schema which makes reference not only to the constraints that distinguish this construction, but also to the syntactic, semantic and morphological features. The construction does not in itself lead to a particular pragmatic effect, therefore this component of the constructional schema is described as “unspecified”.

5. The German bracket structure as a construction

German syntax is known both for its complexity and its discontinuity. The regular “bracket structure” is typical for many syntactic phenomena in German. It is the most important typological feature of German syntax (Nübling 2008: 91). The bracketing principle is found in phonology and morphology as well. New High German shows a general trend towards marking borders, which is apparent, for example, in final devoicing, sentence intonation principles and bracketing inflection in the morphology of past participles (Ronneberger-Siebold 1991). In Modern German syntax, the following features are cases in point: (cf. Nübling 2008: 94):

- The obligatory subject pronoun
- The article/determiner
- The main clause bracket structure, which appears with the following constructions (Drach 1937 [41963], Eisenberg 2006):

  A. Verbal brackets
  - Periphrastic verbal constructions like perfect, passive, future, subjunctive, including emergent forms like the *bekommen*-passive (Diedrichsen 2008a, 2012a), the *haben*-passive, and the substandard *tun*-periphrasis (Diedrichsen 2008b).
  - Modal verb constructions, where the modal verb is finite and the full verb is in the infinitive, as in *Sie will heute nicht schon wieder mit ihm tanzen* (‘She doesn’t want to dance with him yet again today’) [brackets in boldface]

  B. Lexical brackets (Nübling 2008, Ronneberger-Siebold 1991):
  - “Funktionsverbgefüge” (cf. also Ronneberger-Siebold 1991:208f.): complexes of one finite verb and more lexical material; both are lexicalized as one semantic unit, e. g. *Sie bringt ihre Freude zum Ausdruck* (‘She expresses her joy’) [brackets in boldface]
Constructions with separable prefix verbs. Separable prefixes form a unit with the verb in its infinite forms, but in a finite use of the verb, they get separated from it and move to the end of the sentence. Verbs with separable prefixes are discontinuous forms which establish a bracket structure.

This section will be concerned with the main clause bracket structure. I will argue that the bracket structure, given its continuous appearance across German syntax, is adequately described by a construction-based model. The bracket construction will be represented as a sentence structure pattern that is part of the linguistic knowledge of an individual. Its formal and functional properties will be represented in a Constructional Schema, as it is applied for constructions in Role and Reference Grammar (Van Valin 2005; Diedrichsen 2010, 2011, Nolan 2012a, 2012b).

5.1 The German bracket structure as a word order rule

The so-called “Stellungsfeldermodell” was invented by Drach (1937) in order to account for the topology of German sentences. In German main clauses, there is no restriction with respect to the position of subject and object, but the position of the finite verb is fixed. The V-2 word order rule demands that the finite verb has to be the second element in the clause. With periphrastic tense forms and other separable verbs, the finite and infinite parts of the verb do not stand adjacent to each other. Rather, a so-called “Satzklammer” (bracket construction, also known as brace construction) is formed: The finite verb opens the bracket, like a brace, and the infinite verb closes it. Within the two braces, the order of constituents is relatively free. This part of the sentence is called “Mittelfeld” (middle field), the position before the finite verb is called “Vorfeld” (prefield), and the position after the second part of the separable verb is called “Nachfeld” (postfield). There is also an optional “Vor-Vorfeld” for left-dislocated elements. Those are separated from the rest of the clause by a comma, and are referred to by a resumptive pronoun in the prefield.

Note that these word order rules only apply to main clauses. Subordinated clauses have verb-final order, and the verbal elements stand adjacent to each other (8e). Thus, the prefield only exists in main declarative clauses. In (8), the use of the “Stellungsfeldermodell” is illustrated for different types of sentences (see e.g. Eisenberg 2006, Grewendorf, Hamm and Sternefeld 71994, Wöllstein-Leisten et al. 1997).

The basic sentences exemplified in (8a–b) are represented with glossings in (7a–b). (8c–k) are variations of this sentence with different word order.

(7) a. John wäscht heute das Auto
   John wash.pres3sg today defnsgacc car.sg
   John washes the car today.
b. John hat heute das Auto gewaschen
   John have.pres3sg today defnsgacc car.sg wash.pstp
   John has washed the car today.

(8) German sentence topology

<table>
<thead>
<tr>
<th>VVF</th>
<th>VF</th>
<th>lSk</th>
<th>MF</th>
<th>rSk</th>
<th>NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>John</td>
<td>wäscht</td>
<td>heute das Auto</td>
<td>gewaschen</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>John</td>
<td>hat</td>
<td>heute das Auto</td>
<td>gewaschen</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>John,</td>
<td>hat</td>
<td>heute das Auto</td>
<td>gewaschen</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>John</td>
<td>hat</td>
<td>das Auto</td>
<td>gew. heute</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>weil</td>
<td>J. heute das A. gew.</td>
<td>hat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>Das Auto</td>
<td>hat</td>
<td>John heute</td>
<td>gewaschen</td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>Gewaschen</td>
<td>hat</td>
<td>John das Auto heute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Das A. gewaschen</td>
<td>hat</td>
<td>John heute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j.</td>
<td>Hat</td>
<td>John heute das Auto</td>
<td>gewaschen?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k.</td>
<td>Wasch</td>
<td>das Auto!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In all kinds of clauses, the left brace has to be occupied, while the right brace may remain free (8h, i). In main declarative clauses, there has to be a constituent in the prefield.

The topology model from Drach is a very powerful representation of the word order regularities that hold in German. It defines the position of the finite verb in a main clause, and all the other positions and fields in the sentence. Apart from being useful for statements relevant for generative descriptions with the respective terminology, the topology also enables structural descriptions of the functionality of the clause structure. For example, the order of constituents in the middle field generally follows the topic-comment structure. With ditransitive sentences, the order of the dative and accusative arguments is organised with respect to the pronoun-noun distinction (Lenerz 1977; Haftka 2004, Van Valin & Diedrichsen 2006; Diedrichsen 2008b). The generative rule, that only one constituent may appear in the prefield, may be overridden by pragmatic circumstances, for example when the expression in the prefield has contrastive focus, as in (8i) (Diedrichsen 2008b). Therefore, the topology model with the bracket structure presents itself as a very useful resource for the description and functional motivation of sentence structure in German. It has been used for the statement of a word order rule in RRG-based descriptions of German (Van Valin & Diedrichsen 2006; Diedrichsen 2008b, Diedrichsen 2009), which will be discussed in the next section.

5.2 The RRG word order rule for German main declarative clauses in the Semantics to Syntax linking

Diedrichsen (2008b) defends the idea that the structure of German main declarative clauses involves a precore slot, and that the precore slot is the preverbal
position in a V-2 main declarative clause. The assumption of the structural position of a precore slot facilitates the formulation of a word order rule for German main declarative clauses, as the important structural positions prefield, left brace and right brace can be translated into RRG terms very succinctly, and the functionality of the bracket construction can be given full consideration in an RRG description (cf. Diedrichsen 2008b for full discussion). This section will introduce the RRG based treatment of the bracket structure in German.

In RRG, the structure of the clause is assumed to be organised in layers. The core holds the elements of the simple clause, which means the arguments and the predicate. “Clause” is a super-core level which holds extra core elements. The prefield position in German is argued to correlate with the precore slot position in RRG. The core, then, is structurally embedded in the two braces. The core essentially corresponds to the Mittelfeld. The left brace (finite verb) is assumed to belong to the core, if it is not an auxiliary. The right brace, which holds the full verb in a periphrastic construction, is considered to belong to the core. Thus, the core holds the full verbal information and the arguments in the middle field. Auxiliaries do not belong to the core in terms of the constituent projection.

Figure 5 shows the constituent projection of the sentence in (7b).

![Figure 5. Constituent projection for a periphrastic construction in a main declarative clause](image)

For the description of sentence structure, RRG formulates a set of general rules, which includes the view that on the basis of Aktionsart classes, the semantics of the verb can be translated into a logical structure for the syntax of the sentence including this verb. Grammatical relations like subject and object are assigned on the basis of Generalised Semantic Roles and language specific PSA selection rules. The word order is allocated by using pre-formulated syntactic templates that save basic syntactic structures of the language, and language-specific word order rules that assign the actual words to positions in these syntactic templates (cf. Diedrichsen 2008b, 2012b).
In the following, two constructional schemas will be combined for a German declarative transitive sentence. The declarative construction and the transitive construction are both “grammatical objects” stored in the linguistic knowledge of a speaker. For the production and recognition of (9) below, these two units of grammatical knowledge must be activated and combined. The two constructional schemas in Figure 6 and Figure 7 represent the respective grammatical knowledge from the repository of linguistic knowledge that is available to German speakers. (For an introduction and justification of constructional schemas for intransitive, transitive and ditransitive constructions cf. Diedrichsen 2011).

Note that the RRG-concept of syntactic templates with core slots is available, so the argument positions are to be understood as argument positions in the syntactic template, which involves a core, a periphery and a precore slot. They do not have to be derived from the semantics of the verb or the construction.

(9) John hat das Auto gewaschen.
John have.pres3sg defsgacc car.sg wash.pstp
John has washed the car.

In the constructional schema in Figure 7, the bracket structure word order rules are included in a constructional description of the declarative construction

| CONSTRUCTION: | German active transitive construction |
| SIGNATURE: | RP₁...... V⁵₂......RP₂ (any order, any number of adjuncts, RP₁ and RP₂ may be distinguished by case marking) |
| CONSTRAINT: | V⁵₂ is not a copula |
| WORKSPACE: | Real-time processing according to the following construction-specific rules: |
| SYNTAX: | Template: 2 core arguments: x, y |
| PSA ['subject']: | Highest ranking argument (default) |
| Linking: | Highest-ranking argument (agent) will be nominative, lowest-ranking Argument (patient) will be accusative (default) |
| MORPHOLOGY: | RPs: Case marking subject to noun type and declension class. Auxiliary in the perfect: haben (default), sometimes sein with verbs of motion in a transitive use |
| SEMANTICS: | PSA is instigator of state of affairs (default), other core argument is affected or effected (there may be deviations) |
| PRAGMATICS: | Illocutionary force: Unspecified |
| | Focus structure: No restrictions; PSA = topic (default) |

Figure 6. Constructional schema for German transitive construction
The knowledge about the bracket structure is therefore represented as part of the knowledge about the formation of the declarative construction. The steps in the semantics-to-syntax linking make reference to the constructional schemas given in Figure 6 and 7. The last step, where the constituents are placed in the right order, is to be spelled out like this (Diedrichsen 2011):

(10) “Assign LS elements to positions in the syntactic representation, according to the constructional schema in Figure 7.”

5.3 The German bracket structure as a construction

In this section, I will elaborate on the question if it is correct to assume that the bracket structure is part of the linguistic knowledge associated with the declarative
construction. Wouldn’t it be more straightforward to assume that the bracket structure relies on knowledge that is principally independent of the formation of declarative sentences? Note that not all declarative sentences have a bracket structure, but this structure is very powerful, and there is a tendency to use it in spoken German. The preterite, which is a tense form that does not involve a bracket structure, is hardly found in spoken German. It is the tense form used for written registers, and it is primarily found in literature. In spoken German, the following periphrastic constructions exist to express past. The bracket elements are highlighted by boldface:

(11) **Perfect:** Periphrastic past with *haben* or *sein* auxiliary and past participle:

a. *John hat das Auto gewaschen.*
   John have.PRES3SG DEFNSGACC CAR.SG wash.PSTP
   John has washed the car.

b. *John ist in seiner Jugend um die ganze Welt gereist.*
   John be.PRES3SG in his youth around DEFFSGACC
   whole world travel.PSTP
   John has travelled around the world in his youth.

(12) **Pluperfect** (rare, found in literature as pre-past):
Periphrastic past with *haben* or *sein* in the past and past participle:

a. *John hatte das Auto gewaschen.*
   John have.PAST3SG DEFNSGACC CAR.SG wash.PSTP
   John had washed the car.

b. *John war in seiner Jugend um die ganze Welt gereist.*
   John be.PAST3SG in his youth around DEFFSGACC
   whole world travel.PSTP
   He had travelled around the world in his youth.

Preterite and present, on the other hand, are expressed with a simple, non-periphrastic structure.

(13) **Preterite:**
John wusch das Auto
John wash.PAST3SG DEFNSGACC CAR.SG
John washed the car.

Present may be expressed by a non-periphrastic construction as well. In the example in (7a), the full finite verb *wäscht* appears in the second position, and there is no right brace. There is, however, a number of alternative constructions to express present, which are considered to be non-standard.
They would not appear in written registers:

(14) a. *Tun*-periphrasis:

\[
\begin{array}{llll}
\text{John} & \text{tut} & \text{das} & \text{Auto waschen.} \\
\text{John do.pres3sg & defnsgacc & car.sg & wash.inf} \\
\text{John does wash the car.}
\end{array}
\]

b. *Am*-progressive:

\[
\begin{array}{llll}
\text{John} & \text{ist} & \text{das} & \text{Auto am waschen.} \\
\text{John be.pres3sg & defnsgacc & car.sg & at wash.inf} \\
\text{John is washing the car.}
\end{array}
\]

Both of these have been described in terms of putting emphasis on the continuity of the ongoing action (Abraham & Fischer 1998; Krause 2002). The *tun*-periphrasis uses *tun* as a dummy auxiliary. The sentence, however, is semantically not really different from the simple present *Er wäscht das Auto*.

German also has a number of passive constructions, all of which make use of bracket structures formed by auxiliary + past participle.

All periphrastic constructions form the bracket structure, and they are increasingly popular in spoken German. There is, on the other hand, no indication of the emergence of a non-periphrastic passive or future, and the simple tenses present and preterite are rarely used in spoken German. In some dialects, like Bavarian and low German, preterite does not even exist. One could argue, therefore, that there must be a tendency in spoken German that leads to the formation of the bracket structure. Therefore, it is at least a possibility that the bracket structure has more functions than merely coding the “declarative” sentence type, especially as the V2 sentence structure can express other illocutionary forces than declarative, cf. (15):

(15) a. V2 Echo-Question: Das Auto ist gewaschen? (‘The car is washed?’)

b. V2 Imperative: Du setzt dich jetzt hin! (‘You sit down right now!’)

The format of V1 structures, as given in yes/no questions, for example, may involve a bracket structure as well. The possibility of bracket structures is therefore not reserved for V2 structures. I will therefore argue that the bracket structure is a construction in its own right, whose function is a structural one: The bracket structure puts a set of formal braces around the content of a simple utterance. This formal signal for beginning and end of the main content of the utterance is helpful for the organisation and the processing of the utterance. For the hearer, it facilitates an early estimation of the turn constructional unit, and it may serve as a formal indication of the duration of the turn: The hearer knows that after the finite auxiliary, the turn constructional unit may continue for a while, until the infinite verb is reached. For the speaker planning and performing her
utterance, this means that she can be sure that her turn will not be claimed by another interactant before the right bracket of the structure appears (cf. Auer 1991; Uhmann 1997).

The bracket structure also provides a formal frame around the part of the utterance in which the default theme-rheme structure is represented. Generally, the “newness” and also the formal complexity of the content in the middlefield gradually increases from left to right (Hawkins 1994, 2004). The bracket structure can therefore be argued to have a complex functionality in terms of utterance organisation, turn taking and information structure. This functionality is put to use in the declarative construction, but also in W-questions, yes/no questions and exclamations.

Periphrastic tense and passive constructions are not the only variants of bracket structure constructions in German. Besides the verbal brackets, there are lexical brackets (Nübling 2008; Ronneberger-Siebold 1991), which include Funktionsverbgefüge (cf. also Ronneberger-Siebold 1991: 208f.): These are complexes of one finite verb and more lexical material. They are lexicalized as one semantic unit. In their finite form, they appear discontinuously.

Verbs with separable prefixes form lexical braces as well. The prefixes form a unit with the verb in its infinite forms, but in finite uses of the verb, the prefixes get separated from it and move to the end of the sentence. Verbs with separable prefixes are discontinuous forms which establish a bracket structure. Separable prefixes include ab-, an-, auf-, aus-, ein-. The separable prefix can add telicity to the meaning of the verb. Many accomplishment versions of activity verbs are formed by adding a separable prefix to the verb (16).

However, in colloquial speech in particular, there is a tendency to use verbs with separable prefixes, even if a semantically equivalent verb with an inseparable prefix or a plain verb without prefix is available. The separable prefix does not necessarily change the meaning of the verb, but makes it sound a bit more “concrete” and “expressive” (Nübling 2008:98), which is probably due to the fact that the prefix adds an “accomplishment” component where it is not really needed, as the verb expresses the full execution of the action already.

(16)  

<table>
<thead>
<tr>
<th></th>
<th>essen vs. aufessen</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Sie isst die Pizza.</td>
</tr>
<tr>
<td></td>
<td>3FsgNom eat.3sgPRES defFsgACC pizza</td>
</tr>
<tr>
<td></td>
<td>She eats the pizza. (Completeness implied, but not forced or emphasized)</td>
</tr>
<tr>
<td>b.</td>
<td>Sie isst die Pizza auf.</td>
</tr>
<tr>
<td></td>
<td>3FsgNom eat.3sgPRES defFsgACC pizza up</td>
</tr>
<tr>
<td></td>
<td>She eats the pizza completely. (‘She finishes the whole pizza’)</td>
</tr>
</tbody>
</table>
(17) *speichern* vs. *abspeichern*

a. *Sie speichert das Dokument.*
   
   She saves the document.

b. *Sie speichert das Dokument ab.*
   
   She saves the document.

(18) *chillen* vs. *abchillen*

a. *Nach der Party chillen wir mit unseren Freunden.*
   
   After the party, we chill with our friends.

b. *Nach der Party chillen wir mit unseren Freunden ab.*
   
   After the party, we chill out with our friends.

The separable prefixes in the sentences (17b and 18b) add an element of virtual “intensity” to the expression of the action, which is popular in colloquial speech. Also, the use of the separable prefix in these examples may be explained by the trend to form a bracket structure even in non-periphrastic tenses like present and preterite.

5.4 The bracket structure as a grammatical object

The German bracket construction fulfils functions in its own right, which can be used by actual sentence constructions like the declarative, but also for other sentence types. Therefore, I suggest representing the bracket structure in a constructional schema of its own. The German bracket construction is therefore conceptualised as a grammatical object (Nolan 2012a, 2012b). It has a signature, which is a morphosyntactic pattern that makes it recognisable. It also has a workspace, in which the processing of the structure takes place in real time. The constructional schema in Figure 8 displays the syntactic, semantic and pragmatic features and functions of this construction.

For sentence formation, the bracket structure construction is inherited by other sentence formation constructions, like for example the declarative (cf. Kay & Fillmore 1999; Goldberg 1995; Michaelis 2013 for the concept of inheritance). For a transitive active declarative sentence in the perfect, like (19), three
constructional schemas are combined. The construction in (19) uses the constructional schema of the transitive construction for its argument structure, and the constructional schema of the declarative construction for its word order and illocutionary force. The declarative construction itself inherits the constructional schema for the bracket construction, because it is a periphrastic
tense construction. The constructional schema for the bracket construction in Figure 8 contains the complete linguistic knowledge that applies when speakers use the bracket structure construction, including its word order regularities and its semantic and pragmatic functions. In Figure 9, the combined constructional schemas are displayed in a shortened format, but they are to be understood to contain all the features displayed in Figures 6 and 7.

(19) (repeated from (9)):  
John hat das Auto gewaschen.

---

**Figure 9.** Combination of constructional schemas for the production and interpretation of (19)
5.5 Conclusion

In this section, the German bracket structure has been explained by providing examples for sentence formation in main declarative clauses. The bracket structure is formed by the strict V2 word order rule that holds for main declarative sentences, but it appears in V1 structures as well. The finite verb and another part of a discontinuous verbal expression form a bracket in the formal appearance of the sentence, that has been found to fulfil a number of functions in its own right, which include support in the organisation of turn-taking (Uhmann 1997): The right bracket signifies the end of a turn constructional unit. It potentially includes all the information of a simple clause (a core in RRG terms), even though it is possible to place arguments outside the right bracket. The word order in the middle-field, which is the field between the two brackets, has a strong tendency to reflect topic-comment structure. The bracket puts a frame around this important part of the utterance and therefore supports the processing of the utterance, as well.

Given that the construction is seen as a grammatical object in the repository of the linguistic knowledge of an individual, the bracket structure as a construction can be treated and represented as the model underlying a number of phenomena in German, like the tendency to use periphrastic tenses, the emergence of a variety of periphrastic passive and subjunctive forms, and the tendency to use non-standard periphrastic structures like the tun-periphrasis and the am-progressive.

It is therefore suggested that an approach that treats the bracket structure in its own right is superior to various alternative approaches which treat the bracket structure as a word order rule, or as part of the linguistic knowledge associated with the main declarative construction. A representation of the bracket structure as a construction provides a complete structural and functional description of the structure. This approach makes it possible to account for diachronic facts and tendencies in German, as it spells out the functional advantages this construction provides for language use. The formal notation in terms of a constructional schema has been found to be adequate for the representation of the linguistic knowledge associated with the bracket structure.

The next section will introduce the role of constructional schemas in the analysis of constructions that are generally treated as “idioms”: These are sentences or phrases whose semantics is associated with the expression “as a whole”, rather than following from the composition of single elements in the utterance.

6. Cultural objects/memes: On Constructions that require cultural knowledge

The section will introduce the construction as a “cultural object”, assuming that both the knowledge about and the use of certain constructions are based on
cultural rules and conventions that are valid in the cultural space where linguistic interaction takes place. The validity of these rules and norms can be explained using Wittgenstein’s notion of “life-form”, which is the cultural background against which language assumes its interactional and semiotic potential.

6.1 Cultural objects = memes for interaction

A “cultural object” is part of the structured cultural knowledge that a speaker has and that is needed for interaction in a society of humans. Like for the notion of grammatical object before, it is assumed that the cultural object is a complex system of rules, and it is processed on-line in the interaction. Therefore, it is not a stable, stored unit, and it is not “transferred” to the interactant “as a whole”. Rather, it is activated for processing as a “live” object in each new instance of use.

What is a “cultural object” for interaction, and why do we need this notion in a linguistic theory? Modern theories of language origin and first language acquisition emphasize the playful, productive use of linguistic units that leads to the full command of a language in first language acquisition. Human beings have come to handle a rich system of meaningful symbols for interpersonal communication, whose employment they are able to pass on to other speakers. The symbols themselves or their meanings may change over time or diverge from one community of speakers to the next.

Also, communication is not per se easy and straightforward: A common set of symbols and rules for interaction has to be found, and sometimes, geographical distances have to conquered. Still, it seems that human beings find ways to communicate with others, and apply rules and conventions for the communication.

This section will introduce a theory of cultural conventions, which are defined as units of culturally acquired knowledge that is used in personal interaction. As linguistic rules are patterns acquired in interaction, they are always part of the aforementioned cultural knowledge. Therefore, a theoretical discussion about “constructions” and the knowledge bases that form them has to make reference to cultural knowledge.

A well known and widely disputed account of units of cultural knowledge and their transmission is found in Richard Dawkin’s theory of memes. Assuming that cultural transmission processes are subject to the dynamics of evolution, it is possible to find parallels between the biological “genes”, which distribute by replication on the basis of selectional processes, on the one hand, and culturally traded, learnable items of knowledge, on the other hand. The latter are called “memes”, in obvious analogy with the term “genes”.

The word “meme” has been suggested first by Richard Dawkins in his book “The Selfish Gene” (1976/1989). Dawkins defines a meme as that aspect of an idea that is shared among interactants of a culture.
An 'idea-meme' might be defined as an entity that is capable of being transmitted from one brain to another. The meme of Darwin's theory is therefore that essential basis of the idea which is held in common by all brains that understand the theory. (Dawkins 1976/1989: 196)

The approach developed here will make use of the term “meme” for linguistic theory, and for pragmatics in particular (cf. Diedrichsen 2013 for a more extensive discussion of “memes”). The term “meme” invented by Dawkins (1976/1989) will be used to formulate a concept of linguistic constructions that is able to account for the linguistic and cultural knowledge that is “at work” (Goldberg 2006) in the interpretation of utterances. Memes are defined, therefore, as functional units for the interaction between human individuals. Their interpretation may rely on linguistic knowledge to variable degrees. Memes as cultural units are conventionalized. They comprise rules. They may have meaning in a strict sense, but their general purpose is to be functional in human interaction. Memes may be idiosyncratic, but they may also be productive: The rules underlying one particular setting in interaction may be usable for other formations. In this case, memes, like grammatical constructions, are like a recipe or a “construction manual” for culturally shared issues.

Like for the grammatical construction as a grammatical object, it is also assumed for the meme as a cultural object that they are processed in the “workspace” that is associated with the cultural object (cf. Nolan 2012b, after Van Valin 2005: 161. Butler (this volume) gives a concise summary of this approach). The cultural object has its own signature, which is a perceivable feature that lets speakers identify it in interaction. It also has a “constraint”, which is to be understood in terms of a context-induced condition for the recognition of the construction that represents the cultural object.

For the representation of all these levels of knowledge that play a role in the use and processing of a construction as a cultural object, the constructional schema is regarded as a useful tool, as it presents a complete list of the features of a given construction. This will be exemplified in the next section.

6.2 Three examples

In the following, I will show that the insights on memes as cultural objects may be applied to a construction-based treatment of illocutionary force. Illocutionary force is generally described as pragmatic factor that is associated with certain constructions (cf. Searle 1969). It is taken for granted that these constructions have this pragmatic effect. It is not principally clear, however, how individual constructions come to carry this pragmatic effect and how it is linked to the form of the linguistic expression.

While a speech act may appear in any form and is not limited to a certain sentence type, for example, there are constraints, or rather, guidelines, for the
achievement of a communicative effect, which are rooted in the culture of the community of speakers.

These “cultural factors” are “shared” between individuals in a community of speakers. They are acquired as part of the cultural knowledge that is associated with the use of certain linguistic expressions. How does the use of linguistic expressions emerge culturally, how can they be “shared”, and how can they be considered to be “useful”? Wittgenstein (1953, 1958, 2001) views the “use” of linguistic expressions in close correlation with a “life-form” (Lebensform). The linguistic expressions do not have a reason for being or a function of their own, outside the use and interactional function that interactants give to them.

“But how many kinds of sentence are there? Say assertion, question, and command? – There are countless kinds: countless different kinds of use of what we call “symbols”, “words”, “sentences”. And this multiplicity is not something fixed, given once for all; but new types of language, new language-games, as we may say, come into existence, and others become obsolete and get forgotten. (…)"

Here the term “language-game” is meant to bring into prominence the fact that the speaking of language is part of an activity, or of a life-form.”

(Wittgenstein PU 1953, 1958, 2001: 10®, emphasis in original)

Also, sharing a convention of use within a community of speakers is not something that speakers invent or actively agree upon. It is shared through the life form, which is the cultural setting that speakers find themselves in.

“‘So you are saying that human agreement decides what is true and what is false?’ – It is what human beings say that is true and false; and they agree in the language they use. That is not agreement in opinions but in form of life.”

(Wittgenstein PU 1953, 1958, 2001: 75®, emphasis in original)

The speech acts that I will deal with here do not carry any formal indication of their illocutionary force. Their use and understanding rely on lexical knowledge, which regulates which components of lexical-semantic content are necessary in order to let the construction “work” in the fashion that is typical for the construction. The motivation of the particular combination of lexical-semantic content and the form that the construction assumes in everyday interaction, however, are based on cultural factors.

I will claim that the constructions analysed here assume their illocutionary force by adhering to the expression or negation of politeness. They achieve their effects by the use of linguistically and/or culturally manifested face-saving/face-threatening expressions. Many linguistic phenomena are based on the notion of ‘politeness’. Brown and Levinson (1987) have introduced the notion of “face” in order to explain reflexes of politeness in language. “Face” refers to the needs of an
individual living in a society of humans. Individuals want to ‘protect their face’ and have a fear of ‘losing their face’. Each person has both a “positive” and a “negative” face, both of which need to be protected and supported in society, which generally leads to “politeness” in the interaction between individuals. The “positive face” is longing for acceptance and appreciation in society. Linguistically, it is supported by polite plural pronouns for the addressee, for example, and by other expressions that assign the addressee a high rank in society, like sir, madam etc.

The negative face concerns the desire for freedom and individual space that each individual strives to keep. Politeness in terms of saving the negative face therefore aims at confirming the addressee’s space and refraining from getting in his or her way. Indirectness in linguistic expressions is generally viewed as a by-product of the silent contract between individuals to respect the other’s personal space. Unpleasant news or requests that may cause the addressee some inconvenience are generally wrapped in indirect utterances (irrealis mode, subjunctive, breaking of conversational maxims) in order to give the addressee the space to react in a way that is convenient for him/her (Nübling 2008; Brown & Levinson 1987).

In many speech acts that involve requests or the transfer of unpleasant information, the protection of the negative face is an important cultural factor. These speech acts may not exhibit the grammatical form that has been described for their illocutionary force proper, but they can still be understood if some lexical constraints are fulfilled. The reason why they are used in the first place and why the form-function mismatch is necessary, however, lies in the cultural factor of politeness. Therefore, this cultural factor must have its place in the constructional schema, if the constructional schema is to fully represent a construction as a cultural object.

This will be exemplified in the following.

(20)  
Danke, dass Sie hier nicht rauchen.
Thx that 2sg(pol)NOM here not smoke.3pl
Thank you for not smoking here.

This construction adheres to both the positive (desire for acceptance) and the negative (desire for autonomy) face of the addressees by expressing an actual request in the form of an appreciation of the obedience of the request.

The constructional schema for this construction is built up like the constructional schemas for the syntactic constructions discussed in the previous sections: The lexicon that contains the knowledge about the construction is activated, together with the constraint that delimits the use of the construction. The constraint says that this construction is only to be used if the unsolicited behaviour the construction talks about is controllable and its execution is possible, it is behaviour that could potentially annoy other people, but it is not illegal.
If the conditions of the lexical constraint are satisfied, the construction can be used, and it has the features laid out in the constructional schema shown in Figure 10 (cf. Diedrichsen 2012a, 2013 for an extensive discussion of this construction).

Note that there is a CULTURAL GUIDELINE added to the constructional schema. It explains the cultural background, i.e. the “life-form” that makes this construction interactionally functional in the way described here.

**Lexicon** of cultural knowledge

Lexical constraint for the use of the construction:
Unsolicited behaviour is
[+ controllable]
[+ possible]
[+ potentially annoying]
[– illegal]

CONSTRUCTION: Anticipation of adherence-request construction
SIGNATURE: POSITIVE_EMBED [(address_to_recipient) (negation of unsolicited behaviour)]

CONSTRAINT (for recognition of the construction): Sender is not face-to-face with addressee and does not see their actual behaviour. Construction is displayed in written form or announced. (Otherwise, it would be interpreted as a “real” appreciation of actual behaviour, and the mismatch of sentence type and illocutionary force would not be on hand).

CULTURAL GUIDELINE (Why does the construction work?):
The culture of face-saving motivates the interpretation of an appreciation as a request if the “appreciated” behaviour is not clearly fulfilled.

WORKSPACE: Real-time processing according to the following construction-specific rules:

SYNTAX: open proposition (positive evaluation/thank) + embedded clause
Sentence type: Declarative clause

MORPHOLOGY: Not specified

SEMANTICS: The construction expresses a positive evaluation for refraining from an undesired action

PRAGMATICS:
Illocutionary force: request/demand/order
Interlocutors are directly addressed

Figure 10. Constructional Schema for the “Anticipation of adherence-request construction” (Diedrichsen 2012a, 2013)

(21) *I'm afraid* major revisions will be necessary before resubmission of the paper.

The English formula “I’m afraid” formally expresses an apprehension, i.e. irrealis mode. Functionally, however, the addressee must know that this is actually a statement of a
bitter truth that is softened in its expression for reasons of face saving for the addressee and self-protection of the producer against accuses and complaints. The constructional schema in Figure 11 provides its features and the conditions of its functionality including the cultural guideline that explains the background for its functionality.

CONSTRUCTION: I’m afraid + bad news construction
SIGNATURE: I’m afraid + conjunction_EMBED [declarative sentence]

CONSTR...
recognisable as an insult at all, this particular expression seems to have emerged as a “fashion” out of a long-standing tradition of mother-insults known from youth cultures. Along with it, there is also a current trend for jokes with absurd and therefore entertaining insults of the addressee’s mother in Germany. The deeper cultural reason for the “success” of this phrase as an insult is that it breaks the taboo of honouring the mother, which provides a serious face threat to the addressee (cf. Havryliv 2009, web sources). Ironically, however, the speech acts that degrade and dishonour the mother of the addressee are not meant as serious threats or insults. Rather, they are very widespread among young males who use them around very close friends, in order to underline the intimacy and reliability of the friendship. These utterances are, therefore, not really meant as insults. The mother insults, called The Dozens by sociologists, may have originated from Afro-American youth cultures, but they have been described for peer groups of white middle class youths from the 1940s and 1950s onwards (Ayoub & Barnett 1965). Bronner (1978) considers the mother insults to be independent from Afro-American influence, as he discovers parallels to Anglo-Celtic patterns of insults.

As of the 1990s, the mother insults have become very popular in German speaking cultures. They are treated in movies, TV comedies and pop songs (Wikipedia).

The constructional schema for the use of the “Deine Mutter” construction in the complex culturally manifested use outlined above is given in Figure 12.

6.3 Conclusion

The constructions discussed in this section, while conventionalised and well known to their users, do not arise from language use arbitrarily. The expression of polite requests as well as the presentation of inconvenient information may take various formal shapes, but it relies on the linguistic expression of politeness (indirectness, irrealis), which can be seen as a “cultural constraint” for the formation of these utterances. Similarly, the formulation of verbal attacks is principally unlimited, but its success is based on face-threats whose nature is deeply rooted in culture. These are cultural constraints for the formulation of the respective constructions, which have to be taken into account in the discussion of their illocutionary force, and which therefore have to be part of the constructional schemas.

It has been argued that the pragmatic effect that these constructions have is established as a convention that unfolds its potential when certain constraints are satisfied. The knowledge about the construction, its pragmatic function and the constraints for their use are acquired through interaction in a culture of speakers. Therefore these constructions are cultural objects, which are to be seen in close correlation with Richard Dawkin’s notion of memes. Their emergence, their functionality and their conditions of use arise through cultural evolution and are
sustained as a convention, which, however, is not based on humans’ decisions and conscious agreements but rather on the life form that the humans in a cultural community share.

7. Summary and conclusion of the paper

In this paper, I have introduced an approach to linguistic constructions that covers not only argument structure and syntactic structure constructions, but broadens the scope of the term “construction” by also addressing idioms whose use is closely connected with predictable culturally induced conditions.

After a short introduction into the assumptions of Role and Reference Grammar as a lexical-semantic theory, I have discussed some extensions of the notion of constructional schemas, which have been part of RRG for a long time,
but their use has heretofore been limited to constructions which cannot be predicted by argument structure or word order considerations.

I have introduced the Lexical Constructional Model, whose advantage over many Construction Grammar approaches is mainly that it restricts the formation and use of constructions on the basis of the semantics of the verb around which the construction is formed.

I have extensively discussed three examples of construction types which are frequently used in German. These are (1) the *bekommen*-passive construction, which is essentially an argument structure construction for three-place predicates. The constraint for its formation and use is that the verb applied in the construction has to be a verb with a transfer semantics. The second construction type I have examined is the bracket structure, which is the typical sentence structure pattern for main declarative clauses in German. I have shown that the bracket structure in itself, and not merely the declarative clause in which it appears, should be considered as a construction, for which a constructional schema can be applied. The bracket structure serves a number of interactional functions, like facilitating turn taking and marking the part of the sentence where the default information structure pattern Theme>Rheme occurs. Attestations of this functionality support the considerations that the bracket structure is a constructional pattern on its own, and a very sustainable one, as it is preferred over other conventionalised patterns.

The last type of constructions discussed here is sometimes called “idioms”, which entails that these are acquired and processed “as a whole”, and their meaning/function is not decomposable into the parts of the construction. This notion of “idiom” does not quite capture the nature of these constructions, however, as with two of these, the composition of the construction allows some variability, as elements in certain positions in the structure may be replaced. Also, these constructions are tied very closely to certain cultural conditions. I have argued that they have to be interpreted against the background of the cultural notion of “politeness” and face-saving. This background can be seen as the life form which is the ground upon which their use and interpretation works. The life form is therefore not something that speakers actively agree upon, but something that is there as a mode of cultural life that is reflected in language. I have discussed in general terms some of the common linguistic realisations of face-saving, which include indirectness in language and politeness in the choice of the addressee pronoun.

The form-function mismatch that occurs with the speech act constructions discussed here is not an obstacle in the interpretation of the utterances, as long as the speakers are aware of the cultural background against which they are produced. The form-function mismatch, then, is not a mismatch any more, but plays a role in the realisation of indirectness.
I have argued that such constructions which clearly emerge culturally and reflect cultural conventions can be described in correlation with Dawkins' notion of meme, which is an item of knowledge that is passed on to the next generation of speakers or to a new peer group in cultural evolution. Successful memes “survive” and get passed on. Their success is based on their functionality in human interaction.

The notion that I am using for these constructions for the purposes of this paper is “cultural object”, as I have argued that the cultural objects, like the grammatical objects, fulfil functions in the interaction of individuals in a linguistic community, and they can be represented by a constructional schema. Therefore, I am arguing that such cultural objects should be treated analogously to grammatical objects in linguistic theory.

References


Butler, Christopher S. This volume. Constructions in the Lexical Constructional Model.


Diedrichsen, Elke. 2012a. What you give is what you GET? On reanalysis, semantic extension and functional motivation with the German bekommen-passive construction. In The Art of


Ruiz de Mendoza Ibáñez. This volume. Meaning construction, meaning interpretation and formal expression in the Lexical Constructional Model.


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