

**Instruments and Related Concepts
at the Syntax-Semantics Interface**

Koen Van Hooste

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To Heinz Thomas, he will be sorely missed

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Contents

1	Introduction	1
1.1	Instruments, instrumentals & comitatives: phenomena and problems	1
1.2	Methodology	7
1.3	Glossing in this thesis	7
1.4	Structure of this thesis	9
2	Role and Reference Grammar	11
2.1	Introduction	11
2.2	Fundamentals	11
2.3	Overall organization of Role and Reference Grammar	14
2.3.1	Constituent Projection	15
2.3.2	Operator Projection	22
2.4	The Semantic architecture of Role and Reference Grammar	26
2.4.1	Aktionsarten	26
2.4.2	Logical structures	35
2.5	Linking semantics to syntax	37
2.5.1	The Actor-Undergoer Hierarchy and the macroroles	37
2.5.2	Privileged Syntactic Argument	42
2.5.3	The Linking Algorithm	44
2.6	Conclusion	49
3	Instruments at the syntax-semantics interface	51
3.1	Thematic relations as an interface component	52
3.1.1	Finite-primitive approaches	55
3.1.2	Lexical decomposition	58
3.1.3	Causality-driven approaches	60
3.1.4	Generalized Semantic Roles	61
3.1.5	Instrument as a thematic relation	64

3.2	Role and Reference Grammar	65
3.2.1	Thematic relations	65
3.2.2	The effector role: agents	69
3.2.3	The effector role: forces vs. instruments	75
3.3	Case Grammar	80
3.3.1	Overview	80
3.3.2	Instruments	83
3.4	Causality-driven approaches	85
3.4.1	Thematic relations	87
3.4.2	Instruments	88
3.5	Lexical-Functional Grammar	90
3.5.1	A-Structure and mapping to grammatical functions	90
3.5.2	Instruments	93
3.6	Conceptual Semantics	95
3.6.1	Overview	96
3.6.2	Thematic relations	97
3.6.3	Instruments	99
3.7	Instruments as subjects	102
3.7.1	The general approach	104
3.7.1.1	Naturalness conditions	105
3.7.1.2	Deliberation & mediation constraint	108
3.7.1.3	Conjunction test & do-test	110
3.7.1.4	Instruments as members of the agent class	111
3.7.2	The subtype approach	118
3.7.2.1	Intermediary & facilitating instruments	118
3.7.2.2	Instruments & implements	124
3.7.2.3	Webb's Causal Force	128
3.7.3	Summary of instruments as subjects	131
3.8	Conclusion: properties of thematic relations and instruments	133

4	Semantic range of instruments, agents & forces	137
4.1	Degrees of animacy & autonomy	138
4.1.1	Animacy	139
4.1.2	Autonomy	145
4.1.3	The actionality scale	155
4.1.4	Pseudo-agents	157
4.1.5	Inherent vs. induced features	165
4.2	The prevalence of instruments and implements with respect to verb classes	169
4.3	Integrating the actionality scale with logical structures ...	179
4.4	The three problems revisited	182
4.5	A different approach to the semantic range	187
5	Instruments and causation: A Force Dynamic view	191
5.1	Fundamentals of Force Dynamics	193
5.1.1	Further patterns	197
5.1.2	Instruments in relation to causation	200
5.1.3	Integrating Force Dynamics with logical structures	203
5.1.4	Force Dynamics: More than causation	205
5.1.5	Configurations of volition and Holisky's principle	207
5.2	Implements as facilitating instruments	217
5.2.1	Helping as weaker causality	217
5.2.2	Identifying implement and instruments: a new diagnostic	220
5.3	A proposal for enriched causation	225
5.3.1	Relevant dimensions for neutralization	226
5.3.2	Neutralization of causation	231
5.3.3	Enriched causation in the logical structures	237
5.4	Conclusion	238
6	The Instrument-Subject Alternation and subtypes of instruments	239
6.1	Delineating instruments in subject position from other inanimates in subject position	239
6.2	Mechanics & purpose	241
6.3	A new naturalness condition as a prerequisite for ISA	243

6.4	Actionality constraint	247
6.5	Ability readings vs. ISA	249
6.6	General statements vs. ISA	257
6.7	Subtypes of instruments	259
6.7.1	Free instruments & blocked instruments	260
6.7.2	Conjoined instruments & conjoined implements ..	260
6.8	Conclusion	267
7	Delimiting instruments from instrument-like participants	269
7.1	Causees	270
7.1.1	Causees taking instruments	281
7.1.2	Expanding the effector role	285
7.2	Comitatives	287
7.2.1	True comitatives	288
7.2.2	Undergoer & NMR comitatives	290
7.2.3	Comitatives with inanimate components	291
7.2.4	Inanimate comitatives	297
7.2.5	False inanimate comitatives	301
7.3	Proper parts as instruments	303
7.4	Potential instruments, implements & comitatives	306
7.5	Problematic cases of instruments	310
7.6	Conclusion	311
8	Linking semantics to syntax	313
8.1	Three classes of prepositions	314
8.2	Argument linking in Role and Reference Grammar	315
8.2.1	Instrument and implement marking	317
8.2.2	Causee marking	321
8.2.3	Comitative marking	330
8.2.4	Inanimate comitatives	334
8.2.5	Marking of proper part-implements	335
8.2.6	Marking of potential instruments, implements and comitatives	337
8.2.7	Extending predicative with and without	342
8.3	Passive construction with an instrument	344
8.4	Passive ISA construction	346

8.5	Instrument unaccusative construction	347
8.6	Middle construction with an instrument	350
8.7	Impossible structures	352
8.8	Conclusion	354
9	Conclusion: A semantic-syntactic landscape for instruments and related concepts	357
9.1	Summary of instrument-like concepts	359
9.2	Summary of expanded causation	361
9.3	Overview of tests	362
9.4	Future research	364
	Appendix: Figures	367
	References	371

List of Figures

1	General organization of RRG	12
2	Constituent projection of a simple English sentence	15
3	Constituent projection including the periphery	16
4	Dutch sentence with a PrCS	17
5	English sentence with an LDP	17
6	Dutch sentence with an RDP and a resumptive pronoun in the core	18
7	A non-exhaustive list of Dutch syntactic templates in the syntactic inventory	19
8	The layered structure of a Reference Phrase	21
9	A non-predicative and a predicative PP in English	22
10	Constituent and operator projections of an English sentence	24
11	Constituent and operator projections of a Dutch RP	25
12	The Actor-Undergoer Hierarchy (AUH)	39
13	General overview and summary of the RRG linking system	48
14	Semantics-to-syntax linking in its successive steps	49
15	General organization of Role and Reference Grammar (final)	50
16	Overview of thematic relation approaches discussed in this dissertation	54
17	Causal chain representation of <i>Fred ate the banana</i>	61
18	Neutralization of semantic contrasts	63
19	Thematic relations in terms of argument positions on the Actor-Undergoer Hierarchy	68
20	Top section of the saliency scale proposed by Van Valin & Wilkins	368
21	Basic causal chain	86
22	Chain representation of <i>Fred ate the banana</i>	87
23	Causal chain representation of <i>John broke the window with the hammer</i>	88

24	The relation between lexical semantics, a- and f-structure ..	91
25	Lexical entry for <i>go into</i> (conceptual semantics)	97
26	Thematic tier and action tier	98
27	Jackendoff's analysis of an instrument construction (pre-1990)	100
28	Jackendoff's reformulated analysis of an instrument construction (1990)	101
29	Grimm's agency lattice	369
30	The combined agency-animacy lattice	370
31	Overview of Alexiadou & Schäfer's instrument classification	120
32	LCS of <i>John opened the door with the key</i>	128
33	LCS of <i>John ate pasta with a fork</i>	128
34	ISA in Webb's LFG-approach	129
35	The actionality scale with example referents	156
36	Semantic space of pseudo-agents	163
37	Range of instruments, forces, agents, pseudo-agents and causes within the actionality scale	164
38	Preliminary Multiple Inheritance Hierarchy analysis of the actionality scale	189
39	An overview of a force dynamic configuration	195
40	Primary steady-state oppositions	196
41	Example configuration with disengaging antagonist and two-state resultant	198
42	Structure of a basic causative event with an instrument	202
43	Force dynamic configurations in a standard instrument construction	204
44	Force dynamic configurations in a standard instrument construction (II)	205
45	Standard instrument construction with micro- and macro-configurations	207
46	Micro-FD configurations for an implement construction	218
47	Micro- and macro-configurations for an implement construction	220
48	Feature neutralizations	229
49	Force dynamic configurations underlying the four principle causal operators	231

50	Neutralization of conceptual causation to generalized causative relations	233
51	Causal operators ordered along strength of causation	234
52	Split between free & blocked instruments and implements	259
53	Partial causal chain	263
54	Linking to syntax of a clause containing an instrument	318
55	Linking to syntax of a clause containing an implement	321
56	Syntactic structure of a French sentence expressing permissive causation	323
57	Syntactic structure of a French sentence expressing direct causation	323
58	Causee under the scope of direct causation taking an instrument	327
59	Causee under the scope of indirect causation taking an instrument	328
60	Linking to syntax for <i>Todd destroyed the ship with Michael</i>	331
61	Linking to syntax for <i>Edward ran to the hospital with the hammer</i>	335
62	Linking to syntax for <i>Evie ate the soup without a spoon</i>	340
63	Linking to syntax for <i>Caroline ran to the store without Elena</i>	342

List of Tables

1	Semantic units underlying the syntactic units of the Layered Structure of the Clause	13
2	Summary of operators in the LSC	23
3	Operators in the layered structure of the RP	25
4	Feature matrix for the base aktionsart classes as recognized by RRG	27
5	Aktionsart tests and the values for the respective aktionsart classes	33
6	Summary of aktionsart tests with tested properties and caveats	34
7	Lexical representations for aktionsart classes	37
8	Transitivity in Role and Reference Grammar	42
9	PSA-assignment overview	44
10	Definition of thematic relations in terms of argument positions in the logical structure	67
11	Comparison of thematic relation properties between varieties of Case Grammar	85
12	(Simplified) overview of approaches and ISA-problems	132
13	Overview of treatment of intermediary and facilitating instruments	133
14	Overview of approaches to thematic relations and instruments	134
15	Feature matrix for the principal levels of autonomy	153
16	Tests for distinguishing instruments from forces	158
17	Verb classes and the prevalence of instruments and implements	179
18	Performance matrix	200
19	Summary of diagnostics for instruments and implements ...	225
20	Matrix of proposed types of causation and their operators ..	230

21	Constructional schema for the <i>instrument-subject alternation</i> (preliminary)	242
22	Constructional schema for the <i>instrument-subject alternation</i> (complete)	247
23	The German ability construction	257
24	Constructional schema for English General Property construction	259
25	Summary of intermediate effector classes	281
26	Summary of proposed effector subtypes	286
27	Constructional schema for French causee construction with an instrument	330
28	English passive construction	345
29	English passive instrument as actor construction	347
30	Overview of concepts explored in this dissertation	361
31	Matrix table of causation types	362

List of Abbreviations

1	First person	ERG	Ergative
2	Second person	F	Figure or Feminine
3	Third person	FD	Force Dynamic(s)
A	Actor	G	Ground
ABIL	Ability	GCR	Generalized Causative Relation
ABS	Absolutive	GEN	Generic
AC	Actionality Constraint	GPSG	Generalized Phrase Structure Grammar
ACC	Accusative	GSR	Generalized Semantic Role
ADE	Adessive	I	Instrument
ADJ	Adjective	IF	Illocutionary Force
ADV	Adverb(ial)	IND	Indirect Causation
Ago	Agonist	INDEF	Indefinite
Ant	Antagonist	INF	Infinitive
AOR	Aorist	INGR	Ingressive
AP	Adpositional Phrase	INS	Instrumental
AT	Actor of a transitive verb	ISA	Instrument-Subject Alternation
AUH	Actor-Undergoer Hierarchy	LCS	Lexical Conceptual Structure
AUX	Auxiliary	LDG	Lexical Decomposition Grammar
BEN	Beneficiary	LDP	Left-Detached Position
CAUS	Causative	LFG	Lexical-Functional Grammar
CF	Causal Force	LGR	Leipzig Glossing Rules
CL	Clause/Clausal	LOC	Location
CNJ	Conjunction	LS	Logical Structure
COM	Comitative	LSC	Layered Structure of the Clause
CRC	Collaborative Research Center		
DAT	Dative		
DEF	Definite		
DEM	Demonstrative		
DET	Determiner		
DIST	Distal		
d-S	Derived Subject		
E/e	Event		

M	Masculine	REL	Relative pronoun or Relative clause marker
MOD	Modal/Modality	REFL	Reflexive
MR	Macrorole	RP	Reference Phrase
MSE	Multi-purpose Syntactic Element	RPFP	RP-final position
M-	Macrorole transitivity	RPIP	RP-initial position
N	Noun or Neuter	RRG	Role & Reference Grammar
NMR	Non-Macrorole Argument	S	Subject
NOM	Nominative	SAE	Standard Average European
NP	Noun Phrase	SEML	Semelfactive
NUC	Nucleus	SG	Singular
NUM	Numeral/Number	S _n	Situation
NV	Neutral Version	STA	Status
O	Objective	S-	Syntactic transitivity
OBJ	Object	SUBJ	Subject
P	Preposition	TNS	Tense
PART	Partitive	U	Undergoer
PERF	Perfective	V	Verb
PL	Plural	VOL	Volitional causation
PoCS	Post-Core Slot	VP	Verb Phrase
POSS	Possessive	VPR	Verb Prefix or Verb Particle
PP	Prepositional Phrase		
PR	Preverb		
PrCS	Pre-Core Slot		
PRED	Predicate		
PREP	Preposition		
PROX	Proximate		
PRS	Present		
PSA	Privileged Syntactic Argument		
PST	Past		
PTCP	Past Participle		
QNT	Quantification/Quantifier		
R	Restricted		
RDP	Right-Detached Position		

1 Introduction

In this dissertation I explore the status of instruments and related concepts at the Syntax-Semantics Interface. I look into these concepts from the point of view of Role and Reference Grammar (or: *RRG*), using a core set of languages (primarily languages belonging to the Standard Average European group) for illustration. I pursue three main goals: 1) To explore the status of instruments in linguistic theory and provide answers to problems connected to instruments, 2) to deepen the *RRG* approach to these concepts and 3) to contribute to the further development of *RRG* as a theory. The central question of my investigation is: *What is instrumentality and how does instrumentality link to syntax?*

1.1 Instruments, instrumentals & comitatives: phenomena and problems

Instruments are usually treated in terms of thematic relations in the relevant literature. Such treatments are often problematic for several reasons: 1) There are many theoretical problems concerning thematic relations in general and treatments of instruments usually suffer from the same flaws, 2) the instrument relation is usually treated only peripherally, 3) there is an alternation in many languages where the instrument appears as the subject and this is often not captured sufficiently or not at all, 4) only the standard, prototypical occurrence of instruments (such as in (1a)) is explored whereas there are several other constructions with instruments and 5) instrumental marking is cross-linguistically very multifunctional.

The status of instruments is fully dependent on the general conception of thematic relations in the framework under investigation. As there is a wide range of conceptions of them, there is an equally diverse

landscape of approaches to the instrument role. For instance, for Dowty (1991), instruments are participants that have an equal amount of proto-agent and proto-patient properties. This captures the fact that instruments are both acted upon by a manipulator and act on another participant themselves. An example of this is given in (1a): *Lumberjack* acts on the *chainsaw* and in turn, it acts on the *tree* with the result that the tree is cut down. Instruments, like other thematic relations, are treated as primitive notions by many linguists and linguistic traditions (e.g. Lexical-Functional Grammar). A treatment in terms of primitive, unanalyzable relations is highly problematic in itself, but especially problematic for instruments. The example in (1a) reveals that instruments have a dual role: they are simultaneously agentive and patientive. Treating them in isolation thus seems questionable.

With respect to 3), there is an important difference between instruments, implements and instrumentals. Based on the morphosyntactic behavior of instruments, some linguists distinguish between two different classes of instruments. Even though the motivation for positing two different classes can vary, it is usually based on roughly the same observation. I refer to this alternation as the *Instrument-Subject Alternation* (or: *ISA*). Consider the difference between (1a–1b) and (1c–1d):

- (1) a. *The lumberjack cut down the tree with the chainsaw.*
- b. *The chainsaw cut down the tree.*
- c. *The lumberjack cut down the tree with the axe.*
- d. **The axe cut down the tree.*

The inability of *axe* to occur as the subject, compared to the ability of *chainsaw* to undergo precisely that alternation has led some linguists to assume two distinct classes of instruments. RRG (Van Valin & LaPolla 1997, Van Valin 2005) labels the former *implements* and the latter *instruments*. With respect to this alternation, there is a great deal of cross-linguistic variation. Dutch is less permissive than English, for example. German disprefers ISA as well, clearly preferring an ability reading. Consider the example in (2).

- (2) *Dieses Messer schneid-et das Brot.*
 DEM.PROX knife cut-PRS.3SG DEF bread
 ‘This knife cuts the bread.’

In (2), the referent in subject position, *Messer (knife)*, is described as having the ability to cut another referent (in this case, *bread*) rather than describing a situation as it unfolds. The ability-reading in Dutch is also less common and generally requires a modal auxiliary. Slavic, on the other hand, strongly disprefers instruments in subject position altogether. There are further problems with this alternation, which will be explored in chapter 3. Most theories can handle one of these issues, but not all. I will propose an approach that can capture the behavior of this construction in all its facets.

I reserve the term *instrumental* for the morphological and syntactic marking of the semantic concepts (either implement or instrument). *Instrumental* covers both adpositional marking and case marking. Examples of this are given in (3). Irish (Celtic) uses a preposition, but Hungarian (Uralic) uses a case marker.

- (3) a. *Ghearr Sean an t-arán le scian.*
 Cut.PST John DET bread with knife
 ‘John cut the bread with a knife.’ (Irish)
- b. *János egy kés-sel felvágta a kenyer-et.*
 John.NOM INDEF knife-INS up_cut.3SG DEF
 bread-ACC
 ‘John cut the bread with a knife.’ (Hungarian)

Apart from differences like those between Irish and Hungarian, many languages mark comitatives – roughly the expression of accompaniment – and instruments with the same means. Consider the differences between French (Romance) and Finnish (Uralic) in (4).

- (4) a. *Jean a coupé le pain avec*
 Jean AUX.3SG cut.PTCP DEF bread with
un couteau.
 INDEF knife
 ‘Jean cut the bread with a knife.’ (French)
- b. *Jean travaille ensemble avec Marie.*
 Jean work.PRS.3SG together with Marie.
 ‘Jean works together with Marie.’
- c. *Hän kirjoittaa kynä-llä.*
 3SG write.PRS.3SG pen-ADE
 ‘He writes/is writing with a pen.’
 (Finnish, Karlsson 2004: 135, glossing mine)
- d. *Läsnä ol-i Veikko Väättäinen*
 Present be-PST.3SG Veikko Väättäinen
vaimo-ine-en.
 wife-COM-POSS
 ‘Veikko Väättäinen was there with his wife.’
 (Karlsson 2004: 145, glossing mine)

French uses the same marker for accompaniment as for the instrument ((4a–4b)): *Marie* and *couteau* express the former and the latter, respectively, and are both marked by *avec*. In Finnish, by contrast, accompaniment is expressed by the comitative case marker *-ine* ((4d)), whereas the instrument ((4c)) is marked with the adessive case *-llä*. The prototypical use of this case is to express a form of static location, but it also encodes instrumentality.

In addition to the standard occurrence of instruments and ISA, such as in (1a), there are also other types of examples that feature instruments (examples in (5)). These occurrences cover passives containing an instrument ((5a)), passive versions of ISA ((5b)), unaccusative constructions with an instrument ((5c)), middle constructions with an instrument ((5d)) and the like. Because such occurrences are only sporadically examined in the literature, I will provide a discussion of them and propose an analysis based on the standard treatment of instruments.

- (5)
- a. *The tree was cut down with the axe.*
 - b. *The bread was cut by the knife.*
 - c. *The door opened (with the key).*
 - d. *This glass breaks easily with a hammer.*

The examples in (4) illustrated that French uses typical instrumental marking for more than just instruments. English, Dutch and German, too, use this marking for a wide range of functions. The multifunctional nature of the preposition *with* in English and its counterparts in, for example, Dutch and German is a particular challenge. Consider (adapted from McKercher 2003) the various uses of *with* in (6).

- (6)
- | | | |
|----|--|------------|
| a. | <i>Kim ate pizza with a fork.</i> | Instrument |
| b. | <i>Kim ate pizza with her friend.</i> | Comitative |
| c. | <i>Kim ate pizza with enthusiasm.</i> | Manner |
| d. | <i>Kim ate pizza with pesto sauce.</i> | Attribute |
| e. | <i>Her argues with Sandy about that issue.</i> | Opposition |
| f. | <i>Kim needed help with that problem.</i> | Reference |
| g. | <i>Kim left her keys with her wallet.</i> | Proximity |
| h. | <i>Kim was paralyzed with fear.</i> | Cause |
| i. | <i>The garden swarms with bees.</i> | Locatum |

Dutch and German would use *met* and *mit*, respectively, for all of these, except for (6g–6i). In this dissertation, I do not discuss all of these functions as the focus of this dissertation lies on instrumentality. Nevertheless, many of the functions of *with* can be accounted for with the approach that I develop in this dissertation.

Apart from instruments and comitatives, there are other, seemingly related notions. Causees, for instance, are often implicitly treated as a type of instrument. I argue in favor of distinguishing instruments from causees, partly over the strength of causation that each is under the scope of. In addition to causation, animacy differences between the referents is central in the distinction between causees and instruments. It is to this end that Force Dynamics will be integrated with RRG's *logical structures*. Force Dynamics (Talmy 2000) is a production model of causation in that the precise type causation is the sum of the interaction of the

components in a configuration. Using the combinatorial possibilities of force dynamic configurations, Talmy proposes a wide range of causation types. I propose an integration of Force Dynamics with RRG as a theoretical contribution and I argue that my account deepens the latter's approach to causation.

Furthermore, there are other non-canonical, instrument-like notions. The arguments marked by *with* in the examples in (7) superficially look like instruments or comitatives but they are, in fact, neither. For example, in (7a) *hammer* is not wielded by the *lumberjack* to arrive at a certain result, nor does it perform the action of running as a companion of the aforementioned lumberjack. In (7b), the *book* is not wielded and it is not interpreted as accompanying the running individual. Rather, it conveys the meaning of an attribute: The *woman* seems to be (at least partly) defined over her possession of a book. In (7c), the use of an instrument in the coming about of a result state is explicitly denied. However, as it is present in the morphosyntactic structure, it must somehow be present in the semantic representation as well. Finally, in (7d), the accompaniment is explicitly denied. From a semantic point of view, it would be questionable to simply negate a normal expression of accompaniment (i.e. comitative) as comitatives are often defined over the observation that two entities perform an action simultaneously. Adopting such an approach would be overly simplistic and present problems for the linking to syntax.

- (7) a. *The lumberjack ran to the store with the hammer.*
 b. *The woman with the book ran to the store.*
 c. *John broke the window without a hammer.*
 d. *Bill went home without Eric.*

In this dissertation, I present an RRG-based analysis of the concepts superficially related to instruments. In addition to ISA and the phenomena in (7), I will explore the occurrence of other inanimate referents in subject position and how they are related to the more canonical instances of instruments.

1.2 Methodology

This dissertation is primarily an investigation of the syntax-semantics interface based on a small sample of languages. It is not a typological study in the strictest sense of the word, even though typological data are certainly used at times to illustrate a point. This study primarily uses English (West-Germanic), Dutch (West-Germanic), German (West-Germanic) and French (Gallo-Romance) as main data points. The following languages are also referenced to or used to varying degrees: Afrikaans (West-Germanic), Russian (East-Slavic), Croatian (South-Slavic), Serbian (South-Slavic), Bulgarian (South-Slavic), Georgian (Kartvelian), Finnish (Balto-Finnic), Estonian (Balto-Finnic), Hungarian (Ugric), Icelandic (North-Germanic), Basque (Isolate), Portuguese (Ibero-Romance), Spanish (Ibero-Romance), Romanian (Eastern Romance), Lithuanian (Baltic), Irish (Celtic), Persian (Indo-Iranian), Greek (Hellenic), Quechua (Quechua), Malayalam (Dravidian), Japanese (Isolate) and Jingulu (Jingulu) and several others. All examples that were not drawn from the literature, including those from my own native language (Dutch), were supplied and validated by native speakers. I employed questionnaires with example sentences in a lingua franca that the native speakers were most familiar with, i.e. there are 4 base questionnaires (one in Dutch, one in German, one in English and one in French). Many of the examples do not concern strict grammaticality vs. ungrammaticality. Rather, they are a matter of acceptability and degrees thereof. If more consultants accepted an example than not, I included the example as acceptable. Beyond the questionnaires, further interviews conducted with consultants constitute the bulk of the data used in this dissertation. Finally, the RRG-trees were generated with Praat (Boersma & Weenink 2016).

1.3 Glossing in this thesis

I loosely follow the Leipzig Glossing Rules (or: *LGR*, Comrie 2008). There are, however, several exceptions. I do not apply the same level of glossing in every example. The level of detail depends on the purpose the example serves and the morphological complexity of the language. For

instance, Georgian and Basque are always glossed in extensive detail with an extra top line provided for the sake of clarity. Another exception to the standard LGR concerns the marking of morphophonological changes. In addition to the backslash, the locus of change is marked in boldface. As German and Dutch employ such a marking strategy quite productively to mark past tense, it will be found throughout this dissertation. An example of this is given in (8).

- (8) *Lena lief* *in-s* *Haus.*
 Lena run\PST.3SG in-DEF house
 ‘Lena ran into the house.’

Another exception to the LGR concerns the marking of personal pronouns. Rather than including long sequences like *PERS.PRN.DAT.3SG* I have opted to simply use *3SG*. Case information for German has mostly been omitted, unless directly relevant for the matter at hand or if leaving it out would create confusion. The relevant preposition marking the instrument in German is *mit* and it always takes dative case. As Dutch does not have a case system any more than English does, the fact that the preposition *met* takes oblique marking (in the rare cases where there is overt marking) is hardly relevant.

I have also opted to use several labels that are not in the LGR-inventory. Both German and Dutch exhibit a phenomenon where a prefixed verb is split into the base verb and a postposed prefix or particle. Instances of this are labeled *VPR* (Verb particle/verb prefix). Dutch also has a syntactic element (*er*) with a wide array of uses, such as that of a placeholder pronoun or that of a locative pronoun. This element is an ongoing topic in Dutch (and general) linguistics and I do not wish to go into its details. As it is very frequent, it will appear throughout the Dutch examples. I will label it as *Multi-purpose Syntactic Element (MSE)*. Examples of these phenomena are given in (9a) and (9b–9c), respectively.

- (9) a. *Jan schlug* *das Fenster ein.*
 Jan break\PST.3SG DEF window VPR
 ‘Jan broke the window.’ (German)

- b *Ik ben er goed aan<ge>komen.*
 1SG AUX.1SG MSE good arrive<PTCP>arrive
 ‘I arrived there well.’ (Dutch)
- c. *Jan heef-t er drie.*
 Jan have-PRS.3SG MSE three
 ‘Jan has three.’

The glossing of English taken from the literature has been maintained, unless explicitly indicated. The glossing of languages other than Dutch, English, French and German was validated by the native speakers of the respective languages. The Dutch examples are from Standard Belgian Dutch. These will be simply indicated as ‘Dutch’.

1.4 Structure of this thesis

Chapter 1 has been a brief introduction to several basic phenomena that are the central object of study: Instruments, implements, causees and others that are either semantically or superficially related to them. I will employ the Role and Reference Grammar framework and therefore, chapter 2 supplies a detailed introduction to the theory. Chapter 3 provides an overview of the relevant literature regarding thematic relations, the types of semantics they employ and of instruments and related phenomena. Chapter 4 presents the first major pillar of my own approach: A proposal to revise the concept of animacy and to merge it with another concept which I call *autonomy*. Chapter 4 also includes a brief excursion into a different type of analysis, using a multiple inheritance hierarchy. This type of hierarchy can be used as a starting point to translate parts of my research into Barsalou’s frame semantic approach as developed in the CRC 991 at the Heinrich-Heine-Universität Düsseldorf (cf. Löbner 2014, 2015, Petersen 2007/2015, Kallmeyer & Osswald 2013). Chapter 5 presents the second major theoretical pillar. I provide an analysis of the causal relations that instruments occur with using *Force Dynamics* and I argue in favor of merging Force Dynamics with logical structures, a central component of RRG’s theory of linking. In doing this, I explore a weaker type of causation (*helping*) that will constitute the core of my

analysis of a specific type of instrument-related class, the *implement*. Chapter 6 is an approach to ISA, drawing from RRG's approach to constructional schemas. ISA presents special challenges for handling the notion of context and the cross-linguistic validity of theories of instruments. The main problems concerning ISA that are often not addressed in the relevant literature will be discussed in detail and a solution for each of them will be proposed. The principle topic of chapter 7 is how to distinguish instruments from phenomena that are (superficially) related. These include comitatives and causees but also phenomena like the ones that the examples in (7) illustrated. Chapter 8 concerns the linking of the semantics of instruments, causees and comitatives (in various forms) to the syntactic representation. As RRG is a non-derivational theory of syntax, the semantic analysis of these notions will prove crucial to account for their marking and surface behavior. I primarily explore marking and linking in English, Dutch, French and German. Chapter 9 is a summary of the most relevant semantic analyses and morphosyntactic tests.

2 Role and Reference Grammar

2.1 Introduction

Role and Reference Grammar (Foley & Valin 1984, Van Valin & LaPolla 1997, Van Valin 2005) is a functionalist grammatical framework which is monostratal in nature. Its ongoing development is driven by two major questions (Foley & Van Valin 1984, Van Valin 2005: 1): 1) What would a theory of language look like if it were not based on the analysis of English but rather on the analysis of typologically diverse languages such as Lakhota, Tagalog and Dyirbal? and 2) How can the interaction of the syntax, semantics and pragmatics in different languages with differing systems best be captured and explained?

The main focus of work in RRG lies on syntax-semantics interface and pragmatics (Van Valin & LaPolla 1997, Van Valin 2005), although advances are being made in the area of morphology (e.g. Martín Arista 2008, 2009, 2011, 2012 and Nolan 2010, 2011). Most RRG work is synchronic in nature (including this dissertation), although there is some diachronic work available (e.g. Matasović 2004, Martín Arista 2011). This chapter is intended to serve as an overview of RRG in its present-day conception.

2.2 Fundamentals

Apart from the research questions above, RRG holds a number of fundamental insights that make it quite distinct from other theories. Van Valin (2005: 3) points out that any theory of clause structure must meet two fundamental requirements, as displayed in (1).

- (1)
 - a. A theory of clause structure should capture all of the universal features of clauses without imposing features on languages in which there is no evidence or them.
 - b. A theory should always represent comparable structures in different languages in comparable ways.

In addition to these requirements, RRG rejects any kind of underlying deep structure syntactic representation or transformation commonly found in the generative tradition, Relational Grammar and certain varieties of Case Grammar. RRG's structures can be considered to be flat and the syntactic representation of a given clause reflects its actually occurring form very closely (Van Valin 2005: 3–4).

In general, RRG posits a semantic base which is linked into the syntax using a system known as the *linking algorithm* (Van Valin 2005: 1–2). Discourse pragmatics – or information structure – influences the whole system and can be described as ‘mediating’ the linking (Van Valin 2005: 1–2). Information structure operates in all aspects of the grammar. Each of the components of RRG has its own representation. These will be discussed in more depth in the following sections. The organization of RRG is visualized in the figure below (Van Valin 2005: 2):

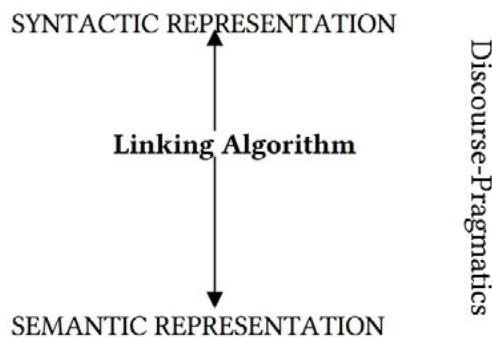


Figure 1: General organization of RRG.

Central to RRG's conception of non-relational clause structure is the *Layered Structure of the Clause* or LSC (Van Valin 2005: 3–4). It is based

on two distinctions; one is made between the predicate and elements that do not predicate. Another (within the class of non-predicating elements) is made between arguments and non-arguments. These distinctions result in units that are defined semantically rather than syntactically (Van Valin 2005: 5). Each of the semantic units has a syntactic equivalent, for which they are the motivating elements:

Semantic Element(s)	Syntactic Unit
Predicate	Nucleus
Argument in semantic representation of predicate	Core argument
Non-arguments	Periphery
Predicate + Arguments	Core
Predicate + Arguments + Non-arguments	Clause (=Core + Periphery)

Table 1: Semantic units underlying the syntactic units of the Layered Structure of the Clause (Van Valin 2005: 5).

It stands out that contrary to other theories, there is no syntactic unit called *verb phrase*. RRG treats VPs in languages that have them as grammaticalized focus structure patterns (Van Valin 2005: 8 & 80–81). This means that from the RRG perspective, VP is not a universal constituent and thus it is not listed as a syntactic unit.

Contrary to other theories, Role and Reference Grammar is represented through three different structures or ‘projections’: a *constituent projection* (representing the syntactic structure), an *operator projection* and an *information structure projection*. Not all of these projections need to be construed in every analysis or visualization. Indeed, representing all three simultaneously comes with certain difficulties as the result is a three-dimensional figure¹. As the information structure projection is not relevant for the topic of this thesis, it is not discussed in this chapter. The operator and constituent projections will be discussed in the

¹ See Van Valin (2005: 80) for an example of such a figure.

following sections. For more background on information structure and its projection, see Van Valin (2005).

It is important to point out that Van Valin (2008) argued for replacing the concept of the *noun phrase* with the concept of *reference phrase* or RP. Van Valin points out that language is used to refer and predicate (Van Valin 2005: 1). Calling an ‘NP’ a reference phrase is a logical consequence of this point of view, as RPs are indeed referring expressions (Van Valin 2005: 28) and as such refer to real world participants. They are also categorically varied. That is to say, just like predicates need not be verbs (although they canonically are), RPs are usually headed by nouns but do not need to be (Van Valin 2005: 28). Consider (Van Valin 2008: 167) the German nominative phrase *Der Lange* (‘The tall one’) in *Der Lange ist eingeschlafen* (‘The tall one has fallen asleep’). In German, it is undeniably headed by an adjective, whereas the English equivalent has the nominal ‘one’ as a head. RP has become the standard unit in RRG in post 2008-work. Consequently, in this thesis *RP* is used in all RRG-analyses. In the discussion of other frameworks, the labels and terminology of the respective approach will be respected.

2.3 Overall organization of Role and Reference Grammar

Role and Reference Grammar can be described as a semantically driven syntactic theory. RRG assumes that every verb belongs to a certain aktionsart class. These classes are largely drawn from Vendler’s classes (1957, 1967) but there are also several non-Vendlerian aktionsart classes in RRG. Each class is paired with a so-called *logical structure*, which reflects the syntactically relevant elements. These logical structures are based on Dowty’s (1979) system of lexical decomposition. A logical structure (or: *LS*) is thus a decomposition of certain predicate (including argument slots). Such decompositions constitute the basis for the linking algorithm. The logical structures are not usually depicted together with any of the projections. An exception is when the workings of the linking algorithm are graphically illustrated (see section 2.5.3 and chapter 8).

The logical structures are stored in the mental lexicon (Van Valin 2005: 47 & 130ff.). Parallel to the mental lexicon, the *syntactic inventory* is a syntactic equivalent in that it stores the syntactic structures available in a given language (Van Valin 2005: 13–15). As the logical structures (and aktionsarten) play a vital role in the workings of RRG, they are the principle topic of section 2.4. The following sections will focus on the projections and their respective components, explore the semantic basis of RRG (which will play a pivotal role in this dissertation) and finally discuss the linking algorithm. As RRG is an elaborate theory, not all aspects of it will or can be discussed in this chapter.

2.3.1 Constituent Projection

The constituent projection is the representation of the syntactic structure in RRG. The concept of the Layered Structure of the Clause is crucial here. The units posited by Van Valin (2005: 4–5) are directly reflected in the constituent projection and form the backbone of syntactic representation: The nucleus is the syntactic unit that contains the predicate (Van Valin 2005: 4–5). The core consists of the nucleus and the arguments of the predicate. Consider the following example from English.

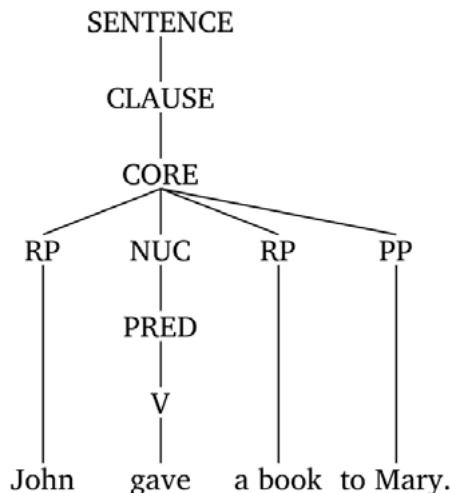


Figure 2: Constituent projection of a simple English sentence.

The clause is the core and periphery (which contains non-arguments) combined. The highest level in the LSC is the sentence:

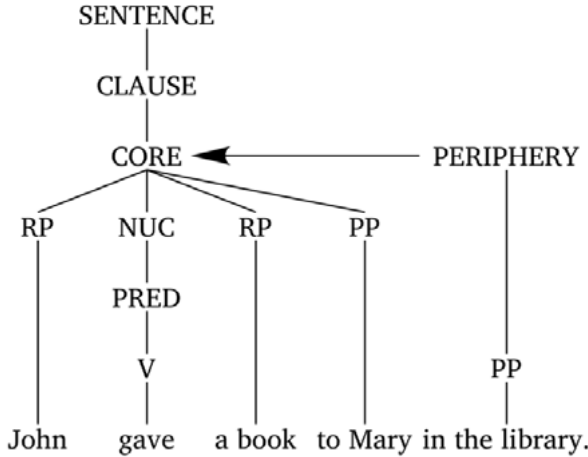


Figure 3: Constituent projection including the periphery.

In addition to these semantically motivated units, there are also pragmatically motivated units. Languages can have an extra-core slot (*pre- or postcore slot*) and a detached position (*left- or a right-detached position*). The former contains fronted elements and question words in languages where they do not appear in situ (Van Valin 2005: 5). In the Dutch sentence *BIER drinkt hij niet graag*² ('BEER he doesn't like to drink'), the fronted object-RP is located in the precore slot (PrCS).

² 'The Dutch adverbial *graag* roughly translates as *gladly* or *happily*. In English, this is expressed by the verb *like*.

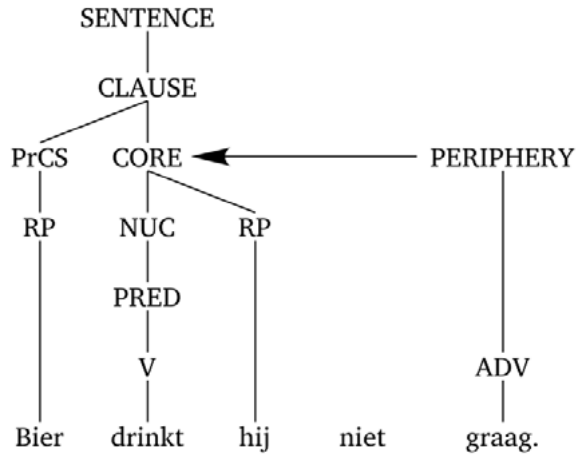


Figure 4: Dutch sentence with a PrCS.

The detached positions (LDP and RDP) are often the location of adverbials that are set off from the rest of the sentence by an intonation break (Van Valin 2005: 5–6). Consider the following example.

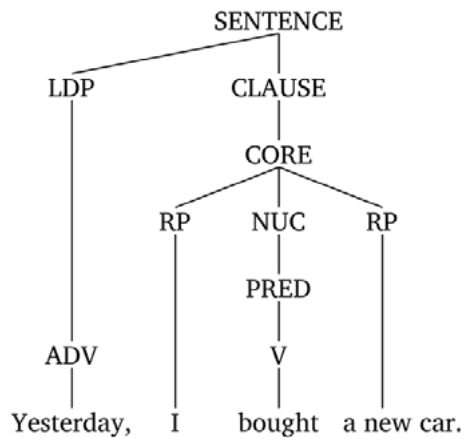


Figure 5: English sentence with an LDP
(adapted from Van Valin 2005: 6).

Van Valin (2005: 8) points out that the pragmatically motivated units (the detached positions and extracore slots) are not universal, whereas the other syntactic units are universal. This means that not all languages will have an extracore slot, whereas others will have both and still others will only have one. Van Valin (2005: 17) stresses that the extracore slots cannot contain more than one RP or PP at a time and that there can never be more than one such slot in the clause. It is possible in some languages to have a semantic argument of the predicate in a detached position. If this is the case, a resumptive pronoun will be present in the core (Van Valin 2005: 6). Van Valin offers an example from English, but the situation in Dutch is similar: *Ik ken hem, je broer* ('I know him, your brother') or *Ik zie het, dat onweer* ('I see it, that thunderstorm'). Consider:

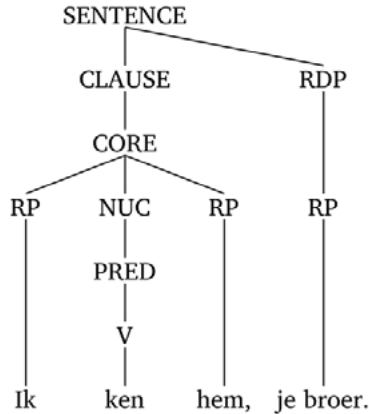


Figure 6: Dutch sentence with an RDP and a resumptive pronoun in the core.

RRG assumes that the syntactic structures are stored as templates in the syntactic inventory rather than being derived by any kind of phrase structure rule (Van Valin 2005: 13). As different languages show different configurations in the constituent projection, the templates in the syntactic inventory are not universal but subject to considerable cross-linguistic variation. In short, the content of the syntactic inventory is language specific. Judging from the Dutch examples in figures 4 and 6,

we can theorize that Dutch has (at least!) a right detached position-template, a precore slot-template and two different core templates. Within the process of linking semantics to syntax, the correct templates are selected and merged to form the complete structure that is depicted in the constituent projection. This non-exhaustive Dutch inventory is given in figure 7.

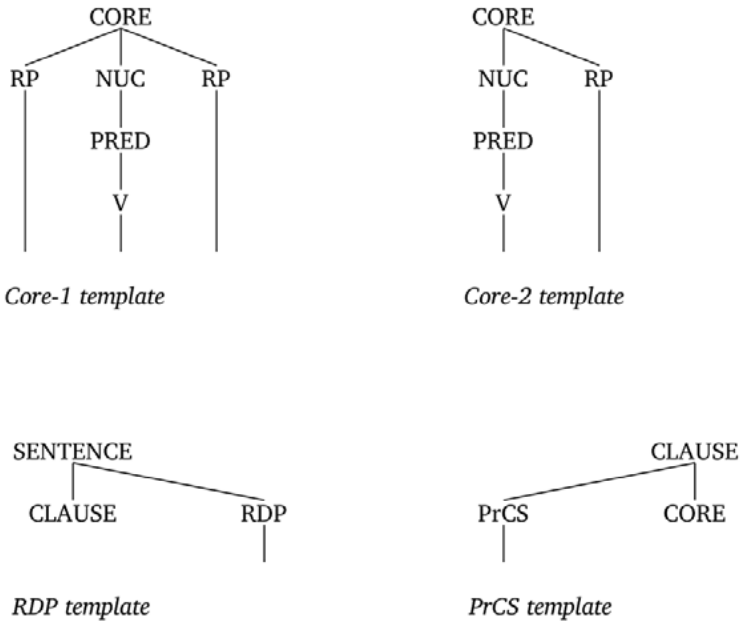


Figure 7: A non-exhaustive list of Dutch syntactic templates in the syntactic inventory.

It has been previously explained that the periphery contains the non-arguments, the adjuncts. Van Valin (2005: 19) distinguishes between phrasal and non-phrasal adjuncts. PPs are an example of the former, adverbs an example of the latter. An element of the periphery, depending on its precise content, can modify any layer of the LSC. Van Valin (2005: 19) posits that temporal or locational PPs (such as in figure 3) modify the events encoded by the elements of the core. Consequently,