Encoding of argument structure in Romanian and SiSwati

Udo-Michael Klein

Submitted for the degree of Doctor of Philosophy
Department of Philosophy
King’s College
University of London
March, 2007
Declaration

I hereby declare that the work presented in this thesis is my own work.

Signed: Udo Klein
Abstract

This dissertation provides a comparative analysis of the function played by Romanian weak (clitic) pronouns and Siswati object markers in the encoding of argument structure. The central claim is that both weak pronouns in Romanian as well as object (and subject) markers in Siswati are pronominal signs which satisfy the syntactic as well as the semantic requirements of the verbal sign they combine with.

The basic assumptions are that (i) formal rules operate on tuples of strings, rather than strings, (ii) semantic rules identify predicate placeholders by their restriction on the construal of the saturating argument, and (iii) the relation between syntactic and semantic structure is exhaustively characterised by pairing formal and semantic rules.

The structure of the Romanian verb cluster is analysed in terms of rules which operate on the exponent, categorial and semantic levels simultaneously. Preverbal and postverbal accusative weak pronouns are generated by rules having the same category function (resulting in identical phrase structures), but different exponent functions (resulting in different word orders). The exponent and categorial functions correspond to simple Literal Movement Grammar rules and are thus parsable in polynomial time. The meaning of a weak pronoun can be saturated by the meaning of a direct object sign with matching formal features. Non-local direct object signs are combined with a verb before this verb is embedded – the argument combines with the predicate, while the concatenation of their strings is deferred.

Following Cognitive Grammar, I assume that linguistic expressions encode both conceptual content and the speaker’s construal of this content. The morphosyntactic realisation of an argument depends mainly on its construal. Arguments are construed asymmetrically as figure, ground, background or oblique. The various valency changing constructions in Siswati are analysed in terms of modes which change not only the conceptual content, but also the construal restrictions associated with the placeholders of the predicate. Subject and object markers are analysed as pronominal signs whose meanings saturate the placeholders restricted to figure and ground arguments respectively.

The central claim is compared with and defended against (i) the claim that weak pronouns are the phonological realisation of syntactic features (and thus are not signs) and (ii) the claim that subject markers which co-occur with a coreferent NP sign have lost their semantic value and are therefore merely formal agreement devices.
Acknowledgements

It is my pleasure to thank those who have helped me complete this dissertation. To start with, I would like to thank my first linguistics teachers Fritz Hamm, Arnim von Stechow and Wolfgang Sternefeld for sharing with me their passion and enthusiasm for linguistics, and for giving me the opportunity to tutor some of their classes in the later years in Tübingen.

Throughout the years I have benefited enormously from long, challenging and very fruitful discussions with my friend Christoph Dørge about our shared object of interest: philosophy of language and linguistics. Without his encouragement during the more difficult times this dissertation may not have been finished. It is my pleasure to say thanks.

In 2003, after completing a one year Master’s course at King’s College London, I started my dissertation under the supervision of Ruth Kempson and Wilfried Meyer-Viol. Despite my shifting interests, Ruth has never failed to consider my ideas carefully and respond to them insightfully. Her relentless insistence on clarity of thought and precision of expression has helped me clarify a number of important points. Wilfried’s technical expertise in mathematical linguistics has helped me develop crucial parts of the analysis based on simple Literal Movement Grammar rules. I would like to thank both of them for their support, advice and encouragement over the last years.

My colleague Nhlanhla Thwala deserves a special thank you for introducing me to the fascinating world of Bantu languages and to Siswati in particular. He helped and guided me in my first attempts at analysing a non-European language, and also provided all the Siswati sentences in this dissertation.

Thanks also to my other colleagues at King’s, in particular Lutz Marten and Eleni Gregoromichelaki, who gave me valuable feedback at various stages in the development of this dissertation.

This dissertation has been part of the AHRC-funded project “A dynamic typology of pronouns and clitics in Bantu and Romance” which I gratefully acknowledge.

I would also like to acknowledge the influence of two linguists who have profoundly shaped my thinking about linguistics: Marcus Kracht’s views on semantic composition and on the relation between syntactic and semantic structure, and Ronald Langacker’s theory of cognitive grammar.

Finally, I thank my parents Alfred and Maria for their love and support since I can
remember. My biggest debt of gratitude I owe to my wife Katie for her love, patience and support when it mattered most. This dissertation is dedicated to her.
## Contents

1 **Introduction**  
   1.1 Linguistic communication of new thoughts and compositionality  
   1.2 The framework  
   1.3 Formal structure  
      1.3.1 Why tuple-based grammars?  
      1.3.2 Why Simple Literal Movement Grammars?  
   1.4 Conceptual structure  
      1.4.1 The standard view of semantic composition  
      1.4.2 An alternative  
   1.5 Summary  

2 **Motivating the framework**  
   2.1 Linguistic communication of new thoughts and compositionality  
   2.2 The framework  
   2.3 Formal structure  
      2.3.1 Why tuple-based grammars?  
      2.3.2 Why Simple Literal Movement Grammars?  
   2.4 Conceptual structure  
      2.4.1 The standard view of semantic composition  
      2.4.2 An alternative  
   2.5 Summary  

3 **Romanian**  
   3.1 Personal pronouns in Romanian  
   3.2 The verb cluster  
      3.2.1 Data and generalisations  
      3.2.2 Summary  
      3.2.3 Analysis  
   3.3 Direct objects in Romanian  
      3.3.1 Data and generalisations  
      3.3.2 Analysis  
   3.4 Conclusion  

4 **Siswati**  
   4.1 Data and generalisations  
      4.1.1 Noun class system  
      4.1.2 Basic clauses  
      4.1.3 Conjunctive and disjunctive verb forms  
      4.1.4 Applicative  

5 **Conclusions and future work**  

6 **Appendices**  

7 **Bibliography**
# Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>first class, singular</td>
</tr>
<tr>
<td>ACC</td>
<td>accusative</td>
</tr>
<tr>
<td>ADJ-M</td>
<td>adjective marker</td>
</tr>
<tr>
<td>ANIM</td>
<td>animate (or animacy)</td>
</tr>
<tr>
<td>APPL</td>
<td>applicative</td>
</tr>
<tr>
<td>AUX</td>
<td>auxiliary</td>
</tr>
<tr>
<td>CAUS</td>
<td>causative</td>
</tr>
<tr>
<td>CL</td>
<td>class</td>
</tr>
<tr>
<td>CONJ</td>
<td>conjunctive</td>
</tr>
<tr>
<td>DAT</td>
<td>dative</td>
</tr>
<tr>
<td>DEF</td>
<td>definite</td>
</tr>
<tr>
<td>DET</td>
<td>determiner</td>
</tr>
<tr>
<td>DISJ</td>
<td>disjunctive</td>
</tr>
<tr>
<td>DOM</td>
<td>differential object marker</td>
</tr>
<tr>
<td>F</td>
<td>feminine</td>
</tr>
<tr>
<td>FIL</td>
<td>phonological filler</td>
</tr>
<tr>
<td>FUT</td>
<td>future</td>
</tr>
<tr>
<td>FV</td>
<td>final vowel</td>
</tr>
<tr>
<td>GEN</td>
<td>genitive</td>
</tr>
<tr>
<td>GER</td>
<td>gerund</td>
</tr>
<tr>
<td>IMP</td>
<td>imperative</td>
</tr>
<tr>
<td>INAN</td>
<td>inanimate</td>
</tr>
<tr>
<td>INDEF</td>
<td>indefinite</td>
</tr>
<tr>
<td>INF</td>
<td>infinitive</td>
</tr>
<tr>
<td>INT</td>
<td>intensifier</td>
</tr>
<tr>
<td>INV</td>
<td>inversion</td>
</tr>
<tr>
<td>IP</td>
<td>immediate past</td>
</tr>
<tr>
<td>LOC</td>
<td>locative</td>
</tr>
<tr>
<td>M</td>
<td>masculine</td>
</tr>
</tbody>
</table>

8
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEG</td>
<td>negation</td>
</tr>
<tr>
<td>NOM</td>
<td>nominative</td>
</tr>
<tr>
<td>NUM</td>
<td>number</td>
</tr>
<tr>
<td>OM</td>
<td>object marker</td>
</tr>
<tr>
<td>P</td>
<td>person</td>
</tr>
<tr>
<td>PASS</td>
<td>passive</td>
</tr>
<tr>
<td>PFV</td>
<td>perfective marker</td>
</tr>
<tr>
<td>POSS-M</td>
<td>possessive marker</td>
</tr>
<tr>
<td>PREP</td>
<td>preposition</td>
</tr>
<tr>
<td>PRF</td>
<td>perfect</td>
</tr>
<tr>
<td>PST</td>
<td>past tense</td>
</tr>
<tr>
<td>RECP</td>
<td>reciprocal</td>
</tr>
<tr>
<td>REFL</td>
<td>reflexive</td>
</tr>
<tr>
<td>RF</td>
<td>remote future</td>
</tr>
<tr>
<td>RP</td>
<td>remote past</td>
</tr>
<tr>
<td>SM</td>
<td>subject marker</td>
</tr>
<tr>
<td>SBJV</td>
<td>subjunctive</td>
</tr>
<tr>
<td>V</td>
<td>verb</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

The aim of this thesis is to provide a comparative analysis of the role played by Romanian\(^1\) weak pronouns and by Siswati\(^2\) subject and object markers in the encoding of argument structure, in order to clarify the similarities and differences between these linguistic entities. The analyses will be formulated within a particular version of sign grammars, in which grammatical knowledge is formulated in terms of associations between formal and semantic functions.

The main reason for comparing Romanian weak pronouns with Siswati object markers is that they display intriguing similarities in their grammatical properties, despite the fact that these two languages are genetically unrelated. To mention only two common properties, both weak pronouns and object markers can be used instead of noun phrases in order to express the object of a verb. Secondly, both weak pronoun and object markers can co-occur with clause-internal coreferential noun phrases. On the other hand, an important difference between weak pronouns and object markers is that weak pronouns are marked for case in Romanian, whereas they are marked for class in Siswati.

The analysis of weak pronouns in Romanian and subject and object markers in Siswati will be formulated within a particular version of sign grammars, which will be motivated in detail in the second chapter. Some important properties of this grammar framework will be derived from the requirements imposed by the explanation of successful linguistic communication of new thoughts. First, to explain successful linguistic communication we must postulate that both speaker and hearer use the same signs and the same modes of combining signs when producing and understanding an utterance. Signs are associations between an expression and a context-invariant meaning of this expression, and modes of combination are associations between a formal function and a semantic function. Secondly, an explanation of linguistic communication must assume that the thought to be communi-

\(^1\)Romanian is a Romance language spoken in Romania.
\(^2\)Siswati is a Bantu language spoken in Swaziland.
cated is somehow structured, and thus that semantics is not interpretive but generative as well. Thirdly, language is not a set of well-formed expressions, but a set of signs consisting of an expression and its context-independent meaning.

Two other properties of the framework presented below do not follow directly from the requirements imposed by the explanation of successful communication. First the formal and semantic rules can only distinguish the immediate components, and not their internal structure, and secondly the relation between syntactic and semantic structure is characterised exhaustively by associations of syntactic and semantic rules (that is by grammatical rules) so that every condition on an association is either a condition on the syntactic rule or a condition on the semantic rule. This latter property will have important consequences for the analysis of long-distance dependencies, and will be discussed in more detail in section 3.3.2.3.

Given a language L consisting of a set of signs, a grammar of a language L is a set of associations between formal and semantic functions which derive all and only the signs of a language. Since associations between formal and semantic functions (i.e. modes of combination) are hypothesised to be necessary in order to explain the linguistic communication of new thoughts, formal and semantic functions must be formulated independently of one another – otherwise it is not possible to formulate their association. This strict separation of formal and semantic structure entails that there is no entity or property which can be manipulated by both formal and semantic functions: If an entity can be manipulated by formal functions, then it cannot be manipulated by semantic functions, and conversely if an entity can be manipulated by semantic functions it cannot be manipulated by formal functions. Among other things this will rule out the possibility of coindexing in a grammatical rule a syntactic entity with a semantic entity.

I distinguish (i) those aspects of meaning which are context-invariant, i.e. which are determined only by the hearer’s choice of modes for combining the formal units, from (ii) those aspects of meaning which are inferred by the hearer on the basis of her knowledge about the world in general and the context of the utterance in particular.

I will then set out and motivate why the formal structure of expressions should be characterised in terms of functions on tuples of expressions rather than just expressions. The basic idea here is the distinction between what [Curry (1963)] called the tectogrammar, that is the underlying structure, and phenogrammar, that is the surface structure of expressions. Assuming that certain expressions have the same tectogrammar, it can be shown that their phenogrammar cannot be analysed in terms of functions which can only concatenate strings. This motivates the move from functions on strings to functions on tuples of strings.

Choosing a mode for combining the formal units of an expression e determines the meaning of e, whereas choosing a formal function does not determine the meaning, since this formal function may be associated with different semantic functions.
CHAPTER 1. INTRODUCTION

I will then motivate the choice of a particular tuple-based grammar called Simple Literal Movement Grammar (sLMG). The main reason for choosing sLMG is that it imposes no other restriction on the possible syntactic rules other than that they must be computable in polynomial time. The only substantial difference between this formalism and the mildly context-sensitive formalisms is that this formalism does not have the constant-growth property. The reason for this is that the sLMG allows for reduplication which is excluded in mildly context-sensitive formalisms.

Lastly, I discuss the standard theory of semantic composition, and argue that it is undesirable to assume that the two arguments of a binary predicate are combined with this predicate by means of two applications of the same semantic function – functional application. Instead, I propose that the two arguments are combined by means of different semantic functions, which identify the placeholders of unsaturated entities in terms of restrictions on the construal of the arguments saturating these placeholders. The basic idea is that speakers construe the participants in a situation differently (e.g. as figure, ground, background, oblique), and that the verb signs which a speaker chooses reflect this asymmetric construal of participants by means of construal restrictions on the arguments saturating the placeholders of the predicate. These notions of construal are based on similar notions proposed within the framework of Cognitive Grammar in Langacker (1987, 1991b), and will be introduced in detail in section 2.4.2.

Before proceeding to the introduction to the following chapters, I would like to briefly discuss two important methodological assumptions that I have made. The first is that I strictly distinguish between the description of the grammar of a language, and the explanation of why the grammar is the way it is. The aim of this thesis is to provide hypotheses about the structure of certain phenomena in Romanian and Siswati (in order to compare certain aspects of their grammars), and not to explain why the structure is the way it is. Certain aspects of the grammar of a language may be the way they are because of certain innate predispositions of our narrow language faculty. Other aspects may be the way they are because human language processing is the way it is, or because of language contact or language change. Despite the tendency in modern linguistics to describe linguistic structure within the same framework which is used to formulate linguistic universals, it is my conviction that this should better be avoided. The main reason for this is that in my view every language should be analysed in its own terms without assuming that certain properties are universal. Of course this makes the comparison between different grammars much more difficult, but on the other hand the assumption (as well as all the conclusions based on it)

---

4 See Groenink (1997).
5 See Joshi (1985) and Vijay-Shanker and Weir (1994) for a definition of mildly context-sensitive formalism, and for a proof of the equivalence of four different mildly context-sensitive grammar formalisms.
6 See Hawkins (2004, §9) for an illuminating discussion.
that two different languages have the same category $C$ is as good as the evidence we have that this is the case.

The second methodological point is that I make no assumptions about universal principles of grammar (which is not synonymous with saying that there are no universal principles of grammar). I believe that the description of the structure of grammar can and should proceed without such assumptions. This essentially forces us to justify every category that we use in the description of a grammar, be it word classes, assumptions about the structure of phrases, etc.. The second reason is that I do not aim to explain the fact that children can acquire Romanian, Siswati, or any other natural language for that matter. The central explanandum which determines the main properties of the present framework is not the fact that infants can learn Romanian or Siswati, but the fact that native speakers of Romanian and Siswati can understand each other using these languages. The third reason is that if we find out that infants can – after all – learn certain aspects of language which have been postulated to be universal, then we need to reformulate not just the whole theory of universal grammar, but also the particular grammars themselves, to the extent that they have been described in terms of these universal principles.

The third chapter will provide a detailed analysis of the use of weak pronouns in the encoding of argument structure in Romanian. Weak (i.e. unstressable) pronouns display two important properties. First, they occur in close proximity to the verb, either before or after the verb, and secondly they sometimes (but not always) cliticise either to the following word (proclisis) or to the preceding word (enclisis). It is easy to see that these two properties are logically independent, since we must distinguish between preverbal weak pronouns which encliticise, preverbal weak pronouns which procliticise, and preverbal weak pronouns which neither encliticise nor procliticise (postverbal weak pronouns are always enclitic). I will postulate exponent functions which on the one hand determine the position of weak pronouns with respect to the verb, and on the other hand perform the obligatory cliticisation of (certain occurrences of) weak pronouns. The distinction between phenostructure (analysed in terms of exponent functions) and tectostructure (analysed in terms of category functions) is crucial for the analysis of the verb cluster in Romanian. The different positions of the weak pronouns with respect to the verb are analysed in terms of different exponent functions (that is as part of the phenostructure), while the tectostructure is the same, since the same category function is used for combining accusative weak pronouns (irrespective of the eventual position of this pronoun with respect to the verb). The hypothesis that exponent functions operate on tuples of strings rather than just on strings is essential for the analysis of the preverbal and postverbal positions of weak pronouns in Romanian, because it allows for deferring the concatenation of a weak pronoun and its syntactic host. This division of work between exponent functions and category functions allows us to keep the tectostructure uniform, and thus to dispense with functional projections which have been proposed repeatedly in the
literature.

Semantically, weak pronouns are analysed as having the same meaning as strong pronouns (i.e. pronouns which can be stressed), despite the fact that sometimes they co-occur with a clause-internal coreferential direct object NP.

The main challenge facing theories which claim that weak pronouns have the same meaning as strong pronouns is the analysis of the clause internal co-occurrence of weak pronouns and coreferent NPs. I hypothesise that direct object arguments can combine with verb meanings by the application of two different semantic functions. The first function saturates a ground placeholder of a predicate with the argument, while the second semantic function saturates the meaning of a weak pronoun which itself saturates the placeholder restricted to ground arguments. This second function provides the basis for the analysis of the co-occurrence of accusative weak pronouns and direct object NPs.

Differential object marking in Romanian (i.e. the phenomenon that direct objects high on the animacy/referentiality scales are marked with the preposition pe whereas other direct objects whose referents are low on these scales are not marked) is analysed by postulating two different types of modes of combining direct objects. The modes of the first type require the direct object to be pe-marked and apply if the meaning of the direct object satisfies conditions C1, whereas the modes of the second type require the direct object to be unmarked and apply under other certain conditions C2. The optional pe-marking of some direct objects is then a consequence of the fact that they can be combined with the verb by both types of modes.

The existence of topicalised direct objects which occur at a “long distance” from the verb presents a serious challenge to all theories in which the formal functions must be formulated independently of the semantic functions (unless formal and semantic functions are formulated independently, it is not possible to formulate their association). The challenge is to synchronise the formal and semantic functions so that they pick out the same weak pronoun (for the purposes of semantic combination and formal agreement). I argue that direct objects which end up in a dislocated position must be combined with the verb before the verb is embedded into a matrix verb. This, however, requires the delay of the concatenation of direct object exponent and the verb exponent. This delay is analysed in terms of exponent functions on tuples of strings rather than strings. I will complete the analysis of Romanian weak pronouns and their function in the encoding of argument structure by providing an explicit formulation of all the modes for combining direct object signs with verb signs.

The fourth chapter then turns to the presentation and analysis of the function played by subject and object markers in the encoding of argument structure in Siswati. I will start

\[\text{Dobrovie-Sorin, 1994; Dobrovie-Sorin, 1995; and Alboiu, 2003.}\]
this chapter with a detailed presentation of the encoding of arguments in the basic clause, in personal and impersonal passive clauses, in applicative clauses, in causative clauses, in reciprocal clauses, in the reversal construction, and in the impersonal active construction. The distribution of object markers in Siswati depends also on whether the verb takes a so-called ‘conjunctive’ or ‘disjunctive’ form, a distinction characteristic of many Bantu languages but so far relatively under-studied and not well understood; as part of the demonstration of the applicability of the grammar formalism that I set out, my analysis will include an explicit specification of the interaction between these two types of verbs and object marking.

In the second part of this chapter I turn to the analysis of the encoding of argument structure and the function which object and subject markers play in it. The first main hypothesis about the semantic structure of Siswati is that there are two types of semantic functions. The functions of the first type combine component meanings into a composite meaning. The functions of the second type change the predicate (by adding or removing semantic roles) and/or the construal restrictions on the arguments saturating the placeholders. To give two examples of functions of the second type, the personal passive construction will be analysed by means of a mode of combination whose semantic function changes the construal restrictions on the arguments saturating the placeholders of the predicate, whereas the causative construction will be analysed by means of a mode whose semantic function changes both the predicate to which it applies as well as the construal restrictions on the arguments of the predicate. The second main hypothesis is that the construal restrictions on the arguments saturating the two object placeholders of a ternary predicate are the same as the construal restriction on the argument saturating the object placeholder of a binary predicate – the common restriction is that the arguments must be construed as ground. The third main hypothesis is that the semantic function of the mode combining object markers with the verb root saturates a placeholder restricted to ground arguments with the meaning of the object marker sign. I argue that the meaning of object markers as well as weak pronouns is the same as the meaning of strong pronouns. The fourth main hypothesis is that there are two modes for combining object signs with verb signs in Siswati. The first mode consists of (i) a semantic function which saturates a placeholder restricted to ground arguments with the meaning of the object sign, and (ii) a syntactic function which prefixes the object exponent to the verb exponent. The second mode combines an object sign with a verb sign containing an object marker, and consists of (i) a semantic function which saturates the unstaturated semantic value of a weak pronoun, which itself saturates a placeholder restricted to ground arguments with the meaning of the object sign, and (ii) a syntactic function which essentially defers the concatenation of verb and object exponent.

The obligatoriness of subject marking as opposed to the non-obligatoriness of the object marker is explained as the result of the grammaticalisation of the preference for combining clause-internal subject NPs not with the mode for combining clause-internal subject NPs,
but with that mode which was initially used for combining clause-external subject NPs.

In the fifth chapter I first sum up the main similarities and differences between the functions of weak pronouns and subject and object markers in the encoding of argument structure, as these similarities and differences emerge from the two analyses in the previous two chapters. Then I turn to the comparison of my analyses with various analyses (from the recent literature) of the function of weak pronouns and subject and object markers.

The first comparative claim I make is that both weak pronouns as well as subject and object markers are pronominal signs, and that they do not have to be analysed differently depending on whether or not they co-occur with coreferring object NPs. This differs from the analysis proposed in the LFG literature, where subject markers were analysed as pronominal when they do not co-occur with a coreferent subject NP, and as agreement markers without meaning when they do co-occur with a coreferent subject NP. Dynamic Syntax does not postulate that weak pronouns lack meaning if they co-occur with coreferential subject NPs, but it nevertheless postulates a difference between weak pronouns which can co-occur with coreferential NPs within a simple clause and weak pronouns which cannot co-occur with coreferential NPs in a simple clause. In my analysis there is no such difference – weak pronouns are analysed uniformly, irrespective of whether they can or cannot co-occur with clause-internal coreferential object NPs. Secondly, the hypothesis that weak pronouns are signs differs from the analysis proposed in Anderson (2005) and Monachesi (2005), where it is essentially claimed that weak pronouns do not have to status of signs.

Since the position of weak pronouns with respect to the verb is analysed in terms of exponent functions, and not in terms of category functions, it is possible to dispense with the functional projections which were argued to be necessary for example in Dobrovie-Sorin (1994). What distinguishes the present analysis of the verb cluster in Romanian from that provided in Dobrovie-Sorin (1994) is that in the present analysis a distinction is made between the phenostructure and the tectostructure, which makes it possible to keep the tectostructure of the verb cluster uniform, and thus to dispense with functional projections.

The second comparative claim that I make is that semantic value of object NPs in both Romanian and Siswati can be combined by means of essentially the same two semantic functions. The first semantic function saturates a placeholder restricted to ground arguments with the semantic value of the object NP, and the second semantic function saturates the semantic value which saturates a placeholder restricted to ground arguments with the semantic value of the object NP.

The third comparative claim is that in Romanian the object placeholders of a ternary predicate have different restrictions on the construal of the argument saturating them, while in Siswati the (main) construal restrictions are the same. In Romanian the recipient is encoded differently from the theme. This is analysed by postulating that the respective placeholders of the predicate (e.g. recipient and theme placeholders) have different restric-
tions on the construal of the argument. In Siswati, on the other hand, the two objects of a ternary predicate share some important morphosyntactic properties. They both occur in the verb phrase, they can both be passivised, and they can both be object marked. This is explained by hypothesising that in Siswati the two object placeholders of ternary predicates have similar restrictions on the construal of the saturating argument, so that some important rules of the grammar (encoding inside a verb phrase, passivisation, object marking) apply to both objects because of this similarity in construal restrictions. Some other grammatical rules, e.g. word order within the verb phrase, actually distinguish these two objects of a ternary predicate. This is analysed by hypothesising that unlike the previous rules, which are only sensitive to the main construal restrictions on the arguments saturating the two placeholders, these rules are also sensitive to some more fine-grained differences in construal restrictions, to which e.g. the passivisation rule is not sensitive.

Regarding the typology of object asymmetries in Bantu, I make the following two claims. First, the difference between symmetric and asymmetric Bantu languages is due to the restriction that in asymmetric languages at most one placeholder restricted to ground arguments can be affected by a verbal morpheme (either by being saturated or by its construal restriction being changed), whereas in symmetrical languages this restriction does not hold. And secondly, the difference between alternating and non-alternating passives in Bantu is due to the grammaticalisation of a preference for interpreting potentially ambiguous subjects of passivised clauses as the argument licensed by the causative or applicative morpheme. Both claims differ from the claims made in the theory of object asymmetries in Bresnan and Moshi (1990) and Alsina (1996).

I will close with some general reflections on the significance of the accounts proposed for the two languages within the overall theoretical perspective dictated by the formalism I have adopted.

Remarks on glossing and notation: The glossing will be based on the Leipzig Glossing Rules (LGR). The cliticisation of a word will be marked both in the example and in the gloss by the equals sign “=”. Segmentable morphemes are separated by hyphens, both in the examples and in the gloss. When a single object-language element is glossed by more than one metalanguage element, then these metalanguage elements are separated by periods. Person and number labels are not separated by a period. For Siswati I will use the person features 1st, 2nd and 3rd, in order to distinguish these from the classes 1, 2 and 3. See the list of abbreviations for the abbreviations used in the glosses.

I will use the type writer font for the object language, and sans serif font for the representation of MEANING.
Chapter 2

Motivating the framework

The communication of a speaker meaning $\mu_S$ by means of a linguistic expression is successful to the extent that the hearer meaning $\mu_H$ approximates $\mu_S$. The hearer meaning consists of (i) those aspects of meaning which are determined only by the hearer’s choice of modes for combining the components of an expression (and not by encyclopaedic or contextual knowledge) and (ii) those aspects of meaning which are inferred by the hearer on the basis of her knowledge about the world in general and the context of the utterance in particular. In order to explain linguistic communication of a new thought it is hypothesised in section 2.1 that speaker and hearer use the same signs and the same modes of combination when producing or understanding a new thought. A sign is taken to be an association between an expression and a context-invariant meaning of this expression. A mode of combination $f_i$ is an association of a formal function $f_{\sigma,i}$ and a semantic function $f_{\mu,i}$. The result of combining e.g. two component signs by means of a certain mode $f_b$ is a composite sign whose expression is determined by applying formal function $f_{\sigma,b}$ to the expressions of the component signs, and whose meaning is determined by the application of a semantic function $f_{\mu,b}$ to the meanings of the component signs. The use (by speaker and hearer) of the same signs and the same modes of combination is crucial in the explanation of the communication of a new thought, since it guarantees the successful communication of context-invariant aspects of meaning, that is of those aspects of meaning which only depend on the signs and the modes of combination.

Since (i) a grammar is a characterisation of linguistic knowledge, and since (ii) shared linguistic knowledge is necessary in explaining the communication of new thoughts, a grammar has to specify the associations between formal and semantic functions, i.e. it has to specify the modes of combination. Given a language L consisting of a set of signs, a grammar G of L is defined in 2.2 as a set of modes of combination which can derive all and only the signs of L. This strict separation of formal and semantic structure entails that every grammatical rule must be formulated as a pair consisting of a function which operates on syntactic entities only, and a function which operates on semantic entities only. The claim is that without
such a strict separation between formal and semantic structure it is not possible to explain
the linguistic communication of new thoughts.

In section 2.3 I motivate why the formal structure of expressions should be characterised
in terms of tuples of expressions rather than just expressions. The basic idea here is the
distinction between what Curry (1963) called the tectogrammar, that is the underlying
structure, and phenogrammar, that is the surface structure of expressions. Assuming that
certain expressions have the same tectogrammar, I will show that their phenogrammar
cannot be analysed in terms of functions restricted to concatenating strings. This motivates
the move from functions on expressions to functions on tuples of expressions. I will then
motivate the choice of a particular tuple-based grammar called Simple Literal Movement
Grammar.

In section 2.4 I discuss the standard theory of semantic composition, and point out a
few weaknesses of this theory. In particular, I argue that by assuming only one semantic
combination function (functional application) it is not possible to associate the different
morphosyntactic realisations of the arguments of a binary predicate directly with different
semantic combinations of these arguments with the predicate. Alternatively, I propose that
the two arguments are combined by means of different semantic functions, which identify the
placeholders of unsaturated entities in terms of restrictions on the construal of the arguments
filling these placeholders. If, as argued extensively in Cognitive Grammar, speakers construe
the participants in a situation differently (e.g. as figure, ground, background, oblique),
and if linguistic expressions encode not just the truth-conditionally relevant properties of
an expression, but also the speaker’s construal of this situation, then it is plausible to
hypothesise that the verb signs which a speaker chooses in order to express a certain situation
reflect the speaker’s asymmetric construal of the participants. This is implemented by
hypothesising that an integral part of the meaning of verbs are the restrictions on the
construal of arguments filling the placeholders of the predicate. I will conclude this section
by presenting the basic ideas for a cognitive Linking Theory, which characterises the relation
between the specific semantic role of an argument and its morphosyntactic realisation.

2.1 Linguistic communication of new thoughts and com-
positionality

How can the communication of a new thought $\mu$ be explained? In one of the most well-known
passages by Gottlob Frege, he said:

It is astonishing what language can do. With a few syllables it can express an
incalculable number of thoughts, so that even a thought grasped by a terrestrial
being for the very first time can be put into a form of words which will be
understood by someone to whom the thought is entirely new. This would be impossible, were we not able to distinguish parts in the thoughts corresponding to the parts of a sentence, so that the structure of the sentence serves as the image of the structure of the thought. (Frege (1923, 36), translation by Geach and Stoothoff (1977))

My exegesis of these remarks is as follows: In order for a speaker to successfully communicate a new thought $\mu$ to a hearer by means of a linguistic expression $e$ it is necessary that:

1. The speaker expresses some parts $\mu_i$ of a thought $\mu$ by means of expressions $e_i$, and the hearer understands the expressions $e_i$ as symbolising the parts $\mu_i$ of thought $\mu$.

2. The speaker symbolises the combination $f^\mu_{j}$ of the parts of thought $\mu_1, \ldots, \mu_n$ by means of combining the respective expressions $e_1, \ldots, e_n$ in a certain way $f^\mu_{\sigma_j}$. The hearer understands the combination $f^\mu_{\sigma_j}$ of the expressions $e_1, \ldots, e_n$ as symbolising the combination $f^\mu_{j}$ of the parts of thought $\mu_1, \ldots, \mu_n$.

At the heart of this are two basic ideas. First, that the thought which a speaker wants to communicate is a structured entity, and secondly that some aspects of the structure of a thought can be symbolised by the structure of an expression.

This exegesis, however, does not capture an important property of communication by means of natural languages, which is that if a language user can symbolise a part of thought $\mu$ by means of expression $e$, he can also understand $e$ as meaning $\mu$. To illustrate that the exegesis does not capture this property, this formulation of the explanation for the successful communication of new thoughts allows for the following scenario:

1. Language user A expresses the concept $\text{CAT}$ by means of the word $\text{cat}$.

2. Language user B understands the word $\text{cat}$ as expressing the concept $\text{CAT}$.

3. Language user B expresses the concept $\text{CAT}$ by means of the word $\text{rat}$.

4. Language user A understands the word $\text{rat}$ as expressing the concept $\text{CAT}$.

Note that both language users can successfully communicate the concept $\text{CAT}$ to each other, despite actually using different words. The difference between this type of communication and human communication by means of natural languages is the fact that e.g. language user A expresses the concept $\text{CAT}$ by means of the word $\text{cat}$, but does not understand the word $\text{cat}$ as expressing the concept $\text{CAT}$.

To account for this property, we can say that for the successful communication of a thought $\mu_S$ ($S$ is mnemonic for speaker) it is necessary that:

1. The speaker uses the sign $\sigma_i = \langle e_i, \mu_i \rangle$ in order to express the part $\mu_i$ of thought $\mu$.

   The hearer uses the same sign $\sigma_i = \langle e_i, \mu_i \rangle$ in interpreting the subexpression $e_i$ of an expression $e$. 
2. The speaker uses the association \( f_j = (f^\sigma_j, f^\mu_j) \) of formal and conceptual combinations in order to express (symbolise) the combination \( f^\mu_j \) of the parts of thought \( \mu_1, \ldots, \mu_n \) by means of the combination \( f^\sigma_j \) of the subexpressions \( e_1, \ldots, e_n \). The hearer uses the same association \( f_j \) in order to interpret the combination \( f^\sigma_j \) of the subexpressions \( e_1, \ldots, e_n \) as the combination \( f^\mu_j \) of the parts of thought \( \mu_1, \ldots, \mu_n \).

It is important to note that I do not claim that all parts of the thought \( \mu_S \) as well as all relations between these parts must be expressed. Salient parts of a thought (as well as salient relations between parts of thought) can be left for the hearer to infer. To use an example discussed in Bach (2004, 38), if you say I haven’t had breakfast, you may have meant (at least under normal circumstances) that you have not had breakfast this morning, but you have not said it. Assuming that what you meant was indeed that you have not had breakfast on the day you said this sentence, it is important to note that you have not encoded linguistically that it was this morning that you did not have breakfast. So not every part of a thought gets encoded linguistically. In the same way, not every connection or combination between the parts of a thought gets encoded linguistically. Consider the expressions red apple and red melon which are used to express the concept of an apple with red skin and a melon with red flesh (but green skin). The point is that the way in which these two expressions are put together (i.e. the formal function) does not encode which part of the apple and melon is red. This is left for the hearer to infer.

In other words, we must distinguish the thought \( \mu_S \) which a speaker intends to communicate from those aspects \( \mu_E \) of \( \mu_S \) which actually get encoded by linguistic means. The hearer not only retrieves \( \mu_E \) on the basis of the linguistic expression, she also enriches \( \mu_E \) by using contextual information and general world knowledge.

The first important point about this is that we can speak of successful communication only to the extent to which the result \( \mu_H \) of the hearer’s enrichment of \( \mu_E \) approximates the thought \( \mu_S \) which the speaker wanted to communicate. The claim is that for the successful linguistic communication of a thought \( \mu_S \) it is necessary (but, of course, not sufficient) that the speaker encodes some aspects \( \mu_E \) of \( \mu_S \) by means of an expression \( e \), and that the hearer uses the same signs and associations between formal and conceptual combinations in order to interpret \( e \). If this is the case the hearer will understand the aspects \( \mu_E \) of the thought \( \mu_S \) which the speaker intended to communicate.

Secondly, I distinguish those aspects \( \mu_E \) (of the hearer meaning \( \mu_H \)) which the hearer arrives at on the basis of the formal structure of the expression alone (i.e. without any context or world knowledge) from those aspects of meaning which she arrives at on the basis of context and encyclopedic knowledge (the enrichment from \( \mu_E \) to \( \mu_H \)). The separation of these two aspects of meaning is not intended to imply that these aspects of meaning are computed sequentially or separately in the actual process of understanding an utterance.
This separation is motivated by the observation that there simply are aspects of the meanings of expressions which are invariant across contexts, and that there are on the other hand aspects of the meaning of expressions that vary with context or world knowledge. One last remark about the relation between meaning and context: that \( \mu_E \), i.e. encoded meaning of \( e \), is invariant across contexts does not mean that the speaker means the same thing in all context by using \( e \). Let me give an artificial example: If a language community uses the word \textit{dog} to mean the concept \( \text{DOG} \) on Mondays, Tuesday and Wednesdays, but uses the same word \textit{dog} to mean the concept \( \text{CAT} \) the rest of the week, what the speaker means by the word \textit{dog} does of course depend on the context, in particular the day of the week. But nevertheless, we can associate a context-invariant encoded meaning with this word – the function whose value is the concept \( \text{DOG} \) if the day in which the utterance is made is Monday, Tuesday or Wednesday, and whose value is \( \text{CAT} \) if the utterance is made on another weekday. It is not the encoded meaning (the function itself) which is dependent on the weekday, but the value of the function (i.e. whether the speaker meant \( \text{DOG} \) or \( \text{CAT} \)).

To give an abstract, but hopefully useful example of what is hypothesised to be necessary for linguistic communication, assume a (new) thought \( \mu_S \). Let \( \mu_E \) be those aspects of \( \mu_S \) which are actually encoded by linguistic means. Let the structure of \( \mu_E \) be as follows. Part of thought \( \mu_1 \) combines with part of thought \( \mu_2 \) to yield part of thought \( \mu_3 \), and this part of thought combines with part of thought \( \mu_4 \) to yield the thought \( \mu_E \).

\[
\mu_E = f_\mu^1(\mu_3, \mu_4); \quad \mu_3 = f_\mu^2(\mu_1, \mu_2)
\]

Then for the successful communication of the thought \( \mu_S \) it is necessary that:

1. The speaker indicates the combination of \( \mu_1 \) and \( \mu_2 \) by means of the combination of the corresponding expressions \( e_1 \) and \( e_2 \), and the combination of the parts \( \mu_3 \) (resulting from the combination of \( \mu_1 \) and \( \mu_2 \)) and \( \mu_4 \) by means of the combination of the corresponding expressions \( e_3 \) (resulting from the combination of \( e_1 \) and \( e_2 \)) and \( e_4 \).

\[
f_\sigma^2(\mu_1, \mu_2) = \mu_3 \Rightarrow f_\sigma^2(e_1, e_2) = e_3; \quad f_\mu^\mu(\mu_3, \mu_4) = \mu_E \Rightarrow f_\mu^\mu(e_3, e_4) = e
\]

2. The hearer interprets the combination of expressions \( e_1 \) and \( e_2 \) as indicating the combination of the corresponding parts of thought \( \mu_1 \) and \( \mu_2 \), and the combination of expressions \( e_3 \) and \( e_4 \) as indicating the combination of the corresponding parts of thought \( \mu_3 \) and \( \mu_4 \).

\[
f_\sigma^2(e_1, e_2) \Rightarrow f_\sigma^\mu(\mu_1, \mu_2) = \mu_3; \quad f_\mu^\mu(e_3, e_4) \Rightarrow f_\mu^\mu(\mu_3, \mu_4) = \mu_E
\]

For the explanation of successful communication it is thus hypothesised that a thought has identifiable parts which are related in a certain way, i.e. that a thought is a structured entity.\footnote{This is not exactly an innocent assumption, since there are semantic theories which hypothesise that the meaning of an expression is an \textbf{unstructured entity} (e.g. a set of possible worlds in which the a sentence}
Secondly, for the explanation of successful linguistic communication it is not necessary to assume that a conceptual combination is associated with only one formal combination, or that a formal combination can indicate only one conceptual combination. Instead, what is necessary in order to explain successful communication of new thoughts is that if the speaker symbolises the conceptual combination \( f^\mu \) by the formal function \( f^\sigma \), then the hearer interprets \( f^\sigma \) as indicating the conceptual combination \( f^\mu \), i.e. that they use the same association of formal and conceptual combination. Note, by the way that the successful communication of a concept like PERSON JUMPING does not depend on there being only one way of expressing this concept (the expressions person jumping and jumper both express this concept), nor does it depend on the word jumper having only one meaning (it means either person jumping or a certain type of clothing which we wear when it is cold).

In the literature it is common to hypothesise that the meaning of an expression is (the value of) a function of the meanings of the parts and the syntactic rule used to combine the parts. What this means is that given a syntactic rule combining certain expressions \( e_0, \ldots, e_{n-1} \) into expression \( e_n \), and given the meanings \( \mu_0, \ldots, \mu_{n-1} \) of these expressions, there is exactly one meaning \( \mu_n \) of the expression \( e_n \). Saying that the meaning of a complex expression is the value of a function of the meanings of the parts of the expression and the way they are combined is one particular way of making precise the principle that the meaning of the parts of an expression and the formal mode of combining these parts determine the meaning of the whole expression. This principle is known as the principle of compositionality of meaning.

I think it is important to point out that the requirement that every formal function be associated with exactly one conceptual function is not necessary in order to explain how new thoughts can be communicated. (This restriction may of course be justified by something else.) The same formal function can be associated with different semantic functions, and nevertheless the communication of a new thought can be successful, provided that both hearer and speaker use the same mode of combination. The formal function determines the meaning of the expression only in virtue of being part of a certain mode of combination – ultimately it is the choice of the mode of combination which determines the meaning of the expression.

Thirdly, for the explanation of successful linguistic communication it is not only necessary that the hearer can determine the meaning of an expression only on the basis of (i) the meaning of the parts and (ii) the way they have been combined formally, but also that the speaker can produce an expression only on the basis of (i) the expressions associated with those parts of the thought which get encoded, and (ii) the way in which these parts of the thought are combined. As it was put in Pagin (2003), the principle of compositionality is true, as in Montague (1973). It is not obvious how the communication of a new thought can be explained under the assumption that thoughts are unstructured entities.
alone is not sufficient in explaining communication (of new thoughts), since “in order to explain communication we need to explain both how [the hearer] finds the right interpretation, and how [the speaker] finds an appropriate linguistic item, i.e. an expression that enables [the hearer] to find the right interpretation.”

Fourthly, the communication of new thoughts is explained in terms of a systematic relation between what is encoded (exclusively by the formal structure of an expression) and how it is encoded (i.e. the formal structure of the expression). As already pointed out it is not the whole structure of a thought $\mu_S$ that is encoded linguistically, but only some aspects $\mu_E$ of $\mu_S$. What is hypothesised is that the relation between the formal structure of an expression $e$ and the encoded meaning $\mu_E$ must be compositional in order to explain successful communication, and not the relation between the structure of $e$ and $\mu_S$.

What is the relation between the explanation of successful linguistic communication of new thoughts and grammar? To the extent that a grammar is a characterisation of linguistic knowledge, and to the extent that shared linguistic knowledge is necessary in explaining the communication of new thoughts, a grammar has to specify the associations between formal and conceptual modes of combination. A grammar which does not distinguish between formal and semantic combinations cannot specify their association, and thus cannot in my view explain how new thoughts are communicated.

Both the formal structure of an expression as well as the conceptual structure of a thought are computable by language users. Therefore the combinations which define these structures must be ‘computable in reasonable time’ too. The idea put forward in mathematical linguistics in order to capture this is that a language should be computable by a Turing machine in deterministic polynomial time (the length $n$ of the string does not occur in the exponent of the function characterising the time it takes to compute a structure in the worst case), and not e.g. in exponential time (the length $n$ of the string does occur in the exponent). For a detailed exposition of these notions, see e.g. Kracht (2003, §1).

Exactly how humans compute these structures is a matter of ongoing psycholinguistic research. There is evidence that in the process of understanding an expression $e$ the formal structure of the expression and the conceptual structure of the thought expressed by $e$ is computed incrementally and simultaneously\(^2\).

Summing up the main point of this section, a grammar which does not distinguish between formal and conceptual modes of combination cannot specify their association, and thus cannot in my view explain how new thoughts are communicated.

\(^2\)See for example the collection of articles on natural language processing in Crocker et al. (2000).
CHAPTER 2. MOTIVATING THE FRAMEWORK

2.2 The framework

The following framework is based on the notion of sign grammar formulated in Kracht (2003, §3.1). A grammar is a set of associations between formal and conceptual combinations (called simply modes of combination) which define a set of signs, which are triples consisting of a formal representation, a category and a meaning.

Modes of combination are partial, in the sense that they are only defined for certain signs but not others. For example, the mode combining signs whose category is that of intransitive verb with signs whose category is that of noun phrase is not defined for signs whose category is e.g. adverb or transitive verb. It is not always easy to decide whether the reason why a mode of combination does not apply to a certain sign is syntactic or semantic in nature, since this depends among other things on the notion of semantics that is used. If one assumed that an essential aspect of conceptual structure is the way in which the objects being talked about and the relations between them are being construed, then one could argue, as done in Langacker (1987) and Croft (2003), that e.g. the notions of noun and verb are not formal but conceptual notions. In this case one could dispense with the formal categories noun and verb, and could then state the restriction that certain modes apply e.g. only to nouns not in terms of a formal category, but in terms of a semantic notion (assuming a suitably enriched view of semantics). To simplify things I have often assumed that the reasons why certain modes are not defined for certain signs is syntactic, so that the restriction of modes of combination to certain signs and not others is implemented mainly by restricting the formal function of a mode of combination so that it only applies to expressions of a certain category.

Signs consist of an exponent, a syntactic category, and a meaning contribution. Signs are combined by means of modes of combination. There are two types of signs: basic (lexical) signs and derived signs. Derived signs are signs which result from combining basic or derived signs by means of a mode of combination. A language is the smallest set containing the basic signs plus the signs which result from combining basic or derived signs by the modes of combination (the closure of the basic signs under the modes of combination). A mode of combination is an association between an exponent, a category and a conceptual function.

As I will argue in section 2.3, exponents are tuples of strings, rather than strings, and formal functions are therefore operations on tuples of strings. Syntactic categories are sets of attribute value pairs, and category functions are operations on such attribute-value matrices. What meanings are and how they are combined will be discussed in section 2.4.

A language L is a set of signs \((e, c, \mu)\), where \(e\) is an exponent, \(c\) is the category of the exponent \(e\), and \(\mu\) is the meaning of \(e\). Given a language L, E will be called the set of exponents, C will be the set of categories, and M will be the set of encoded meanings, i.e.
the set of concepts and relations between concepts.

\[ E = \{ e : \langle e, c, \mu \rangle \in L \} \]

\[ C = \{ c : \langle e, c, \mu \rangle \in L \} \]

\[ M = \{ \mu : \langle e, c, \mu \rangle \in L \} \]

A **sign grammar** \( G \) for \( L \) is a finite set of modes of combination which generate all and only the signs in \( L \). A mode of combination \( f_i \) generates a sign \( \langle e, c, \mu \rangle \) iff the language \( L \) contains signs \( \sigma_1 = \langle e_1, c_1, \mu_1 \rangle, \sigma_2 = \langle e_2, c_2, \mu_2 \rangle, \ldots, \sigma_n = \langle e_n, c_n, \mu_n \rangle \) such that the combination of these signs by means of \( f_i \) results in \( \langle e, c, \mu \rangle \):

\[
\begin{align*}
& f_i(\langle e_1, c_1, \mu_1 \rangle, \langle e_2, c_2, \mu_2 \rangle, \ldots, \langle e_n, c_n, \mu_n \rangle) = \\
& (f^e_i(e_1, e_2, \ldots, e_n), f^c_i(c_1, c_2, \ldots, c_n), f^\mu_i(\mu_1, \mu_2, \ldots, \mu_n)) = \langle e, c, \mu \rangle
\end{align*}
\]

\( f_i^e \) is an operation on the set \( E \) of exponents, i.e. a function from \( E \) to \( E \), \( f_i^c \) is an operation on the set \( C \) of categories, and \( f_i^\mu \) is an operation on the set \( M \) of meanings. For an algebraic definition of such a sign grammar, see Kracht (2003, 181).

First, note that this grammar allows for the distinction between phenogrammar and tectogrammar, which has been introduced by Curry (1963) and used in Montague (1973), Dowty (1982), Muskens (2001), and Kracht (2003, §5), among others. The exponent functions define the phenogrammar, whereas the category functions define the tectogrammar.

Secondly, this notion of a grammar does not itself impose any restriction on the type of exponent, category and meaning functions. However, it imposes a serious restriction on the way in which modes of combination can be formulated: it requires that a mode consist of an operation on the exponents of the component signs, an operation on the category of the component signs, and an operation on the meaning of the component signs. The reason I emphasise this is that by virtue of being operations on \( E \), \( C \) or \( M \) respectively, an exponent function can only distinguish exponents, a category function can only distinguish categories, and a meaning function can only distinguish meanings. The crucial consequence of all this is that if we formulate a condition on one of these operations, for example on an exponent function, then this condition can only refer to exponents and properties of exponents, but not to meanings or properties of meanings. If we formulate a condition on a conceptual function we can only refer to meanings and properties of meanings, and not to exponents or properties of exponents. In other words, if we formulate a mode of combination which only applies under a certain condition \( \text{COND} \) which makes essential use of e.g. properties of exponents, categories and meanings, then the framework forces us to split this condition into three conditions \( \text{COND}_1 \), \( \text{COND}_2 \) and \( \text{COND}_3 \), where \( \text{COND}_1 \) refers only to (properties of) exponents, \( \text{COND}_2 \) refers only to (properties of) categories, and \( \text{COND}_3 \) refers only to (properties of) encoded meanings.
CHAPTER 2. MOTIVATING THE FRAMEWORK

This restriction guarantees a strict separation of the structure of an expression (its formal structure) from the structure of the meaning $\mu_E$ which this expression encodes (note that I talk about the encoded meaning, not about the result of enriching the encoded meaning by using contextual or world knowledge). The structure of the expression and the structure of the meaning which this expression encodes must be separated strictly in order to be able to specify the association between these two structures, which in turn is necessary in order to explain the successful communication of new thought $\mu_S$, as argued in the previous section.

Thirdly, note that truth values are not part of the set of meanings for a language. That is, there is no semantic function whose argument or value is a truth value. The claim is that no syntactic function is associated with a semantic function whose argument or value is a truth-value. Instead, the formal functions are associated with semantic functions whose arguments and values are concepts or relations between concepts. Put differently, grammatical rules do not associate formal structure with extensional semantic structure, but with conceptual semantic structure. However, the concepts and relations between concepts do have extensions, and if e.g. a pair of entities in the extensions of the two concepts is in the extension of a relation between concepts, then the complex concept is true (see section 2.4.1).

Fourthly, note that the set of modes of combination exhaust the specification of the relation between formal and semantic structure. No additional filters or constraints are allowed in order to further specify the interface between formal and semantic structure.

In section 2.3 I will present the framework for the characterisation of the formal structure of expressions. I will motivate the hypothesis that formal functions operate on tuples of expressions, rather than just expressions. Simple Literal Movement Grammars (sLMG) are defined by certain types of rules which all operate on tuples of expressions. sLMGs are briefly compared with other grammars whose rules also operate on tuples of strings. In section 2.4 I will present the framework for the characterisation of the structure of meanings.

2.3 Formal structure

The basic assumption that I will make about the formal structure of expressions is that the basic units on which exponent functions operate are not expressions, but tuples of expressions. In particular, I will assume that the formal structure is defined by a Simple Literal Movement Grammar (sLMG), which is a particular type of tuple-based grammar. I will first discuss the basic idea behind tuple-based grammars, and then I will discuss why I chose this particular type of tuple-based grammar.
2.3.1 Why tuple-based grammars?

Tuple-based grammars are an extension of context-free grammars. In order to understand the motivation for tuple-based grammars it is useful to first separate the context-free backbone of a context-free rule from the way it linearises the strings. It can then be observed that given a grammar with a certain context-free backbone, no linearisation function which is limited to concatenating strings can derive certain linguistic patterns (e.g. crossing dependencies in Dutch). This motivates the extension of context-free grammars to tuple-based grammars, that is the move from linearisation functions operating on strings to linearisation functions operating on tuples of strings.

I will start with the English raising construction, and discuss the separation of context-free backbone from linearisation functions. I will then present a grammar for the German raising construction which has the same context-free backbone as the English construction, but which has different linearisation functions. Finally, I will turn to the Dutch raising construction, and show that if one assumes the same context-free backbone for Dutch that was assumed for English and German raising constructions, then it is not possible to derive the Dutch raising construction only with linearisation rules which are limited to concatenating strings. I will then present an analysis of the Dutch raising construction in terms of a grammar which has the same context-free backbone, but linearisation functions which operate on tuples of strings. This analysis will be based on Groenink (1997, 65).

Consider the English subclause:

(1) that John saw the child swim.

The conceptual structure of the thought that John saw the child swim, can be represented by means of:

$$f_{3}^{\mu}(JOHN, f_{2}^{\mu}(SEE, f_{1}^{\mu}(CHILD, SWIM)))$$

For the time being I will ignore the issue of what exactly the conceptual functions do. What matters for the moment is that the semantic value \textsc{Child} combines with the semantic value \textsc{Swim} of the expression the child swim, that the semantic value \textsc{Swim(Child)} combines with \textsc{See}, and that the result of this combination combines with the semantic value \textsc{John}.

Assuming that the grammar is to be expressed by means of associations between formal and conceptual functions, such that the formal function operates on the expressions of the component signs, and the conceptual function operates on the meanings of the component signs, it follows that there is (i) a formal function (call it $f_{2}^{\sigma}$) which combines the expressions \textsc{the child} with \textsc{swim}, (ii) a formal function $f_{2}^{\sigma}$ which combines the expression \textsc{saw} with the expression $f_{1}^{\sigma}(\textsc{the child, swim})$, and (iii) a formal function which combines the expression \textsc{John} with the expression $f_{2}^{\sigma}(\textsc{saw, f_{1}^{\sigma}(\textsc{the child, swim})})$. Since the subclause in (1) has the
same formal structure as the subclause *that Peter heard the dog bark*, we can abstract away from the expressions and represent the formal structure of (1) as:

\[
f_3^f(NP, f_2^f(VR^F, f_1^f(NP, VI)))
\]

where *NP* is a noun phrase, *VR^F* is a finite raising verb, and *VI* is an infinite verb. The following context-free grammar \( G_1^{ENG} \) assigns this formal structure to the sentence (1).

1. \( S \rightarrow NP \ VP^F \)
2. \( VP^F \rightarrow VR^F \ SI \)
3. \( SI \rightarrow NP \ VP^I \)
4. \( VP^I \rightarrow VI \)
5. \( NP \rightarrow John | the \ child \)
6. \( VR^F \rightarrow saw \)
7. \( VI \rightarrow swim \)

In addition to the symbols *NP*, *VR^F* and *VI*, this grammar employs the symbols *S* for finite sentence, *VP^F* for finite verb phrase, *SI* for infinite sentence and *VP^I* for infinite verb phrase.

The derivation of sentence (1) is illustrated by the following tree:

```
S
   /\    /
  NP   VP^F
     /\    /
    John VR^F SI
       /\     /
      saw NP VP^I
            /
               \  \
                 VP^I
                   /
                     \  \
                      VP^I
                        /
                          \  \
                           VP^I
                             /
                              \  \
                               VP^I
                                 /
                                  \  \
                                   VP^I
                                     /
                                      \  \
                                       VP^I
                                         /
                                          \  \
                                           VP^I
                                             /
                                              \  \
                                               VP^I
                                                  /
                                                   \  \
                                                    VP^I
                                                      /
                                                       \  \
                                                        VP^I
                                                          /
                                                           \  
```

An equivalent way of representing the derivation is:

```
S:John saw the child swim
   /\     /
  NP:John VP^F:saw the child swim
     /\     /
    VR^F:saw SI:the child swim
       /\     /
      NP:the child VP^I:swim
         /
          VP^I:swim
```

Thus an equivalent reformulation (i.e. a notational variant) of the context-free grammar \( G_1^{ENG} \) above is the following grammar \( G_2^{ENG} \):
In this grammar we have dissociated the categorial information from the linearisation of the strings. This can be made even more explicit, by introducing so-called linearisation functions which indicate the way in which the strings are combined. For our grammar we only need one such linearisation function:

$$f_1(e_1, e_2) = e_1 \cdot e_2$$

where $e_1 \cdot e_2$ represents the concatenation of $e_1$ and $e_2$. The grammar now changes to:

1. $S : f_1(e_1, e_2) \rightarrow NP : e_1$ $VP^F : e_2$
2. $VP^F : f_1(e_1, e_2) \rightarrow VR^F : e_1$ $S^I : e_2$
3. $S^I : f_1(e_1, e_2) \rightarrow NP : e_1$ $VP^I : e_2$
4. $VP^I : e \rightarrow V^I : e$
5. $NP : John | the \ child \rightarrow$
6. $VR^F : saw \rightarrow$
7. $V^I : swim \rightarrow$

If we now compare for example the rule $S \rightarrow NP \ VP^F$ with its variant $S : f_1(e_1, e_2) \rightarrow NP : e_1$ $VP^F : e_2$, we observe the following important difference. The first rule encodes the linear precedence of an NP string before an $VP^F$ string by means of the linear order of NP and $VP^F$ in the right-hand side of the rule, whereas the second rule encodes this linear precedence of an NP string before a $VP^F$ string by means of a linearisation function on the strings. In other words, the order of the categories on the right hand side of the first rule is crucial, while the order of the categories on the right-hand side of the second rule is irrelevant, provided the linearisation function can access the categories of the component strings. What matters is how the linearisation function concatenates the strings. If, however, the linearisation function cannot distinguish the categories of the strings, then the order of the categories in the right-hand side of the rules is important.

Before we proceed, let me introduce some more rules to this grammar. The new rules are (i) the rule (4) below, which builds a non-finite verb phrase out of a non-finite raising verb and a non-finite sentence, (ii) the rule 8 below which introduces non-finite raising verbs, and (iii) the new rule $NP : Mary \rightarrow$, which is added as part of rule 6. The resulting grammar will be referred to as $G^{ENG}_3$: 
CHAPTER 2. MOTIVATING THE FRAMEWORK

1. \( \text{S}: f_1(e_1, e_2) \rightarrow \text{NP}: e_1 \text{ VP}^F: e_2 \)
2. \( \text{VP}^F: f_1(e_1, e_2) \rightarrow \text{VR}^F: e_1 \text{ S}^I: e_2 \)
3. \( \text{S}^I: f_1(e_1, e_2) \rightarrow \text{NP}: e_1 \text{ VP}^I: e_2 \)
4. \( \text{VP}^I: f_1(e_1, e_2) \rightarrow \text{VR}^I: e_1 \text{ S}^I: e_2 \)
5. \( \text{VP}^I: e \rightarrow \text{V}^I: e \)
6. \( \text{NP}: \text{John} | \text{the child} | \text{Mary} \rightarrow \)
7. \( \text{VR}^F: \text{saw} \rightarrow \)
8. \( \text{VR}^I: \text{teach} \rightarrow \)
9. \( \text{V}^I: \text{swim} \rightarrow \)

The addition of these two rules allows the derivation of the sentence:

(2) because John saw Mary teach the child to swim

The derivation of this sentence (ignoring the complementiser because) is:

Consider next the German sentence (3), which is a translation of the English sentence (2):

(3) weil Hans Maria das Kind schwimmen lehren sah.

because John Mary the child swim.INF teach.INF saw
because John saw Mary teach the child to swim.

The grammar \( G^\text{GER}_1 \) which derives this sentence is:

---

3 For ease of presentation, I will ignore the complication arising from the fact that now the infinitive verb is actually to swim and not just swim as in \(^1\). This does not affect the presentation that follows.
CHAPTER 2. MOTIVATING THE FRAMEWORK

1. \( S: f_1(e_1, e_2) \rightarrow NP: e_1 \quad VP^F: e_2 \)
2. \( VP^F: f_2(e_1, e_2) \rightarrow VR^F: e_1 \quad SI^F: e_2 \)
3. \( SI^F: f_1(e_1, e_2) \rightarrow NP: e_1 \quad VP^I: e_2 \)
4. \( VP^I: f_2(e_1, e_2) \rightarrow VR^I: e_1 \quad SI^I: e_2 \)
5. \( VP^I: e \rightarrow V^I: e \)
6. \( NP: \text{Hans | das Kind | Maria} \rightarrow \)
7. \( VR^F: \text{sah} \rightarrow \)
8. \( VR^I: \text{lehren} \rightarrow \)
9. \( V^I: \text{schwimmen} \rightarrow \)

where
\[
f_1(e_1, e_2) = e_1 \circ e_2 \quad \text{and} \quad f_2(e_1, e_2) = e_2 \circ e_1
\]

The derivation of the German sentence (3):

\( S: \text{Hans, Maria, das Kind, schwimmen, lehren, sah} \)
\( NP: \text{Hans} \quad VP^F: \text{Maria, das Kind, schwimmen, lehren, sah} \)
\( VR^F: \text{sah} \quad SI^F: \text{Maria, das Kind, schwimmen, lehren} \)
\( NP: \text{Maria} \quad VP^I: \text{das Kind, schwimmen, lehren} \)
\( VR^I: \text{lehren} \quad SI^I: \text{das Kind, schwimmen} \)
\( NP: \text{das Kind} \quad VP^I: \text{schwimmen} \)
\( V^I: \text{schwimmen} \)

The crucial difference between \( G^\text{ENG}_3 \) and \( G^\text{GER}_1 \) (apart from the obviously different lexical rules) is that the strings in a verb phrase are concatenated differently: Instead of putting the raising verbs before the infinitive sentence, as in rules (2) and (4) of \( G^\text{ENG}_3 \), the rules (2) and (4) of \( G^\text{GER}_1 \) place the raising verb after the infinitive sentence. Otherwise the two grammars are the same (modulo rules introducing lexical items).

Comparing for example rule (2) from \( G^\text{ENG}_3 \) with rule (2) from \( G^\text{GER}_1 \), we observe that they are the same, except for the linearisation function. Another way of putting this is that they have the same context-free backbone, but different linearisation functions.

Lastly, consider the Dutch sentence (4), which is a translation of the English sentence (2):

(4) \text{dat Jan Marie het kind zag leren zwemmen.}
that John Mary the child saw teach.INF swim.INF
that John saw Mary teach the child to swim.
The question is whether it is possible to formulate a grammar $G^{DUT}$ which has the same context-free backbone as $G_{3}^{ENG}$ and $G_{4}^{GER}$, and which can derive the Dutch sentence (4).

Put differently, the question is whether it is possible to formulate linearisation functions for the same context-free backbone, which derive the Dutch pattern of crossing dependencies.

S: Jan Marie het kind zag leren zwemmen

The crucial point now is that if the linearisation functions are restricted to concatenating strings, then there is no way of deriving the Dutch sentence with this context-free backbone. If the only thing we can do is concatenate the expressions *het kind* and *zwemmen*, then the result of combining these two strings must be either *het kind zwemmen* or *zwemmen het kind*, but in the final string these two strings are not adjacent. But maybe we just have to tweak the context-free backbone, and then we might find some linearisation functions that do the job. This, however, is not possible either: [Kracht (2007)] proves that under the assumptions that (i) “meanings are concepts (in the technical sense of [that] paper)” and (ii) “the admissible operational meanings are: identification of arguments and existential quantification”, there is no compositional context-free interpretation of Dutch.

Tuple-based grammars have been developed in order to deal precisely with this type of challenge. For semantic reasons we would like to have a certain context-free backbone, but we cannot derive the desired strings if the linearisation functions are restricted to concatenating strings. Tuple-based grammars get rid of precisely this restriction. In other words, they allow linearisation functions to operate not on strings but on tuples of strings.

To illustrate this, let us return to the derivation of the Dutch sentence. What we want is a rule that combines *het kind* with *zwemmen*, but which does not concatenate these two expressions. The simplest way to do this is to build a pair ⟨*het kind*, zwemmen⟩.

\[ f_{a}(\text{het kind}, \text{zwemmen}) = \langle \text{het kind}, \text{zwemmen} \rangle \]

This pair must then combine with the string *lernen*. Since *lernen* occurs before the *zwemmen* in the final string, we postulate the linearisation function:

\[ f_{b}(e_{1}, \langle e_{2}, e_{3} \rangle) = \langle e_{2}, e_{1} e_{3} \rangle \]
Applying this function to *leren* and ⟨*het kind*, *zwemmen*⟩ results in:

\[ f_b(\text{leren}, \langle \text{het kind}, \text{zwemmen} \rangle) = \langle \text{het kind}, \text{leren zwemmen} \rangle \]

This pair combines with the string *Marie*. Since in the resulting string *Marie* occurs before *het kind*, we postulate the linearisation rule:

\[ f_c(e_1, \langle e_2, e_3 \rangle) = (e_1 \cup e_2, e_3) \]

So the application of this linearisation rule to *Marie* and ⟨*het kind*, *leren zwemmen*⟩ results in:

\[ f_c(\text{Marie}, \langle \text{het kind}, \text{leren zwemmen} \rangle) = \langle \text{Marie het kind}, \text{leren zwemmen} \rangle \]

Note that there are two linearisation functions which combine NPs with verbs, i.e. \( f_a \) and \( f_c \). This can be avoided – instead of using linearisation function \( f_a \) to combine *het kind* with *zwemmen*, we could also use \( f_c \), and combine *het kind* with ⟨\( \epsilon \), *zwemmen*⟩, where \( \epsilon \) is the empty string.

\[ f_c(\text{het kind}, \langle \epsilon, \text{zwemmen} \rangle) = \langle \text{het kind}, \text{zwemmen} \rangle \]

This is what I shall assume in the following.

The pair ⟨*Marie*⟨*het kind*, *leren zwemmen*⟩⟩ combines with *zag*. Since *zag* must be placed at the beginning of the second element of the pair, we can apply linearisation function \( f_b \) to do this.

\[ f_b(\text{zag}, \langle \text{Marie het kind}, \text{leren zwemmen} \rangle) = \langle \text{Marie het kind zag}, \text{leren zwemmen} \rangle \]

This pair can then combine with *Jan* by means of linearisation function \( f_c \):

\[ f_c(\text{Jan}, \langle \text{Marie het kind zag}, \text{leren zwemmen} \rangle) = \langle \text{Jan Marie het kind zag}, \text{leren zwemmen} \rangle \]

Finally, we need the linearisation rule \( f_d \) which concatenates the two elements of a pair:

\[ f_d(\langle \text{Jan Marie het kind zag}, \text{leren zwemmen} \rangle) = \langle \text{Jan Marie het kind zag}, \text{leren zwemmen} \rangle \]

The derivation of this string can be illustrated by the following tree:
CHAPTER 2. MOTIVATING THE FRAMEWORK

The grammar $G_{\text{DUT}}^1$ that assigns this structural description to the Dutch sentence is:

0. $S: f_d(x) \rightarrow S:x$
1. $S: f_c(e, x) \rightarrow \text{NP}: e \quad \text{VP}^F:x$
2. $\text{VP}^F: f_b(e, x) \rightarrow \text{VR}^F:e \quad S^I:x$
3. $S^I: f_c(e, x) \rightarrow \text{NP}: e \quad \text{VP}^I:x$
4. $\text{VP}^I: f_b(e, x) \rightarrow \text{VR}^I:e \quad S^I:x$
5. $\text{VP}^I: x \rightarrow \text{VI}^I:x$
6. $\text{NP}: \text{Jan} \mid \text{het} \mid \text{kind} \mid \text{Marie} \rightarrow$
7. $\text{VR}^F: \text{zag} \rightarrow$
8. $\text{VR}^I: \text{leren} \rightarrow$
9. $\text{VI}^I: (\epsilon, \text{zwemmen}) \rightarrow$

where $e$ stands for strings, and $x$ stands for pairs of strings.

\[
\begin{align*}
    f_d(\langle e_1, e_2 \rangle) &= e_1 \cdot e_2 \\
    f_c(e_1, \langle e_2, e_3 \rangle) &= \langle e_1 \cdot e_2, e_3 \rangle \\
    f_b(e_1, \langle e_2, e_3 \rangle) &= \langle e_2, e_1 \cdot e_3 \rangle
\end{align*}
\]

Summing up, note that the grammar $G_{\text{DUT}}^1$ has essentially the same context-free backbone as the grammars $G_{\text{ENG}}^3$ and $G_{\text{GER}}^1$, but that in contrast to these two grammars the linearisation functions of $G_{\text{DUT}}^1$ must operate on tuples of strings as opposed to strings.

The grammar $G_{\text{DUT}}^1$ operates on strings and pairs of strings. However, as shown by Groenink [1997], if we want to account for the word order difference of main clauses, subclauses and questions in Dutch then the linearisation functions need to operate on 4-tuples.

To illustrate this consider the following Dutch main clause:

(5) Jan zag Marie het kind leren zwemmen.  
John saw Mary the child teach.INF swim.INF  
John saw Mary teach the child to swim.
CHAPTER 2. MOTIVATING THE FRAMEWORK

To derive this main clause (i) we need to keep the string Jan separate from Marie, het, kind, and (ii) we need to keep the main verb zag separate from the string leren, zwemmen. To do this, the linearisation functions have to operate on 4-tuples. First I illustrate the derivation and then I will present the grammar.

\[
S : \text{Jan, zag, Marie, het, kind, leren, zwemmen}
\]

\[
S : (\text{Jan, Marie, het, kind, zag, leren, zwemmen})
\]

The grammar \( G_{DUT} \) which assigns this structure to the main clause has essentially the same context-free backbone as the previous grammar. The difference is that its linearisation functions operate on strings and 4-tuples of strings.

\[
f_e (\langle e_1, e_2, e_3, e_4 \rangle) = e_1 \cup e_2 \cup e_3 \cup e_4
\]

\[
f_d (\langle e_1, e_2, e_3, e_4 \rangle) = e_1 \cup e_2 \cup e_3 \cup e_4
\]

\[
f_c (\langle e_N, e_1, e_2, e_3, e_4 \rangle) = \langle e_N, e_1, e_2, e_3, e_4 \rangle
\]

\[
f_b (\langle e_V, e_1, e_2, e_3, e_4 \rangle) = \langle e_1, e_2, e_3, e_4 \rangle
\]

This concludes the motivation of tuple-based grammars. Next I will discuss some varieties.
of tuple-based grammars, and motivate why I chose the simple Literal Movement Grammars as a framework for analysing formal structure.

2.3.2 Why Simple Literal Movement Grammars?

Groenink (1997) introduces Literal Movement Grammars (LMG), and uses them in order to discuss the linguistic and computational properties of various tuple-based grammars. The reason I chose simple LMGs (sLMG) as the formalism in which to express the formal structure of expressions are that:

- Languages generated by simple LMG are parsable in polynomial time.
- Simple LMGs allow the characterisation of certain phenomena in a way which the other formalisms do not allow for.

But before I proceed with a discussion of these points, I will present the definition of LMGs and sLMGs, taken over from Groenink (1997) and Kracht (2003).

2.3.2.1 Some definitions

What distinguishes different types of tuple-based grammars is the way in which the rules can manipulate the tuples of strings. Literal Movement Grammars contain rules which pose no restriction on how tuples can be manipulated. As shown in Groenink (1997), the different types of tuple-based grammars are weakly equivalent (i.e. generate the same set of strings as) to LMGs with different restrictions on how the rules can manipulate tuples.

In this subsection I will present some definitions of tuple-based grammars, and in the next subsection I will turn to an example of an LMG and present some properties of rules that are important in categorising tuple-based grammars.

Definition 1 A literal movement grammar (LMG) is a quintuple $G = \langle T, N, \Omega, S, HC, \rangle$, where $T$ is the alphabet of terminal symbols, $N$ a set of predicates, $\Omega : R \rightarrow \omega$ a signature, $S \in N$ a distinguished symbol such that $\Omega(S) = 1$, and HC a set of Horn-formulae in the language consisting of constants for every letter of $T$, the empty string, concatenation, and the relation symbols of $N$.

The following is an example of a Literal Movement Grammar.

Example 2 $G = \langle \{a, b\}, \{H, B_1, B_2, B_3, B_4\}, \Omega, S, H \rangle$, where $\Omega(H) = 1, \Omega(B_1) = 1, \Omega(B_2) = 1, \Omega(B_3) = 2, \Omega(B_4) = 1$, and where $H$ has the following clauses:

1. $\forall x \forall y (H(xy) \leftrightarrow B_1(y) \land B_2(y)).$
2. $\forall x \forall y (H(xx) \leftrightarrow B_3(x, y)).$
3. $\forall x \forall y (H(x) \leftrightarrow B_4(xx)).$
4. \( B_1(a) \leftarrow . \)

5. \( B_2(b) \leftarrow . \)

6. \( B_3(a, b) \leftarrow . \)

7. \( B_4(aa) \leftarrow . \)

A horn clause of the form:

\[
H(h_0, \ldots, h_{\Omega(H)-1}) \leftarrow B_1(b_1^0, \ldots, b_{\Omega(B_1)-1}^1) \land \ldots \land B_n(b_n^0, \ldots, b_{\Omega(B_n)-1}^n).
\]

is called:

- upward non-deleting, if every variable occurring in a term \( b_j^i \) occurs at least once in \( h_0, \ldots, h_{\Omega(H)-1} \). The rules (or better horn-clauses) (1) and (3) in the previous example are upward non-deleting, since both variables \( x \) and \( y \) on the right-hand side (RHS) of (1) occur at least once on the left-hand side (LHS), and since \( x \) on the RHS of (3) occurs at least once on the LHS. Note that rule (2) is not upward non-deleting, since \( y \) occurs on the RHS, but not on the LHS.

- upward linear, if no variable occurs more than once in \( h_0, \ldots, h_{\Omega(H)-1} \). Rules (1) and (3) are upward linear, since the variables on the RHS occur at most once in the LHS of these rules, but rule (2) is not upward linear, since variable \( x \) occurs twice in the LHS.

- downward non-deleting, if every variable occurring in \( h_0, \ldots, h_{\Omega(H)-1} \) occurs at least once in one of \( b_j^i \). Rules (2) and (3) are downward non-deleting, since the variables on the LHS occur on the RHS. However, rule (1) does not have this property, since variable \( x \) occurs in the LHS but not in the RHS.

- downward linear, if every variable occurring in \( h_0, \ldots, h_{\Omega(H)-1} \) occurs at most once in \( b_1^0, \ldots, b_{\Omega(B_n)-1}^n \). Rule (1) is not downward linear, since the variable \( y \) occurs twice on the RHS. Rule (2) is downward linear, since variable \( x \) occurs only once on the RHS. And rule (3) is again not downward linear, since the variable \( y \) occurs twice on the RHS.

- non-combinatorial, if all \( b_j^i \) are variables, as opposed to strings of variables. Rules (1) and (2) are non-combinatorial, since every term consists of one variable. Note that in the RHS of (2) we have two terms, not one term with two variables. Rule (3) is not non-combinatorial, since its RHS contains a term consisting of two variables.

A simple LMG (sLMG) is a LMG, where all horn-clauses are:

- non-combinatorial.
CHAPTER 2. MOTIVATING THE FRAMEWORK

• upward non-deleting.

Definition 3 A parallel multiple context free grammar (PMCFG) is a $G = \langle T, N, \Omega, S, P \rangle$, where $T$ is the set of terminal symbols, $N$ is the set of nonterminal symbols, $\Omega$ is the signature of $N$, $S$ is a distinguished nonterminal symbol, and $P$ is a set of productions of the form:

$$A \rightarrow f(B_1, \ldots, B_n),$$

where $n \geq 0$, $A, B_1, \ldots, B_n$ are nonterminals, and the yield function $f$ is a function over tuples of terminal strings, so that:

$$f((x_1^1, \ldots, x_{\Omega(B_1)}^1), \ldots, (x_n^1, \ldots, x_{\Omega(B_n)}^n)) = (h_1, \ldots, h_{\Omega(A)})$$

Proposition 4 A PMCFG is weakly equivalent to a LMG where the horn-clauses are:

• non-combinatorial
• upward non-deleting
• downward non-deleting, downward linear

Definition 5 A linear context free rewriting system (LCFRS) is a parallel context free grammar whose yield function is linear, which means that every variable in the “body” appears at most once in the “head”.

Proposition 6 A LCFRS is weakly equivalent to a LMG where the horn-clauses:

• non-combinatorial
• upward non-deleting, upward linear
• downward non-deleting, downward linear

Definition 7 A head grammar (HG) is a LCFRS whose yield function is restricted to concatenation and wrapping of pairs.

2.3.2.2 Discussion of tuple-based grammars

Now that the five types of tuple-based grammars (HG, LCFRS, PMCFG, sLMG, LMG) have been defined, and that their relation has been discussed in terms of the properties of the rules they allow, I will turn to a brief discussion of the phenomena that can and cannot described in a certain way by these types of rules. Then I will discuss how to integrate a sLMG into a sign grammar, and then I conclude this subsection with a discussion of what categories are taken to be, and how my use of attribute-value matrices (AVMs) differs from their use in Head-Driven Phrase Structure Grammar (HPSG).
CHAPTER 2. MOTIVATING THE FRAMEWORK

Starting with Head Grammars, they only allow two operations on pairs of strings: concatenation and wrapping. The grammar \( G_1^{\text{DUT}} \) of Dutch which operates on pairs (see page \[35\]) could be turned into a head grammar. Since the grammar \( G_2^{\text{DUT}} \) (see page \[36\]) operates on 4-tuples and not on pairs, it cannot be expressed by a head grammar.

The extension from Head Grammars to Linear Context Free Rewriting Systems allows operations over \( n \)-tuples, not just pairs of strings. This increase in power allows for a uniform characterisation of verb-second phenomena and crossed dependencies in Dutch, as argued by Groenink (1997, 64f). An important restriction of LCFRSs is that the body variables cannot be multiplied in the head, and thus they do not allow rules of the form \( H(xx) : -B(x) \).

What this means is that if a language contains a structure which simply reduplicates a given string, this cannot be characterised in LCFRSs.

The extension from LCFRS to PMCFGs allows us to multiply body variables, and thus to capture reduplication. The rule \( H(xx) : -B(x) \) is a possible PMCFG rule. What the rules of PMCFG do not allow is to erase or multiply a head variable, and thus to have strings in the head which either do not occur in the body or which occur in the body multiple times. Because of this restriction it is not possible, as noted in Groenink (1997, 78), to express the coordination of transitive verbs by means of the rule

\[
VP(v_1 \text{and } v_2, n) : -VP(v_1, n), VP(v_2, n).
\]

Note that in this rule the variable \( n \) occurs twice in the body of the rule. So in a PMCFG we cannot derive the coordination of the string loves and supports linux by deriving the left-hand side from the right-hand side:

\[
VP(\text{loves and supports}, \text{linux}) : -VP(\text{loves, linux}), VP(\text{supports, linux})
\]

The extension from PMCFGs to sLMGs allows us to erase or multiply head variables, and thus to have strings in the head which do not occur in the body (thus rules can add strings which do not occur in the body), or to have strings in the head which occur multiple times in the body. The latter allows us to express e.g. the coordination of transitive verbs by means of the rule

\[
VP(v_1 \text{and } v_2, n) : -VP(v_1, n), VP(v_2, n).
\]

So sLMG rules allow for:

- strings in the head which do not occur in the body (PMCFGs and LCFRSs do not allow for this, because they are downward non-deleting)

- the same string to occur multiple times in the body (PMCFGs and LCFRSs do not allow for this, because they are downward linear)
CHAPTER 2. MOTIVATING THE FRAMEWORK

- the same string to occur multiple times in the head (LCFRSs do not allow for this, because they are upward linear, and PMCFGs allow for this too, because they do not have to be upward linear)

The languages generated by a sLMG have an important computational property. Groenink (1997) proves that a language L can be generated by a sLMG if and only if L is recognisable in polynomial time. The importance of this property is that as long as we stick to rules of sLMGs in the characterisation of the formal structure of linguistic expressions, these structures remain not just computable, but computable in a reasonable time. Despite this property, sLMGs do not generate mildly-context sensitive languages, since by definition a mildly-context sensitive language has the constant growth property, whereas not all languages generated by a sLMG have this property. Already with PMCFGs it is possible to generate languages without the constant growth property, e.g. $L = a^{2^n}$ can be generated by the two rules $S : f(x) \rightarrow S : x$ and $S : a \rightarrow f(x) = x \cdot x$. In other words, as soon as we allow for body variables to be multiplied in the head, we lose the property of constant growth. The constant-growth property of a language L is therefore only guaranteed if the language is generated by a LCFRS, and not anymore if it is generated by a grammar which allows for rules to be upward non-linear (e.g. PMCFG, sLMG and LMG).

Next I will discuss how to integrate a simple Literal Movement Grammar into a sign grammar. I will do this by giving an example. Assume that we want to integrate the following sLMG rule into a sign grammar.

$$A(x, xyz) \leftarrow B_1(x, y), B_2(y)$$

Note that this rule is not upward linear ($x$ occurs twice on the LHS), that it is not downward linear (because $y$ occurs twice on the RHS), and that it is not downward non-deleting ($z$ does not occur in RHS).

The exponent function corresponding to this rule is:

$$f^\sigma(\langle x, y \rangle, \langle y \rangle) = \langle x, xyz \rangle$$

and the category function corresponding to this rule is:

$$f^c(B_1, B_2) = A$$

The association of these two functions can be represented as:

$$f(\begin{bmatrix} \langle x, y \rangle \\ B_1 \end{bmatrix}, \begin{bmatrix} \langle y \rangle \\ B_2 \end{bmatrix}) = \begin{bmatrix} f^\sigma(\langle x, y \rangle, \langle y \rangle) \\ f^c(B_1, B_2) \end{bmatrix} = \begin{bmatrix} \langle x, xyz \rangle \\ A \end{bmatrix}$$

4See Joshi (1985).

5An infinite language L has the constant growth property if for any string s in L, we can find a longer string s’ (also in L), such that the length of s’ minus the length of s does not exceed a certain number c.
I will assume, following Gazdar et al. (1985), that categories are not atomic but are attribute-value matrices, i.e. sets of attribute-value pairs. The basic reason is that if categories were atomic we would for example need different categories for a singular and a plural verb, and thus could not express those generalisations which involve verbs irrespective of whether they are singular or plural. The value of an attribute can itself be an attribute value pair.

The main difference between my use of attribute-value matrices and their use in Head-Driven Phrase Structure Grammar (e.g. in Sag and Wasow (1999)) is that in HPSG AVMs are used not only to encode formal (categorial) information, but also to encode conceptual structure, whereas I use the AVMs only for the encoding of categorial information. The important point to note is that as soon as the value of e.g. a syntactic attribute is an AVM which contains essential semantic information, this constitutes a conflation of formal and conceptual structure which immediately undermines the formulation of associations between formal and conceptual rules (or constraints, in the case of HPSG). By essential syntactic information I mean that the semantic information is crucial to the constraints of the grammar. A case in point is the combination of a direct object with the verb in HPSG. The head-complement rule unifies the object sign with the value of the syntactic attribute COMP, and the verb imposes the constraint that the semantic value of the sign which is the value of the syntactic attribute COMP is assigned the patient role of the predicate. “In this way, as the verb combines with a particular NP object, the index [i.e. the semantic value] of that NP is identified with the value of the feature LOVED in the verb’s semantics.” (Sag and Wasow 1999, 113). So the semantic value of the sign which is the value of the SYNTACTIC attribute COMP is really essential. The moral of this is that despite postulating a “syntactic side and a semantic side to all feature structures” (Sag and Wasow 1999, 111), the syntactic and the semantic structure are not strictly separated.

Put differently, in HPSG the relation between the syntactic and semantic structure is not exhaustively characterised by associating purely syntactic constraints with purely semantic constrains, but is characterised by means of constrains which make essential use of both syntactic and semantic notions simultaneously. This contrasts with the present framework, where the relation between syntactic and semantic structure is characterised exhaustively by associating syntactic and semantic functions.

### 2.4 Conceptual structure

The notion of conceptual structure is central to this thesis, since part of what I shall argue is that a purely truth-conditional semantics is simply not rich enough to express distinctions which natural languages encode and manipulate. Expressions do not encode only the truth-conditionally relevant properties of a situation or event, but also the speaker’s construal of the situation and its participants.
The three basic hypotheses that I shall make are that:

1. A speaker construes the participants in a situation or event in four different ways, i.e. as figure, ground, background or oblique participants. The basic idea is that the different morphosyntactic realisations of the arguments of a predicate are due to the speaker construing these participants in different ways.

2. The verb signs which a speaker chooses in order to express a certain situation match the speaker’s asymmetric construal of the participants. This match is analysed in terms of restrictions that e.g. a certain placeholder of a predicate can only be filled by a figure argument.

3. There is more than one semantic function which combines component semantic values, and these functions identify placeholders of predicates in terms of the different construal restrictions associated with them.

To give an example, assume that the speaker wants to express the thought that John beats Mark, and that the speaker construes John as the figure and Mark as the ground participant. I will then represent the encoded meaning by means of the formula $\text{BEAT}\{\text{beater:JOHN}_F, \text{beaten:MARK}_G\}$, where the indices $F$ and $G$ indicate that JOHN is the figure and MARK the ground argument. The basic claim is that that the parts of this encoded meaning are JOHN, MARK, and $\text{BEAT}\{\text{beater:}_F, \text{beaten:}_G\}$. The crucial point is that the verb meaning contains restrictions on the type of arguments which can fill a placeholder: the subscript $F$ on the placeholder $\text{beater:}$ indicates the restriction that only a figure argument can fill this placeholder, and the subscript $G$ on the placeholder $\text{beaten:}$ indicates that only a ground argument can saturate this placeholder. Instead of representing $F$ and $G$ as indices on semantic values, I will use the notation $\text{BEAT}\{F:\text{beater:JOHN}, G:\text{beaten:MARK}\}$, in order to emphasise that the construal restriction is associated with the placeholder. Nothing, however, hinges on the particular way in which the construal restriction is represented.

In order to motivate this theory of semantic composition, I will start this section by discussing the standard view of semantic composition and by pointing out a few weaknesses of this theory. Under the standard view the meaning of a binary predicate is a pair consisting of an unsaturated entity and a stipulation of the order in which the placeholders of this entity must be saturated. The arguments of a binary predicate $P_2$ are then combined with $P_2$ by two applications of the same semantic function – functional application. Assuming that structure is defined in terms of functions, the reason why the two arguments of a binary predicate have a different morphosyntactic realisation cannot be semantic, since there is no difference in how these arguments are combined with the predicate. Alternatively, I argue that the different morphosyntactic realisations of the two arguments symbolise that the arguments combine with the predicate by different semantic functions. I argue that
the semantic functions identify placeholders not in terms of truth-conditionally relevant properties of the roles assigned to the fillers of these placeholders, but in terms of the construal restrictions associated with these placeholders. Lastly, I will sketch the basic ideas behind the cognitive Linking Theory implicit in [Langacker 1987, 1991a]. The most basic notion is that of the asymmetric construal of participants: in a situation containing two participants, one participant is more cognitively salient than the other, due to the differential distribution of attention. This cognitive salience of participants depends on a number of different factors: (i) agents are more cognitively salient than patients, (ii) the active participant (e.g. the experiencer) is more cognitively salient than the non-active participant (e.g. the stimulus), and (iii) the figure (i.e. "the concept that needs anchoring", see Talmy (2000, §5)) is more cognitively salient than the ground (i.e. "the concept that does the anchoring"). There is a sense in which the notion of "figure" subsumes both the notion of "agent" as well as the notion of "active participant". For this reason I will use the notion "figure" in a more general sense than in Talmy (2000) to refer to the participant which is cognitively more salient, and I will use the notion "ground" to refer to the participant which is less cognitively salient.

The relation between the specific semantic role of an argument and the morphosyntactic realisation of this argument is mediated by the construal of this argument, and not by the syntactic notions of subject or object.

2.4.1 The standard view of semantic composition

What are meanings and how are they combined? Again it was G. Frege who made headway:

Declarative sentences in general [...] can be imagined to be split into two parts, of which one is complete in itself, and the other is in need of supplementation, or unsaturated. So, e.g., the sentence *Caesar conquered Gaul* can be split into *Caesar* and *conquered Gaul*. The second part is unsaturated, it contains an empty place, and only when this place is filled with a proper name or an expression that replaces a proper name does a complete sense emerge. Here too, I call the denotation [German: die Bedeutung] of the unsaturated part a function. In this case the argument is Caesar. (Frege (1891, 20), my translation)

According to Frege both the expression as well as its meaning can be split into saturated and unsaturated parts. The expression can be split into a saturated part *Caesar*, and an unsaturated part ( ) *conquered Gaul*. The denotation of the saturated expression *Caesar* is the person Caesar (a saturated entity), and the denotation of the unsaturated expression ( ) *conquered Gaul* is an unsaturated entity, i.e. a function from saturated entities to truth values.

---

6See Talmy (2000, §5).
Frege insists that a function is an unsaturated entity, an entity in need of saturation, and should therefore not be confused with the extension (German: der Werteverlauf) of the function, which is a saturated entity. The denotation of the expression \((\ )\) conquered Gaul is a function (an unsaturated entity), and not the extension of a function, since the extension of a function is a saturated entity. The result of saturating the denotation of the expression \((\ )\) conquered Gaul is in Frege’s theory a truth value, and the result of saturating the sense of \((\ )\) conquered Gaul is a thought.

There is an important difference between the sense of a sentence and the denotation of a sentence. The sense of a sentence is a thought, which is a structured entity, whereas the denotation of a sentence is a truth-value, which is an unstructured entity. Since the explanation of linguistic communication depends on the hypothesis that speaker meaning is an entity (certain aspects of) whose structure can be symbolised by the structure of an expression, I will restrict myself in what follows to discussing how unsaturated senses are saturated.

Let \(f_{S}(\ )\) be the unsaturated sense of an expression\(^7\) and let \(a_{S}\) stand for the saturated sense of another expression. We can now postulate a mode of combination \(f_{S-SAT}^{\mu}\) (for sense saturation) which takes as its arguments an unsaturated sense \(f_{S}(\ )\), a saturated sense \(a_{S}\), and results in the saturated entity \(f_{S}(a_{S})\).

\[
f_{S-SAT}(f_{S}(\ ), a_{S}) = f_{S}(a_{S})
\]

This function \(f_{S-SAT}\) is the first example of a semantic combination, i.e. a function which combines meanings. \(f_{S}(a_{S})\) is a thought which consists of the unsaturated sense \(f_{S}(\ )\) and the saturated sense \(a_{S}\), i.e. it is a structured entity.

An analogous mode of combination could be used in order to saturate an unsaturated denotation \(f_{D}(\ )\) with a saturated denotation \(a_{D}\).

\[
f_{D-SAT}^{\mu}(f_{D}(\ ), a_{D}) = f_{D}(a_{D})
\]

The relation between the sense of a declarative sentence and the denotation of a declarative sentence can be specified as follows: A thought \(f_{S}(a_{S})\) is true if and only if \(f_{D}(a_{D})\) is the truth value TRUE, and this is the case if and only if the denotation \(a_{D}\) is in the extension of the denotation \(f_{D}(\ )\).

What if the sense of an expression is an unsaturated entity which must be saturated by two entities, rather than just one? The sense of the expression conquered is a case in point. If a sense consisting of an unsaturated part and one saturated part is represented as \(f_{S}(a_{S})\), then it is natural to represent the sense consisting of an unsaturated and two saturated parts as \(f_{S}(a_{S}, b_{S})\), but now we have to specify whether this represents the thought that \(a_{D}\) conquered \(b_{D}\) or whether it represents the thought that \(b_{D}\) conquered \(a_{D}\).

\(^7\)The subscript \(S\) stands for sense, the subscript \(D\) stands for denotation.
CHAPTER 2. MOTIVATING THE FRAMEWORK

There are two ways of specifying this. First, we could introduce explicit labels into the representation, so that \( f_{S}(C_1 : a_S, C_2 : b_S) \) and \( f_{S}(C_2 : b_S, C_1 : a_S) \) both represent the thought that \( a_D \) conquered \( b_D \), while \( f_{S}(C_1 : b_S, C_2 : a_S) \) and \( f_{S}(C_2 : a_S, C_1 : b_S) \) both represent the thought that \( b_D \) conquered \( a_D \). The sense of the expression \textit{conquered} can then be represented either by \( f_{S}(C_1 : \_ , C_2 : \_) \) or by \( f_{S}(C_2 : \_ , C_1 : \_) \). Since order does not play a role in this representation, one could introduce the notation \( f_{S}\{C_1 : \_, C_2 : \_\} \) to represent the unsaturated sense of the expression \textit{conquered}.

Alternatively, one could simply introduce the convention that \( f_{S}(a_S, b_S) \) represents the thought that \( a_D \) conquered \( b_D \). With this convention in place, one could represent the unsaturated sense of \textit{conquered} as \( f_{S}(\_, \_) \). The convention is that if the sense \( m_S \) of an expression \( e \) fills the left placeholder of \( f_{S}(\_, \_) \) then it saturates the placeholder for the conqueror argument, and if it fills the right placeholder, than it saturates the placeholder for thing conquered.

Note that the linear ordering of \( a_S \) and \( b_S \) in the representation \( f_{S}(a_S, b_S) \), and the labels \( C_1 \) and \( C_2 \) in \( f_{S}\{C_1 : a, C_2 : b\} \) are properties of the representation of the sense, and not necessarily of the sense itself. This distinction is crucial when discussing the combination of such an unsaturated entity with saturated entities, because the semantic function which performs the combination does not operate on the representation of an unsaturated entity, but on this unsaturated entity itself.

So how can a semantic function identify the placeholders of a twice unsaturated entity?

If the structure of the thought that \( a_D \) conquered \( b_D \) is represented by \( f_{S}(a_S, b_S) \), then the function combining the unsaturated entity with the two saturated entities is either:

\[
 f_{S-SAT}^1(f_{S}(\_, \_), x_S, y_S) = f_{S}(x_S, y_S) \\
 f_{S-SAT}^2(f_{S}(\_, \_), x_S, y_S) = f_{S}(y_S, x_S)
\]

\( f_{S-SAT}^1 \) saturates the placeholder for the conqueror (represented by the left placeholder in the representation of the unsaturated entity) with \( x_S \) and the other placeholder with \( y_S \), whereas \( f_{S-SAT}^2 \) saturates the placeholder for the conqueror with \( y_S \) and the other placeholder with \( x_S \). Consequently, whichever function we choose, it must be able to somehow distinguish the placeholders of the unsaturated entity itself, not the representations of the placeholders in the representation of the unsaturated entity.

One idea (referred to either as Schönfinkelisation, in honour of Moses Schönfinkel, or as Currying, in honour of Haskell Curry) is to stipulate that the placeholders of an unsaturated entity can only be saturated in a certain order. Then \( 1 : 2 : f_{S}(\_, \_) \) means that the placeholder for the person conquering must be saturated before the placeholder for the thing conquered, and \( 2 : 1 : f(\_, \_) \) would mean that the placeholder for the person conquering must be saturated after the placeholder for the thing conquered.
This stipulation has now simplified the job of the semantic function, in the sense that it
does not really have to identify the placeholders, but only needs to know which is the “next”
empty placeholder. So

\[ f_{S-SAT}(1 : 2 : f_S(\_, \_), x_S) = 2 : f_S(x_S, \_) \]
\[ f_{S-SAT}(2 : 1 : f_S(\_, \_), x_S) = 1 : f_S(\_, x_S) \]

So if we represent the sense of conquered by \( 2 : 1 : f(\_, \_) \), then we can saturate this entity
in two steps. In the first step we saturate the placeholder for the thing conquered,

\[ f_{S-SAT}(2 : 1 : f_S(\_, \_), b_S) = 1 : f_S(\_, b_S) \]

and secondly we saturate the placeholder for the conqueror.

\[ f_{S-SAT}(1 : f_S(\_, b_S), a_S) = f_S(a_S, b_S) \]

At this point we can introduce the familiar notation from introductory semantics text-
books. The semantic combination function \( f_{S-SAT} \) is called functional application \( FA \),
an unsaturated entity is represented by means of a (typed) \( \lambda \)-term \( \lambda x \lambda y f_S(x, y) \), and the
saturation of an unsaturated entity is represented as:

\[ FA(\lambda x \lambda y f_S(x, y), z) = \lambda y f_S(z, y) \]

If we carefully distinguish the representation from the thing that it represents, and bear in
mind that the semantic combination function (here functional application) operates on the
unsaturated and saturated senses, and not their representation, we can clarify the following
question:

- How does this particular semantic function distinguish the placeholders (the elabora-
tion sites, in the terminology of Langacker [1987]) of an unsaturated entity?

The answer is that functional application distinguishes the placeholders in terms of the
order in which they must be saturated. So this semantic function does not actually identify
placeholders. It saturates all (unsaturated) placeholders indiscriminately, provided that the
placeholder is the “next” unsaturated placeholder.

Let me briefly spell out some of the consequences of this.

C1 It is claimed that the order in which the placeholders of an unsaturated predicate are to
be saturated is part of the meaning of an expression. In other words, the unsaturated
entity is biased towards having its placeholders saturated in a certain order.

C2 The semantic functions cannot actually distinguish the placeholders themselves, but
they can identify which of the unsaturated placeholders is to be saturated next.
CHAPTER 2. MOTIVATING THE FRAMEWORK

C3 Unsaturated meanings combine with saturated meanings only in a certain order determined by the unsaturated meaning.

C4 Because the semantic function can only “see” which placeholder is to be saturated next, the same semantic function can be used in order to combine the two arguments of a binary predicate.

Discussing the nature of relations, Fine (2000, 6) claims that:

the bias we perceive in the application of relations is merely an artifact of our language or means of representation. For in expressing or representing a relational thought, we think of one relatum coming first and another second; and this leads us to suppose that the relations themselves must apply to the objects in a given order. However, in the reality that we are attempting to depict, there is no such corresponding form of bias and the relations should therefore be taken to apply to their objects without regard to the order in which they might be given.

Fine’s main argument against the standard view that relations hold of certain objects in a certain order is this. (i) If a relation R holds of its relata in a certain order, then it has a converse R’ which is in general different from the original relation. (ii) If this is the case then we cannot specify a single relation which identifies the situation. (iii) But, “surely if the state is a genuine relational complex, there must be a single relation that can be correctly said to figure in the complex combination with the given relata”.

Kracht (2005, 8) provides an additional argument against consequence C1. If the unsaturated entity expressed by the Gaelic verb faic (to see) is $\lambda x \lambda y \text{SEE}(x,y)$, and the unsaturated entity expressed by the English verb see is $\lambda y \lambda x \text{SEE}(x,y)$, then we are essentially claiming that these two expressions have a different meaning.

Turning to consequence C2, what does it mean for the semantic function to identify the order in which the placeholders are to be saturated? This seems to imply that the unsaturated entity is a geometric object whose placeholders are ordered linearly, and that the semantic function can distinguish this linear order. But this can only work if we view geometric order as a property of an unsaturated entity (in particular of binary predicates), which is not immediately obvious, to say the least.

The third consequence C3 is arguably also undesirable. If the sense of the verb likes is an unsaturated entity which somehow requires that the placeholder for the thing liked is saturated before the placeholder for the person liking, then we basically predict that we cannot combine the sense of the subject NP with the sense of the verb, unless we have already combined the sense of the verb with the sense of the object NP. However, this basic prediction is (arguably) wrong, since in hearing the expression The child likes... I have
no problem combining the sense of the expression *the child* with the sense of the expression *likes* before the sense of the verb combines with the sense of the object NP. Of course, this has not gone unnoticed, and type-shifting operations have been proposed, i.e. the so-called Thrush rule which changes the combinatorial properties of the meaning of nouns by turning “arguments into functions over functions-over-such-arguments” (Steedman 2000, 43). The semantic combination of the meaning of *the child* with the meaning of *likes* has been accounted for at the cost of complicating the meaning of the expression *the child*. We are forced to accept a different meaning for the expression *the child*, depending on whether it combines with the verb before or after the verb has combined with the object. The underlying problem is that in formulating the combination of semantic values it has been hypothesised that the combinatorial properties of a semantic value are part of this semantic value itself.

Finally, using the parsimony principle (entities should not be multiplied beyond necessity) one could argue that a theory postulating fewer semantic functions is better than a theory postulating more semantic functions, and thus that at least consequence four is desirable. However, I think that there is a good argument against postulating that the different arguments of a predicate combine with the predicate by the same semantic function. If both arguments of a binary predicate are combined with the predicate by means of the same semantic function, then it is not necessary (at least not for semantic reasons) to associate different syntactic functions to the same semantic function – one syntactic function is sufficient. To illustrate, assume that the syntactic function concatenates the functor expression $e_F$ to the left of the argument expression $e_A$. Then the meaning $FA(FA(PRED, A_1), A_2)$ will be expressed as $e_{PRED}e_{A_1}e_{A_2}$, whereas the meaning $FA(FA(PRED, A_2), A_1)$ will be expressed as $e_{PRED}e_{A_2}e_{A_1}$. But if one syntactic function is sufficient, then there is no principled explanation for why the exponents expressing the arguments of a binary predicate combine by means of different syntactic functions, which is the case in most languages. In some languages these exponents are suffixed by different case markers (e.g. Latin, German), in some other languages they are positioned differently with respect to the verb (e.g. English), to mention only two strategies for distinguishing the two exponents.

Assuming on the other hand that the two arguments of a binary predicate are combined semantically by different semantic functions provides a principled explanation for why the syntactic functions combining the exponents of the arguments with the exponent of the predicate are different – because the different syntactic functions symbolise different semantic functions.

I therefore conclude that the search for an alternative theory of semantic composition is justified.
2.4.2 An alternative

Let us return to the idea that the thought that \( a_D \) conquered \( b_D \) can be represented as \( f_S \{ C_1 : a_S, C_2 : b_S \} \), i.e. by making explicit in the representation that \( a_S \) saturates the placeholder for the conqueror argument. We can represent the sense of the expression conquered as \( f_S \{ C_1 : \ldots, C_2 : \ldots \} \), and then specify the following semantic function:

\[
f_{S-SAT}(f_S \{ C_1 : \ldots, C_2 : \ldots \}, x_S, y_S) = f_S \{ C_1 : x_S, C_2 : y_S \}
\]

So this function saturates the placeholder for the conqueror with \( x_S \), and the other placeholder with \( y_S \). Again, we need to ask how exactly the semantic function identifies the placeholders. Note again, that the two labels \( C_1 \) and \( C_2 \) are not particularly useful, since the function does not combine the representations but what the representations stand for.

An initial idea would be to suggest that the semantic functions identify the placeholders of an unsaturated entity by means of the specific semantic roles which will be attributed to the arguments saturating these placeholders. This would require as many semantic function as there are specific semantic roles, and would thus constitute, as it were, the other extreme from assuming only one semantic function. The reason for rejecting this view is similar to the reason for rejecting the hypothesis that the arguments of a binary predicate are combined by means of the same semantic function: in this case we cannot explain why the beater and the hitter are realised similarly in an active clause. For example, the exponent cries combines with the child (to form the child cries) in the same way that the exponent he combines with beats (to form he beats), and the exponent saw combines with the exponent her in the same way that the exponent kicked combines with the exponent him.

This failure, however, points in the right direction. The idea is to find a conceptual property which all those arguments have in common whose exponents are combined by the same syntactic function. It is, however, impossible to find a truth-conditionally relevant property which e.g. all nominative noun phrases in German have in common. And this is precisely where cognitive grammar enters the picture, since cognitive grammar rejects the view that meaning is to be reduced to what is truth-conditionally relevant. What I will claim is that semantic functions do not identify placeholders of unsaturated entities in terms of some truth-conditionally relevant property of the role which will be assigned to the argument saturating this placeholder (e.g. volition, agentivity, patient, etc.), but in terms of the construal restriction imposed by the predicate on the argument saturating a certain placeholder.

A speaker construes the participants in a situation or event in four different ways, i.e. as figure, ground, background or oblique participants. The basic idea is that the morphosyntactic realisation of the arguments of a predicate differs if the construal of these arguments differs, and that it is similar if the construal of the participants is similar. The verb sign which a speaker chooses in order to express a situation construed in a certain way matches
the speaker’s asymmetric construal of the participants. This match is analysed in terms of two restrictions. The first restriction imposed by a binary predicate is that one of its placeholders can only be filled by a figure argument, and the second restriction is that the other placeholder can only be filled by a ground argument. Semantic functions identify placeholders of predicates in terms of these different construal restrictions associated with the placeholders of a predicate.

Some examples where the speaker construes the two participants in a situation in the same way are (i) Lines A and B intersect, (ii) John and Mary met in the bar., (iii) Blocks A and B are adjacent, (iv) A and B are equal., (v) John and Mary kissed. I claim that the two arguments of a binary predicate are expressed by means of a coordination of two exponents if and only if the two arguments are construed similarly. If the two arguments of a binary predicate are construed differently, then they have different morphosyntactic realisations. Thus the sentence John kissed Mary expresses the asymmetric construal of John and Mary, whereas the sentence John and Mary kissed expresses the symmetric construal of John and Mary.

The difference between the meanings of Block A is adjacent to block B. and Block B is adjacent to block A. is one of construal, as argued extensively in [Langacker] (1987) and [Talmy] (2000). Whereas the former sentence expresses the construal of block A as figure and B as ground, the second sentence expresses the construal of block B as figure and of block A as ground.

Another example of asymmetric construal is if the speaker A construes the person beating in a certain beating situation as more cognitively prominent/salient than the person beaten. In other words, the speaker construes the person beating as figure, and the person beaten as ground. Then A may choose to express the construal of this situation by means of the expression beats whose meaning is the concept BEAT\{BEATER : F, BEATEN : G\}, where the subscript F (standing for figure) indicates the restriction that the placeholder for the beating person can only be saturated by a figure argument, and G indicates the restriction that the placeholder for the beaten individual can only be saturated by a ground argument. If, however, the speaker construes the person beaten as being more cognitively prominent than the person beating, then he may choose the expression was beaten with meaning BEAT\{BEATER : OBL, BEATEN : F\}. In the case of this predicate it is the placeholder for the beaten individual that must be saturated by the figure argument, and the placeholder for the beating person must be saturated by an oblique argument. Thus the meanings of the verbs beats and was beaten differ only in the construal restrictions associated with the placeholders.

Instead of postulating that the semantic function can identify the “next” empty placeholders of a predicate, or that it can identify placeholders in terms of the specific semantic roles assigned to the arguments saturating these placeholders, I propose that the semantic
functions identify placeholders in terms of the **construal restrictions** on the arguments saturating these placeholders: “With a few exceptions, relational predications display an inherent asymmetry in the presentation of their participants. This asymmetry is not reducible to semantic roles […] From among the entities participating in the profiled interconnections, a relational predication selects one to be construed as figure and “tracked” against the background provided by the other elements. The selection is not predictable in absolute terms and constitutes a dimension of conventional imagery.” (Langacker, 1987, 231f)

The fundamental assumption underlying this claim is that “[t]he full conceptual or semantic value of a conceived situation is a function not only of its content (to the extent that one can speak of content apart from construal), but also how we structure this content with respect to such matters as attention, selection, figure/ground organisation, viewpoint, and level of schematicity.” (Langacker, 1987, 138). So the notion construal of a situation refers to the way in which the situation is conceptualised by the language user with respect to attention, selection, figure/ground organisation, viewpoint, and level of schematicity. The construal of participants is only part of the construal of a situation or event.

Fine (2000, 16) has argued against a conception of relations in which “argument-places” (what I call placeholders) are reified. The first argument is an ontological one: “suppose we were to attempt to describe the world in the most fundamental terms. Then we might well wish to refer to certain basic relations and to certain basic individuals that they relate; and yet surely we would not hereby wish to be committed to the existence of argument places as the intermediaries through which the exemplification of the relations was effected.” It may be the case that in order to describe the world in the most fundamental terms one may not want to commit to the existence of argument placeholders, but the purpose of linguistic expressions is not “describing the world in the most fundamental terms”, and therefore it does not follow that the meanings associated with linguistic expressions should not reify placeholders. Moving on to the more linguistically relevant argument, Fine claims that this view of relations cannot account for strictly symmetrical relations like adjacent or between. “The neutral relation of adjacency, for example, should be endowed with two positions or argument-places according to the view. Call them Next and Nixt. Given that block a is adjacent to block b, there will be a state of adjacency obtained by assigning a to Next and b to Nixt and also a state of adjacency obtained by assigning a to Nixt and b to Next. Intuitively, these states are the same. Yet, surely, under the positionalist view, they must be distinct, since the positions occupied by a and b are distinct.” (Fine, 2000, 17) The problem with this view of relations, according to Fine, is that it allows different saturations of a strictly symmetric relation (or completions, as he calls it) to characterise the same state. It is precisely at this point that the difference between Langacker’s and Fine’s views of relations becomes clear.

Fine is in search of a notion of relation which can be used to characterise states uniquely,
so he cannot accept a view of relations which allows for different completions of a relation,
since it is precisely the completion of a relation which is required to characterise states
uniquely. For such a characterisation (i.e. completion of a relation) to be unique for a state,
it is important to abstract away from the way in which the state is construed. For Fine’s
purposes, the notion of a relation should allow for exactly one completion which characterises
the state of a block \( a \) being on top of a block \( b \). On the other hand, Langacker is interested
precisely in those aspects which Fine must exclude, namely the construal of a situation:
Is it the position of \( a \) which is described with reference to the position of \( b \) (\( a \) is above
\( b \), \( a \) is to the left of \( b \)), or is it the position of \( b \) which is described with reference
to the position of \( a \) (\( b \) is below \( a \), \( b \) is to the right of \( a \))? To put it in a nutshell,
Langacker is interested in how linguistic expressions symbolise the speaker’s construal of a
situation, whereas Fine is interested in a notion of relation which can be used to characterise
certain situations uniquely. It should therefore not come as a surprise that the cognitive
grammar view of relations differs from Fine’s view of relations.

I will now turn to the relation between the specific semantic role of an argument and
its morphosyntactic realisation. The basic claim is that this relation is mediated not by
syntactic notions like ‘subject’ or ‘object’, but by the construal restriction on the argument
which fills a placeholder. That is, a placeholder is associated with a certain construal re-
striction, and this construal restriction correlates with a specific morphosyntactic encoding
of the argument. The important question to be asked is: what factors determine the con-
strual restrictions associated with a placeholder? At this stage it is important to distinguish
between initial construal restrictions, by which I mean the construal restrictions before
a construal-changing operation applies, and the final construal restrictions, which are the
construal restrictions resulting from applying a construal-changing operation. The initial
construal restriction associated with a placeholder depends on a number of factors, which
may differ from predicate to predicate. These factors determine for every basic predicate
which of its placeholders must be filled with the figure argument, and which with the ground
argument.

- An agentive argument is more cognitively salient than a non-agentive argument. This
  is why the placeholder (of the basic predicate \textit{BEAT}) for the beating individual must
  be filled with the figure argument, whereas the placeholder for the beaten individual
  must be filled by a ground argument.

- An argument construed as active is more cognitively salient than an argument con-
  strued as non-active. This is why the placeholder for the person hearing (of the basic
  predicate \textit{hear}) must be filled by the figure argument, and the placeholder for the thing
  heard must be filled by the ground argument, or why the placeholder for the argument
  moving can only be saturated with the figure argument.
• An argument construed as figure is more cognitively salient than a second argument in terms of which e.g. the location of the figure is described. This is why given the predicate ABOVE the placeholder for the argument whose location is to be described can only be filled with the figure argument, and the placeholder for the landmark argument can only be filled with the ground argument.

The initial construal restrictions can be overridden by certain operations. An example is the semantic function associated with the personal passive mode. To repeat the above example, the meaning of the active verb beats is BEAT{beater:F, beaten:G}, where F and G indicate the initial construal restrictions on the placeholders. The passive operation overrides these initial construal restrictions and imposes final construal restrictions on the placeholders, so that the meaning of the passive verb was beaten is represented by BEAT{beater:F\textsubscript{OBL}, beaten:G\textsubscript{F}}. Here the subscript F\textsubscript{OBL} indicates that the initial construal restriction is F, and that the final construal restriction is OBL, meaning that this placeholder can only be saturated by an oblique argument.

In many languages, the asymmetric construal of arguments is based on the distinction between figure and ground arguments. There are, however, languages where the asymmetric construal of arguments is not based on the figure/ground distinction, but on whether or not the argument is part of the “conceptually autonomous core” of a predication (see Langacker (1991a, §7.1)). According to this hypothesis, in (6) the argument ICE is part of the conceptually autonomous core CRACK{ICE}, whereas HAMMER, WAITER, MANAGER and OWNER are parts of successive conceptually dependent layers of causation:

\begin{equation}
\text{(6) a. The ice cracked.} \\
\text{b. A rock cracked the ice.} \\
\text{c. A waiter cracked the ice with a rock.} \\
\text{d. The manager made a waiter crack the ice with a rock.} \\
\text{e. The owner had the manager make a waiter crack the ice with a rock.}
\end{equation}

Assuming that the cognitively more prominent argument is less formally marked, it is possible to explain why in many languages whose asymmetric construal is based on the figure/ground distinction the agent-like argument of a binary predicate is formally unmarked, whereas in many languages whose asymmetric construal is based on the notion of conceptually autonomous core the patient-like argument is formally unmarked.

As argued by Langacker (1991a, 382), the encoding of arguments of unary predicates is predicted to vary, depending on what the asymmetric construal is based on. If it is based on the figure/ground distinction, it is predicted that the arguments of unary predicates are encoded the same way as figure arguments. If, on the other hand, the construal asymmetry is based on the notion of the conceptually autonomous core, and the argument A of a unary
CHAPTER 2. MOTIVATING THE FRAMEWORK

predicate is construed as part of the conceptually autonomous core of the predicate, then A is encoded the same way as the patient-like argument of binary predicates. If, however, A is construed as figure, it is encoded the same way as the agent-like argument of a binary predicate, giving rise to so-called “split-ergativity”.

To sum up, I have started this section by pointing out some undesirable consequences of the standard theory of semantic composition, and then I have proposed that the arguments of a binary predicate are combined with this predicate not by means of the same semantic function, but by means of different functions. Finally, I have argued that these different functions distinguish the placeholders of an unsaturated entity in terms of the construal restrictions associated with the placeholders. Following [Langacker 1991a], I assume that the asymmetric construal of participants can be based on two different principles: either on the figure/ground distinction (resulting in so-called accusative grammatical patterns) or on whether or not the argument is part of the conceptually autonomous core of the predication (resulting in ergative grammatical patterns).

2.5 Summary

What I have set out in this chapter is the motivation for a theoretical framework with the following properties:

- Given a language consisting of a set of signs, a grammar G of L is defined as a set of modes of combination which derive all and only the signs of L, where the modes of combination are associations of formal and semantic functions.

- It imposes a strict separation of formal and conceptual structure, which is presupposed by the hypothesis that successful linguistic communication of new thoughts hinges on certain aspects of the structure of a thought being symbolised by the structure of an expression.

- It defines formal structure in terms of exponent and category functions, with the exponent functions operating on tuples of strings, rather than strings, and thus separates phenostructure (defined by the exponent functions) from the tectostructure (defined by the category functions). The reason for expressing the formal structure in terms of simple Literal Movement Grammars is that these grammars are polynomially parsable and allow the formulation of analyses of reduplication and a certain type of coordination.

- It defines semantic structure in terms of semantic functions which identify a placeholder of a predicate in terms of the construal restriction on the argument saturating the placeholder. The construal restrictions of a placeholder correlate both with the
speaker’s construal of the participants in a situation or event and with the morphosyntactic realisation of these participants. Thus, the relation between the specific semantic roles of an argument and the morphosyntactic realisation of this argument are mediated by the construal restrictions associated with the placeholder which this argument saturates.

What follows in the remainder of this thesis is an attempt to substantiate this grammatical framework by using it to provide an explicit analysis of the particular morphological, syntactic and semantic properties of weak pronouns in Romanian and subject and object markers in Siswati, and their role in the encoding of argument structure.
Chapter 3

Romanian

Romanian is a language whose properties reflect the complex language contact to which its speakers have been exposed. On the one hand, as in Romance languages, there are weak pronouns which occur both pre- and postverbally, depending on the form of the verb, though with deviations from standard Romance patterns (for example allowing a very restricted set of adjuncts to occur between the weak pronouns and the verb). On the other hand, Romanian displays definite articles which are encliticised to the first constituent (not word) of the noun phrase, a property shared by a number of Balkan languages (e.g. Bulgarian, Macedonian and Albanian). In addition, Romanian displays the phenomenon of Differential Object Marking, whereby direct objects which are high on the animacy/referentiality scales are obligatorily marked with the preposition pe, whereas direct objects which are low on these scales are not marked with pe. The particular goal of this chapter is to provide an analysis of (i) the verb cluster in which the weak pronouns occur, and (ii) the co-occurrence of the accusative and dative weak pronouns with direct and indirect objects respectively.

I will begin by introducing the distinction between stressable and unstressable personal pronouns in Romanian. Stressable pronouns have the same distribution as noun phrases, whereas unstressable pronouns, referred to as weak pronouns, occur in close proximity to the verb and can be either preverbal or postverbal. Sometimes preverbal weak pronouns cliticise to the preceding word, sometimes they cliticise to the following word, and sometimes they do not cliticise at all. All postverbal weak pronouns are cliticised to the immediately preceding verb. The form of cliticised weak pronouns differs systematically from the form of weak pronouns which do not cliticise.

Then I will turn to the Romanian verb cluster, and discuss in detail the three defining properties of the verb cluster: (i) certain elements in the proximity of the verb occur in a fixed order, (ii) no words or phrases can occur between the elements of the verb cluster, and (iii) certain elements of the verb cluster obligatorily cliticise.

---

See Joseph (1999) for a discussion of Romanian as part of the Balkan Sprachbund.
In the third part of this section I will provide an analysis of direct objects in Romanian. This will involve first presenting the phenomenon that some direct objects must, some may and some cannot be marked with the preposition pe. Then I will discuss the conditions under which the resumption of a preverbal direct object by means of a matching weak pronoun is obligatory, and the conditions under which the resumption of preverbal direct objects is not possible. The main observation will be that the conditioning factor is the discourse status of the semantic value of the preverbal direct object sign. If the semantic value of the preverbal direct object is identifiable, then a matching accusative weak pronoun is obligatory. Otherwise, the weak pronoun is not possible. I then turn to the discussion of the anticipation of a postverbal direct object by means of an accusative pronoun. Here it is necessary to distinguish whether or not the direct object is in the same intonation phrase as the verb. If it is not, then the conditions for anticipation by means of an accusative weak pronoun are the same as the conditions for the resumption of preverbal NPs. However, if the direct object is in the same intonation phrase as the verb, then it is anticipated by a matching weak pronoun if it is a pe-marked NP whose semantic value is identifiable by the hearer. I will then provide an analysis of differential object marking and the doubling of direct objects in terms of modes of combination. Three basic ideas underpin this analysis. First, there are two types of modes combining direct objects: those which combine pe-marked signs, and those which combine signs which are unmarked for case. Secondly, there are three different ways in which these modes can combine the exponents of nominal and verbal sign: by concatenating the nominal exponent to the left of the verb string, by concatenating it to the right of the verb string, and by deferring the concatenation. Thirdly, there are two complementary ways of combining the semantic values of nominal and verbal signs. Either by saturating the placeholder for the ground argument with the semantic value of the nominal sign, or by saturating the (unsaturated) semantic value which itself saturates the placeholder for ground arguments with the semantic value of the nominal sign.

### 3.1 Personal pronouns in Romanian

In Romanian there are two classes of pronouns: stressable and unstressable pronouns. Unstressable pronouns are bound to the verb in the sense that they occur in close proximity to the verb and form together with other elements a verb cluster. The position of these unstressable pronouns with respect to the verb depends on the construction (indicative, imperative, conditional, gerund). Under certain circumstances these unstressable pronouns cliticise to adjacent words – they are pronounced together with the adjacent word as a prosodic unit.

Some pronouns in Romanian can be stressed, some cannot be stressed. (7b) shows that the phrase pe ea (her), which contains the pronoun ea (she), can be stressed, whereas
is prosodically ill-formed (indicated with #) if the pronoun o is stressed.

(7) a. Marcel o va visita pe ea. Marcel ACC.F.3SG will.3SG visit.INF DOM she will visit her.

b. Marcel o va visita PE EA. Marcel ACC.F.3SG will.3SG visit.INF DOM she will visit HER.

c. #Marcel o va visita pe ea. Marcel ACC.F.3SG will.3SG visit.INF DOM she will visit her.

Stressable pronouns have the same distribution as noun phrases.

(8) a. Marcel o va visita mâine pe Maria. Marcel ACC.F.3SG will.3SG visit.INF tomorrow DOM Mary Marcel will visit Mary tomorrow.

b. Marcel o va visita mâine pe ea. Marcel ACC.F.3SG will.3SG visit.INF tomorrow DOM she will visit her tomorrow.

(9) a. Pe Maria Marcel mâine o va visita. DOM Mary Marcel tomorrow ACC.F.3SG will.3SG visit.INF Mary, Marcel will visit tomorrow.

b. Pe ea Marcel mâine o va visita. DOM she Marcel tomorrow ACC.F.3SG will.3SG visit.INF Her, Marcel will visit tomorrow.

Unstressable pronouns cannot occur in the same position where noun phrases can occur. Instead they must occur in close proximity to the verb. (The precise position will be described and analysed in section 3.2.)

(10) a. Marcel o va visita mâine pe Maria. Marcel ACC.F.3SG will.3SG visit.INF tomorrow DOM Mary Marcel will visit Mary tomorrow.

b. *Marcel o va visita mâine (pe) o. Marcel ACC.F.3SG will.3SG visit.INF tomorrow DOM ACC.F.3SG Int.: Marcel will visit her tomorrow.

(11) a. Pe Maria Marcel mâine o va visita. DOM Mary Marcel tomorrow ACC.F.3SG will.3SG visit.INF Mary, Marcel will visit tomorrow.

b. *Pe o Marcel mâine o va visita. DOM ACC.F.3SG Marcel tomorrow ACC.F.3SG will.3SG visit.INF Int.: Her, Marcel will visit tomorrow.

There are three types of unstressable pronouns, which are called accusative (ACC), dative (DAT) and reflexive (REFL):
Accusative and dative unstressable pronouns subdivide again into two classes each depending on whether they are reduced or unreduced. Compare the unreduced pronouns in (12) with the corresponding reduced forms in (13).

(12) a. Îl văd.
   ACC.M.3SG see.1SG
   I see him.

b. Îi dau o carte.
   DAT.3SG give.1SG a book
   I give him/her a book.

c. El se spală.
   He REFL washes
   He washes himself.

(13) a. L-am văzut.
   ACC.M.3SG=have.1 seen
   I/we have seen him.

b. I-am dat o carte.
   DAT.3SG=have.1 given a book
   I/we have given him/her a book.

c. El s-a spălat.
   He REFL=has washed
   He has washed himself.

Note that (as indicated by the equals sign in the example as well as in the gloss) the unstressable pronouns in (13) and the respective following word are pronounced as a unit. In (12), however, the unstressable pronouns and the respective following words are not pronounced as a unit, as indicated by the lack of the equals sign. Put differently, there is a correlation between an unstressed pronoun’s occurrence in reduced form and its cliticisation to an adjacent word.

The following table contains the different types of accusative, dative, reflexive and (for the sake of comparison) nominative pronouns:
The phonological similarities between stressable and unstressable personal pronouns are interpreted as evidence that the unstressable pronouns are derived from stressable pronouns.

In most cases reduced pronouns are also spelled differently from their unreduced counterparts. In some cases the reduced and the unreduced pronouns are spelled the same way, but their pronunciation is nevertheless different. For a phonological analysis of reduced and unreduced unstressable pronouns see Popescu (2000).

In the next section I will show (i) that unstressable pronouns are part of the verb cluster, (ii) that their position with respect to the verb depends not only on the type of construction (indicative, positive imperative, negative imperative, conditional, inverted conditional, gerund) but also in one noteworthy case on phonological properties, and (iii) when exactly phonological incorporation (cliticisation) of unstressable pronouns is obligatory, optional and impossible.

Some notes on terminology. I will use the terms “stressable” and “strong” synonymously. The same goes for the notions “unstressable” and “weak”. If a word (or more generally a linguistic element) \( W_1 \) lacks autonomous accent and is therefore phonologically integrated with an adjacent word \( W_2 \), I will say that \( W_1 \) has cliticised to \( W_2 \). A clitic is a word (or linguistic element) which has cliticised to an adjacent word. The important points about this usage are that (i) the process of cliticisation is a phonological process, and therefore (ii) a word is not called a clitic unless it actually cliticises (i.e. is phonologically attached) to another word. This is important to point out, since some authors speak of “morphosyntactic clitics” (for example Anderson (2005, 31)) and therefore use the notion of clitic to refer to the first important property of weak pronouns – their proximity to the verb – and not to a phonological process.

I use the notion of “cliticisation” as referring only to a phonological process, in order to distinguish cliticisation from the position in which the weak pronouns occur with respect
 CHAPTER 3. ROMANIAN

62

to the verb. Weak pronouns will be called preverbal if they occur before the verb, and postverbal if they occur after the verb. It is important to sharply distinguish the position of the weak pronouns with respect to the verb from the direction in which they may cliticise. If a weak pronoun cliticises to the following word, it is called proclitic, and if it cliticises to the previous word, I will call it enclitic. If a weak pronoun does not cliticise, then I do not call it a clitic. It is important to distinguish these two properties (i.e. position with respect to verb and direction of cliticisation), since some preverbal weak pronouns procliticise, some other preverbal weak pronouns encliticise, and yet some other preverbal weak pronouns are neither proclitic nor enclitic – they do not cliticise. For example, in \textit{nu=1 aud} (NEG=ACC.M.3SG hear.1SG) the weak pronoun \textit{l} is preverbal and enclitic, since it cliticises to the previous word, i.e. the negation \textit{nu}. In the string \textit{nu 1=am auzit} (NEG ACC.M.3SG=have.1 heard), the weak pronoun is also preverbal, but it is proclitic, since it cliticises to the following word. In the string \textit{1l aud} (ACC.M.3SG hear.1SG) or \textit{1T i dau} (DAT.2SG give.1SG)) the weak pronouns are both preverbal, but they do not cliticise. Postverbal weak pronouns always encliticise, i.e. they always lean to the immediately preceding word, and never to the following word. The failure to distinguish these two properties has led some authors to call all preverbal weak pronouns proclitic, despite the fact that some of the preverbal weak pronouns actually cliticise to the preceding word.

3.2 The verb cluster

3.2.1 Data and generalisations

In Romanian the infinitive marker \textit{a}, the subjunctive marker \textit{s˘a}, the negation \textit{nu}, weak pronouns, auxiliaries, monosyllabic adverbs (also called intensifiers), the perfective marker \textit{fi}, and the main verb form a cluster in the sense that no other word or phrase can intervene between the elements of this group. The order of the elements of the verb cluster depends on the type of construction, and in one particular case (the position of the unstressable pronoun \textit{o} (ACC.F.3SG)) on phonological properties. Thirdly, in certain cases unstressable pronouns must be cliticised (they occur in reduced form), in other cases they cannot be cliticised, and in yet other cases they may be cliticised. In this section I will describe these three properties of unstressable pronouns by looking in turn at the different constructions in which they occur.

**Indicative** I will begin by listing a number of generalisations about the indicative construction in Romanian.

The order of elements in an indicative verb cluster is: negation, dative weak pronoun, \{accusative weak pronoun, reflexive weak pronoun\}, auxiliary, monosyllabic intensifier, per-
fective marker, verb. The brackets around accusative and reflexive weak pronouns is meant to indicate that these pronouns do not co-occur and that their ordering with respect to the other elements of the verb cluster is identical.

\[ \text{NEG} \prec \text{DAT} \prec \{\text{ACC}, \text{REFL}\} \prec \text{AUX} \prec \text{INT} \prec \text{PFV} \prec \text{V} \]

An example illustrating the order of words in the indicative construction is:

(14) \text{Nu ți=1=ag mai fi dat.}
\text{NEG DAT.2SG=ACC.M.3SG=would.1SG still/again PFV given}
\text{I would not have given it(masc.) to you anymore.}

There are two properties which justify the use of the term ‘verb cluster’. The first is that no word or phrase can intervene between the words in (14). For example, the accusative pronoun cannot occur before the dative, and none of them can occur between the auxiliary and the main verb. There is, however, some flexibility in the relative order of monosyllabic adverbs and the perfective marker fi. To illustrate, consider the following sentence, where the elements of the verb cluster are the weak pronoun îi (DAT.3SG), the future auxiliary va and the infinitive verb trimite. Neither the direct object pachetul (the parcel), nor the adverb mâine can occur between the elements of the verb complex.

(15) a. îi va trimite pachet-ul mâine.
\text{DAT.3SG will.3SG send.INF parcel-DEF.M tomorrow}
\text{He/she will send him/her the parcel tomorrow.}

b. îi (*pachetul) va trimite mâine.

c. îi va (*pachetul) trimite mâine.

d. îi (*mâine) va trimite pachetul.

e. îi va (*mâine) trimite pachetul.

The second observation that justifies the use of the notion of verb cluster is that all permutations of the words in (14) are ungrammatical.

A notable exception to the generalisation about the order of the elements of the verbal cluster in the indicative is when the verb cluster contains both the accusative weak pronoun o (ACC.F.3SG) and a vowel-initial auxiliary. In this case the accusative weak pronoun does not precede the auxiliary but follows the verb.

2The weak pronoun îl (whose reduced form is î) refers to an entity whose expression has grammatical gender masculine. If the intended referent of îl is a male human, I will translate it as ‘him’. If the intended referent is inanimate, then I will translate it as ‘it (masc.)’.

3I will use the following (standard) conventions: The expression a(*x)b is a concise way of saying that x cannot occur between a and b (ab is grammatical whereas axb is ungrammatical). The expression a*(x)b is a concise way of saying that the string x must occur between a and b (ab is ungrammatical, whereas axb is grammatical).
In all other cases the weak pronoun o (ACC.F.3SG) precedes the verb. Note in particular (i) that o can occur before an auxiliary, if the auxiliary begins with a consonant [17], and (ii) that o can also occur before main verbs which are vowel-initial [18]. Note that in these cases o does not cliticise to the following word:

(17)  0      voi    trimite.
       ACC.F.3SG will.1SG send
      I will send her.

(18)  0       aud.
       ACC.F.3SG hear.1SG
      I hear her.

Why does the weak pronoun o (ACC.F.3SG) occur after the verb if the auxiliary is vowel-initial? To find out the answer, it is helpful to look at the phonological behaviour of other weak pronouns when they precede a vowel-initial auxiliary.

If the verb cluster contains a weak pronoun other than o as well as a vowel-initial auxiliary, then the weak pronoun attaches phonologically to the auxiliary. (The weak pronoun and the vowel-initial auxiliary must be pronounced as a prosodic unit, the reduced form of the weak pronoun is obligatory).

(19)  a.  L=am     citit.
       ACC.M.3SG=have.1 read
      I/we have read it (masc.).

   b.  *I=am     citit.
       ACC.M.3SG have.1 read
      Int.: I/we have read it (masc.).

(20)  a.  I=am     dat un cadou.
       DAT.M.3SG=have.1 given a  gift.
      I/we have given him a gift.

   b.  *I=am     dat un cadou.
       DAT.M.3SG have.1 given a  gift.
      Int.: I/we have given him a gift.

If, however, the verb complex contains a weak pronoun and an auxiliary which is not vowel-initial, then the weak pronouns do not attach phonologically to the auxiliary. (The weak
pronoun and the auxiliary are pronounced as different prosodic units. The unreduced form of the weak pronoun is used.)

(21)  
(a. \[L=\text{voi} \quad \text{trimite}.
\quad \text{ACC.M.3SG=will.1SG send}
\quad \text{Int.: I will send it.}
\]
(b. \[\text{Ii} \quad \text{voi} \quad \text{trimite}.
\quad \text{ACC.M.3SG will.1SG send}
\quad \text{I will send it.}
\]

(22)  
(a. \*[I=\text{voi} \quad \text{da un cadou}.
\quad \text{DAT.3SG=will.1SG give a gift.}
\quad \text{Int.: I will give him/her a gift.}
\]
(b. \[\text{Ii} \quad \text{voi} \quad \text{da un cadou}.
\quad \text{DAT.3SG will.1SG give a gift.}
\quad \text{I will give him/her a gift.}
\]
So weak pronouns other than \(o\) obligatorily attach phonologically to an auxiliary if and only if the auxiliary is vowel initial. To account for this I will postulate a rule which phonologically attaches a weak pronoun to an auxiliary if and only if the auxiliary is vowel-initial. And the ungrammaticality of (16a), which is the only exception to this generalisation, will be accounted for by a condition on a phonological operation which prohibits hiatus in unstressed monosyllabic prosodic words.

If two weak pronouns are adjacent, they attach phonologically to one another, and form a prosodic unit. Both weak pronouns must occur in their reduced forms.

(23)  
(a. \[\text{Ii=1} \quad \text{trimit.}
\quad \text{DAT.2SG=ACC.M.3SG send.1SG}
\quad \text{I send you it.}
\]
(b. \*[\text{Ii=1} \quad \text{trimit.}
\quad \text{DAT.2SG=ACC.M.3SG send.1SG}
\quad \text{Int.: I send you it.}
\]
(c. \*[\text{Ii=1} \quad \text{trimit.}
\quad \text{DAT.2SG=ACC.M.3SG send.1SG}
\quad \text{Int.: I send you it.}
\]
(d. \*[\text{Ii=1} \quad \text{trimit.}
\quad \text{DAT.2SG ACC.M.3SG send.1SG}
\quad \text{Int.: I send you it.}
\]

This generalisation holds even if there is a potential phonological host to the left. (24a) shows that the weak pronoun can attach phonologically to the preceding negation marker. However, this is not possible if the verb cluster contains two weak pronouns, as shown by (24b). (24c) shows that the two weak pronouns must attach phonologically to one another.
(24) a.  Nu=t ¸i  trimit...
   NEG=DAT.2SG send.1SG
   I don’t send you...

   b. * Nu=t ¸i  il  trimit.
      NEG=DAT.2SG ACC.M.3SG send.1SG
      Int.: I don’t send you it (masc.).

   c.  Nu  ¸i=l  trimit.
      NEG DAT.2SG=ACC.M.3SG send.1SG
      I don’t send you it (masc.).

If two weak pronouns are followed by a vowel-initial auxiliary, then the weak pronouns and
the auxiliary are pronounced as one prosodic unit, and the weak pronouns must both occur
in reduced form. If the weak pronouns are followed by an auxiliary which is not vowel-initial,
then the weak pronouns and the auxiliary are pronounced as two separate prosodic units.
The weak pronouns must both occur in reduced form.

(25) a.  ¸i=l=am  dat.
      DAT.2SG=ACC.M.3SG=have.1 given.
      I/we have given you it (masc.).

   b. * ¸iti  il  am  dat.
      DAT.2SG ACC.M.3SG have.1 given.
      Int.: I/we have given you it (masc.).

   c. * ¸iti  l=am  dat.
      DAT.2SG ACC.M.3SG=have.1 given.
      Int.: I/we have given you it (masc.).

   d. * ¸i=il  am  dat.
      DAT.2SG=ACC.M.3SG have.1 given.
      Int.: I/we have given you it (masc.).

(26) a.  ¸i=l  voi  da.
      DAT.2SG=ACC.M.3SG will.1SG give.
      I will give you it (masc.).

   b. * ¸iti  il  voi  da.
      DAT.2SG ACC.M.3SG will.1SG give.
      Int.: I will give you it (masc.).

   c. * ¸iti=l  voi  da.
      DAT.2SG=ACC.M.3SG will.1SG give.
      Int.: I will give you it (masc.).

   d. * ¸i=il  voi  da.
      DAT.2SG=ACC.M.3SG will.1SG give
      Int.: I will give you it (masc.).

If a weak pronoun (i) precedes the verb, (ii) cannot attach phonologically to the right
(cannot procliticise), and (iii) is vowel-initial, then it may attach phonologically to the left
(it may encliticise).
(27) a. i. Maria îl cumpără.
   Mary ACC.M.3SG buys
   Mary buys it(masc.).

   ii. Maria=l cumpără.
       Mary=ACC.M.3SG buys
       Mary buys it(masc.).

b. i. Maria l=a cumpărat.
     Mary ACC.M.3SG=has.3SG bought
     Mary bought it(masc.).

   ii. *Maria=l a cumpărat.
       Mary=ACC.M.3SG has.3SG bought
       Int.: Mary bought it(masc.).

c. i. Maria ne va cumpăra ceva.
     Maria DAT.3PL will.3SG buy.INF something
     Mary will buy us something

   ii. *Maria=ne va cumpăra ceva.
       Maria=DAT.3PL will.3SG buy.INF something
       Int.: Mary will buy us something

Summary:

- The order of elements in the indicative verb cluster is:

<table>
<thead>
<tr>
<th>Ind.</th>
<th>NEG</th>
<th>DAT</th>
<th>{ACC, REFL}</th>
<th>AUX</th>
<th>INT</th>
<th>PFV</th>
<th>V</th>
<th>ACC.F.3SG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEG</td>
<td>DAT</td>
<td>AUX</td>
<td>INT</td>
<td>PFV</td>
<td>V</td>
<td></td>
<td>ACC.F.3SG</td>
</tr>
</tbody>
</table>

- No other word or phrase can intervene between the elements of the verbal complex.

- Weak pronouns attach phonologically to the auxiliary if and only if the auxiliary is vowel-initial.

- The phonological attachment of the accusative feminine third person singular weak pronoun o to a preverbal vowel-initial auxiliary results in a prosodically ill-formed unit.

- The weak pronoun o (ACC.F.3SG) occurs after the main verb, if the verb cluster contains a vowel-initial auxiliary.

- If two weak pronouns are adjacent, they attach phonologically to each other.

- If a weak pronoun (i) precedes the verb, (ii) cannot attach phonologically to the right, and (iii) is vowel initial, then it may attach phonologically to the left.

4The auxiliary must be vowel-initial.
**Imperative**  In positive imperatives weak pronouns follow the verb and are phonologically attached to it.

(28) a. i. Trimite=l.  
   send.IMP.2SG=ACC.M.3SG  
   Send it(masc.)!

   ii. *Trimite  l.  
      send.IMP.2SG ACC.M.3SG  
      Int.: Send it(masc.)!

b. i. Trimite=mi un roman  
   send.IMP.2SG=DAT.1SG a novel  
   Send me a novel!

   ii. *Trimite  îmi un roman  
      send.IMP.2SG DAT.1SG a novel  
      Int.: Send me a novel!

In negative imperatives the weak pronouns precede the verb.

(29) a. Nu=l trimite.  
   NEG=ACC.M.3SG send.INF  
   Don’t send it(masc.)!

b. Nu=mi  trimite un roman.  
   NEG=DAT.1SG send.INF a novel  
   Don’t send me a novel!

The order of weak pronouns relative to one another is the same as in the indicative mood, i.e. dative before accusative.

(30) a. Trimite=mi=l.  
   send.IMP.2SG=DAT.1SG=ACC.M.3SG  
   Send me it(masc.)!

b. *Trimite=l=mi.  
   send.IMP.2SG=ACC.M.3SG=DAT.1SG

(31) a. Nu  mi=l trimite.  
   NEG DAT.1SG=ACC.M.3SG send.2SG  
   Don’t send me it(masc.)!

b. *Nu l=mi trimite.  
   not ACC.M.3SG=DAT.1SG send.2SG

The intensifiers precede the verb both in positive and in negative imperatives.

(32) a. Mai cumpără.  
   still buy.IMP.2SG  
   Keep buying!

b. Nu mai cumpără.  
   NEG still buy.INF  
   Stop buying!
Note, by the way, that the negative imperative in Romanian is formed with the infinitive verb form, not with the imperative verb form which is only used in the positive (singular) imperative.

Summary:

- The order of the elements of an imperative verb cluster is:

<table>
<thead>
<tr>
<th>Imp.</th>
<th>INT</th>
<th>V</th>
<th>DAT</th>
<th>ACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEG</td>
<td>DAT</td>
<td>ACC</td>
<td>INT</td>
<td>V</td>
</tr>
</tbody>
</table>

- The order of the weak pronouns is always dative before accusative, both when they occur before the verb (negative imperative) and when they occur after the verb (positive imperative).

- If two weak pronouns are adjacent, they attach phonologically to each other.

- In positive imperatives, the weak pronouns occur after the verb and are phonologically attached to it (enclisis).

**Gerund** Weak pronouns follow the gerund and are phonologically attached to it (33a). The order of the weak pronouns relative to one another is the same as in the indicative and the imperative (33b). The intensifier mai precedes the gerund, and the negation is at the left edge (33c).

(33) a. Cumpăránd=ul
buy.GER=FIL=ACC.M.3SG
buying it(masc.)

b. Cumpăránd=um=il
buy.GER=FIL=DAT.1SG=ACC.M.3SG
buying it(masc.) for me

c. Ne=mai=având=ul
NEG=still=have.GER=FIL=ACC.M.3SG
not having it(masc.) anymore

FIL stands for filler, and glosses the phonologically inserted vowel u which eases the suffixation of the consonant 1 to the consonant d.

Summary:

- Order of elements in a gerund verb complex:

<table>
<thead>
<tr>
<th>Ger.</th>
<th>NEG</th>
<th>INT</th>
<th>V</th>
<th>DAT</th>
<th>ACC</th>
</tr>
</thead>
</table>

- The order of the weak pronouns is dative before accusative.

- If two weak pronouns are adjacent, they attach phonologically to each other.

- The weak pronouns are phonologically attached to the verb (enclisis).
Inverted and uninverted conditionals  Romanian has two types of conditional constructions. In the first the conditional auxiliary occurs before the verb, whereas in the second the conditional auxiliary occurs after the verb. I shall call the latter construction the “inverted conditional construction” in order to distinguish it from the “uninverted” conditional construction.

In the uninverted conditional construction the order of the elements of the verb cluster is the same as in the indicative, i.e. the negation precedes the weak pronouns, which precede the conditional auxiliary, as exemplified in (34a). In the inverted conditional, however, the cluster consisting of weak pronouns and conditional auxiliary occurs after the main verb, as exemplified in (34b). The inverted conditional construction has a fairly restrictive usage (mainly swearwords or expressions of praise or admiration). The relevance of these uninverted construction is twofold. First, it shows that the weak pronouns cluster together with the auxiliary, and secondly it shows that the weak pronoun o (ACC.F.3SG) can occur before a vowel-initial auxiliary, if the auxiliary is postverbal.

(34) a. Nu  l=a¸s mânca
   NEG ACC.M.3SG=would.1SG eat.INF
   I would not eat it(masc.).

b. Mânca=l=ar mama
   eat.INF=ACC.M.3SG=would.3SG mother.
   (He is so sweet that) mother would eat him.

If the baby is a girl then one would say (35a) instead of (34b):

(35) a. Mânca=o=ar mama
   eat.INF=ACC.F.3SG=would.3SG mother.
   (She is so sweet that) mother would eat her.

b. *o=ar mânca.
   ACC.F.3SG=would.3SG eat.INF.
   Int.: he/she would eat it(fem.)/her.

c. ar mânca=o.
   would.3SG eat.INF=ACC.F.3SG
   he/she would eat it(fem.)/her

Note that if both the weak pronoun and the conditional auxiliary occur after the verb (i.e. in the inverted conditional), the weak pronoun o (ACC.F.3SG) can occur before the vowel-initial auxiliary ar, as shown by (35a). However, in the uninverted conditional construction exemplified by (35b) the weak pronoun o cannot occur before the vowel initial auxiliary ar, but has to occur after the verb, as shown in (35c).

Summary:

5The notions of “inverted” and “uninverted” are simply labels for the syntactically different conditional constructions, and nothing hinges on the particular labels chosen.
- Order of elements in the uninverted (UC) and inverted (IC) conditionals:

<table>
<thead>
<tr>
<th>UC</th>
<th>DAT</th>
<th>ACC</th>
<th>AUX</th>
<th>V</th>
<th>ACC.F.3SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>V</td>
<td>DAT</td>
<td>ACC</td>
<td>AUX</td>
<td></td>
</tr>
</tbody>
</table>

- The order of the weak pronouns is always dative before accusative, irrespective of whether the weak pronouns are preverbal or postverbal.

- In uninverted conditional constructions, \( o \) (ACC.F.3SG) cannot occur before the vowel-initial conditional auxiliary.

- In inverted conditional constructions, the weak pronoun \( o \) (ACC.F.3SG) occurs before the vowel-initial conditional auxiliary, and both occur after the main verb. The weak pronoun \( o \) and the conditional auxiliary do not form a prosodic word but a prosodic syllable which is part of the prosodic word including the main verb.

Despite its idiomaticity, the inverted conditional construction is relevant because it shows that the weak pronoun \( o \) (ACC.F.3SG) can occur before a vowel-initial auxiliary. Note, however, that in this case the weak pronoun and the auxiliary do not form a prosodic word by themselves, but are part of the prosodic word containing the main verb.

**Infinitive** The infinitive and the subjunctive markers are analysed as part of the verb cluster, because their order with respect to the weak pronouns and the verb is fixed, and no other word or phrase can occur between them and the other elements of the verb cluster.

The infinitive marker \( a \) occurs before the negation marker \( nu \).

(36)  
\[
\text{a} \quad \text{nu} \quad \text{ti}=l \quad \text{trimite}
\]

INF NEG DAT.2SG=ACC.M.3SG send

not sending it to you

**Subjunctive** The subjunctive marker \( s\˘a \) occurs before the negation marker \( nu \).

(37)  
\[
\text{M}=a \quad \text{rugat} \quad \text{s\˘a} \quad \text{nu} \quad \text{ti}=l \quad \text{trimit}
\]

DAT.1SG=have.3SG asked SBJV NEG DAT.2SG=ACC.M.3SG send.SBJV

He asked me that I don’t send you it

Summary:

- Order of elements in the infinitive and subjunctive verb complex:

<table>
<thead>
<tr>
<th>Infin.</th>
<th>INF</th>
<th>NEG</th>
<th>DAT</th>
<th>ACC</th>
<th>INT</th>
<th>PFV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjun.</td>
<td>SBJV</td>
<td>NEG</td>
<td>DAT</td>
<td>ACC</td>
<td>INT</td>
<td>PFV</td>
<td>V</td>
</tr>
</tbody>
</table>
### 3.2.2 Summary

I will now sum up the main properties of the verb cluster in Romanian.

1. **Order of elements in the verb cluster:**

<table>
<thead>
<tr>
<th>Ind.</th>
<th>NEG</th>
<th>DAT</th>
<th>ACC</th>
<th>AUX</th>
<th>INT</th>
<th>PFV</th>
<th>V</th>
<th>ACC.F.3SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imp.</td>
<td>NEG</td>
<td>DAT</td>
<td>AUX</td>
<td>INT</td>
<td>PFV</td>
<td>V</td>
<td>ACC.F.3SG</td>
<td></td>
</tr>
<tr>
<td>Ger.</td>
<td>NEG</td>
<td>INT</td>
<td>V</td>
<td>DAT</td>
<td>ACC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cond.</td>
<td>DAT</td>
<td>ACC</td>
<td>AUX</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inv. Cond.</td>
<td>DAT</td>
<td>AUX</td>
<td>V</td>
<td>ACC.F.3SG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infin.</td>
<td>INF</td>
<td>NEG</td>
<td>DAT</td>
<td>ACC</td>
<td>INT</td>
<td>PFV</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Subjunc.</td>
<td>SBJV</td>
<td>NEG</td>
<td>DAT</td>
<td>ACC</td>
<td>INT</td>
<td>PFV</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

2. With one exception (i.e. the weak pronoun o) two weak pronouns always occur on the same side of the verb.

3. Nothing can intervene between the elements of the verbal cluster.

4. The order of weak pronouns is always dative before accusative, irrespective of whether they are preverbal or postverbal.

5. The monosyllabic intensifiers and the perfective marker fi always occur before the verb. In this they differ markedly from the weak pronouns which may occur either before or after the verb. (I will not provide a functional explanation of why the intensifiers always occur before the verb, and never after.)

6. If two weak pronouns are adjacent, both must occur in reduced form.

7. If weak pronouns are postverbal they must occur in reduced form.

8. If a weak pronoun occurs in front of an auxiliary then its form must be reduced if and only if the auxiliary is vowel-initial.

**Important observations about the position of the weak pronoun o (ACC.F.3SG):**

1. The weak pronoun o follows the verb if and only if the verb cluster contains a vowel-initial auxiliary.

2. In inverted conditionals, o precedes the (inverted) vowel-initial conditional auxiliary. Note, however, that in this case the weak pronoun and the auxiliary do not form an unstressed prosodic word, but a syllable which is part of the prosodic word containing the main verb.

---

Vowel-initial auxiliary.
The analysis in the next section will account for all these properties of the Romanian verb cluster, and will thus constitute a hypothesis about what the structure of the verb cluster in Romanian is. In particular, I will provide an analysis of (i) the preverbal and postverbal occurrence of weak pronouns, (ii) the fact that weak pronouns remain before the auxiliary, if the auxiliary is postverbal, (iii) the fact that dative weak pronouns occur before accusative weak pronouns, both preverbally and postverbally, (iv) that negation and monosyllabic intensifiers always occur preverbally, (v) obligatory phonological reduction, and (vi) the distribution of the weak pronoun o (ACC.F.3SG). The reason why I decided to provide an analysis of obligatory phonological reduction is that it is, as I will argue, instrumental in understanding the postverbal occurrence of the weak pronoun o.

It should be pointed out that the analysis itself is a hypothesis of what the structure of the verb cluster is, and not a hypothesis about why the structure is the way it is. In other words, I will specify formal (exponent and category) and conceptual operations which together provide a hypothesis about the structure of the verb cluster, but I will not answer the question why for example the dative weak pronoun always occurs before the accusative weak pronouns, or why the monosyllabic intensifiers never occur after the verb.

3.2.3 Analysis

In this section I will provide an analysis of the verb cluster in Romanian. I will analyse (i) the order of the elements of the verb cluster, (ii) the obligatory phonological reduction of certain elements of the verb cluster, and (iii) the semantic combination of weak pronouns with predicates. I will begin by presenting the necessary exponent functions. The two basic hypotheses about the exponent structure are (i) that verb exponents are pairs of strings with the verb itself being (part of) the second string, and (ii) that a verbal exponent is linearised differently depending on the construction. In the indicative, negative imperative and uninverted conditional constructions the first component of the pair is prefixed to the second component, while in the positive imperative, the gerund and the inverted conditional constructions the first component of the verbal exponent is suffixed to the second component. The fact that monosyllabic adverbs and the perfective marker never occur after the verb is then analysed by postulating that they attach to the second component of the verbal exponent (i.e. to the verb itself), and are thus unaffected by the linearisation. The fact that weak pronouns and auxiliaries can occur both before or after the verb, but always in the same order $DAT \prec ACC \prec AUX$ is then analysed by postulating that they attach to the first component of the verbal exponent (in a given order), and can therefore precede the verb if the first component of the verbal exponent is prefixed to the second, or follow the verb if the first component of the verbal exponent is suffixed to the second component (which contains the verb itself). In the second part I will argue that the phenomenon of
obligatory phonological reduction of weak pronouns should be analysed in terms of exponent and categorial functions operating in parallel. In the third part of the analysis I will introduce the category functions, which essentially ensure that exponent functions can only apply in a certain order and to certain categories of exponents but not others. In the last part I will discuss the semantics of weak pronouns, put together the exponent, category and conceptual functions and present the modes of combination which taken together constitute the hypothesis about the structure of the Romanian verb cluster.

3.2.3.1 Exponent structure

**Exponent functions** As argued above, weak pronouns have two properties that should be carefully distinguished: (i) their position with respect to the verb, and (ii) their cliticisation to an adjacent word. In my analysis both the position of the weak pronouns (as well as of the other elements of the verb cluster) and the obligatory phonological cliticisation of certain elements of the verb cluster will be analysed in terms of exponent functions. This section will first introduce and illustrate the exponent functions which are necessary for the analysis of the position of the elements in the verb cluster, and the next section will turn to the analysis of obligatory phonological reduction and thus to cliticisation.

One could try to account for the order of the elements in the indicative verb cluster by assuming that these elements are prefixed to the main verb in a certain order. Postulating that weak pronouns are prefixed to the verb accounts for two important properties: First, no other word or phrase can occur between the weak pronoun and the verb, and secondly the order between weak pronouns and auxiliaries is fixed. The challenge faced by such an approach is how to account for the postverbal occurrence of weak pronouns and auxiliaries in the positive imperative, gerund, and inverted conditionals. An additional challenge is the analysis of the occurrence of the weak pronoun o (ACC.F.3SG).

The idea that will be developed here is that verb clusters are generated as pairs of strings, and are then linearised differently depending on the construction. For example, in the positive imperative the weak pronouns are generated in the same order as in the indicative construction, but in the positive imperative construction the weak pronouns and the imperative verb are inverted, whereas in the indicative construction the weak pronouns are simply concatenated to the verb.

In order to do this, I shall make two basic hypotheses. First, following the pattern of simple Literal Movement Grammars proposed in section 2.3.2 I propose that the exponent of a verb is not a string but a pair \(|\varepsilon, V|\) of strings, where \(\varepsilon\) is the empty string, and \(V\) is the (main) verb string. And secondly, I hypothesise that different constructions linearise the verbal exponent in one of two ways: either by prefixing or by suffixing the first component to the second component.
If an element of the verb cluster always occurs before the verb (monosyllabic intensifiers and perfective marker), it will be prefixed to the second string of the pair (i.e. the verb itself), whereas those elements which can occur either before or after the verb are prefixed to the first string of the pair. By prefixing an element \( e \) to the first string \( e_1 \) of a pair \( \langle e_1, e_2 \rangle \) one achieves two important things at once: First one fixes the order between \( e \) and \( e_1 \), and secondly one delays the linearisation of \( e \) with respect to \( e_2 \). For example, the monosyllabic intensifier mai (still, again) will be directly concatenated to the verb \( \text{întreabă} \) (ask.3SG or ask.IMP), thus accounting for the fact that the order intensifier before main verb is invariant across constructions. The result of combining \( \langle \text{mai} \rangle \) and \( \langle \epsilon, \text{întreabă} \rangle \) is \( \langle \epsilon, \text{mai} \text{întreabă} \rangle \).

The accusative weak pronoun ne (ACC.1PL), however, will not be prefixed to the string containing the main verb, but to the first string of the verbal exponent. So combining ne with \( \langle \epsilon, \text{mai} \text{întreabă} \rangle \) results in \( \langle \text{ne}, \epsilon, \text{mai} \text{întreabă} \rangle \), which equals \( \langle \text{ne}, \text{mai} \text{întreabă} \rangle \), since the empty string is not visible.\(^7\) This pair can then be linearised in two different ways. We can either prefix the first component (containing the weak pronoun) to the verb, in which case we get the indicative order \( \langle \text{ne, mai} \text{întreabă} \rangle \), or we can suffix the first component to the second, in which case we get the imperative order \( \langle \text{mai} \text{întreabă, ne} \rangle \).

Thus the verb cluster is generated in two steps. First, a pair of strings is generated, and secondly the pair is linearised either by prefixing or suffixing the the first string to the second string.

Next I will discuss in detail the exponent functions which together characterise the exponent structure of the verb cluster.

The first exponent function \( f_1 \) applies to a string \( e_1 \) and a pair of strings \( \langle e_2, e_3 \rangle \) and prefixes \( e_1 \) to \( e_3 \). The idea is that this function attaches monosyllabic adverbs and the perfective marker to the verb. However, by virtue of being an exponent function, \( f_1 \) cannot itself distinguish types of exponents, and therefore applies indiscriminately to weak pronouns, auxiliaries, monosyllabic adverbs, etc.. The application of this function will be restricted indirectly by associating it with a category function which requires that the first exponent \( e_1 \) be of type ‘monosyllabic adverb’ or ‘perfective marker’.

\[
f_1((e_1), \langle e_2, e_3 \rangle)) = \langle e_2, e_1, e_3 \rangle,
\]

if \( e_2 = \epsilon \).

The second exponent function applies again to a string \( e_1 \) and a pair of strings \( \langle e_2, e_3 \rangle \) and prefixes \( e_1 \) to \( e_2 \). This function will be paired with a category function which ensures that exponent \( e_1 \) is either an auxiliary or a weak pronoun.

\[
f_2((e_1), \langle e_2, e_3 \rangle) = \langle e_1, e_2, e_3 \rangle
\]

\(^7\)Another way of putting this is to say that the empty string \( \epsilon \) is the unit with respect to concatenation, see Kracht (2003, 18).
The third exponent function also applies to a string $e_1$ and a pair of strings $(e_2, e_3)$, and suffixes $e_1$ to $e_2$. This function will be paired with a category function which requires that the exponent $e_1$ be the weak pronoun $o$ (ACC.F.3SG).

$$f_3^\epsilon((e_1), (e_2, e_3)) = (e_2, e_3, e_1)$$

The fourth exponent function applies to a pair of strings $(e_1, e_2)$ and prefixes $e_1$ to $e_2$. This function will be used to generate the order in the indicative, negative imperative and uninverted conditional constructions.

$$f_4^\epsilon((e_1, e_2)) = (e_1, e_2)$$

The fifth exponent function also applies to a pair $(e_1, e_2)$ and suffixes $e_1$ to $e_2$. This function will be used to generate the order in the positive imperative, gerund and inverted conditional constructions.

$$f_5^\epsilon((e_1, e_2)) = (e_2, e_1)$$

The sixth and last exponent function applies to two strings $e_1$ and $e_2$, and prefixes $e_1$ to $e_2$. This exponent function will be used to add the negation, the infinitive and the subjunctive markers.

$$f_6^\epsilon((e_1), (e_2)) = (e_1, e_2)$$

The difference between $f_2^\epsilon$ and $f_6^\epsilon$ is that $f_2^\epsilon$ applies to a string and a pair of strings, whereas $f_6^\epsilon$ applies to two strings. If the negation was combined by means of $f_2^\epsilon$ it would be predicted that it occurs after the verb in inverted constructions, which is contrary to fact. The same holds for the infinitive and subjunctive markers. If these elements can only be combined by $f_6^\epsilon$, which requires the second component to be a string as opposed to a pair of strings, the verbal exponent must be linearised before the negation, infinitive or subjunctive markers can attach.

The following exponent functions have thus been postulated:

$$f_1^\epsilon((e_1), (e_2, e_3)) = (e_2, e_1, e_3)$$

where $e_2 = \epsilon$

$$f_2^\epsilon((e_1), (e_2, e_3)) = (e_1, e_2, e_3)$$

$$f_3^\epsilon((e_1), (e_2, e_3)) = (e_2, e_3, e_1)$$

$$f_4^\epsilon((e_1, e_2)) = (e_1, e_2)$$

$$f_5^\epsilon((e_1, e_2)) = (e_2, e_1)$$

$$f_6^\epsilon((e_1), (e_2)) = (e_1, e_2)$$

**Examples** I will illustrate the application of these exponent functions by providing the bottom-up derivations of the following verb clusters:

(38) a. Nu mi-l=a mai trimis.  
NEG DAT.1SG=ACC.M.3SG=have.3SG still send  
He/she hasn’t sent it(masc.) to me anymore
b. Dămi-o.
give.IMP=DAT.1SG=ACC.F.3SG
Give it(fem.) to me.

c. Ne=mai=avându=l
NEG=still=have.GER=FIL=ACC.M.3SG
Not having it anymore

Since neither category nor conceptual functions have been introduced yet, I will only illustrate the derivation of the exponents, not the derivation of the complete signs. The cliticisation of weak pronouns will be analysed in section 3.2.3. Consequently the following bottom-up derivations illustrate the analysis of the linear order of these verb clusters, but not the phenomenon of obligatory phonological reduction. So instead of actually deriving for example \langle nu\_imi\_il\_a\_mai\_trimis \rangle I shall actually derive \langle nu\_imi\_il\_a\_mai\_trimis \rangle.

Derivation of Nu mi l-a mai trimis  The bottom-up derivation of this exponent will illustrate three points. First, the intensifier mai will be prefixed to the second element in the pair, whereas the auxiliary a and the weak pronoun l will be prefixed in that order to the first element of the string. Secondly, the pair will be linearised by attaching the first element containing the weak pronoun and the auxiliary to the left of the second element. Thirdly, the negation can only apply to a string, not to a pair of strings, and thus always occurs before weak pronouns, auxiliary, intensifier and main verb.

The first step in the derivation of this exponent is the combination of the intensifier exponent \langle mai \rangle with the verb exponent \langle \epsilon, trimis \rangle, by the exponent function \( f_1 \).

\[
f_1((\text{mai}), (\epsilon, \text{trimis})) = (\epsilon, \text{mai} \_\text{trimis})
\]

The second step is the combination of the result with the auxiliary exponent \langle a \rangle by the exponent function \( f_2 \):

\[
f_2((\text{a}), (\epsilon, \text{mai} \_\text{trimis})) = (\text{a}, \epsilon, \text{mai} \_\text{trimis}) = (\text{a}, \text{mai} \_\text{trimis})
\]

The third step is the combination of the result with the accusative weak pronoun \langle il \rangle by means of the same exponent function as in the previous step, \( f_2 \):

\[
f_2((\text{il}), (\text{a}, \text{mai} \_\text{trimis})) = (\text{il} \_\text{a}, \text{mai} \_\text{trimis})
\]

The fourth step is the combination of this exponent with the exponent for the dative weak pronoun \langle imi \rangle by the same exponent function \( f_2 \):

\[
f_2((\text{imi}), (\text{il} \_\text{a}, \text{mai} \_\text{trimis})) = (\text{imi} \_\text{il} \_\text{a}, \text{mai} \_\text{trimis})
\]

Next the two clusters are concatenated by the exponent function \( f_4 \), resulting in:

\[
f_4((\text{imi} \_\text{il} \_\text{a}, \text{mai} \_\text{trimis})) = (\text{imi} \_\text{il} \_\text{a}, \text{mai} \_\text{trimis})
\]
Lastly, this exponent is combined with the negation exponent \langle \nu \rangle by means of the exponent function $f_0'$:

$$f_0'(\langle \nu \rangle, \langle \text{îmi}_\text{îl}_\text{a}_\text{mai}_\text{trimis} \rangle) = \langle \nu, \text{îmi}_\text{îl}_\text{a}_\text{mai}_\text{trimis} \rangle$$

The phenomenon of obligatory phonological reduction of îmi to mi and of îl to l will be analysed in section 3.2.3.2.

**Derivation of Dă-mi-o.** This derivation will illustrate the alternative linearisation of the verbal exponent, i.e. the suffixation of the first element of the pair to the second element of the pair, resulting in postverbal weak pronouns.

First the exponent of the accusative weak pronoun \langle o \rangle is combined with the exponent of the imperative verb \langle ε,dă \rangle by means of the exponent function $f_2'$:

$$f_2'(\langle o \rangle, \langle ε,dă \rangle) = \langle o, dă \rangle$$

Secondly, this exponent combines with the exponent of the dative weak pronoun \langle îmi \rangle by means of the same exponent function $f_2'$:

$$f_2'(\langle îmi \rangle, \langle o, dă \rangle) = \langle îmi, o, dă \rangle$$

Thirdly, the elements of the tuple are inverted by means of the function $f_5'$:

$$f_5'(\langle îmi, o, dă \rangle) = \langle dă, îmi, o \rangle$$

**Derivation of ne-mai-avându-l** The bottom-up derivation of this string illustrates two points. First it shows that the monosyllabic intensifier is not affected by suffixing the first element of the verbal exponent to the second (since it has been prefixed to the second element), and secondly it shows that the negation marker can be prefixed to a string irrespective of how this string has been linearised.

First the exponent of the gerund verb \langle ε,având \rangle is combined with the monosyllabic intensifier \langle mai \rangle by means of the function $f_1'$:

$$f_1'(\langle mai \rangle, \langle ε,având \rangle) = \langle ε, mai, având \rangle$$

Secondly, this exponent is combined with the exponent of the accusative weak pronoun \langle îl \rangle by means of the function $f_2'$:

$$f_2'(\langle îl \rangle, \langle ε, mai, având \rangle) = \langle îl, ε, mai, având \rangle = \langle îl, mai, având \rangle$$

Thirdly, the two elements of the tuple are inverted by means of the function $f_5'$:

$$f_5'(\langle îl, mai, având \rangle) = \langle mai, având, îl \rangle$$
Lastly, this exponent is combined with the negation exponent by means of the function $f^6_e$:

$$f^6_e(\langle nu \rangle, (mai, având, 1l)) = (nu, mai, având, 1l)$$

The change of the vowel of the negation marker from $u$ to $e$ and the introduction of the vowel $u$ between the verb and the weak pronoun can be analysed by changing the exponent functions so that they operate not on strings of letters, but strings of sounds (see section reduction). The vowel $u$ between verb exponent $având$ and the weak pronoun $1l$ is introduced in order to facilitate the suffixation of the consonant $1$ to the consonant $d$. The obligatory phonological reduction of $1l$ to $1$ will be discussed below.

I will conclude this section with two important remarks. First, within the framework of sign grammars which I use, there is no theoretically relevant distinction between modes combining morphemes and modes combining words. The reason for this is that both morphemes and words are signs, and as such are combined together by modes. Some modes of combination may be grouped together and labelled morphological modes, since they combine morphemes, and some other modes may be labelled grammatical since they apply to words, but this labelling is of no theoretical importance. This is in line with the so-called syntax-lexicon continuum hypothesis that there is no principled distinction between syntax and lexicon.

Secondly, note that the exponent functions cannot distinguish between dative and accusative weak pronouns, or between weak pronouns and auxiliaries. In fact they cannot distinguish the different elements of the verb cluster at all. For the purposes of the exponent functions all elements of the verb cluster are the same, namely exponents. In order to restrict the application of exponent functions to certain types of exponents it is necessary to pair an exponent function with a category function which specifies the category of the exponents. The separation of exponent functions from category functions allows weak pronouns to be combined with the verb by means of modes which have the same category function, but different exponent functions. Since e.g. accusative weak pronouns are combined by means of modes having the same category function irrespective of the position of the pronouns relative to the verb, is not necessary in the present analysis to postulate additional categories (functional projections) in order to accommodate the different positions of a weak pronoun with respect to the verb.

The category functions will be the topic of section 3.2.3.3 but before that I will first provide an analysis of obligatory phonological reduction in the Romanian verb cluster.

### 3.2.3.2 Obligatory phonological reduction

In this section I will provide an analysis of the fact that in some cases certain elements of the verb cluster obligatorily cliticise. It is often argued that since for example two weak

---

*See e.g. Croft (2001, 17).*
pronouns cliticise to one another they should be analysed as a lexical unit (i.e. as a unit which is listed as such in the lexicon). If by a lexical unit one means a basic sign which cannot be further subdivided into meaningful components, then there is in my view a very simple but persuasive reason for not analysing two weak pronouns which cliticised to one another as a basic unit: unless we analyse clusters of weak pronouns as consisting of two basic lexical units which are phonologically integrated into one prosodic unit, it is impossible to explain why e.g. the cluster tı=ő (DAT.2SG=ACC.F.3SG) consists of tı and ő. The trivial observation is simply that the phonological form of all weak pronoun clusters is systematically related to the phonological form of the two component weak pronouns, and precisely this admittedly trivial observation cannot be captured if weak pronoun clusters are analysed as lexical units. On such a view, this would be no more than a coincidence of diachronic development, a disappointingly weak conclusion. However, as we shall see, providing an account for this distribution is not unproblematic, since it essentially requires syntax and phonology to operate in parallel.

I will provide an analysis for the following three generalisations:

1. If two weak pronouns are adjacent, both must occur in reduced form. So the correct form is tı=1 dau (DAT.2SG=ACC.M.3SG give.1SG), whereas the expression tı tı ől dau containing the unreduced forms is ungrammatical.

2. If a weak pronoun occurs in front of vowel-initial auxiliary then it must occur in reduced form.

3. If weak pronouns are postverbal they must occur in reduced form.

By definition, the exponent functions operate on tuples of strings of expressions, and expressions were taken to be sequences of letters. In order to account for obligatory phonological reduction, I will replace these assumptions by the following two assumptions: (i) expressions are sequences of sounds, and (ii) exponent functions manipulate not just the position of (strings of) expressions but also their phonological shape. The crucial point to bear in mind when analysing the above generalisations about obligatory phonological reduction is that these generalisations involve syntactic, categorial as well as phonological notions simultaneously. Take for example the second generalisation which says that if a weak pronoun occurs in front of a vowel-initial auxiliary, then it must occur in reduced form. The notion ‘in front of’ is a syntactic notions, and will be implemented by exponent functions. The notion ‘auxiliary’ is a categorial notion, and therefore the reference made by a generalisation to this notion is implemented by means of category functions. And lastly, the notion ‘vowel-initial’ is a phonological notion, and therefore sensitivity of a generalisation to this notion is implemented again by means of exponent functions.

The theoretical relevance of the fact that these generalisations make reference to phono-
logical and categorical notions simultaneously is that these generalisations cannot be analysed if the phonological rules apply after the syntactic rules. On the syntactic/categorical level it is not possible to capture the second generalisation, because the syntax cannot distinguish vowel-initial auxiliaries from consonant-initial auxiliaries. On the phonological level it is not possible to capture this generalisation either, since the phonology cannot distinguish the category of an expression. Therefore, it is necessary to give up the assumption that the phonological rules apply after the syntactic rules, and assume that phonological and syntactic rules apply in parallel.

To give an example, it is not the case that the dative weak pronoun form îți always reduces to îi when it precedes a vowel-initial phonological form – the grammatical form is îți încarc tractorul (DAT.2SG load.1SG tractor.DEF, I load your tractor). Reducing the weak pronoun as in îi încarc tractorul is ungrammatical. However, it is the case that this weak pronoun always reduces if it precedes a vowel-initial auxiliary or weak pronoun.

So, crucially, obligatory cliticisation of an element a to an element b of the verb cluster depends on the syntactic category of b. In order to account for this generalisation it is necessary to pair exponent functions (which perform the phonological reduction) which corresponding category functions, so that the category function can specify the categories of those exponents which must be obligatorily reduced. This is in essence the reason why phonological operations (implemented by means of exponent functions) must operate in parallel with category functions.

The obligatory phonological reduction of two adjacent weak pronouns on the one hand and a weak pronoun and a vowel-initial auxiliary on the other hand will be analysed in two steps. In the first step a new exponent function $f_7$ will be introduced:

$$f_7((e_1), (e_2, e_3)) = (e'_1, e'_2, e_3)$$

where $e'_1e'_2$ is a phonological unit consisting in the phonologically reduced form $e'_1$ of $e_1$ and the reduced form $e'_2$ of $e_2$.

In the second step, which will be presented in section [3.2.3.5], the exponent functions $f_7$ (which simply concatenates) and $f_2$ (which phonologically integrates) will be associated with different category functions, as part of the modes of combination which combine accusative and dative weak pronouns with a verb cluster.

I will illustrate this new exponent function by combining the exponent /îtsi/ (îți, DAT.2SG) with the exponent (/îl/, /daw/), where /îl/ is the phonological representation of îl (ACC.M.3SG) and /daw/ the phonological representation of dau (give).

$$f_7((/îtsi/), (/îl/, /daw/)) = (/bil/, /daw/)$$

On the other hand, since the combination of /îtsi/ with the exponent (/voj/, /da/) (where /voj/ is the phonological representation of voi (will), and /da/ is the phonological repre-
sentation of da (to give) does not result in a phonological integration of /tibJ/ with /voj/, these two exponents should combine by means of exponent function $f_2^t$, resulting in:

$f_2^t((/tibJ/), (/voj/,.da/)) = (/tibJ/,.voj/,.da/)$

In order to simplify notation I shall represent phonological entities by means of their orthographic correspondent, so that e.g. /tib/ will be represented by t¸i=1. It should however be kept in mind that the exponents, i.e. the units on which the exponent functions operate, are sequences of sounds and not sequences of letters.

Next I will turn to the analysis of the grammaticality of sentences (35a) and (35c) on the one hand (repeated below as (39a) and (39c)), and the ungrammaticality of sentence (35b) (repeated below as (39b)) on the other hand.

(39) a. Mänca=o=ar
   eat.INF=ACC.F.3SG=would.3SG mother.
   (She is so sweet that) mother would eat her.

b. *o=ar
   ACC.F.3SG=would.3SG eat.INF.
   Int.: he/she would eat it(fem.)/her.

c. ar mänca=o.
   would.3SG eat.INF=ACC.F.3SG
   he/she would eat it(fem.)/her

The conditional auxiliary ar combines with the verbal exponent $\langle e, mänca \rangle$ by means of exponent function $f_2^t$, and results in $\langle ar, mänca \rangle$. The combination of the weak pronoun o (ACC.M.3SG) with $\langle ar, mänca \rangle$ by means of the exponent function $f_2^t$ results in:

$f_2^t(\langle o, \langle ar, mänca \rangle \rangle) = \langle o=ar, mänca \rangle$

The application of the exponent function $f_2^t$ to this exponent results in:

$f_2^t(\langle o=ar, mänca \rangle) = \langle mänca, o=ar \rangle$

If instead of applying the exponent function $f_2^t$ we apply the exponent function $f_4^t$, we derive the exponent in (39b), which is ungrammatical.

$f_4^t(\langle o=ar, mänca \rangle) = \langle o=ar, mänca \rangle$

In order to prevent the grammar from generating this expression, I postulate a phonological condition on exponent function $f_4^t$, to the effect that it only applies provided that the first string in the exponent pair is not a monosyllabic unstressed prosodic word containing hiatus. So the modified version of exponent function $f_4^t$ is:

$f_4^t((e_1, e_2)) = \langle e_1 \cup e_2 \rangle$
if $e_1$ is not a monosyllabic unstressed prosodic word containing hiatus.

Therefore this condition prevents the linearization of a pair of exponents whose first exponent is a monosyllabic unstressed prosodic word containing hiatus, and thus the generation of the string $o=\text{ar,mânca}$.

In the derivation of sentence 39c, the exponent function $f'_1$ applies and concatenates $o$ to the right edge of the second component of the verbal exponent:

$$f'_1((o), (\text{ar,mânca})) = (\text{ar,mânca,o})$$

In order to capture the third generalisation that postverbal weak pronouns are always phonologically reduced, I shall replace the exponent function $f'_4$ with the exponent function $f'_8$:

$$f'_8((e_1,e_2,e_3)) = (e'_2e'_1)$$

where $e'_2e'_1$ is a phonological word consisting in the phonologically reduced form $e'_1$ of $e_1$ and the reduced form $e'_2$ of $e_2$. Since, unlike with exponent function $f'_4$, there is no restriction on the application of this exponent function, it is possible to apply this function to the exponent $(o=\text{ar,mânca})$:

$$f'_8((o=\text{ar,mânca})) = (\text{mânca}=o=\text{ar})$$

The replacement of the exponent function $f'_5$ with exponent function $f'_8$ prevents for example the generation of the string $\text{dă,îmi}$, and instead allows for the generation of the string $\text{dă,mi}$, where $\text{mi}$ is the phonologically reduced form of the weak pronoun $\text{îmi}$.

Summing up the revised set of exponent functions, we have:

- $f'_1((e_1), (e_2,e_3)) = (e_2,e_1,e_3)$, if $e_2 = e$.
  This exponent function will combine the perfective marker and monosyllabic adverbs with the verb exponent.

- $f'_2((e_1), (e_2,e_3)) = (e_1,e_2,e_3)$
  This exponent function will combine auxiliaries and weak pronouns with the verbal exponent.

- $f'_5((e_1), (e_2,e_3)) = (e_2,e'_3e'_1)$
  This exponent function will phonologically integrate the accusative weak pronoun $o$ to the right edge of $e_3$. Note that this weak pronoun can also be combined by means of the previous exponent function.

- $f'_4((e_1,e_2)) = (e_1,e_2)$, if $e_1$ is not a monosyllabic unstressed prosodic word containing hiatus.
  This exponent function will concatenate the first string to the left edge of the second string.
• \( f_6^\epsilon(\langle e_1 \rangle, \langle e_2 \rangle) = \langle e_1 e_2 \rangle \)

This exponent function will combine the negation and subjunction particle with the verbal exponent.

• \( f_7^\epsilon(\langle e_1 \rangle, \langle e_2, e_3 \rangle) = \langle e_1' e_2' e_3 \rangle \)

where \( e_1' e_2' \) is the phonological unit resulting from the phonological integration of \( e_1 \) and \( e_2 \).

This exponent function will phonologically integrate the first string to the left edge of the second string.

• \( f_8^\epsilon(\langle e_1, e_2 \rangle) = \langle e_2' e_1' \rangle \)

where \( e_1' e_2' \) is the phonological unit resulting from phonologically integrating \( e_1 \) and \( e_2 \).

This exponent function will phonologically integrate the first string to the right edge of the second string.

### 3.2.3.3 Categories

As mentioned in the previous section, each exponent function is intended to apply to certain exponents but not to others. To illustrate, the exponent function \( f_1^\epsilon \) was meant to apply to monosyllabic adverbs and the perfective marker \( f_1 \), but not to weak pronouns and auxiliaries. On the other hand, the exponent function \( f_2^\epsilon \) was meant to apply to weak pronouns and auxiliaries, but not to monosyllabic adverbs and the perfective marker. In order to implement these restrictions, it is necessary to distinguish types of exponents, and to restrict the application of particular exponent functions to particular types of exponents. This restriction is implemented by pairing exponent functions (within a mode of combination) with a category function which ensures that the exponents are of the required type. So within the mode combining monosyllabic adverbs and the perfective marker the exponent function \( f_1^\epsilon \) will be paired with a category function \( f_1^c \) which requires that the category of the first component be ‘monosyllabic adverb’ or ‘perfective’ respectively. Within the mode combining e.g. accusative weak pronouns, the exponent function \( f_2^\epsilon \) will be paired with a category function \( f_2^c \) which requires that the category of the first component be ‘accusative weak pronoun’.

The second important point is the restriction of the order in which the exponent functions can apply. Remember that in Romanian the dative weak pronoun always occurs before the accusative weak pronoun. As will be shown below, both the dative and the accusative weak pronouns are combined with a verbal exponent by means the same exponent functions, i.e. \( f_2^\epsilon \) (concatenation) and \( f_7^\epsilon \) (phonological integration). Because of this, it is necessary to prevent these exponent functions from combining an accusative weak pronoun, if a dative weak pronoun has already been combined, since otherwise this exponent function would generate the ungrammatical order \( ACC \prec DAT \). This can be achieved in one of three ways. First, by stipulating that the mode can only combine signs of a certain formal type.
Secondly, by stipulating that it can only combine signs of a certain conceptual type, and thirdly, by a combination of formal and conceptual restrictions.

In the present analysis the order of application of the modes of combination which generate the verb cluster signs will be restricted by stipulating that these modes can only combine signs of a certain formal type. I will assume that the category of a verb root exponent contains the following three attribute value pairs: 1: *, 2: * and 3: *. In the course of the derivation the value *(* is intended to mean “no value”, but is technically a value like any other value) will be replaced. The idea is that the attribute 1 stands for the person and number properties of the verb, while the attributes 2 and 3 stand for the person, number, gender and case properties of the accusative and dative weak pronouns respectively. To give an example, the verb cluster ȋni-il-dai (DAT.1SG=ACC.M.3.SG give.2SG) will have the category:

\[
\begin{bmatrix}
\text{CAT} & V \\
1 & [\text{PER:2, NUM:SG}] \\
2 & [\text{PER:3, GEN:M, NUM:SG, CASE:ACC}] \\
3 & [\text{PER:1, NUM:SG, CASE:DAT}, \ldots] \\
\end{bmatrix}
\]

To simplify notation, I will write this attribute-value matrix as:

\[ [V, 1 : 2SG, 2 : \text{ACC}.M.3.SG, 3 : \text{DAT}.1.SG] \]

The category function \( f_{\text{AUX}} \) combines the category auxiliary with the category of a verb root lacking auxiliaries and weak pronouns, and results in a verb root category lacking weak pronouns but containing an auxiliary. This is indicated by saying that the component verb root category has the value * for the attribute AUX, whereas the resulting category has the value + for this attribute, and that both categories have the value * for the attributes 2 and 3 (standing for the properties of the accusative and dative weak pronouns).

The category function \( f_{\text{ACC}} \) of the mode which adds an accusative weak pronoun to the verbal exponent changes the value of 2 from * to the X, where X is the attribute-value matrix describing the person, number, gender and case properties of the accusative weak pronoun. The category function \( f_{\text{DAT}} \) of the mode which adds a dative weak pronoun to the verbal exponent changes the value of 3 from * to the Y, where Y is the attribute-value matrix describing the person, number, gender and case properties of the dative weak pronoun.

The order of the elements in the first component of a verbal exponent will be implemented as follows:

1. The category function \( f_{\text{AUX}} \) requires that the values of 2 and 3 be *'. This essentially ensures that the mode adding an auxiliary cannot apply after a weak pronoun has been added, since in this case the value of either 2 or 3 will not be *'. This precludes the order of auxiliaries before weak pronouns.
2. The category function $f_{ACC}^c$ requires that the value of 3 be $\star$. This precludes the application of this mode if a dative weak pronoun has been added.

The order of the elements in the second element of the verbal exponent will be restricted semantically, by hypothesising that the semantic function of the mode which adds the perfective marker requires the predicate of the verbal sign to be unmodified by adverbs.

So the category function $f_{AUX}^c$ is:

$$f_{AUX}^c([CAT : aux], [CAT : v, 2 : \star, 3 : \star, AUX : \star, \ldots]) = [CAT : v, 2 : \star, 3 : \star, AUX : +, \ldots]$$

This category function thus makes sure that the first exponent is an auxiliary and that the second exponent does not contain auxiliaries or weak pronouns.

The category function $f_{ACC}^c$ is:

$$f_{ACC}^c(X, [CAT : v, 2 : \star, 3 : \star, \ldots]) = [CAT : v, 2 : X, 3 : \star, \ldots]$$

where $X = [CAT : wp, PER : X_1, GEN : X_2, NUM : X_3, CASE : acc]$

This function thus ensures that the first exponent is an accusative weak pronoun, that the second exponent contains no dative weak pronoun, and then it changes the value of the attribute 2 from $\star$ to $X$.

The category function $f_{DAT}^c$ is:

$$f_{DAT}^c(Y, [CAT : v, 3 : \star, \ldots]) = [CAT : v, 3 : Y, \ldots]$$

where $Y = [CAT : wp, PER : X_1, GEN : X_2, NUM : X_3, CASE : dat]$

This function ensures that the first exponent is a dative weak pronoun, and then it changes the value of the attribute 3 from $\star$ to $X$.

The category function $f_{ADV}^c$ is:

$$f_{ADV}^c([CAT : adv], [CAT : v, \ldots]) = [CAT : v, \ldots]$$

which means that the combination of a monosyllabic adverb with the verbal exponent does not change the type of the verbal exponent.

The same goes for the category function $f_{PFV}^c$:

$$f_{PFV}^c([CAT : pfv], [CAT : v, \ldots]) = [CAT : v, \ldots]$$
3.2.3.4 The meaning of weak pronouns

So far I have discussed exponent and category functions. The last type of function to be discussed before presenting the modes of combination are the conceptual functions which combine the semantic values of the elements of the verb cluster. I will restrict myself to discussing only the conceptual functions combining the semantic values (the sense) of the weak pronouns with the semantic values of the verbs. But before doing so, I will first review the main argument why weak pronouns should be analysed as having the same semantic value as the corresponding strong pronouns.

Consider the following two expressions:

(40) a. $l=am$ \text{Semnat}
    ACC.M.3SG=have.1 signed
    We/I have signed it(masc.).

b. $am$ \text{Semnat}
    have.1 signed
    We/I have signed.

The basic observation is that the English translation contains the pronoun “it” if and only if the Romanian sentence contains the accusative weak pronoun $l$ (ACC.M.3SG). I take this to be sufficient motivation for analysing weak pronouns as having the same meaning as stressable pronouns.

There is also a second, slightly more involved reason for assuming that weak pronouns do indeed have a semantic value. This is that weak pronouns are obligatory if the referent of a preverbal direct object is identifiable by both speaker and hearer, whereas they are impossible if the referent of a preverbal direct object is not identifiable. This correlation between the identifiability of a referent of a direct object NP on the one hand and the presence of a weak pronoun on the other hand can be explained by hypothesising that the weak pronoun does indeed have a semantic value. Note that an accusative weak pronoun is not licensed if the preverbal direct object is the generic NP \textit{fete}, which does not refer to any particular set of girls:

(41) a. $*\text{Fete nu le=am văzut.}$
    girls NEG ACC.F.3PL=have.1 seen
    Int.: Girls I/we haven’t seen.

b. $\text{Fete nu am văzut.}$
    girls NEG have.1 seen
    Girls I/we haven’t seen.

By hypothesis, the reason for the ungrammaticality of (41a) is that in this construction the accusative weak pronoun is supposed to refer to the referent of a preverbal direct object, but that it cannot do so since the preverbal direct object NP does not denote an identifiable referent.
Having motivated the analysis of weak pronouns as being indeed pronominal in nature, I turn to the semantic function which combines the meaning of weak pronouns with the meaning of verbs.

The semantic function belonging to the mode \( f_{\text{ACC}} \) (which combines accusative weak pronouns with verbal signs) saturates the placeholder for the ground argument with the semantic value \( U \) of the weak pronoun.

\[
f_{\text{ACC}}(U, \text{PRED}\{G : \ldots\}) = \text{PRED}\{G : U, \ldots\}
\]

The semantic function of the mode \( f_{\text{DAT}} \) combining dative weak pronouns with a verbal sign saturates the placeholder for the background argument with the semantic value \( U \) of the weak pronoun.

\[
f_{\text{DAT}}(U, \text{PRED}\{BG : \ldots\}) = \text{PRED}\{BG : U, \ldots\}
\]

Once the placeholder for the ground or background argument is saturated, it cannot be saturated again by another semantic value. What can, however, still be saturated is the semantic value \( U \) which saturates a placeholder, since \( U \) is an unsaturated value.

Note first of all that these semantic functions identify the placeholders only in virtue of their construal restriction, and not in virtue of the semantic roles assigned to the arguments saturating these placeholders, as argued for in section 2.4. Secondly, note that I have analysed the construal restrictions of the two placeholders of ternary predicates other than the placeholder for the figure argument to be different in Romanian. The reason for this is that the encoding of e.g. the thing given and the person receiving is different, and according to the basic assumption of Cognitive Grammar (which I share), the different encoding of semantic arguments is indicative of a different construal of arguments. In Siswati the encoding of the thing given and the person receiving is very similar, so that for Siswati it will be hypothesised in section 4.2.1 that both the placeholder for the thing given and the placeholder for the recipient have the same construal restriction – they can only be saturated by ground arguments.

3.2.3.5 The modes of combination

At this point we can put the exponent, category and semantic functions together and build the modes of combination. I shall start with the modes combining accusative weak pronouns with a verbal sign. Mode \( f_{\text{ACC}1} \) prefixes an accusative weak pronominal exponent to the first component of the verb exponent, whereas the following mode \( f_{\text{ACC}2} \) suffices the accusative
weak pronoun o to the second element of the verbal exponent.

\[
f_{\text{ACC}}(\langle e_1 \rangle, \langle e_2, e_3 \rangle, \langle /e_1/ \rangle, \langle /e_2/, /e_3/ \rangle) =
\begin{cases}
\{f^f_7((e_1), \langle e_2, e_3 \rangle) \\
    f^c_{\text{ACC}}([\text{CAT} : \text{wp}, \text{CASE} : \text{acc}, \ldots], [\text{V}, \text{AUX} : +, 2 : \star, 3 : \star, \ldots]) \\
    f^\mu_{\text{ACC}}(U, \text{PRED}\{G : \_ \ldots\})
\end{cases}
\]

if \( e_2 \) is vowel initial, or

\[
\begin{cases}
\{f^f_7((e_1), \langle e_2, e_3 \rangle) \\
    f^c_{\text{ACC}}([\text{CAT} : \text{wp}, \text{CASE} : \text{acc}, \ldots], [\text{V}, 2 : \star, 3 : \star, \ldots]) \\
    f^\mu_{\text{ACC}}(U, \text{PRED}\{G : \_ \ldots\})
\end{cases}
\]

otherwise.

If the string \( e_2 \) is an auxiliary (as required by the attribute-value pair AUX:+ of the verb category in the first case) which is vowel initial, then the accusative weak pronoun combines by means of exponent function \( f^f_7 \) which phonologically integrates the weak pronoun to \( e_2 \). Otherwise the weak pronoun combines by means of exponent function \( f^f_7 \), and thus is simply concatenated to the left of \( e_2 \). In the first case the categorial function \( f^c_7 \) requires that the first string \( e_1 \) is a weak pronoun, that the string \( e_2 \) is an auxiliary, and that the third string \( e_3 \) does not contain any weak pronoun. The effect of this requirement is that the accusative weak pronoun cannot be combined after the dative weak pronoun has combined with the verbal exponent, and since both accusative and dative weak pronouns are prefixed to the first string, it is guaranteed that dative weak pronouns always precede the accusative weak pronouns.

In the second case there is no requirement that the string \( e_2 \) is an auxiliary. Therefore this case applies if \( e_2 \) is not vowel initial, irrespective of its category. This accounts for the fact that weak pronouns do not reduce if the auxiliary is not vowel-initial, or if the verb cluster contains no auxiliary. The semantic function \( f^\mu_7 \) saturates the placeholder for the ground argument with the semantic value \( U \) of the accusative weak pronoun.

The mode \( f_{\text{ACC}} \) phonologically integrates the accusative weak pronoun \( o \) (ACC.F.3SG) to the right edge of the second string of the verbal exponent.

\[
f_{\text{ACC}}(\langle e_1 \rangle, \langle e_2, e_3 \rangle, \langle /e_1/ \rangle, \langle /e_2/, /e_3/ \rangle) =
\begin{cases}
\{f^f_7((e_1), \langle e_2, e_3 \rangle) \\
    f^c_{\text{ACC}}([\text{CAT} : \text{wp}, \text{CASE} : \text{acc}, \ldots], [\text{V}, \text{AUX} : +, 2 : \star, 3 : \star, \ldots]) \\
    f^\mu_{\text{ACC}}(U, \text{PRED}\{G : \_ \ldots\})
\end{cases}
\]
Note that the exponent function of this mode differs from the corresponding two exponent functions of the previous mode. Instead of concatenating or phonologically integrating an accusative weak pronoun to the first string of the verbal exponent, this mode phonologically integrates the accusative weak pronoun to the second string of the verbal exponent. The phonological condition on this mode requires that the the weak pronoun be o (and thus prevents other accusative weak pronouns from being placed after the verb), and that the first string of the verbal exponent be vowel-initial. Secondly, there is a condition on the mode of combination which restricts its application to those cases where the first exponent is the weak pronoun o and the first element of the verbal exponent is vowel-initial.

Note also that the weak pronoun o (ACC.F.3SG) can be combined with a verb sign either by \( f_{\text{ACC}1} \), in which case it is concatenated or phonologically integrated to the left edge of the first component, or by \( f_{\text{ACC}2} \), in which case it is phonologically integrated to the right edge of the second string of the verbal exponent. The former case is necessary, as I have already shown, in order to derive e.g. the exponent \( \text{mânca=о=аr} \) (eat.INF=ACC.F.3SG=would.3SG), while the latter is necessary in order to generate e.g. the exponent \( \text{аr mânca=о} \) (would.3SG eat.INF=ACC.F.3SG). The exponent \( \text{o=аr mânca} \) (ACC.F.3SG=would.3SG eat.INF) is ruled out, as argued in section 3.2.3.2 by a phonological condition on the exponent function \( f_4 \).

Since the category functions in both modes require the value of attribute 3 to be \( * \), it follows that these modes cannot apply to a verbal exponent which contains a dative weak pronoun. This accounts for the fact that accusative weak pronouns never occur before dative weak pronouns in Romanian.

Consider next the mode combining dative weak pronouns with the verb:

\[
\begin{align*}
\left[ f_{\text{DAT}} \left( \begin{array}{c}
\langle e_1 \rangle \\
\{ \text{CAT} : wp, \text{CASE} : dat, \ldots \} \\
\text{U}
\end{array} \right), \begin{array}{c}
\langle e_2, e_3 \rangle \\
\{ \text{V, 3 : *}, \ldots \} \\
\text{PRED}\{\text{BG : *}, \ldots \}
\end{array} \right) =
\left[ f_{\text{ACC}} \left( \begin{array}{c}
\{ \text{CAT} : wp, \text{CASE} : acc, \ldots \} \\
\{ \text{V, AUX : +, 2 : *}, 3 : *}, \ldots \}
\end{array} \right), \begin{array}{c}
\langle e_1 \rangle \\
\{ \langle e_2 \rangle, \langle e_3 \rangle \}
\end{array} \right) =
\end{align*}
\]
This mode (i) phonologically integrates a dative weak pronoun with an accusative weak pronoun, if the latter is part of the verb exponent, (ii) phonologically integrates a dative weak pronoun with a vowel-initial auxiliary, and (iii) simply concatenates a dative weak pronoun to the left edge of the first string of the verbal exponent. Semantically, this mode saturates the placeholder for the background argument with the semantic value of the weak pronoun.

The mode $f_{\text{AUX}}$ is:

$$
f_{\text{AUX}}(\begin{array}{l}
\langle e_1 \rangle \\
\text{[CAT: aux]}
\end{array}, \\
\begin{array}{l}
\langle e_2, e_3 \rangle \\
\text{[V, 2: *, 3: *, AUX: *... ]}
\end{array}) = \\
\begin{array}{l}
f_{\text{AUX}}^2(\langle e_1 \rangle, \langle e_2, e_3 \rangle) \\
f_{\text{AUX}}^\ast([\text{CAT: aux}], [V, \text{AUX: *... }]) \\
f_{\text{AUX}}^\mu(X, \text{PRED})
\end{array}
$$

The semantics of tense, aspect and monosyllabic adverbs will be ignored here and below. The requirement that the values of 2 and 3 be $\ast$ prevents this mode from applying after a weak pronoun has been added. So the account for why the auxiliaries always occur after the weak pronouns is a syntactic one. Alternatively, one could account for this restriction semantically,
by hypothesising that the semantic function $f^{\mu}_{\text{AUX}}$ can only apply if the placeholders of the predicate are not yet saturated. Since the modes combining weak pronouns with verbal signs saturate placeholders of the meaning of the verbal sign, it then follows that the auxiliary has to be combined before weak pronouns, and that it is thus linearly “closer” to the verb than the weak pronouns.

The mode combining a monosyllabic adverb with a verbal sign is $f^{\mu}_{\text{ADV}}$:

$$f^{\mu}_{\text{ADV}}\left(\begin{array}{c} \langle e_1 \rangle \\ \text{CAT} : \text{adv} \\ X \end{array}, \begin{array}{c} \langle e_2, e_3 \rangle \\ [V, \ldots] \end{array} \right) = \begin{array}{c} f^{\epsilon}_{\text{ADV}}\langle \langle e_1 \rangle, \langle e_2, e_3 \rangle \rangle \\ f^{\mu}_{\text{ADV}}([\text{CAT} : \text{adv}], [V, \ldots]) \end{array} = \begin{array}{c} \langle e_2, e_1, e_3 \rangle \\ [V, \ldots] \end{array}$$

if $e_1$ is monosyllabic.

The mode combining the perfective marker $\mathbf{fi}$ with a verbal sign is:

$$f^{\mu}_{\text{PFV}}\left(\begin{array}{c} \langle \mathbf{fi} \rangle \\ \text{CAT} : \text{pfv} \\ X \end{array}, \begin{array}{c} \langle e_2, e_3 \rangle \\ [V, \ldots] \end{array} \right) = \begin{array}{c} f^{\epsilon}_{\text{PFV}}\langle \langle \mathbf{fi} \rangle, \langle e_2, e_3 \rangle \rangle \\ f^{\mu}_{\text{PFV}}([\text{CAT} : \text{pfv}], [V, \ldots]) \end{array} = \begin{array}{c} \langle e_2, \mathbf{fi}, e_3 \rangle \\ [V, \ldots] \end{array}$$

if $\text{PRED}$ is unmodified (by adverbs).

The restriction that the predicate of the verb be unmodified prevents the application of this mode if the verb has already been modified by an intensifying adverb, and has thus been prefixed with an intensifier. This accounts for the fact that the perfective marker (usually) occurs “closer” to the verb than monosyllabic intensifying adverbs.

The mode concatenating the two strings of an exponent is:

$$f^{\mu}_{\text{CONC}}\left(\begin{array}{c} \langle e_1, e_2 \rangle \\ [V, \ldots] \end{array} \right) = \begin{array}{c} f^{\epsilon}_{\text{CONC}}\langle \langle e_1, e_2 \rangle \rangle \\ f^{\mu}_{\text{CONC}}([V, \text{MOOD} : \text{ind} \lor \text{inf}, \ldots]) \end{array} = \begin{array}{c} \langle e_1, \mathbf{fi}, e_2 \rangle \\ [V, \text{MOOD} : \text{ind} \lor \text{inf}, \ldots] \end{array}$$

This mode prefixes the first component of a verbal exponent to the second component if the verb category is indicative or infinitive.
The last mode $f_{INV}$ phonologically integrates the first string of a verbal exponent to the right edge of the second string, if the value of the MOOD attribute of the verb category is either conditional, imperative or gerund:

$$f_{INV}(\begin{bmatrix} \langle e_1, e_2 \rangle \\
\{V, MOOD : \alpha, \ldots\} \\
PRED \end{bmatrix}) = \begin{bmatrix} f'_\alpha(\langle e_1, e_2 \rangle) \\
f_{INV}([V, MOOD : \alpha, \ldots]) \\
f_{INV}(PRED) \end{bmatrix}$$

if $\alpha \in \{\text{cond, imp, ger}\}$.

The functions $f^\epsilon_{CONC}$, $f^\mu_{CONC}$, $f^\mu_{INV}$ and $f^\mu_{CONC}$ are all the identity function $\lambda x.x$ (meaning that their application to an argument X results in X).

I will illustrate the application of these modes by deriving the sign whose exponent is $\text{mai} \overset{d˘a}=\text{mi}=\text{le}$ (give.IMP=DAT.1SG=ACC.3PL). The combination of the monosyllabic adverbial sign (with exponent) $\text{mai}$ (still/again) with the sign $d˘a$ (give.IMP) by means of $f_{ADV}$ results in:

$$f_{ADV}(\begin{bmatrix} \langle \text{mai} \rangle \\
\{\varepsilon, d˘a\} \\
\text{AGAIN} \end{bmatrix}, \begin{bmatrix} \langle \varepsilon, \text{mai}_d˘a \rangle \\
\{V, 1 : [\text{PER} : 2], 2 : \star, 3 : \star, \text{MOOD} : \text{imp}\} \\
\text{GIVE}\{F : U_1, G : \_ \text{BG} : \_\} \end{bmatrix}) = \begin{bmatrix} \langle \varepsilon, \text{mai}_d˘a \rangle \\
\{V, 1 : [\text{PER} : 2], 2 : \star, 3 : \star, \text{MOOD} : \text{imp}\} \\
\text{GIVE}\{F : U_1, G : \_ \text{BG} : \_\} \end{bmatrix}$$

The condition that $e_1$ is monosyllabic is satisfied. The meaning contribution of the adverb will be ignored in the derivation.

Note that if we now combined the dative weak pronoun first, this would result in the value of 3 being something other than $\star$. In this case it would not be possible to combine the accusative weak pronoun next, since the modes combining accusative weak pronouns require that the value of 3 be $\star$.

This sign combines with the sign $\text{le}$ (ACC.3PL) by means of the mode $f_{ACC_1}$:

$$f_{ACC_1}(\begin{bmatrix} \langle \text{le} \rangle \\
\text{ACC.3PL} \\
U_2 \end{bmatrix}, \begin{bmatrix} \langle \varepsilon, \text{mai}_d˘a \rangle \\
\{V, 1 : [\text{PER} : 2], 2 : \star, 3 : \star, \text{MOOD} : \text{imp}\} \\
\text{GIVE}\{F : U_1, G : \_ \text{BG} : \_\} \end{bmatrix}) = \begin{bmatrix} \langle \text{le}, \text{mai}_d˘a \rangle \\
\{V, 1 : [\text{PER} : 2], 2 : \text{ACC.3PL}, 3 : \star, \text{MOOD} : \text{imp}\} \\
\text{GIVE}\{F : U_1, G : U_2, \_ \text{BG} : \_\} \end{bmatrix}$$

The combination of this sign with the sign $\text{imi}$ (DAT.1SG) by means of mode $f_{DAT}$ (the first case is satisfied, so the dative weak pronoun is phonologically integrated to the left of
the accusative weak pronoun) results in:

\[
\begin{align*}
  f_{\text{DAT}}( & \langle \text{imi} \rangle, \langle \text{le, mai,dă} \rangle, \langle \text{GIVE} \{ \text{F} : \text{U}_1, \text{G} : \text{U}_2, \text{BG} : \text{U}_3 \} \rangle ) \\
  & \begin{pmatrix} 
    \text{DAT.1SG} \\
    \text{U}_3 
  \end{pmatrix}, \begin{pmatrix} 
    \text{[V, 1 : [PER : 2], 2 : ACC.3PL, 3 : \text{*, MOOD : imp}] } \\
    \text{GIVE}\{ \text{F} : \text{U}_1, \text{G} : \text{U}_2, \text{BG} : \text{U}_3 \} 
  \end{pmatrix} 
\end{align*}
\]

The last step in the derivation is the inversion of the two strings of the verbal exponent by means of \( f_{\text{INV}} \). Note that in order for the verb cluster to be combined with e.g. nominal signs, it must consist of a string, and therefore it must be linearised. Since \( f_{\text{CONC}} \) cannot apply (the verb category is not indicative or infinitive), the application of mode \( f_{\text{INV}} \) is the only way of linearising this exponent.

\[
\begin{align*}
  f_{\text{INV}}( & \langle \text{le, mai,dă} \rangle, \langle \text{GIVE} \{ \text{F} : \text{U}_1, \text{G} : \text{U}_2, \text{BG} : \text{U}_3 \} \rangle ) \\
  & \begin{pmatrix} 
    \text{[V, 1 : [PER : 2], 2 : ACC.3PL, 3 : DAT.1SG, MOOD : imp]} \\
    \text{GIVE}\{ \text{F} : \text{U}_1, \text{G} : \text{U}_2, \text{BG} : \text{U}_3 \} 
  \end{pmatrix} 
\end{align*}
\]

3.3 Direct objects in Romanian

In the first part of this section I will discuss which direct objects must be marked with \( \text{pe} \), which direct objects can but do not have to be marked with \( \text{pe} \), and which direct objects cannot be marked with \( \text{pe} \). Then I will discuss the conditions for the co-occurrence accusative weak pronouns with coreferential preverbal and postverbal direct objects.

In the second part of this section I will provide an analysis of differential object marking and of the co-occurrence of accusative weak pronouns with direct objects. One of the theoretical challenges posed by differential object marking is that it is conditioned by an intricate interaction between formal and semantic factors. I will show how this interaction can be analysed in a framework in which formal and semantic structure are strictly separated. Another challenge posed by differential object marking, in particular for a rule-based framework like the present one, is the optionality of differential object marking with certain direct objects. This optionality will be analysed by hypothesising that these direct objects can be combined with the verb by means of two different types of modes: those which require the NP to be marked with \( \text{pe} \), and those which combine NPs which are not marked with \( \text{pe} \). What I will not address in this analysis is the question of the functional explanation of differential object marking in Romanian, since the two competing explanations of differential
object marking, i.e. that (i) DOM distinguishes those patient-like arguments which can be misunderstood as subjects\(^9\) and (ii) DOM identifies a strong argument as the patient-like argument\(^10\) cannot easily be distinguished from one another in Romanian.

### 3.3.1 Data and generalisations

In section 3.3.1.1 I will discuss the differential marking of direct objects by means of the preposition *pe*. The purpose of this section is to clarify which direct objects must be marked with *pe*, which can be marked with *pe*, and which cannot be marked with *pe*. The topic of section 3.3.1.2 is the resumption of preverbal direct objects by accusative weak pronouns (otherwise known as clitic left dislocation). I will show that preverbal direct objects which refer to an entity (or set of entities) identifiable by the hearer are obligatorily resumed by a corresponding accusative weak pronoun, whereas if the preverbal direct object NP does not refer to an entity identifiable by the hearer, then the resumption of this preverbal direct object NP by an accusative weak pronoun is impossible. Section 3.3.1.3 discusses the anticipation of a postverbal direct object by means of an accusative weak pronoun (otherwise known as clitic doubling). The first important point of that section is that the anticipation of clause-external direct objects (i.e. direct objects which do not belong to the same intonation phrase as the verb) is essentially parallel to the resumption of preverbal direct objects, in that the conditioning factor is the identifiability of the referent by the hearer. The second important point is that the anticipation of clause-internal postverbal direct objects (i.e. direct objects which belong to the same intonation phrase as the verb) does not only depend on the identifiability of the referent of the direct object NP, but also on whether or not the direct object NP is *pe*-marked.

A number of observations made in this section have also been made by others, e.g. in \[\text{Dobrovie-Sorin (1994) or more recently Alboiu (2003) and Farkas and von Heusinger (2003).}\]

#### 3.3.1.1 Differential object marking

In Romanian some direct objects must be marked by the preposition *pe*\(^11\) some are optionally marked, and some are almost never *pe*-marked. This so-called differential object marking depends on two factors: (i) the animacy of the argument (or the animacy of the arguments in a domain of quantification), and (ii) the type of identification (by means of pronouns, names, definite NPs, specific indefinites, indefinites).

First, strong personal pronouns must be *pe*-marked, irrespective of whether they refer to human, animate or inanimate entities.

---

\(^9\)See for example Comrie (1989).

\(^10\)See for example Åshild Næss (2004).

\(^11\)The preposition *pe* means literally “on”. However, it is likely that the differential object marker *pe* has not developed from this preposition, but from the preposition *spre*, which means “towards”.

---

**CHAPTER 3. ROMANIAN**
CHAPTER 3. ROMANIAN

(42) a. \( L=\text{am}^{\text{ACC.M}} \text{lovit}^{\text{hit \ DOM \ he}} \)  
I/we have hit him.

b. \( \text{Televiziunea m=a}^{\text{ACC.1SG}} \text{ales}^{\text{has chosen \ DOM \ me}} \text{nu \ eu}^{\text{not \ I \ DOM \ it(fem.)}} \)  
Television has chosen me, not I it.

c. \( \text{Informatică}^{\text{DOM \ it(fem.)}} \text{nu}^{\text{not \ O}} \text{înseamnă}^{\text{means \ hardware \ means \ programming.}} \text{hardwar,}^{\text{hardware,}} \text{înseamnă}^{\text{means \ programming!}} \text{programare}^{\text{programming}.} \text{ea}^{\text{it(fem.)}} \text{nu}^{\text{not \ ACC.F.3SG}} \text{întreseaz}^{\text{interested}} \text{din ce}^{\text{of \ what}} \text{e alcătuit}^{\text{put together}} \text{computer-ul,}^{\text{computer-DEF,}} \text{ea}^{\text{it(fem.)}} \text{te}^{\text{to \ programmazi}}^{\text{teaches to program.}} \)  
Computer science doesn’t mean hardware, it means programming! It is not interested in what the parts of the computer are, it teaches you to program.

Secondly, names referring to humans and to animate beings must be \text{pe}-marked if they are direct objects:

(43) a. \( L=\text{am}^{\text{ACC.M}} \text{lovit pe}^{\text{hit \ DOM \ Michael}} \text{Mihai.} \)  
I/we have hit Michael.

b. \( *L=\text{am}^{\text{ACC.M}} \text{lovit}^{\text{hit \ Mihai.}} \text{pe}^{\text{DOM \ Mihai.}} \)  
Int: I/we have hit Michael.

Names referring to certain inanimate objects (e.g. cars, cities) are not \text{pe}-marked:

(44) a. \( *Udo^{\text{ACC.M.3SG}} \text{(l=)a}^{\text{has bought \ DOM \ Mercedes}} \text{cumpărat pe}^{\text{bought \ pe \ Mercedes.}} \text{Mercedes.} \)  
Int: Udo has bought the Mercedes.

b. \( Udo^{\text{ACC.M}} \text{a}^{\text{has \ Mercedes-ul.}} \text{cumpărat}^{\text{bought \ Mercedes-ul. \ Mercedes-DEF.M}} \text{Mercedes-ul.} \)  
Udo has bought the Mercedes.

Thirdly, differential object marking of definite NPs referring to human or animate beings is optional:

(45) a. \( L=\text{am}^{\text{ACC.M}} \text{lovit pe}^{\text{hit \ DOM \ child-DEF.M \ neighbor-DEF.M.GEN}} \text{copil-ul vecin-ului.} \)  
I/we have hit the neighbour’s child.

b. \( Am^{\text{ACC.M-have.1}} \text{lovit}^{\text{hit \ child-DEF.M \ neighbor-DEF.M.GEN}} \text{copil-ul vecin-ului.} \)  
I/we have hit the neighbour’s child.

Note, by the way, a peculiarity about \text{pe}-marked NPs. If the direct object consists only of the preposition \text{pe} and a noun, then the noun cannot be suffixed with the definiteness marker \(46\). On the other hand, if the noun is modified, then either the noun or the modifier must be suffixed with the definiteness marker, depending on the linear order \(47\).
We observe the same distribution when the preposition *pe* is used with its literal prepositional meaning. The expressions *pe scaun* (on the chair) and *pe scaunul vecin-ului* (on the neighbour’s chair) are grammatical, while the expressions *pe scaun-ul* and *pe scaun vecin-ului* are ungrammatical. I will not provide an analysis of the internal structure of noun phrases.

Fourthly, an indefinite NP referring to a human or animal can be *pe*-marked, if it is the direct object. In this case the preferred interpretation of the indefinite is as referring to a specific individual.

Fifthly, some noun phrase expressing quantification over human individuals (e.g. *nimeni*, nobody) have to be *pe*-marked. Some other quantifying expressions (e.g. *toţi*, all) can (but do not have to) be differentially object marked.
Marcel will pick up all abandoned children.

Noun phrases expressing quantification over inanimate objects cannot be differentially object marked.

(51) a. Oferta conține toate produsele necesare.
The offer contains all necessary products.

b. *Oferta conține pe toate produsele necesare.
Int: The offer contains all necessary products.

(52) a. Nu am scris nimic.
I/we haven’t written anything.

b. *Nu am scris pe nimic.
Int: I/we haven’t written anything.

A systematic exception to the generalisation that direct objects referring to inanimate entities are not marked with pe is the following comparative construction:

(53) Miliardarii americani văd investițiile în ziare ca
The american billionaires view the investments in newspapers as a hobby.

Note that the expression pe un hobby is a direct object, but that its referent is inanimate.

By hypothesis, the reason for the obligatory presence of pe in the comparative construction is the disambiguation of the semantic role of the NP following the comparative expression ca (like). To see this, note first that the English sentence John treated me like a king. can either be understood as (i) “John treated me as if he was a king” or as (i) “John treated me as if I was a king”. Now consider the two Romanian sentences.

(54) a. Ion m=a tratat ca un rege.
John treated me as if he was a king

b. Ion m=a tratat ca pe un rege.
John treated me as if I was a king

If the DOM marker pe is present in this comparative construction, then the NP is interpreted as the direct object of the elliptical clause. If it is absent, then the NP is interpreted as the subject of the elliptical clause.

Two other exceptions to the generalisation that NPs referring to inanimate objects are not pe-marked are quoted from Popescu (1997, 39):
(55) a. Cui pe cui scoate.
nail DOM nail pulls out
A nail pulls out another nail. (Romanian proverb)
b. L=am eliminat pe ‘‘cu’’.
ACC.M.3SG=have.1 eliminated DOM “cu”
I’ve eliminated the (word) “cu”.

Summary: These observations are summarised in the following table:

<table>
<thead>
<tr>
<th>‘pe’-marking</th>
<th>obligatory</th>
<th>animate</th>
<th>pronouns names</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>“human”</td>
<td>quantifiers, e.g. nimeni</td>
</tr>
<tr>
<td>optional</td>
<td></td>
<td>“human”</td>
<td>quantifiers, e.g. toți</td>
</tr>
<tr>
<td>mostly ungrammatical</td>
<td></td>
<td>animate</td>
<td>definite NP (with common noun)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>indefinite NP</td>
</tr>
</tbody>
</table>

- Personal pronouns functioning as direct objects are obligatorily marked with pe, both if they refer to animate as well as inanimate entities.
- Names functioning as direct objects are obligatorily marked with pe if they refer to human or animate entities. If they refer to inanimate entities, then they are not pe-marked.
- Definite noun phrases functioning as direct objects are optionally pe-marked if they refer to human or animate entities, and are not pe-marked, if they refer to inanimate entities.
- Indefinite noun phrases functioning as direct objects can only be pe-marked if (i) they refer to an animate entity, and (ii) their referent is identifiable by the speaker (specific).
- Some quantifying expressions (e.g. cineva, nimic) functioning as direct objects are obligatorily pe-marked, if they quantify over human or animate entities.
- In the comparative ca construction direct objects are marked with pe, irrespective of their animacy.

3.3.1.2 Preverbal direct objects

In this section I will discuss the resumption of a preverbal direct object by means of an accusative weak pronoun. It will be shown that the presence of a weak pronoun depends on whether or not the preverbal direct object refers to an entity (or set of entities) identifiable by
the hearer. Resumption of preverbal direct objects is therefore independent of the animacy of the referent of the direct object, and of the case-marking of the direct object.

If a direct object occurs before the verb and its referent is supposed by the speaker to be identifiable by the hearer (in these cases the speaker expresses the referents by means of pronouns, names, definite NPs), then an accusative clitic is obligatory.

(56) a. Pe fratele meu nu l=am visitat.
   DOM brother.DEF.M mine.M NEG ACC=have.1 visited
   My brother, I/we didn’t visit.

   b. *Pe fratele meu nu am visitat.
   DOM brother.DEF.M mine.M not have.1 visited
   Int.: My brother, I/we didn’t visit.

(57) a. Dulap-ul îl voi repara mâine.
   wardrobe-DEF.M AC will.1SG repair tomorrow
   The wardrobe, I will repair tomorrow.

   wardrobe-DEF.M will.1SG repair tomorrow
   Int.: The wardrobe, I will repair tomorrow.

The doubling of a preverbal direct object which is a pronoun, name or definite NP is obligatory, irrespective of whether the direct object is a topic (58a) or focused (58b).

(58) a. Maria mi-a recomandat un roman și o poezie. Roman-ul
   Mary DAT.1SG=has recommended a novel and a poem. novel-DEF.M
deja *l=am citit.
   already ACC.M.3SG=have.1 read
   Mary recommended me a novel and a poem. The novel I’ve already read.

   b. ROMAN-UL l=am citit, nu poezia.
   novel-DEF.M ACC.M.3SG=have.1 read, not poem.DEF.F
   I’ve read THE NOVEL, not the poem.

If a preverbal indefinite direct object is focused, then it cannot be doubled, as shown in (59). If a preverbal indefinite direct object is the topic, then it can be doubled, as shown in (60) found on the world wide web.

(59) a. UN ROMAN am citit, nu o poezie.
   a.M novel have.1 read, not a.F poem
   I’ve read a NOVEL, not a poem.

   b. *UN ROMAN l=am citit, nu o poezie.
   a.M novel ACC.M.3SG=have.1 read, not a.F poem
   Int: I’ve read a NOVEL, not a poem.

(60) a. Am început deja să împart lucrurile – un album
   have.1 started already to divide things.DEF – an.M album
   l=am dat fetiței[2]?
   ACC.M.3SG=have.1 given girl.F:DEF
CHAPTER 3. ROMANIAN

I’ve already started dividing the things – a certain album I’ve given to the girl.

b. Un calculator l=am analizat mai atent.
a PC ACC.M.3SG=have.1 analysed more attentively
A certain PC I’ve analysed more attentively.

Preverbal direct objects which are used generically are not doubled.

(61) a. Nemții nu am întîlnit.
Germans not have.1 met
Germans, I/we haven’t met.

b. *Nemții nu i=am întîlnit.
Germans NEG ACC=have.1 met
Int: Germans, I/we haven’t met.

Some fronted direct object quantifier expressions can/must be followed by an accusative clitic, some can’t.

(62) a. Pe toții i=am contrazis.
DOM all ACC=have.1 contradicted
Everybody I/we contradicted.

b. *Pe toții i=am contrazis.
DOM all have.1 contradicted
Everybody I/we contradicted.

(63) a. *Nimic nu l=am cerut.
nothing NEG ACC.M.3SG=have.1 asked-for
Int.: I’ve asked for nothing.

b. Nimic nu am cerut.
nothing NEG have.1 asked-for
I’ve asked for nothing.

As shown in Asan ([1958], p. 97), three centuries ago it was possible to front a direct object with an identifiable referent without having to double it with an accusative weak pronoun.

(64) Pe mine ascultă.
DOM me listen
Listen to me.

Summary We observed that the relevant factor for the doubling (the resumption) of preverbal direct objects by means of a weak pronoun is the identifiability of the referent (or set of referents) denoted by the direct object. If the referent of a preverbal direct object is supposed to be identifiable in the discourse context (that is when it is expressed by a pronoun, a name or a definite noun phrase), then a matching accusative weak pronoun

13Source: http://www.mail-archive.com/rlug@lug.ro/msg80724.html
is obligatory. Neither the case marking of the direct object nor the animacy of the DO referent are relevant for the doubling of preverbal direct objects. Having an intonation break between the preverbal direct object and the verb does not affect these generalisations. Preverbal direct objects which are indefinite and either focused or interpreted generically are not doubled. Note that in both these cases where direct objects are not doubled by a matching accusative weak pronoun the referent of the direct object is not supposed to be identifiable. A preverbal indefinite direct object is usually not doubled by an accusative weak pronouns. A few exceptions have been noted.

3.3.1.3 Postverbal direct objects

In this section it will be shown that the doubling by means of an accusative weak pronoun of postverbal direct objects which occur outside the intonation phrase containing the verb is conditioned by the same factor as the resumption of preverbal direct objects: the weak pronoun is present if the postverbal right-dislocated direct object refers to an entity identifiable by the hearer. Secondly, it will be shown that postverbal direct objects belonging to the same intonation phrase as the verb are anticipated by an accusative weak pronoun if (i) they are marked with pe and (ii) if they refer to an identifiable entity (or set of entities). This contrasts with the doubling of preverbal direct objects, where the pe-marking of a direct object is not a necessary condition for doubling it. Lastly, I will point out that a century ago it was standard (at least in written literary language) for a postverbal pe-marked direct object expressed by a name not to be doubled by an accusative weak pronoun. At that point the change from optional to obligatory doubling of certain preverbal direct objects was almost complete.

If a postverbal direct object is expressed by a pronoun (65a) or name (65b) referring to animate individuals, then an accusative weak pronoun is obligatory.

(65)  a. *(L=am lovit pe el. ACC.M.3SG=have.1 hit DOM he I/we have hit him.
       b. *(L=am lovit pe Ion. ACC.M.3SG=have.1 hit DOM John I/we have hit John.

The obligatoriness of the accusative weak pronoun in the presence of a postverbal direct object expressed by a name referring to a human or animal is the result of a relatively recent diachronic change. Almost century ago, sentence (66) was grammatical, at least in written Romanian, as evidenced by novels from that period.

(66)  Și atita obosi pe Toma. and that much tired DOM Toma.
Even that much tired Toma out.

If a postverbal direct object is expressed by a name referring to an inanimate entity, and the direct object is not separated from the verb by an intonation phrase, then an accusative weak pronoun is (usually) omitted (67a). If, on the other hand, the direct object is separated from the verb by an intonation phrase, then the accusative weak pronoun is necessary (67b).

(67) a. (*L=)am lovît Mercedes-ul.
    ACC.M.3SG=have.1 hit Mercedes-DEF.M
    I/we have hit the Mercedes.

b. *(L=)am lovît # Mercedes-ul.
    ACC.M.3SG=have.1 hit IB Mercedes-DEF.M
    I/we have hit it, the Mercedes.

If a postverbal direct object is a pe-marked definite NP referring to a human or animate individual, the accusative clitic is strongly preferred (68). If such a direct object is not pe-marked, then doubling is impossible (69).

(68) a. L=am lovît pe copil-ul vecin-ului.
    ACC.M=have.1 hit DOM child-DEF.M neighbour-DEF.M.GEN
    I/we have hit the neighbour’s child.

b. ?Am lovît pe copil-ul vecin-ului.
    have.1 hit DOM child-DEF.M neighbour-DEF.M.GEN
    I/we have hit the neighbour’s child.

(69) a. Am lovît copil-ul vecin-ului.
    have.1 hit child-DEF.M neighbour-DEF.M.GEN
    I/we have hit the neighbour’s child.

b. *L=am lovît copil-ul vecin-ului.
    ACC.M=have.1 hit child-DEF.M neighbour-DEF.M.GEN
    I/we have hit the neighbour’s child.

If a postverbal direct object expressed by a definite NP refers to an inanimate object, then it must be doubled by a weak pronoun if it is right-dislocated, but it cannot be doubled if it occurs in the same intonation phrase as the verb.

(70) a. *(L=)am reparat # dulap-ul.
    ACC.M.3SG=have.1 repaired IB wardrobe-DEF.M
    I’ve repaired it, the wardrobe.

b. *(L=)am reparat dulap-ul.
    ACC.M.3SG=have.1 repaired wardrobe-DEF.M
    I’ve repaired the wardrobe.

Comparing (70b) with the sentences in (68) we observe an important difference between postverbal direct objects which are in the same intonation phrase as the verb: if the direct object is a pe-marked NP referring to a human or animate entity, then the accusative weak pronoun is almost obligatory, whereas if the direct object refers to an inanimate entity, then the weak pronoun is impossible.

If the direct object is indefinite and pe-marked, the accusative clitic is possible (71b). Without pe-marking, doubling of postverbal indefinite NPs is impossible (71c).

(71) a. \textit{Caut pe o secretară.}  
\footnotesize{search.1.SG DOM a.F secretary.F}  
Only: I’m looking for a specific secretary.

b. \textit{0 caut pe o secretară.}  
\footnotesize{AC search.1.SG DOM a.F secretary.F}  
Only: I’m looking for a specific secretary.

c. * \textit{0 caut o secretară.}  
\footnotesize{AC search.1.SG a.F secretary.F}  
Int: I’m looking for a specific secretary.

Some postverbal direct object NPs expressing quantification over humans can (sometimes must) be preceded by an accusative weak pronoun (72), whereas postverbal direct object NPs expressing quantification over inanimate entities cannot be anticipated by an accusative weak pronoun (73).

(72) a. \textit{I=am contrazis pe toţii elevii.}  
\footnotesize{ACC=have.1 contradicted DOM all pupils.DEF}  
I/we contradicted all the pupils.

b. \textit{Am contrazis toţii elevii.}  
\footnotesize{ACC-have.1 contradicted all pupils.DEF}  
I/we contradicted all the pupils.

c. ?\textit{Am contrazis pe toţii elevii.}  
\footnotesize{ACC-have.1 contradicted DOM all pupils.DEF}  
I/we contradicted all the pupils.

(73) a. *\textit{Nu l=am cerut nemic.}  
\footnotesize{NEG ACC.M.3SG=have.1 asked-for nothing}  
Int: I’ve asked for nothing.

b. \textit{Nu am cerut nemic.}  
\footnotesize{NEG have.1 asked-for nothing}  
I’ve asked for nothing.

Summary: First, the anticipation (or doubling) of postverbal direct objects which occur outside the intonation phrase containing the verb is conditioned by the same factor as the resumption of preverbal direct objects: the weak pronoun is present if the postverbal right-dislocated direct object refers to an entity identifiable by the hearer. Secondly, postverbal
direct objects belonging to the same intonation phrase as the verb are anticipated by an
accusative weak pronoun if they are marked with pe and if they refer to an identifiable entity
(or set of entities). This contrasts with the doubling of preverbal direct objects, where pe-
marking of a direct object is not a necessary condition for doubling it. Thirdly, a century
ago it was standard (at least in written literary language) for a pe-marked direct object
expressed by a name not to be doubled by an accusative weak pronoun. At that point the
change from optional to obligatory doubling of certain preverbal direct objects was almost
complete.

3.3.2 Analysis

The aim of this section is to formulate the modes combining direct objects with the verb.
In section 3.3.2.1 I postulate two types of modes combining direct objects. The modes
belonging to the first type combine pe-marked nominal signs with the verb, provided that
the semantic value of the NP satisfies certain semantic and pragmatic conditions. The modes
belonging to the second type apply to NP signs which are unmarked for case, provided that
their semantic values satisfy a different set of semantic and pragmatic conditions. In section
3.3.2.2 I postulate that these modes combine the semantic value of the nominal sign with the
semantic value of the verbal sign in two different ways: either by saturating the (unsaturated)
placeholder for the ground argument, or by saturating the meaning of a weak pronoun –
which itself saturates the placeholder for the ground argument – with the semantic value of
the nominal sign. In section 3.3.2.3 I will argue that the modes combining direct objects
with verbs combine the exponents in two different ways. The first exponent function directly
concatenates the exponent of the direct object sign with the exponent of the verbal sign. The
second exponent function defers the concatenation of the two exponents by building a pair
of exponents. In section 3.3.2.4 I will present those associations of functions (i.e. modes)
which combine preverbal direct objects with the verb, and in section 3.3.2.5 I present the
modes which combine postverbal direct objects with the verb.

3.3.2.1 Differential object marking

The semantic values of pe-marked nominal signs can only saturate the placeholders for
ground arguments. The arguments of nominal signs marked as dative can only saturate
placeholders for background arguments. Arguments of signs which are neither pe-marked
nor dative can saturate either placeholders for figure arguments or placeholders for ground
arguments. To distinguish these three cases I introduce three values for the attribute CASE:
acc for nominal exponents marked with pe, dat for nominal exponents marked with the dative
suffix, and * for nominal exponents which are neither pe-marked nor marked as dative.

The basic idea for the analysis of differential object marking is this. There are two types
of modes combining an object sign with a verbal sign. The modes of combination \( f_{G_{DOM}} \) will saturate a placeholder restricted to ground arguments with the meaning of the object sign \( A \), provided that (i) \( A \) has certain semantic and pragmatic properties \( P_1 \), and (ii) the exponent of \( A \) is pe-marked. The modes \( f_G \), of the second type saturate a placeholder restricted to ground arguments with the meaning of the object sign \( A' \), if (i) \( A' \) has certain semantic and pragmatic properties \( P_2 \) (which overlap to an extent with the properties \( P_1 \)) and (ii) the exponent of \( A' \) is neither pe-marked nor marked for dative. Arguments whose semantic and pragmatic properties can be subsumed under either \( P_1 \) or \( P_2 \) can therefore be combined either by the modes \( f_{G_{DOM}} \) or by the modes \( f_G \). This will account for the cases where pe-marking is optional. Arguments which satisfy properties \( P_1 \) but do not satisfy properties \( P_2 \) can only be combined by \( f_{G_{DOM}} \). This will account for the cases where pe-marking is obligatory. Arguments which satisfy properties \( P_2 \) but do not satisfy properties \( P_1 \) can only be combined by \( f_G \). This will account for the cases where pe-marking is impossible. Differential object marking is thus analysed in terms of conditions on the application of two types of modes \( f_{G_{DOM}} \) and \( f_G \).

I will now turn to the formulation of these correlations between (i) the semantic and pragmatic properties of an argument, (ii) the case feature of its expression, and (iii) the semantic function used to combine this argument with a predicate. These correlations will be formulated as underspecified modes, in the sense that they require additional specification at (possibly) all levels of representation in order to be complete. I will begin by formulating the underspecified mode \( f_{G_{DOM}} \) which saturates the placeholder restricted to ground arguments with the meaning of a nominal sign.

\[
f_{G_{DOM}}\left( \begin{bmatrix} \langle e_1 \rangle \\ [CATER : n, CASE : acc, \ldots] \\ ARG \end{bmatrix}, \begin{bmatrix} \langle e_2 \rangle \\ [CATER : v, \ldots] \\ PRED\{G_{\omega}, \ldots\} \end{bmatrix} \right) = \begin{bmatrix} f^c(\langle e_1 \rangle, \langle e_2 \rangle) \\ f^c([CATER : n, CASE : acc, \ldots], [CATER : v, \ldots]) \\ f_G\{\text{ARG, PRED}\{G_{\omega}, \ldots\}\} \end{bmatrix}
\]

if

\( C_1 \) \( \text{ARG} \) is an identifiable entity referring to an animate being (or a set of animate beings), or

\( C_2 \) \( \text{ARG} = U \), where \( U \) is the semantic value of a pronoun, i.e. an entity identifiable from the discourse context alone.

Since these two conditions are conditions on the semantic function, it is crucial not to make reference in them to syntactic notions (see section 2.2). This is why it is necessary to formulate the second disjunct of the condition in terms of identifiability and not in terms of
types of noun phrases (i.e. pronoun, name, definite NP, etc.). The notions of identifiability
is taken from Lambrecht [1994, §3.2]

Next I formulate an underspecified mode which saturates a placeholder restricted to
ground arguments with the meaning of a caseless nominal sign. In order to account for the
fact that pe-marking of certain nominal signs functioning as direct objects is obligatory, the
conditions for the application of \( f_G \) have to be restricted, so that it cannot apply to the
nominal signs for which pe-marking is obligatory.

\[
f_{G'}(\begin{bmatrix}
\langle e_1 \rangle \\
[CAT : n, CASE : \ast, \ldots] \\
ARG
\end{bmatrix}, \begin{bmatrix}
\langle e_2 \rangle \\
[V, \ldots] \\
PRED\{G, \ldots\}
\end{bmatrix}) = \\
\begin{bmatrix}
\ f'((e_1), (e_2)) \\
\ f'([CAT : n, CASE : \ast, \ldots], [V, \ldots]) \\
\ f_G^{e'}(ARG, PRED\{G, \ldots\})
\end{bmatrix}
\]

if

C3 ARG is inanimate, and is a saturated semantic value (i.e. not the semantic value of a
pronoun), or

C4 ARG is animate, and is identifiable in the discourse context by means of a predicate, or

C5 ARG is not NOBODY or SOMEBODY.

I take a semantic value to be identifiable by a predicate in the discourse context if and only
if this argument is expressed by (an NP containing) a common noun. For example, the
semantic value of the expression the dog is identifiable by means of the predicate DOG.

Together the conditions C1, . . . , C5 determine that:

- All semantic values which represent animate and identifiable entities can be expressed
  by a pe-marked exponent if they saturate a placeholder for ground arguments.

- Generic expressions cannot be pe-marked since their semantic value does not represent
  an identifiable entity.

- All pronouns must be pe-marked if their semantic value saturates a placeholder for
ground arguments. This is because unsaturated semantic values are only licensed by
C2, which is a condition for the modes requiring pe-marking.

- Animate beings which are identifiable in the discourse context by means of a property
  expressed by a common noun can be expressed by a pe-marked exponent (due to C1) or
  by a caseless exponent (due to C4) if they saturate a placeholder for ground arguments.
CHAPTER 3. ROMANIAN

This accounts for the fact that pe-marking of definite direct objects referring to animate entities is optional.

- Inanimate entities are expressed by a caseless exponent (C3), unless they are identifiable from the discourse context alone (in which case they are expressed by a pronoun, and must be pe-marked, due to C2).

- Certain quantifiers ranging over humans cannot be expressed by a caseless exponent (C5), therefore they must be pe-marked.

Hypothesising that the animacy of entities and the identifiability of discourse referents are gradable properties, Comrie (1979) and Bossong (1985) among others have established an important cross-linguistic generalisation: If a language marks a direct object NP whose semantic value has a certain degree of animacy and/or identifiability, then it also marks those direct objects whose semantic values represent entities which have a higher degree of animacy or identifiability.

It should be pointed out that the present analysis of differential object marking in terms of modes of combination with overlapping conditions does not explain the Comrie-Bossong generalisation. The present framework does not prevent the formulation of a grammar where, contrary to the Comrie-Bossong generalisation, a direct object whose semantic value represents an entity which has a low degree of animacy is marked, while a direct object whose semantic value represents an entity which has a higher degree of animacy is not marked.

According to the functional-typological explanation proposed in Comrie (1989, 128), and formalised in Aissen (2003) within Optimality Theory, the lack of such patterns could be explained by hypothesising that (i) “the most natural kind of transitive construction is one where the A is high in animacy and definiteness, and the P is lower in animacy and definiteness”, and that (ii) conceptually unmarked objects (i.e. those which are low in animacy and/or identifiability) are formally unmarked, while conceptually marked objects are formally marked (principle of iconicity). The claim that objects high in animacy and/or identifiability are formally marked because they are somehow conceptually marked has not remained unchallenged. Åshild Næss (2004) points out a serious problem with this claim: There are languages where arguments are only expressed as direct objects if they are high in animacy and/or definiteness, and this would be unexpected if the prototypical direct object referent is low in animacy/identifiability. To reconcile this observation with the observations about differential object marking, Næss argues that (i) the higher an object’s animacy and/or identifiability, the higher its degree of affectedness (this argument is based

---

[13] Humans have a high degree of animacy, animals have a lower degree of animacy and inanimate entities have the lowest degree of animacy. Discourse referents introduced by pronouns have the highest degree of identifiability, whereas discourse referents representing entities which are not (supposed to be) identifiable by the hearer have the lowest degree of identifiability
on the transitivity hypothesis proposed in Hopper and Thompson (1980, 255), and that (ii) what is differentially object marked is not a conceptually marked object, but an object which has a high degree of affectedness. Haspelmath (2006) offers an alternative to both the claim that what is differentially (formally) marked is a conceptually marked object and the claim that what is differentially marked is the degree of affectedness: In his view what is differentially object marked is the type of object which is less frequent. I am not in a position to take sides in this interesting theoretical debate, as it is difficult to distinguish the predictions of these explanations on the basis of Romanian alone. The main reason for this is that direct objects which have a high degree of affectedness happen to coincide to a great extent with those direct objects which are conceptually marked direct objects, and this type of argument also seems to be less frequent than conceptually unmarked objects.

In order to contrast the modes combining direct objects, I will also discuss the modes for saturating placeholders for background arguments. These modes require that the exponent of the argument be marked as dative. There are no conditions on the animacy or identifiability of the argument, i.e. the marking of background arguments by means of the dative suffix is not differential.

So far I have discussed how to account for differential object marking in terms of conditions on underspecified modes of combination. In the next section I will argue that there are two semantic functions which combine ground arguments with a predicate. The first semantic function saturates the placeholder for the ground argument directly, whereas the second function saturates the meaning of a weak pronoun which itself saturates the placeholder for ground arguments.

Then I will discuss the exponent functions which are necessary in order to generate the order of dislocated preverbal objects and local preverbal objects. I will then put this all together and present the modes of combination.

### 3.3.2.2 Semantic functions

The first semantic function $f_{BG}^{G}$ saturates the placeholder for the ground argument.

$$f_{BG}^{G}(\langle e_1 \rangle, [N, DAT, \ldots], \langle e_2 \rangle, [V, \ldots], ARG, PRED\{BG, \ldots\}) = f^e([N, DAT, \ldots], [V, \ldots])$$

Placeholders can be saturated either by saturated semantic values or by unsaturated semantic values. Once a placeholder is saturated it cannot be saturated again. However, if a placeholder is saturated with the meaning of a pronoun, then this meaning (not the placeholder) can still be saturated. This semantic function will be part of the modes which
saturate a placeholder for ground arguments with the meaning of a nominal sign in the absence of an accusative weak pronoun.

The second semantic function $f_{G_2}^\mu$ saturates an unsaturated semantic value – which itself saturates a placeholder for ground arguments – with the semantic value $\text{ARG}$ of a nominal sign, provided that the individual represented by $\text{ARG}$ is identifiable from the discourse context.

$$f_{G_2}^\mu(\text{ARG}, \text{PRED}\{G : U, \ldots\}) = \text{PRED}\{G : \text{ARG}, \ldots\}$$

if $\text{ARG}$ is identifiable from context.

Thus, the modes of combination containing this second semantic function can only apply if the verbal sign contains a pronominal sign, and must consequently be paired with a category function which ensures that the value of attribute 2 (standing for the features of the accusative weak pronoun) match the features of the exponent of $\text{ARG}$. The semantic function $f_{G_2}^\mu$ is used in order to saturate the placeholder for ground arguments in the absence of a weak pronoun. The first semantic function applies in precisely those cases in which the second semantic cannot apply, and conversely. Note also that both semantic functions have to identify the placeholder for ground arguments, irrespective of whether or not this placeholder is saturated. (Alternatively, one could define the semantic function which saturates an unsaturated entity such that it does not identify a saturated placeholder restricted to ground arguments, but an unsaturated ground argument.)

For the saturation of the placeholders for background arguments it is necessary to postulate two more semantic functions. $f_{BG_1}^\mu$ saturates the placeholder for the background argument:

$$f_{BG_1}^\mu(\text{ARG}, \text{PRED}\{BG : \_, \ldots\}) = \text{PRED}\{BG : \text{ARG}, \ldots\}$$

and $f_{BG_2}^\mu$ saturates a unsaturated semantic value which itself saturates the placeholder for ground arguments with $\text{ARG}$.

$$f_{BG_2}^\mu(\text{ARG}, \text{PRED}\{BG : U, \ldots\}) = \text{PRED}\{BG : \text{ARG}, \ldots\}$$

One might think that it would be desirable to capture the similarity between e.g. $f_{G_2}^\mu$ and $f_{BG_2}^\mu$ by means of a function $f_2^\mu$, which does not specify whether the placeholder saturated by the meaning of the weak pronoun is a placeholder for ground or background arguments. Within this framework which requires the syntactic functions to operate without referring to semantic information, and semantic functions to operate without reference to syntactic information this is impossible. The reason is that the choice of the unsaturated value to be saturated with $\text{ARG}$ depends on the formal properties (i.e. case) of the exponent expressing $\text{ARG}$: If the exponent of $\text{ARG}$ is e.g. marked as dative, then the semantic function should only saturate a unsaturated value which itself saturates a placeholder for background arguments. If the exponent of $\text{ARG}$ is either unmarked or pe-marked, then the semantic function can only
CHAPTER 3. ROMANIAN

saturate a unsaturated value which itself saturates the placeholder for ground arguments. Therefore it is necessary to distinguish two cases:

\[
f_2(\text{ARG, PRED}(X : U, \ldots)) = \begin{cases} 
\text{PRED\{BG:ARG, \ldots\}} & \text{if the exponent of ARG is } \text{CASE}: \text{dat} \\
\text{PRED\{G:ARG, \ldots\}} & \text{if the exponent of ARG is } \text{CASE}: * \lor \text{acc}
\end{cases}
\]

where \(X \in \text{BG, G}\).

Since the two conditions of \(f_2\) have to make essential reference to syntactic information, it follows that the commonality between \(f_{BG2}\) and \(f_{BG2}\) can only be factored out at the cost of abandoning the hypothesis that semantic functions ought to be formulated without reference to formal properties and entities.

3.3.2.3 Exponent functions

I will next turn to the exponent functions which are necessary in order to analyse the occurrence of local and non-local objects. The first step in the analysis of long-distance dependencies is to postulate a syntactic function which adds a nominal exponent to a verbal exponent, without actually concatenating the nominal exponent and the verb string.

\[
f_1((e_N), (e_V, \ldots)) = (e_V, e_N, \ldots)
\]

This allows for the verb string \(e_V\) to be concatenated together with other exponents first, before it is concatenated to the nominal exponent \(e_N\). To give an example, the derivation of the following string:

(74) Pe Marcel Maria ştie că nu 1=am visitat.
DOM Marcel Mary know.3SG that NEG ACC.M.3SG=have.1 visited Marcel, Mary knows that I haven’t visited.

First we combine the exponent \((\text{pe}\_\text{Marcel})\) with the exponent \((\text{nu}\_\text{il}\_\text{am}\_\text{visitat})\) by means of the function \(f_1\):

\[
f_1((\text{pe}\_\text{Marcel}), (\text{nu}\_\text{il}\_\text{am}\_\text{visitat})) = (\text{nu}\_\text{il}\_\text{am}\_\text{visitat}, \text{pe}\_\text{Marcel})
\]

The idea is that we can now concatenate one by one the exponents că, ştie and Maria to the left of the verb string

\[
f_2((\text{că}, (\text{nu}\_\text{il}\_\text{am}\_\text{visitat}, \text{pe}\_\text{Marcel}))) = (\text{că}\_\text{nu}\_\text{il}\_\text{am}\_\text{visitat}, \text{pe}\_\text{Marcel})
\]

Next we concatenate the matrix verb ştie to the first component of the verbal exponent:

\[
f_2((\text{ştie}, (\text{că}\_\text{nu}\_\text{il}\_\text{am}\_\text{visitat}, \text{pe}\_\text{Marcel}))) = \\
(\text{ştie}\_\text{că}\_\text{nu}\_\text{il}\_\text{am}\_\text{visitat}, \text{pe}\_\text{Marcel})\]
Then we concatenate the exponent Maria to the first component of the verbal exponent:

$$f_1'(\langle Maria, \langle \text{știe că nu îl am visitat}, \text{pe Marcel} \rangle \rangle) = \langle Maria, \text{știe că nu îl am visitat}, \text{pe Marcel} \rangle$$

And now we concatenate the second component pe Marcel (the ‘dislocated’ exponent) to the left of the first exponent:

$$f_3'(\langle Maria, \text{știe că nu îl am visitat}, \text{pe Marcel} \rangle) = \langle pe Marcel, Maria, \text{știe că nu îl am visitat} \rangle$$

If the nominal exponent pe Marcel is combined with the verbal exponent, but is not concatenated with the verb string itself, then one might wonder why this exponent should be combined first with the verbal exponent and not last? To see why not, assume that we did so, i.e. that the exponent pe Marcel is the last exponent to be combined with the verbal exponent. The crucial point is that we must guarantee that the nominal sign saturates the same weak pronoun with which it agrees formally. Otherwise we cannot prevent the nominal sign from agreeing with an accusative weak pronoun PRO₁, while the semantic function saturates the semantic value of a different accusative weak pronoun PRO₂. In such a case I shall say that the syntactic function and the semantic function are asynchronic.

One way to guarantee synchronicity is by adding a condition on the syntactic function, and a condition on the semantic function. The condition on the syntactic function requires that the semantic value of the exponent eₜₚ of the accusative weak pronoun (which agrees formally with the nominal exponent) be U, and the condition on the semantic function requires that the exponent of the semantic value to be saturated (by the semantic value of the nominal sign) is eₜₚ. Clearly, these two conditions prevent the syntactic and semantic functions from being asynchronic. But note that the syntactic function now has to be able to distinguish semantic values, while the semantic function has to be able to distinguish exponents, which crucially amounts to giving up the distinction between syntactic and semantic structure.

This is a good place to clarify one of the main differences between this framework and the theory of Head-Driven Phrase Structure Grammar (HPSG). HPSG is a framework which allows for conditions to make simultaneous reference to both syntactic and semantic properties, whereas this framework does not allow this.

This problem can be avoided by making sure that syntactic and semantic functions can never be asynchronic in the first place. This can be done by combining the nominal exponent with the verbal exponent before the verbal exponent combines with other verbs and creates the potential for asynchronicity. The point is that if we combine the sign (with exponent) (pe Marcel) with the verbal sign (nu îl am visitat) the condition stating that
the semantic value of \( u \) becomes redundant – there is only one accusative weak pronoun, and there is only one unsaturated semantic value \( u \) which saturates the placeholder for ground arguments. But if we have to combine the nominal sign and the verbal sign locally, we better provide a way of delaying the concatenation of the exponents, since otherwise we would not be able to generate long distance dependencies. Simple Literal Movement Grammars (and other grammars whose syntactic functions operate on tuples of strings as opposed to just strings) allow for precisely this possibility, as shown in section 2.3.1.

### 3.3.2.4 Modes combining preverbal NPs

It is now time to formulate the first mode which combines nominal signs with verbal signs. This mode:

- Adds the nominal exponent to the verbal exponent without concatenating it to the verb string.

- Saturates an unsaturated semantic value \( u \) – which itself saturates a placeholder for ground arguments – with the semantic value of the nominal sign, provided that (i) the person, number and gender features of the nominal sign and the corresponding features of the weak pronoun with value \( u \) are the same, (ii) the nominal sign is \textit{case}: acc, and (iii) the semantic value of the nominal sign is either animate or unsaturated (which is the case if the nominal sign is a pronoun).

- Requires the nominal sign to be pe-marked.

- Imposes the first set of differential object marking conditions.

\[
f_1((\langle e_N \rangle, (\langle e_1, e_2, \ldots \rangle)) = \left\langle e_1, e_N, e_2, \ldots \right\rangle \\
\left[ \textit{CAT}: \textit{v}, 2: [\textit{CAT}: \textit{wp}, \textit{PER}: x_1, \textit{GEN}: x_2, \textit{NUM}: x_3, \ldots] \right] \text{ PRED}\{\textit{G}:\textit{U}, \ldots\}
\]

\[
f_1'((\langle e_N \rangle, (\langle e_1, e_2, \ldots \rangle)) = \left\langle e_1, e_N, e_2, \ldots \right\rangle \\
\left[ \textit{CAT}: \textit{v}, 1, \textit{CASE}: \textit{acc}, \textit{PER}: x_1, \textit{GEN}: x_2, \textit{NUM}: x_3, \ldots] \right] \text{ PRED}\{\textit{G}:\textit{ARG}, \ldots\}
\]
if

C1 ARG is an animate being, or

C2 ARG is the semantic value of a pronoun, i.e. an entity identifiable/accessible from the discourse context alone.

Note that the exponent function of this mode does not impose a limit on the number of strings in the verbal exponent. I assume that the number of dislocated exponents is limited to two or three, due to restrictions on the working memory of the human language processor.

The second mode $f_2$ is similar to the first mode, except that it requires the nominal sign to be unmarked for case ($Case : \ast$) and imposes the second set of differential object marking conditions. This mode is used in order to combine e.g. the nominal sign dulapul, wardrobe.DEF.M.SG) with the verbal sign (l-am reparat, ACC.M.3SG=have.1 repaired).

The third mode differs from the previous two in that it requires the nominal sign to be marked for dative, and in that it saturates an unsaturated semantic value which itself saturates a placeholder for background arguments.

if

C3 ARG is inanimate, and is not an unsaturated semantic value, or

C4 ARG is animate, and is identifiable/accessible in the discourse context by means of a predicate, or

C5 ARG is not NOBODY or SOMEBODY.

The third mode differs from the previous two in that it requires the nominal sign to be marked for dative, and in that it saturates an unsaturated semantic value which itself saturates a placeholder for background arguments.
Since the semantic functions $f^{\mu}_{G_2}$ and $f^{\mu}_{BG_2}$ both require the argument ARG to be identifiable from context, these three modes cannot apply to nominal signs whose referents are not identifiable from context. This accounts for the observation that only signs with identifiable referents can co-occur with accusative and dative weak pronouns in Romanian.

In order to account for the combination of a preverbal nominal signs with a verbal sign lacking a corresponding weak pronoun I will postulate three more modes which differ from the previous three modes in that they (i) concatenate the nominal exponent to the left of the verbal exponent, (ii) saturate a placeholder with the semantic value ARG of the nominal sign, and (iii) only apply if the individual which ARG represents is not identifiable.

Mode $f_{4}$ combines a preverbal pe-marked sign with a verb lacking an accusative weak pronoun. So this mode:

- Concatenates the nominal exponent to the first string of the verb exponent.
- Requires the nominal sign to be pe-marked.
- Saturates the placeholder for ground arguments with the semantic value of the nominal sign.
- Imposes the first set of differential object marking conditions.

This mode is necessary in order to combine e.g. the sign (with exponent) pe nimeni (DOM nobody) with the verbal sign nu am visitat (not have.1 visited) in order to form the sign with exponent pe nimeni nu am visitat.
CHAPTER 3. ROMANIAN

\[ f_2^e(\langle e_N, e_1, e_2, \ldots \rangle) \]
\[ f_1^f([\text{CAT} : n, \text{CASE} : acc, \ldots], [\text{CAT} : v, \ldots]) \]
\[ f_0^\mu(G_1(\text{ARG}, \text{PRED}\{G : \ldots \})) \]
\[
= \begin{bmatrix}
\langle e_N, e_1, e_2, \ldots \rangle \\
[\text{CAT} : v, \ldots] \\
\text{PRED}\{G : \text{ARG}, \ldots \}
\end{bmatrix}
\]

if

C1 \text{ ARG is an animate being, or}

C2 \text{ ARG is an unsaturated semantic value (i.e. the semantic value of a pronoun).}

Note that as it is formulated this mode can apply to signs with both identifiable and unidentifiable referents. As such, this mode would have accounted for the observation that three hundred years ago a \text{pe}-marked sign could occur before a verb without being doubled by a weak pronoun. However, by the middle of the 19th century, preverbal \text{pe}-marked nominal signs are always doubled by a weak pronoun.\(^{16}\) (In fact three hundred years ago, both direct and indirect objects could occur before the verb without being doubled by a corresponding accusative or dative pronoun pronoun, irrespective whether the referent was identifiable or not.) In modern Romanian direct and indirect preverbal objects whose semantic values represent identifiable entities are always doubled by an accusative or dative weak pronoun.

I analyse this diachronic change by hypothesising first that initially both mode \( f_1 \) and mode \( f_4 \) could be used in order to combine \text{pe}-marked signs whose referents are identifiable. This accounts for the observation that three hundred years ago the doubling weak pronoun was optional. Secondly, I hypothesise that in time the mode \( f_1 \) was preferred to the mode \( f_4 \) in producing preverbal objects whose referents are identifiable. The obligatory doubling of preverbal objects with identifiable referents by means of a corresponding weak pronoun in modern Romanian is then analysed as the result of the grammaticalisation of a strong preference for using mode \( f_1 \) rather than mode \( f_4 \) when processing preverbal objects (both direct and indirect) whose semantic values represent identifiable entities. The grammaticalisation of this preference can be implemented by adding the additional condition to \( f_4 \) that the semantic value \text{ARG} of the nominal sign may not represent an identifiable entity.

The fifth mode combines a preverbal sign which is neither \text{pe}-marked nor marked for dative with a verb lacking a weak pronoun. So this mode:

- Concatenates the nominal exponent to the first string of the verb exponent.
- Requires the nominal sign to be unmarked for case.
- Requires that the referent \text{ARG} cannot be identifiable from the discourse context.
- Saturates the placeholder for ground arguments with the semantic value \text{ARG} of the nominal sign.

\(^{16}\)See Asan (1958, 95) for this observation.
• Imposes the second set of differential object marking conditions.

This mode is necessary in order to analyse e.g. the (preverbal) combination of un roman (a novel) with am citit (have.1 read), where an accusative weak pronoun in the verb cluster would be ungrammatical.

\[
\begin{align*}
\text{\(f_5(\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle, \langle e_1, e_2, \ldots \rangle, \langle e_1, e_2, \ldots \rangle) = \langle e_N, e_1, e_2, \ldots \rangle\).}
\end{align*}
\]

\[
\begin{align*}
\text{\(f_6(\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle) = \langle e_N, e_1, e_2, \ldots \rangle\).}
\end{align*}
\]

\[
\begin{align*}
\text{\(f_6(\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle, \langle e_1, e_2, \ldots \rangle, \langle e_1, e_2, \ldots \rangle) = \langle e_N, e_1, e_2, \ldots \rangle\).}
\end{align*}
\]

C3 ARG is a saturated semantic value which represents an inanimate entity, or

C4 the entity represented by ARG is animate and is identifiable in the discourse context by means of a predicate, or

C5 ARG is neither NOBODY nor SOMEBODY.

The condition that ARG cannot be identified in the discourse context reflects the grammaticalisation of the preference for using mode \(f_1\) for the combination of signs whose referents are identifiable.

The sixth mode \(f_6\) combines a preverbal sign which is marked for dative with a verbal sign lacking a dative weak pronoun. So this mode:

• Concatenates the nominal exponent to the first string of the verb exponent.

• Requires the nominal sign to be marked as dative.

• Requires that the entity represented by ARG is not identifiable in the discourse context.

• Saturates the placeholder for the background argument with the semantic value ARG of the nominal sign.

\[
\begin{align*}
\text{\(f_6(\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle) = \langle e_N, e_1, e_2, \ldots \rangle\).}
\end{align*}
\]
if \textit{ARG} is not identifiable from the discourse context.

To illustrate the application of these modes, I will derive the complex sign whose exponent is \textit{Dulapul ı1 repar}. (wardrobe.DEF.M ACC.M.3SG repair.1SG). First we combine the weak pronominal sign (with exponent) ı1 with the verbal sign repar by means of mode \( f_{\text{ACC}} \).

\[
\begin{align*}
\text{ACC}( & \langle ı1 \rangle, \langle \varepsilon, \text{repar} \rangle, \text{REPAIR}\{F:\_, \text{G:U}\} ) = \\
& \langle ı1, \text{repar} \rangle, \langle \text{Dulapul} \rangle, \text{WARDROBE(ı1 repar)} \\
& \langle \text{CAT:wp, CASE:acc, M.3SG} \rangle, \text{REPAIR}\{F:\_, \text{G:U}\}
\end{align*}
\]

Next we concatenate the two exponents in \( \langle ı1, \text{repar} \rangle \) by applying the mode \( f_{\text{CONC}} \):

\[
\begin{align*}
f_{\text{CONC}}( & \langle \text{Dulapul} \rangle, \langle \text{CAT:wp, CASE:acc, M.3SG} \rangle, \text{REPAIR}\{F:\_, \text{G:U}\} ) = \\
& \langle ı1, \text{repar} \rangle, \langle \text{Dulapul} \rangle, \text{WARDROBE(ı1 repar)} \\
& \langle \text{CAT:wp, CASE:acc, M.3SG} \rangle, \text{REPAIR}\{F:\_, \text{G:U}\}
\end{align*}
\]

Next this complex sign can be combined with the nominal sign dulapul by means of \( f_2 \), because the conditions on the application of this mode are all satisfied. In particular, (i) the nominal sign is unmarked for case and its semantic value represents an identifiable entity, (ii) the verbal sign contains an accusative weak pronoun with matching features, and (iii) the second set of conditions on DOM are satisfied.

\[
\begin{align*}
f_2( & \langle \text{Dulapul} \rangle, \langle \text{CAT:n, CASE:*}, M.3SG \rangle, \text{WARDROBE(ı1 repar)} ) = \\
& \langle \text{Dulapul}, ı1, \text{repar} \rangle, \langle \text{CAT:wp, CASE:acc, M.3SG} \rangle, \text{REPAIR}\{F:\_, \text{G:d}\}, \text{WARDROBE(d)}
\end{align*}
\]

The last step in the derivation is the linearisation of the exponent by means of a mode \( f_{\text{LIN}_1} \), which concatenates the second string of a tuple to the left of the first string.

\[
\begin{align*}
f_{\text{LIN}_1}( & \langle \text{Dulapul}, ı1, \text{repar} \rangle, \langle \text{CAT:wp, CASE:acc, M.3SG} \rangle, \text{REPAIR}\{F:\_, \text{G:d}\}, \text{WARDROBE(d)} ) = \\
& \langle \text{Dulapul}, ı1, \text{repar} \rangle, \langle \text{CAT:wp, CASE:acc, M.3SG} \rangle, \text{REPAIR}\{F:\_, \text{G:d}\}, \text{WARDROBE(d)}
\end{align*}
\]
Note that this analysis allows for other exponents to be concatenated with the first string of the exponent \( \langle \text{il}, \text{repar}, \text{dulapul} \rangle \) before the dislocated nominal exponent is linearised. As argued above, the delayed concatenation of the nominal exponent accounts for its occurrence at a ‘long distance’ from the verb, as for example in \( \text{dulapul t\i=am zis c\u= a \text{ il repar}} \) (wardrobe.DEF.M DAT.2SG=have.I said that ACC.M.3SG repair).

### 3.3.2.5 Modes combining postverbal NPs

As discussed in section 3.3.1.3, it is necessary to distinguish the anticipation of direct objects belonging to the same intonation phrase as the verb from direct objects which do not belong to the intonation phrase containing the verb. The combination of the latter postverbal direct objects, i.e. those which occur in a different intonation phrase, can be accounted for by the modes of combination \( f_1 \) and \( f_2 \) discussed in the previous section. This is because these two modes defer the concatenation of the object exponent to the verbal exponent, so that the object exponent can be linearised later on in the bottom-up derivation either as occurring before the exponent containing the verb or after this exponent. The important point is that if the object exponent is linearised after the exponent containing the verb, then an intonation break must be inserted, which is not the case if the object exponent is linearised before the exponent containing the verb.

In what follows I will discuss the combination of the postverbal direct objects which occur in the same intonation phrase as the verb. The two important generalisations about these direct objects are that (i) they are almost always anticipated (i.e. doubled) by a matching weak pronoun if they are marked with \( \text{pe} \) and refer to an identifiable entity, and (ii) that they are never doubled if the NP is not marked with \( \text{pe} \). So while a direct object whose semantic value represents an inanimate and identifiable entity must be doubled if it occurs before the verb (as shown in (75a)), the same kind of direct object cannot be doubled if it occurs after the verb but in the same intonation phrase as the verb, as shown in (75b).

(75) a. Dulap-ul *\((1=)\text{am} \text{ reparat ieri seara.} \)
    wardrobe-DEF.M.3SG ACC.M.3SG=have.1 repaired yesterday evening.
    The wardrobe I repaired last night.

b. *(\text{L=}\text{am} \text{ reparat dulap-ul ieri seara.} \)
    ACC.M.3SG=have.1 repaired wardrobe-DEF.M.3SG yesterday evening.
    I repaired the wardrobe last night.

Moreover, while direct objects referring to human (and animate) identifiable entities must be doubled if they occur before the verb (irrespective of whether or not they are \( \text{pe} \)-marked (76a)), postverbal direct objects which occur in the same intonation phrase as the verb and which refer to identifiable human (or animate) entities can only be doubled if they are \( \text{pe} \)-marked, as shown by (76b) and (76c).
(76) a. Director-ul *(l=)am văzut ieri seara.
director-DEF.M.3SG ACC.M.3SG=have.1 seen yesterday evening.
The director I saw last night.

b. *(L=)am văzut pe director ieri seara.
ACC.M.3SG=have.1 seen DOM director yesterday evening.
I saw the director last night.

c. (*L=}am văzut director-ul ieri seara.
ACC.M.3SG=have.1 seen director-DEF.M yesterday evening.
I saw the director last night.

So the doubling of preverbal direct objects depends only on the identifiability of the referent, whereas the doubling of postverbal direct objects which occur in the same intonation phrase as the verb depends on (i) the identifiability of the referent as well as (ii) the case of the direct object.

It should also be born in mind that only hundred years ago postverbal direct objects expressed by names did not have to be doubled by an accusative weak pronoun. To account for this observation I postulate that at that time postverbal direct objects expressed by names could be combined in one of two ways with the verb. Either by a mode which required a weak pronoun, or by a mode which did not require a weak pronoun. The obligatory doubling of these objects in modern Romanian is analysed by hypothesising (i) that there has been a strong preference for producing postverbal direct objects expressed by names by using the mode which requires a weak pronoun, and (ii) that this processing preference has been grammaticalised. The grammaticalisation will be expressed, as before, by means of a restriction on the dispreferred mode.

The mode $f_7$ combines a $pe$-marked sign with a verbal sign lacking an accusative weak pronoun, and:

• Concatenates the nominal exponent to the right of the first string of the verb exponent.

• Saturates a placeholder for ground arguments with the semantic value of the nominal sign.

• Requires the nominal sign to be $pe$-marked, and imposes the first set of differential object marking conditions.

However, since as mentioned above, postverbal direct objects which are expressed by pronouns or names must be doubled by a matching weak pronoun, it is necessary to block the application of this mode to signs whose referents can be identified by the discourse context or by means of a name. This is done by requiring that the semantic value represent an entity
which is identifiable by means of a predicate.

\[
f_8(\begin{bmatrix} \langle e_N \rangle \\ [CAT : n, CASE : \text{acc}, \ldots] \\ \text{ARG} \end{bmatrix}, \begin{bmatrix} \langle e_1, e_2, \ldots \rangle \\ [CAT : v, \ldots] \\ \text{PRED}\{G : \ldots\} \end{bmatrix} = f_5((\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle))
\]

if

C1 \text{ARG} represents an animate being, or

C2 \text{ARG} is the semantic value of a pronoun, i.e. a semantic value which represents an entity identifiable from the discourse context alone.

and \text{ARG} represents an entity identifiable by a predicate.

The mode \(f_8\) combines a sign which is neither pe-marked nor marked as dative with a verb lacking an accusative weak pronoun, and differs from \(f_5\) in that (i) the exponent function concatenates the nominal exponent to the right of the first string of the verb exponent, and (ii) it allows the combination of signs whose referents are identifiable (\(f_5\) disallows this). This mode is necessary in order to combine the sign \text{am reparat} \text{un dulap} (a wardrobe) with the sign \text{am reparat} \text{un dulap} (have.1 repaired) into the sign \text{am reparat un dulap}. Note that (the reduced form of) the accusative weak pronoun \text{IL} cannot be part of the verb cluster, since the semantic function of mode \(f_8\) saturates a placeholder, and thus this placeholder must not already be saturated by the meaning of a weak pronoun.

\[
f_8(\begin{bmatrix} \langle e_N \rangle \\ [CAT : n, CASE : \ast, \ldots] \\ \text{ARG} \end{bmatrix}, \begin{bmatrix} \langle e_1, e_2, \ldots \rangle \\ [CAT : v, \ldots] \\ \text{PRED}\{G : \ldots\} \end{bmatrix} = f_5((\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle))
\]

if

C3 \text{ARG} represents an inanimate entity, and is a saturated semantic value, or

C4 \text{ARG} represents an animate entity which is identifiable in the discourse context by means of a predicate, or
ARG is neither NOBODY nor SOMEBODY.

Next I will turn to the doubling of postverbal direct objects. As observed above, if a postverbal direct object occurs outside the intonation phrase containing the verb, then the accusative weak pronoun is obligatory, whereas if a postverbal direct object occurs inside the same intonation phase as the verb, then the presence of the accusative weak pronoun correlates with the case marking of the direct object NP and the identifiability of the direct object referent.

To analyse the first case I propose a linearisation mode $f_{LIN_2}$, which concatenates the second string of a verbal exponent to the right of the first string, provided the first string is followed by an intonation break. This mode applies at some point after the nominal sign has been combined with the verbal sign by means of $f_1$ or $f_2$.

$$f_{LIN_2}(\begin{bmatrix} (e_1#, e_2, \ldots) \\ [CAT : v, \ldots] \\ \text{PRED} \end{bmatrix}) = \begin{bmatrix} (e_1\#, e_2, \ldots) \\ [CAT : v, \ldots] \\ \text{PRED} \end{bmatrix}$$

Here the symbol # indicates an intonation break.

The obligatory doubling of a postverbal direct object which is part of the same intonation phrase as the verb can then be interpreted as the grammaticalisation of a preference for using the modes $f_1$ and then $f_{LIN_2}$ instead of mode $f_7$ in order to produce pe-marked postverbal direct objects. The reason for this preference, as well as the question of why this preference has not (yet?) affected inanimate definite direct objects remain open issues for future research. The result of the grammaticalisation of this preference is the mode $f_9$:

$$f_9(\begin{bmatrix} \langle e_N \rangle \\ [CAT : n, CASE : acc, PER : x_1, GEN : x_2, NUM : x_3, \ldots] \\ \text{ARG} \end{bmatrix}, \begin{bmatrix} \langle e_1, e_2, \ldots \rangle \\ [CAT : v, 2 : [CAT : wp, PER : x_1, GEN : x_2, NUM : x_3, \ldots]] \\ \text{PRED}\{G : U, \ldots\} \end{bmatrix}) = \begin{bmatrix} f_3((\langle e_N \rangle, (e_1, e_2, \ldots))) \\ f_7([CAT : n, CASE : acc, PER : x_1, GEN : x_2, NUM : x_3, \ldots], \\ [CAT : v, 2 : [CAT : wp, PER : x_1, GEN : x_2, NUM : x_3, \ldots]]) \\ f_{G_2}^{\phi_9}(\text{ARG}, \text{PRED}\{G : U, \ldots\}) \end{bmatrix}$$
CHAPTER 3. ROMANIAN

123

Direct Object NPs

<table>
<thead>
<tr>
<th>Exponents</th>
<th>preverbal</th>
<th>postverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_1^*$ (tuple)</td>
<td>$f_1$ $f_2$</td>
<td>$f_1$ $f_2$</td>
</tr>
<tr>
<td>$f_2$ (left concat.)</td>
<td>$f_4$ $f_5$</td>
<td>$f_7$ $f_8$ $f_9$</td>
</tr>
<tr>
<td>$f_3$ (right concat.)</td>
<td></td>
<td>$f_7$ $f_8$ $f_9$ $f_1$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Categories</th>
<th>preverbal</th>
<th>postverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>pe; C1, C2</td>
<td>$f_1$ $f_4$</td>
<td>$f_7$ $f_8$ $f_9$ $f_1$</td>
</tr>
<tr>
<td>no pe; C3, C4, C5</td>
<td>$f_2$ $f_5$</td>
<td>$f_8$ $f_2$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meaning</th>
<th>preverbal</th>
<th>postverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_G^\mu_1$ (placeholder)</td>
<td>$f_4$ $f_5$</td>
<td>$f_7$ $f_8$</td>
</tr>
<tr>
<td>$f_G^\mu_2$ (unsat. value)</td>
<td>$f_1$ $f_2$</td>
<td>$f_9$ $f_1$ $f_2$</td>
</tr>
</tbody>
</table>

Table 3.1: Modes for combining direct objects in Romanian

$$\begin{bmatrix}
\langle e_1, e_N, e_2, \ldots \rangle \\
[CAT : v, 2 : [CAT : wp, PER : x_1, GEN : x_2, NUM : x_3], \ldots] \\
PRED\{G : ARG, \ldots \}
\end{bmatrix}
\begin{bmatrix}
\langle e_1, e_2, \ldots \rangle \\
[CAT : v, \ldots] \\
PRED\{BG : w, \ldots \}
\end{bmatrix}$$

if

C1 ARG represents an animate being, or

C2 ARG is a semantic value representing an entity which is identifiable from the discourse context alone.

Mode $f_{10}$ combines a dative nominal sign with a verb lacking a dative weak pronoun, and differs from $f_6$ in that (i) the exponent of the nominal sign is concatenated to the right of the first string of the verbal exponent, and (ii) this mode applies to signs with both identifiable and unidentifiable argument:

$$f_{10}(\begin{bmatrix}
\langle e_N \rangle \\
[CAT : n, CASE : dat, \ldots] \\
ARG
\end{bmatrix}) = \begin{bmatrix}
\langle e_1, e_2, \ldots \rangle \\
[CAT : v, \ldots] \\
PRED\{BG : w, \ldots \}
\end{bmatrix}$$

$$f_3^*(\langle e_N \rangle, \langle e_1, e_2, \ldots \rangle) = \begin{bmatrix}
\langle e_1, e_2, \ldots \rangle \\
[CAT : v, \ldots] \\
PRED\{BG : w, \ldots \}
\end{bmatrix}$$

$$f_1^*(\langle CAT : n, \ldots \rangle, \langle CAT : v, \ldots \rangle) = \begin{bmatrix}
\langle e_1, e_2, \ldots \rangle \\
[CAT : v, \ldots] \\
PRED\{BG : ARG, \ldots \}
\end{bmatrix}$$

3.3.2.6 Summary of modes of combination

Table 3.1 sums up the modes combining direct objects. The modes $f_1$ and $f_2$ both defer the concatenation of the object exponent to the verbal exponent. Semantically, both these modes saturate the unsaturated semantic value of a weak pronoun with the semantic value
of the object sign. The difference between them is that $f_1$ applies to objects marked with \texttt{pe}, and requires their semantic value to satisfy certain conditions C1 and C2, whereas $f_2$ applies to noun signs which are not marked with \texttt{pe} and requires their semantic value to satisfy certain other conditions C3, C4, and C5. Note that these two modes can be used both to combine preverbal as well as postverbal direct objects.

The modes $f_4$ and $f_5$ both concatenate the object exponent to the left of the verb string (of the verbal exponent), and they both saturate placeholders for ground arguments with the semantic value of an object sign. The difference between them is the same as the difference between $f_1$ and $f_2$: while $f_4$ applies to \texttt{pe}-marked signs, $f_5$ applies to signs which are neither \texttt{pe}-marked nor marked for dative.

The modes $f_7$ and $f_8$ both concatenate an object exponent to the right of the verb string (of the verbal exponent), and they both saturate a placeholder restricted to ground argument with the semantic value of the nominal sign. The difference again is that $f_7$ applies to \texttt{pe}-marked signs, whereas $f_8$ applies to signs which are not \texttt{pe}-marked.

The mode $f_9$ is the result of the grammaticalisation of the preference for combining postverbal direct objects which are marked with \texttt{pe} and which have identifiable referents by means of $f_1$ instead of $f_7$.

### 3.4 Conclusion

I conclude this chapter by summing up the main points of the analysis of weak pronouns, differential object marking and the co-occurrence of accusative weak pronouns with coreferent direct object noun phrases.

The formal structure of the verb cluster in Romanian has been analysed in terms of associations of exponent and categorial functions. The separation of exponent functions from category functions allows weak pronouns to be combined with the verb by means of modes which have the same category function, but different exponent functions. Since e.g. accusative weak pronouns are combined by means of modes having the same category function irrespective of the position of the weak pronoun with respect to the verb, it is not necessary in the present analysis to postulate additional categories (functional projections) in order to accommodate the different positions of a weak pronoun. This constitutes the first major advantage of analysing the formal structure of the verb cluster in terms of functions on tuples of strings.

Weak pronouns are analysed as pronominal signs. In particular, no distinction between weak pronouns is postulated in order to account for the co-occurrence of weak pronouns and coreferent object NPs.

The modes combining accusative weak pronouns with the verbal sign (i) either prefix or suffix the exponent of the weak pronoun to the verb string of the verbal exponent,
depending on both phonological and categorial properties simultaneously, and (ii) saturate the placeholders for ground arguments with the semantic value of the weak pronoun.

Differential object marking is analysed in terms of two types of modes of combination. The modes of the first type apply to pe-marked nominal signs if the entity represented by the semantic value of the nominal sign has certain semantic and pragmatic properties. The modes of the second type apply to nominal signs which are neither pe-marked, nor marked as dative, if the entity represented by the semantic value of the nominal sign has certain other semantic and pragmatic properties. The overlap of the semantic and pragmatic properties accounts for those cases in which differential object marking is optional.

The co-occurrence of accusative weak pronouns with clause-internal coreferential direct objects is analysed in terms of modes of combination whose semantic function saturates the semantic value of a weak pronoun with the semantic value of the direct object NP. This semantic function is associated with different category and exponent functions, depending on whether the direct object is pre- or postverbal.

Another advantage of tuple-based grammars is that they allow for the local semantic combination of a nominal sign and a verbal sign, while at the same time deferring the concatenation of their exponents. This opens up the possibility of accounting for long distance dependences only in terms of different phenostructure (i.e., exponent functions), without having to postulate a difference in tectostructure. This is in sharp contrast to both the Minimalist Program as well as HPSG, which do not separate phenostructure from tectostructure, and are thus forced into postulating additional mechanisms (movement and slash categories respectively) in order to analyse long distance dependencies (for more on the comparison between the present analysis and other analyses see chapter 5).
Chapter 4

Siswati

4.1 Data and generalisations

Siswati is a Bantu language of the Nguni group, and it is spoken mainly in Swaziland and South Africa. Like all Bantu languages, Siswati has an elaborate noun class system, and a rich verbal morphology. In this chapter I will focus on the complex interaction between the two class-prefixes (the so-called subject and object markers) and the valency changing suffixes of the verb root, in order to present the encoding of argument structure in Siswati.

I will begin by briefly presenting the noun class system, after which I will turn to the encoding of the core arguments in basic clauses. I will then discuss the distinction between conjunctive and disjunctive verb forms in quite some detail, since this is a phenomenon which has received some attention in recent years. I will then discuss the applicative, causative, passive, reversal and reciprocal constructions in Siswati. Most of these phenomena are well documented for many Bantu languages, and there has been important theoretical work about these phenomena, in particular within the framework of Lexical-Functional Grammar, which will be discussed in detail in section 5.3.2.

Throughout the presentation of the data I have tried to avoid using notions like “subject marking”, “object marking”, “subject”, “object” etc. The reason for doing so is a methodological one: I have tried to keep the presentation of the data as theory-neutral as possible, and I think it is not only possible but also very instructive to present the data without theoretically loaded concepts. In the process of expressing generalisations about the structure of the expressions one examines, one will have to introduce certain concepts, without which these generalisations cannot be captured. The point of presenting the data and the underlying generalisations this way is that it becomes clear why certain notions are necessary. In other words, this way of presenting data and generalisations makes the motivation of the

\[^1\]See for example [Creissels (1996)] about this distinction in Setswana and [Buell (2006)] about this distinction in Zulu, both southern Bantu languages.
4.1.1 Noun class system

The prefix of a noun can be used to categorise nouns into different classes. Table 4.1 presents the noun classes in Siswati, following the classification method proposed in Doke (1968) for Zulu. In this classification the singular and plural forms of a noun are assigned to the same class, as opposed to the classification system proposed in Meinhof (1948), where the singular and plural forms of the same noun are assigned to different classes.

The nouns in class 1 denote humans. Names and nouns denoting relations between humans are in class 1a. The nouns in class 2, 7 and 8 denote inanimate entities. The nouns in class 7 are derived from adjectives. The nouns in class 8 are derived from verbs. As this table shows, the adjective and possessor markers are derived from the corresponding

<table>
<thead>
<tr>
<th>Class</th>
<th>Example</th>
<th>Translation</th>
<th>ADJ-M</th>
<th>POSS-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>um-fana</td>
<td>boy</td>
<td>mu-</td>
<td>u-</td>
</tr>
<tr>
<td>1a.</td>
<td>ba-fana</td>
<td>boys</td>
<td>ba-</td>
<td>ba-</td>
</tr>
<tr>
<td></td>
<td>babe</td>
<td>father</td>
<td>ba-</td>
<td>ba-</td>
</tr>
<tr>
<td></td>
<td>bo-babe</td>
<td>the fathers</td>
<td>ba-</td>
<td>ba-</td>
</tr>
<tr>
<td>2.</td>
<td>um-fula</td>
<td>river</td>
<td>mu-</td>
<td>u-</td>
</tr>
<tr>
<td></td>
<td>imi-fula</td>
<td>rivers</td>
<td>mi-</td>
<td>i-</td>
</tr>
<tr>
<td>3.</td>
<td>li-hhashi</td>
<td>horse</td>
<td>li-</td>
<td>li-</td>
</tr>
<tr>
<td></td>
<td>ema-hhashi</td>
<td>horses</td>
<td>ma-</td>
<td>a-</td>
</tr>
<tr>
<td>4.</td>
<td>si-nkhwa</td>
<td>bread</td>
<td>si-</td>
<td>si-</td>
</tr>
<tr>
<td></td>
<td>tiN-nkhwa</td>
<td>breads</td>
<td>tiN-</td>
<td>ti-</td>
</tr>
<tr>
<td>5.</td>
<td>iN-khomo</td>
<td>cow</td>
<td>iN-</td>
<td>i-</td>
</tr>
<tr>
<td></td>
<td>tiN-khomo</td>
<td>cows</td>
<td>tiN-</td>
<td>ti-</td>
</tr>
<tr>
<td>6.</td>
<td>lu-phondvo</td>
<td>horn</td>
<td>lu-</td>
<td>lu-</td>
</tr>
<tr>
<td></td>
<td>tim-phondvo</td>
<td>horns</td>
<td>tiN-</td>
<td>ti-</td>
</tr>
<tr>
<td>7.</td>
<td>bu-hle</td>
<td>beauty</td>
<td>bu-</td>
<td>bu-</td>
</tr>
<tr>
<td>8.</td>
<td>ku-dla</td>
<td>food</td>
<td>ku-</td>
<td>ku-</td>
</tr>
</tbody>
</table>

Table 4.1: Noun classes in Siswati. Source: Thwala (1995, 13f)
class-prefixes.

The class-prefixes are used to express certain relations between nouns on the one hand and adjectives and verbs on the other hand. If for example an adjective modifies a noun, then the adjective must be prefixed with a morpheme (a so called adjective marker) which depends on the class of the modified noun. If, for example, the adjective *ncane* (small) modifies the noun *emahhashi* (3PL.horse), then the adjective must be prefixed with the morpheme *ma*. In addition, the adjective must also be prefixed with the determiner *la*, so that the complete phrase is *emahhashi lamancane* (small horses). If, however, the same adjective *ncane* modifies the noun *bobhuti* (brothers), then the adjective must be prefixed by the morpheme *ba*, resulting in the phrase *bobhuti labancane* (small brothers). The prefixes occurring on words modifying a noun can be shown to be derived from the class-prefix of the noun itself. See Thwala (1995) for a detailed analysis of the agreement system within the noun phrase.

Personal pronouns consist of two syllables, the pronominal syllable and a so-called stabiliser *na*. The pronominal syllable depends on (i) the person and (ii) (in the third person) the class of the noun it stands for. This is illustrated in Table 4.2. Thwala (1995, 41) demonstrates “that there is some regularity in the morphology of third person pronouns which makes it possible to state how they are derived.” In particular, Thwala argues that the pronominal syllable is “composed of three morphological parts: (i) a class/number affix, (ii) the vowel a-, and (iii) a final vowel, namely u-.” The capital *N* in some of the noun prefixes in the following table (e.g. the class 4 plural noun prefix *tin*()) stands for the phonological feature nasal.

4.1.2 Basic clauses

In this section I will present the way in which the arguments of intransitive, transitive and ditransitive predicates are encoded in basic clauses. The formal means by which the semantic relation between an argument and a predicate is encoded in Siswati are the class-prefixes on the verb stem and the position of the noun phrases expressing the arguments in the clause. The first observation is that the linearly first class-prefix of the verb depends on a particular noun phrase, which is referred to as the privileged NP (this is what others refer to as the subject, but for the reasons discussed at the beginning of this section I have decided to use an alternative notion). The other NPs will be referred to as complement NPs. The second observation is that in basic clauses the complement NPs and the verb form a verb phrase which cannot be separated by adverbs. Thirdly, complement NPs occur in a certain

---

2For example, the first class plural independent pronoun *bona* is hypothesised to consist of the class prefix *ba*, the vowel *u* and the stabiliser *na*. The class-prefix *ba* and the vowel *u* form the first syllable *bo*.

3The notion of the privileged NP should not be confused with the semantic notion “inherently prominent argument” which I introduced in section 2.4.2.
<table>
<thead>
<tr>
<th>Person</th>
<th>Class</th>
<th>Number</th>
<th>Pronoun</th>
<th>Noun prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>sg</td>
<td>mi-ne</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>tsi-ne</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>sg</td>
<td>we-na</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>ni-ne</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>sg</td>
<td>ye-na</td>
<td>um(u)-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>bo-na</td>
<td>ba-</td>
</tr>
<tr>
<td>1a</td>
<td></td>
<td>sg</td>
<td>ye-na</td>
<td>∅</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>bo-na</td>
<td>bo-</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>sg</td>
<td>wo-na</td>
<td>um(u)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>yo-na</td>
<td>imi</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>sg</td>
<td>lo-na</td>
<td>li-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>wo-na</td>
<td>ema-</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>sg</td>
<td>so-na</td>
<td>si-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>to-na</td>
<td>tiN-</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>sg</td>
<td>yo-na</td>
<td>iN-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>to-na</td>
<td>tiN-</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>sg</td>
<td>lo-na</td>
<td>lu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pl</td>
<td>to-na</td>
<td>tiN</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>ko-na</td>
<td>ku-</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Personal pronouns. Source: Thwala (1995, 37f)
CHAPTER 4. SISWATI

default order. Fourthly, the occurrence of the privileged NP is not obligatory. Neither is the occurrence of complement NPs. In other words, both privileged NPs and complement NPs can be omitted. If a complement NP is omitted, then a second class-prefix depending on (or matching) the class of the omitted NP is obligatory. Fifthly, verbs in Siswati cannot have more than two class-prefixes. Sixthly, verb phrase internal complement NPs are in complementary distribution with corresponding second class-prefixes.

The prefix of the intransitive verb fik-e (arrived) in the following sentences depends on the person, number and class features of the noun phrase. If the noun phrase is mine (I), then the prefix of the verb must be ngi, if the noun phrase is tsine (we), then the prefix of the verb must be si, and if the noun phrase is silima, then the verb prefix must be si.

   1st.SG 1st.SG-arrive-IP today
   I arrived today.
   1st.SG 1st.PL-arrive-IP today
   Int.: I arrived today.

(78) a. Tsine si-fik-e lamuhla.
   1st.PL 1st.PL-arrive-IP today
   We arrived today.
   1st.PL 1st.SG-arrive-IP today
   Int.: We arrived today.

(79) a. Silima si-fik-e lamuhla.
   4SG.fool 4SG-arrive-IP today
   The fool arrived today.
   4SG.fool 3SG-arrive-IP today
   Int.: The fool arrived today.

In order to distinguish the verb prefixes which depend on the person, number and/or class features of a noun phrase from other verb prefixes which depend on other features (e.g. tense and aspect prefixes), I shall refer to the verb prefixes which depend on person, number and/or class features of noun phrases as **class-prefixes** of a verb.

The dependence of a verb prefix on the person, number and/or class of a noun phrase is **analysed** by attributing to the verb prefix the features of the noun or pronoun on which it depends. This is expressed by glossing the verb prefix the same way as the noun class.

---

4Talking about the omission of an NP is justified if one describes, as I do, the relation between a given thought and the ways in which this thought may be expressed. From this perspective there is no problem in saying that a certain argument has not been expressed, or equivalently that the expression of an argument (e.g. a certain NP) has been omitted. It is only when one starts from a given string and discusses the possible meanings that one should not talk of omission of NPs.
prefix. So in (79), the dependence of the first verb prefix on the class of silima is analysed by assigning the first prefix si of the verb the same class as the noun phrase. As it happens, in (79) the class-prefix of the noun is identical with the class-prefix of the verb. Note, however, that the class-prefixes of verbs are not always identical to the class-prefixes of nouns or pronouns. For example, the class-prefix of the noun emanti (water) is ema, but the corresponding class-prefix on the verb is a.

The class-prefix of the verb is obligatory:

    I arrive-IP today
    Int.: I arrived today.

b. *Tsine fik-e lamuhla.
    1st.PL arrive-IP today
    Int.: We arrived today.

c. *Silima fik-e lamuhla.
    4SG.fool arrive-IP today
    Int.: The fool arrived today.

In monotransitive and ditransitive basic clauses the verbal class prefix must have the same class as a particular NP of the clause. For example, the verbal class-prefix in (81) cannot be a, which is the verbal class-prefix for emanti (water), but must be si, which is the verbal class-prefix for silima (fool).

(81) a. Silima si-nats-e emanti itolo.
    4SG.fool 4SG-drink-IP 3PL.water yesterday
    The fool drank water yesterday.

b. *Silima a-nats-e emanti itolo.
    4SG.fool 3PL-drink-IP 3PL.water yesterday
    Int.: The fool drank water yesterday.

c. *Silima si-nik-e bafana kudla itolo.
    4SG.fool 4SG-give-IP 1PL.boy 8.food yesterday
    The fool gave the boys food yesterday.

b. *Silima ba-nik-e bafana kudla itolo.
    4SG.fool 1PL-give-IP 1PL.boy 8.food yesterday
    Int.: The fool gave the boys food yesterday.

c. *Silima ku-nik-e bafana kudla itolo.
    4SG.fool 8-give-IP 1PL.boy 8.food yesterday
    Int.: The fool gave the boys food yesterday.

The particular NP on which the first class-prefix of the verb depends will be referred to as the privileged NP. Despite its occasional use as a technical term (see Foley and Valin (1985)), I shall use this notion simply as a label for the NP on which the first class-prefix of the verb depends. This label should not be confused with the notion of subject, which is a theoretical term and will be discussed in section 4.2.1.
So the privileged NP in 81 is silima, i.e. the person drinking as opposed to the thing drunk, while the privileged NP in 82 is the NP referring to the person giving, as opposed to the thing given or the person receiving. The NPs other than the privileged NP shall be referred to as complement NPs.

In the sentences 81a and 82a neither the privileged noun phrase nor the adjunct itolo (yesterday) can intervene between the verb and the following noun phrase(s), as shown by the ungrammatical sentences below.

(83) a. *Si-nats-e silima emanti.
   4SG-drink-IP 4SG.fool 3PL.water
   Int.: The fool drank water.

b. *Silima si-nats-e itolo emanti.
   4SG.fool 4SG-drink-IP yesterday 3PL.water
   Int.: The fool drank water yesterday.

(84) a. *Si-nik-e silima bafana kudla.
   4SG-give-IP 4SG.fool 1PL.boy 8.food
   Int.: The fool gave the boys food.

b. *Si-nik-e bafana silima kudla.
   4SG-give-IP 1PL.boy 4SG.fool 8.food
   Int.: The fool gave the boys food.

c. *Silima si-nik-e itolo bafana kudla.
   4SG.fool 4SG-give-IP yesterday 1PL.boy 8.food
   Int.: The fool gave the boys food yesterday.

d. *Silima si-nik-e bafana itolo kudla.
   4SG.fool 4SG-give-IP 1PL.boy yesterday 8.food
   Int.: The fool gave the boys food yesterday.

These observations can be analysed by hypothesising that the verb and the following noun phrases in 81a and 82a constitute a verb phrase. According to my usage of the notion of verb phrase, the temporal adjunct itolo is not considered to be part of the verb phrase.

The default order of noun phrases inside the verb phrase in 82a is bafana (boys) before kudla (food), that is the NP referring the argument receiving (recipient NP for short) occurs before the NP referring the thing given (theme NP). However, in Siswati it is possible to emphasise (focus) a noun phrase by placing it at the end of the sentence. Thus the recipient NP can follow the theme NP, but only if it is at the end of the sentence. This is illustrated by the grammaticality of 85a and the ungrammaticality of 85b.

(85) a. *Silima si-nik-e kudla BAFANA.
   4SG.fool 4SG-give-IP 8.food 1PL.boy
   The fool gave THE BOYS food.

b. *Silima si-nik-e kudla BAFANA itolo.
   4SG.fool 4SG-give-IP 8.food 1PL.boy yesterday
   Int.: The fool gave THE BOYS food yesterday.
CHAPTER 4. SISWATI

The capitals in (85) indicate that bafana (boys) is emphasised.

The privileged noun phrase in (86a-i), (86b-i) and (86c-i), can be omitted, as shown in (86a-ii), (86b-ii) and (86c-ii) respectively:

     1st.SG 1st.SG-arrive-IP today
     I arrived today.

     ii. Ngi-fik-e lamuhla.
          1st.SG-arrive-IP today
          I arrived today.

b. i. Silima si-nats-e emanti itolo.
     4SG.fool 4SG-drink-IP 3PL.water yesterday
     The fool drank water yesterday.

     ii. Si-nats-e emanti itolo.
          4SG-drink-IP 3PL.water yesterday
          He (the fool) drank water yesterday.

c. i. Silima si-nik-e bafana kudla itolo.
     4SG.fool 4SG-give-IP 1PL.boy 8.food yesterday
     The fool gave the boys food yesterday.

     ii. Si-nik-e bafana kudla itolo.
          4SG-give-IP 1PL.boy 8.food yesterday
          He (the fool) gave the boys food yesterday.

Note that when the privileged NP is omitted, the English translation of these sentences contains a pronoun. For example (86c-ii) denotes the proposition that he gave the boys food yesterday, where the pronoun refers to an individual which would be expressed by an NP with the same class features as the prefix si.

If the privileged noun phrase can simply be omitted, then the question arises whether the complement noun phrases can be omitted too. The answer is no, since the omission of the noun phrases bafana or kudla in (86c-i) leads to ungrammaticality.

(87) a. Silima si-nik-e bafana kudla itolo.
     4SG.fool 4SG-give-IP 1PL.boy 8.food yesterday
     The fool gave the boys food yesterday.

b. *Silima si-nik-e kudla itolo.
     4SG.fool 4SG-give-IP 8.food yesterday
     Int.: The fool gave them (the boys) food yesterday.

c. *Silima si-nik-e bafana itolo.
     4SG.fool 4SG-give-IP 1PL.boy yesterday
     Int.: The fool gave it (the food) to the boys yesterday.

5This is the well-known phenomenon which others refer to as subject pro-drop. Languages displaying this phenomenon vary in which properties of the omitted NP the verb displays (e.g. person, number, class), as well as in the means by which these properties are displayed on the verb (e.g. inflection, affixes).
However, either of these noun phrases can be omitted, if the verb is prefixed with an additional morpheme which depends on the class of the omitted noun phrase.

If the complement noun phrase bafana is omitted, then the verb has to be prefixed with the second morpheme ba, as shown by (88b). If, however, the complement noun phrase kudla is omitted, then the verb must be prefixed with a second prefix ku, as shown in (88c).

(88) a. Silima si-nik-e bafana kudla itolo.
   4SG.fool 4SG-give-IP 1PL.boy 8.food yesterday
   The fool gave the boys food yesterday.

   b. i. Silima si-ba-nik-e kudla itolo.
       4SG.fool 4SG-1PL-give-IP 8.food yesterday
       The fool gave them (the boys) food yesterday.

   ii. *Silima si-ku-nik-e kudla itolo.
       4SG.fool 4SG-8-give-IP 8.food yesterday
       Int.: The fool gave them (the boys) food yesterday.

   c. i. Silima si-ku-nik-e bafana itolo.
       4SG.fool 4SG-8-give-IP 1PL.boy yesterday
       The fool gave it (the food) to the boys yesterday.

   ii. *Silima si-ba-nik-e bafana itolo.
       4SG.fool 4SG-1PL-give-IP 1PL.boy yesterday
       Int.: The fool gave it (the food) to the boys yesterday.

Thus, the second prefixes in (88b-i) and (88c-i) respectively depend on the class of the omitted noun phrases. This dependence is analysed by assigning the second prefixes the same class as the omitted noun phrase.

If either of the two noun phrases bafana and kudla can be omitted in the presence of a class marker dependent on the omitted NP, then the question arises whether the two NPs can be omitted simultaneously. This would require three class-prefixes on the verb, which is not possible in Siswati, as shown by the ungrammaticality of (89a) and (89b).

(89) a. *Silima si-ba-ku-nik-e itolo.
   4SG.fool 4SG-1PL-8-give-IP yesterday
   Int.: The fool gave it (the food) to them (the boys) yesterday.

   b. *Silima si-ku-ba-nik-e itolo.
   4SG.fool 4SG-8-1PL-give-IP yesterday
   Int.: The fool gave it (the food) to them (the boys) yesterday.

Similar sentences, however, are grammatical in Kinyarwanda and other languages.

---

*Remember from the presentation of the noun class system that the class of a noun cannot always be determined on the basis of what the noun means. If this were the case, then it would not be necessary to say that the class-prefixes depend on the noun class of the omitted NP, but it would be sufficient to say that the class-prefix depends (or matches) the class of the unexpressed semantic argument. Since this is not the case, it is necessary to refer in this generalisation to the class of the omitted noun phrase.
If a verb of a basic clause has two class-prefixes, then the first of them (for short the 1st CP) depends on the class of the privileged NP, while the second verbal class-prefix (2nd CP) depends on another NP related to the verb. Thus the sentence (90) can only mean that the speaker beat them (the boys), not that they (the boys) beat the speaker.

(90) Ngi-ba-shay-e itolo.
    1st.SG-1PL-beat-IP yesterday
    Only: I beat them (the boys).
    Not: The boys beat me.

The second class-prefix on the verb is not always identical to the noun class prefix. For example, the class-prefix of the noun emanti (water) is ema, while the second verbal class-prefix necessary if the noun emanti is omitted is wa:

(91) a. Silima si-nats-e emanti itolo.
    4SG.fool 4SG-drink-IP 3PL.water yesterday
    The fool drank water yesterday.

b. Silima si-wa-nats-e itolo.
    4SG.fool 4SG-3PL-drink-IP yesterday
    The fool drank it yesterday.

Table 4.3 illustrates the first and second verbal class prefixes. For convenience, I have added also the corresponding noun prefixes, pronouns, adjectival and possessive class-prefixes.

So far I have illustrated that complement NPs can occur adjacent to the verb (i.e. within a verb phrase), or they can be omitted, in which case a second verbal class-prefix dependent on the class of the omitted NP is necessary. Complement NPs can also occur outside the verb phrase. If they occur outside the verb phrase, then the verb must contain a second class-prefix dependent on the class of the verb phrase external complement NP. The occurrence of a complement NP outside the verb phrase is usually associated with an intonation break between the verb phrase and the subsequent NP, much as with postposed privileged NPs.

The sentences in (92) show that if the complement NP emanti occurs outside the verb phrase, then a second class-prefix wa dependent on the class of emanti is obligatory.

(92) a. Silima si-nats-e emanti itolo.
    4SG.fool 4SG-drink-IP 3PL.water yesterday
    The fool drank water yesterday.

b. Emanti silima si-*w(nats-e itolo.
    3PL.water 4SG.fool 4SG-3PL-drink-IP yesterday
    Water, the fool drank (it) yesterday.

c. Silima si-*w(nats-e itolo emanti.
    4SG.fool 4SG-3PL-drink-IP yesterday 3PL.water
    The fool drank it yesterday the water.

The same holds for ditransitive clauses. If the NP bafana expressing the recipient is outside the verb phrase, the verb must contain a second class prefix dependent on the class of the
<table>
<thead>
<tr>
<th>Person</th>
<th>Class</th>
<th>Number</th>
<th>Pronoun</th>
<th>Noun</th>
<th>1st VCP</th>
<th>2nd VCP</th>
<th>ADJ-P</th>
<th>POSS-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>sg</td>
<td>mi-ne</td>
<td>ngi-</td>
<td>ngi-</td>
<td>ngi-</td>
<td>ngi-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>tsi-ne</td>
<td>si-</td>
<td>si-</td>
<td>si-</td>
<td>si-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>sg</td>
<td>we-na</td>
<td>u-</td>
<td>ku-</td>
<td>u-</td>
<td>u-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>ni-ne</td>
<td>ni-</td>
<td>ni-</td>
<td>ni-</td>
<td>ni-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>ye-na</td>
<td>um(u)-</td>
<td>u-</td>
<td>mu-</td>
<td>mu-</td>
<td>ba-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1a</td>
<td>ye-na</td>
<td>ð-</td>
<td>u-</td>
<td>mu-</td>
<td>mu-</td>
<td>w-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>bo-na</td>
<td>ba-</td>
<td>ba-</td>
<td>ba-</td>
<td>ba-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>sg</td>
<td>wo-na</td>
<td>um(u)</td>
<td>u-</td>
<td>wu-</td>
<td>mu-</td>
<td>w-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>yo-na</td>
<td>imi</td>
<td>i-</td>
<td>yi-</td>
<td>mi-</td>
<td>y-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>lo-na</td>
<td>li-</td>
<td>li-</td>
<td>li-</td>
<td>li-</td>
<td>li-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>wo-na</td>
<td>ema-</td>
<td>a-</td>
<td>wa-</td>
<td>ma-</td>
<td>a-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>sg</td>
<td>so-na</td>
<td>si-</td>
<td>si-</td>
<td>si-</td>
<td>si-</td>
<td>si-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>to-na</td>
<td>tin-</td>
<td>ti-</td>
<td>ti-</td>
<td>tiN-</td>
<td>ti-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>sg</td>
<td>yo-na</td>
<td>in-</td>
<td>i-</td>
<td>yi-</td>
<td>iN-</td>
<td>y-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>to-na</td>
<td>tim-</td>
<td>ti-</td>
<td>ti-</td>
<td>tiN-</td>
<td>ti-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>sg</td>
<td>lo-na</td>
<td>lu-</td>
<td>lu-</td>
<td>lu-</td>
<td>lu-</td>
<td>lu-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pl</td>
<td>to-na</td>
<td>tim</td>
<td>ti-</td>
<td>ti-</td>
<td>tiN-</td>
<td>ti-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>bo-na</td>
<td>bu-</td>
<td>bu-</td>
<td>bu-</td>
<td>bu-</td>
<td>bu-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>ko-na</td>
<td>ku-</td>
<td>ku-</td>
<td>ku-</td>
<td>ku-</td>
<td>ku-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3: Nominal, verbal, adjectival and possessive class prefixes. Source: [Thwala 1995, 13f]
NP bafana, as shown in (93a). If the NP kudla expressing the theme is outside the VP, then the verb must contain a second class-prefix dependent on (or matching) the class of the NP kudla, as shown in (93c).

(93) a. Silima si-nik-e bafana kudla itolo.  
4SG.fool 4SG-give-IP 1PL.boy 8.food yesterday  
The fool gave the boys food yesterday.

b. Bafana silima si-(ba-)nik-e kudla itolo.  
1PL.boy 4SG.fool 4SG-1PL-give-IP 8.food yesterday  
The boys, the fool gave (them) food yesterday.

c. Silima si-(ku-)nik-e bafana itolo kudla.  
4SG.fool 4SG-8-give-IP 1PL.boy yesterday 8.food  
The fool gave it to the boys yesterday, the food.

If one of two complement NPs of a ditransitive verb occurs outside the VP, then the other complement NP cannot also occur outside the verb phrase, as shown by the ungrammaticality of the sentences (94), where the adjunct itolo (yesterday) occurs right-adjacent to the verb, and thus forces the other complement NP to also occur outside the verb phrase.

(94) a. *Bafana silima si-ba-nik-e itolo kudla.  
1PL.boy 4SG.fool 4SG-1PL-give-IP yesterday 8.food  
Int.: The boys, the fool gave (them) food yesterday.

b. *Silima si-ku-nik-e itolo bafana kudla.  
4SG.fool 4SG-8-give-IP yesterday 1PL.boy 8.food  
Int.: The fool gave it to the boys yesterday, the food.

I have now shown that if a complement NP of a verb in a basic clause occurs outside the verb phrase, then a second class prefix dependent on this complement NP must be attached to the verb. The sentences in (95) show that if a complement NP occurs within the verb phrase, then a second class-prefix dependent on the complement NP cannot be attached to the verb.

(95) a. Silima si-(wa-)nats-a emanti.  
4SG.fool 4SG-3PL-drink-FV 3PL.water  
The fool drinks water.

b. Silima si-(ba-)nik-e bafana kudla itolo.  
4SG.fool 4SG-1PL-give-IP 1PL.boy yesterday 8.food  
The fool gave the boys food yesterday.

The grammaticality of (96a) does not show that a VP-internal complement NP can co-occur with a second class-prefix which depends on this NP. The reason for the grammaticality of (96a) is that the complement kudla in (96a) is not within the verb phrase, as demonstrated by the grammaticality of (96b), where the adjunct itolo occurs before the complement NP kudla.
(96) a. Silima si-ku-nik-e bafana kudla itolo.  
4SG.fool 4SG-8-give-IP 1PL.boy 8.food yesterday  
The fool gave it to the boys, the food, yesterday.

b. Silima si-ku-nik-e bafana itolo kudla.  
4SG.fool 4SG-8-give-IP 1PL.boy yesterday 8.food  
The fool gave it to the boys yesterday, the food.

The generalisation established so far is that the presence/absence of a complement NP in/from the verb phrase correlates with the absence/presence of a second class-prefix which depends on the class of the NP. This correlation will be one of the main reasons for hypothesising that the second class-prefix acts as a regular pronoun.

4.1.3 Conjunctive and disjunctive verb forms

This section contains the presentation of the distinction between the conjunctive and disjunctive verb forms in Siswati, a phenomenon which has received comparatively little attention in the literature.

The present tense is not marked morphologically.

(97) La-ba-fana ba-nats-a tjwala.  
DET-1PL-boy 1PL-drink-FV 7.alcohol  
The boys drink alcohol.

Or: The boys are drinking alcohol.

The suffix -a is the final vowel of the verb stem which also occurs with other tenses, for example the immediate future, as shown in (98).

(98) Bafana ba-to-nats-a tjwala.  
boy.1PL 1PL-FUT-drink-FV 7.alcohol  
The boys will drink alcohol.

The sentence (97) can mean that the boys are drinking alcohol at the moment in which the sentence is uttered. Therefore, no morphological affix is necessary to express a progressive reading.

Consider next the following pair of sentences.

Nhlanhla 1SG-play-FV  
Int.: Nhlanhla plays.

b. Nhlanhla u-dlal-a kahle.  
Nhlanhla 1SG-play-FV well  
Nhlanhla plays well.

These examples show that the present tense verb udlala cannot occur at the end of a sentence. In order to occur at the end of a sentence, a present tense verb must be marked with the affix ya, glossed as a disjunctive marker (DISJ).
CHAPTER 4. SISWATI

(100)  a. *Nhlanhla u-dlal-a.
Nhlanhla 1SG-play-FV
Int.: Nhlanhla plays.

Nhlanhla 1SG-DISJ-play-FV
Nhlanhla plays.

In fact, a present tense verb must be marked with ya not only when it occurs at the end of a sentence, but more generally when it occurs pre-pausally, in both cases indicating the completion of an intonation phrase. The intonation break is indicated by # and is glossed with IB.

DET.1PL.boy 1PL-5SG-wash-FV IB 5SG.car
Int.: The boys wash it, the car.

b. Labafana ba-[ya]-yi-gez-a # imoto.
DET.1PL.boy 1PL-DISJ-5SG-wash-FV IB 5SG.car
The boys wash it, the car.

The second class-prefix yi in the sentence (102b) is necessary, when the verb is marked with ya.

(102)  a. *Labafana ba-ya-gez-a # imoto.
DET.1PL.boy 1PL-DISJ-wash-FV IB 5SG.car
Int.: The boys wash it, the car.

b. Labafana ba-ya-yi-gez-a # imoto.
DET.1PL.boy 1PL-DISJ-5SG-wash-FV IB 5SG.car
The boys wash it, the car.

When a transitive (or ditransitive) present tense verb is not marked with ya, then the object marker is not necessary.

(103)  Labafana ba-gez-a imoto.
1PL.boy 1PL-wash-FV 5SG.car
The boys wash the car.

If, however, the disjunctive marker does not occur on the main verb but on a preceding (ad)verb, as in (104), then the second class-prefix on the main verb is not obligatory.

(104)  Ngi-ya-phindz-a ngi-dlal-a ibhola.
1st.SG-DISJ-again-FV 1st.SG-play-FV 5SG.ball
I am again playing ball.

If a ditransitive verb nik (give) is marked with ya, then the verb must contain a second class-prefix which depends on the NP expressing the recipient argument.

(105)  a. Kudla bafana ba-ya-*(si)-nik-a (silima).
8.food 1PL.boy 1PL-DISJ-4SG-give-FV (4SG.fool)
The food the boys give to him (the fool).
It is worth repeating at this point that Siswati cannot have more than two class-prefixes on the verb, and thus the verb in (105a) cannot also contain a prefix depending on the VP-external NP kudla.

Creissels [1996] used the terminology of conjunctive and disjunctive verb forms in order to analyse similar data in Setswana. If a present tense verb is not marked with ya, I shall follow Creissels in saying that it has conjunctive form, since it must conjoin with the phrase which follows to build a prosodic unit of some kind. If, however, the present tense verb is marked with ya, then I shall say that it is in disjunctive form.

Verbs in the immediate past tense are similar to present tense verbs lacking the prefix ya in that they cannot occur at the end of a sentence, as shown in (106).

(106) a. *Nhlanhla u-dlal-e.   Nhlanhla 1SG-play-IP
Int.: Nhlanhla played.

Verbs in the subjunctive form are also suffixed with e. However, unlike verbs suffixed with the immediate past suffix e, verbs ending with the subjunctive suffix e can occur at the end of a sentence.

(108) Silima si-phindz-a si-nats-e.   4SG.fool 4SG-repeat-FV 4SG-drink-SBJV.
The fool drinks again.

The sentence (108) also shows that the first class-prefix can occur on words other than the main verb, in particular on auxiliaries and adverbs. This phenomenon is described in detail and analysed in Thwala [1995, 155f].

A main verb which is suffixed with the morpheme ile is similar to a present tense verb prefixed with ya, in that it can occur pre-pausally.

(109) a. *Nhlanhla u-dlal-[ile].   Nhlanhla 1SG-play-DISJ.PRF
Nhlanhla has played.
b. Labafana ba-yi-gez-ile # imoto.  
DET.1PL.boy 1PL-5SG-wash-DISJ.PRF IB 5SG.car  
The boys have washed it, the car.

If a monotransitive or ditransitive main verb is suffixed with ile, then it is similar to present tense verbs marked with ya, in that it must contain a second class-prefix. The lack of such a second class-prefix in (109b) leads to ungrammaticality.

(110) a. *Labafana ba-gez-ile # imoto.  
DET.1PL.boy 1PL-wash-DISJ.PRF IB 5SG.car  
Int.: The boys have washed it, the car.  
b. Labafana ba-yi-gez-ile # imoto.  
DET.1PL.boy 1PL-DISJ-5SG-wash-DISJ.PRF IB 5SG.car  
The boys have washed it, the car.

Summing up so far, we have seen that present tense verbs which are not marked with ya and immediate past tense verbs marked with e cannot occur pre-pausally. I shall refer to these forms of the present tense and immediate past tense forms as the conjoint forms. Secondly we have observed that if the present tense verb is marked with ya, and if a main verb is suffixed with ile, then they can occur pre-pausally. Verbs with these forms will be referred to as having the disjunctive form. Thirdly, we observed that monotransitive or ditransitive verbs in the disjoint form require the presence of a second class-prefix. I have so far refrained from saying which complement NP this class-prefix depends on. This is what I will turn to next.

A monotransitive verb in disjunctive form requires the presence of a second class-prefix which depends on the class of the (only) complement NP of the verb.

(111) Labafana ba-ya-*[(yi-)]gez-a # imoto.  
DET.1PL.boy 1PL-DISJ-5SG-wash-FV IB 5SG.car  
The boys wash it, the car.

The requirement of the second class-prefix yi in (111) will be analysed as follows. (1) The prefix ya indicates that the verb is disjoint from the following phrase. (2) The elements of the verb phrase are not separated by intonation breaks. From (1) and (2) it follows that (3) the complement NP imoto does not occur within the verb phrase in (111). From (3) it follows that (4) the complement NP imoto can either occur outside the verb phrase or be omitted. (5) The presence/absence of a complement NP in/from the verb phrase correlates with the absence/presence of a second class-prefix which depends on the class of the NP.

When a ditransitive verb is suffixed with the morpheme ile, then the verb must also be prefixed with a second class-prefix which depends on the class of the noun phrase which expresses the recipient. The obligatoriness of this second class-prefix is shown by (112a).
The second class-prefix cannot depend on the theme, as shown by the ungrammaticality of (112b). Moreover, the verb cannot be prefixed by three class-prefixes (one depending on the class of the privileged NP and the other two depending on the classes of the complement NPs), as shown by (112c).

(112) a. Silima si-(ba)-nik-ile bafana kudla itolo.
4SG.fool 4SG-1PL-give-DISJ.PRF 1PL.boy 8.food yesterday
The fool has given them, the boys, the food yesterday.

b. *Silima si-ku-nik-ile bafana kudla itolo.
4SG.fool 4SG-8-give-DISJ.PRF 1PL.boy 8.food yesterday
Int.: The fool has given it to the boys yesterday, the food.

c. *Silima si-ba-ku-nik-ile itolo.
4SG.fool 4SG-1PL-8-give-DISJ.PRF yesterday
Int.: The fool has given it (the food) to them (the boys) yesterday.

Note that both complement NPs bafana and kudla occur outside the verb phrase in (112a), as shown by the fact that the adjunct itolo can occur after the verb, as shown in (113a).

Since Siswati allows at most two class markers (one of them depending on the class of the privileged NP), and since the absence of bafana from the VP has to correlate with the presence of a dependent class-prefix, the absence of the NP kudla from the VP cannot also correlate with the presence of a class-prefix. (113b) shows that the complement NP kudla (class 8) can occur topicalised, and thus outside the verb phrase without a class-prefix of class 8 being attached to the verb. This constitutes the only exception to the generalisation that the presence/absence of a complement NP in/from the verb phrase correlates with the absence/presence of a class-prefix which depends on the class of the NP, since kudla is absent from the verb phrase, but this absence does not correlate with the presence of a second class-prefix of class 8.

(113) a. Silima si-ba-nik-ile itolo bafana kudla.
4SG.fool 4SG-1PL-give-DISJ.PRF yesterday 1PL.boy 8.food
The fool has given them, the boys, yesterday food.

b. Kudla silima si-ba-nik-ile.
8.food 4SG.fool 4SG-1PL-give-DISJ.PRF
The food, the fool has given (it) them (the boys).

This concludes the presentation of (i) the conjoint properties of present tense verbs which are not marked with ya and of immediate past tense verbs marked with e, and of (ii) the disjunctive properties of present tense verbs marked with ya and of main verbs suffixed with ile. Next I will show that (i) ile cannot be suffixed to a verb which is already marked for tense, and that (ii) ile does not always display the disjoint properties, but only if it occurs on the rightmost verb of a verb compound.

The morpheme ile cannot be suffixed to a verb which is also inflected for the immediate
future, remote future or remote past tense (irrespective of the presence or absence of the complement NP).

(114)  
DET.4SG.fool 4SG-FUT-8-buy-DISJ.PRF 8.food  
Int.: The fool will have bought it, the food.

DET.4SG.fool 4SG-RF-8-buy-DISJ.PRF 8.food  
Int.: The fool will have bought food.

DET.4SG.fool 4SG-RP-8-buy-DISJ.PRF 8.food  
Int.: The fool had bought it, the food.

However, if the tense marker occurs not on the main verb, but for example on a copula preceding the main verb, then ile can be suffixed to the main verb.

(115)  
a. Lesilima si-to-be si-ku-tseng-ile (kudla).  
DET.4SG.fool 4SG-FUT-COP 4SG-8-buy-DISJ.PRF 8.food  
The fool will have bought it, the food.

b. Lesilima si-yo-be si-ku-tseng-ile (kudla).  
DET.4SG.fool 4SG-RF-COP 4SG-8-buy-DISJ.PRF 8.food  
The fool will have bought it, food.

c. Lesilima s-a-si-ku-tseng-ile (kudla).  
DET.4SG.fool 4SG-RP-4SG-8-buy-DISJ.PRF 8.food  
The fool had bought it, the food.

Omitting the second class-prefix ku would lead to ungrammaticality in all three sentences.

(116)  
DET.4SG.fool 4SG-FUT-COP 4SG-buy-DISJ.PRF 8.food  
Int.: The fool will have bought food.

DET.4SG.fool 4SG-RF-COP 4SG-buy-DISJ.PRF 8.food  
Int.: The fool will have bought food.

DET.4SG.fool 4SG-RP-4SG-buy-DISJ.PRF 8.food  
Int.: The fool had bought food.

Assuming that the remote past tense marker a is a verb on its own, we could describe the co-occurrence of ile with future and past tense markers by saying that ile does not occur on the same verb as the future and past tense markers.

The obligatoriness of the object markers in (115) indicates that ile is a disjunctive marker.

The sentences in (117) and (118) show that if possible ile has to occur on the left-most element of the verb complex, not on the main verb.
   1st.SG-again-PRF 1st.SG-play-FV 5SG.ball
   I have again played ball.

b. *Ngi-phindz-e nga-dlal-ile ibhola.

   Jabulani 1SG-almost-PRF 1SG-again-SBJV 1SG-hurt-FV
   Jabulani has almost again hurt himself.


   Jabulani 1SG-almost-SBJV 1SG-again-PRF 1SG-hurt-FV

   Jabulani 1SG-almost-SBJV 1SG-again-SBJV 1SG-hurt-PRF

More research on the occurrence of the affixes ya and ile is necessary. The following observations and generalisations have been made:

- Verbs in the conjunctive form (i.e. present tense verbs which are not marked with ya and immediate past tense verbs marked with e) cannot occur before a pause.

- Verbs in the disjunctive form (i.e. present tense verbs marked with ya and main verbs suffixed with ile) can occur pre-pausally.

- Monotransitive or ditransitive verbs in the disjunctive form must be prefixed with a class morpheme which depends on the class of the complement of the monotransitive verb or the recipient NP in the case of ditransitive verbs.

- ile can only be suffixed to a verb, if this verb does not itself inflect for tense. So if a tense marker is on an auxiliary and not on the main verb, then it is possible to suffix ile to the main verb.

- ile displays disjunctive properties only if it is suffixed to the last verb in the verb compound.

- ile is suffixed on the left-most element of a verb complex, unless this element is tense marked, in which case it occurs on the last element.

4.1.4 Applicative

The applicative construction is illustrated by sentence (119b):

    Jabulani 1SG-wash-IP 5SG.car yesterday
    Jabulani washed a car yesterday.

b. Jabulani u-gez-el-e make imoto itolo.
    Jabulani 1SG-wash-APPL-IP 1SG.mother 5SG.car yesterday
    Jabulani washed the car yesterday for mother (or on behalf of mother, or to the detriment of mother).
The first formal difference between these two sentences is that the verb root in (119b) has been suffixed with the so-called applicative marker el, while in (119a) this is not the case. The second formal difference is that (119b) contains the complement NP make (mother) which is lacking in (119a). These formal differences correlate with a semantic difference. (119a) means that Jabulani washed a car yesterday, while (119b) means that Jabulani washed a car yesterday for mother, or on behalf of mother or to the detriment of mother.

The ungrammaticality of the sentences (120) shows that the verb and the two NPs make and imoto in (119b) form a verb phrase.

(120) a. *Jabulani u-gez-el-e itolo make imoto.
Jabulani 1SG-wash-APPL-IP yesterday 1SG.mother 5SG.car
Int.: Jabulani washed mother the car yesterday.

b. *Jabulani u-gez-el-e make itolo imoto.
Jabulani 1SG-wash-APPL-IP 1SG.mother yesterday 5SG.car
Int.: Jabulani washed mother the car yesterday.

The sentences (121) show that the (default) word order is applicative NP before other complement NP.

(121) a. Jabulani u-gez-el-e make imoto itolo.
Jabulani 1SG-wash-APPL-IP 1SG.mother 5SG.car yesterday
Jabulani washed mother the car yesterday.

b. *Jabulani u-gez-el-e imoto make itolo.
Jabulani 1SG-wash-APPL-IP 5SG.car 1SG.mother yesterday
Int.: Jabulani washed mother the car yesterday.

Sentence (122) shows that, as in sentence (85a) above, this word order can be overridden in order to place an emphasised verb phrase internal NP at the end of a sentence.

(122) Jabulani u-gez-el-e imoto MAKE.
Jabulani 1SG-wash-APPL-IP 5SG.car 1SG.mother
Jabulani washed the car for MOTHER.

Next I will show that the presence/absence of either of the two complement NPs make (mother) and imoto (car) in/from the verb phrase correlates with the absence/presence of a second class prefix on the verb which depends on the class of the NP (which is absent from the verb phrase).

If the complement NP make is not inside the verb phrase (e.g. it is omitted), then the second class-prefix mu is obligatory, as shown in (123a). If the complement NP make is within the verb phrase, then the second class-prefix mu cannot be attached to the verb, (123b).

(123) a. Jabulani u-*{(mu-)}gez-el-e imoto itolo.
Jabulani 1SG-1SG-wash-APPL-IP 5SG.car yesterday
Jabulani washed the car for her (mother) yesterday.
b. Jabulani u-(*mu-)*gez-el-e make imoto itolo.
   Jabulani 1SG-1SG-wash-APPL-IP 1SG.mother 5SG.car yesterday
   Jabulani washed mother the car yesterday.

If imoto is not inside the verb phrase (e.g. it is omitted), then the second class-prefix yi
is obligatory, as shown in (124a). The grammaticality of (124b) only shows that imoto is
not part of the verb phrase. This analysis is supported by the fact that the adjunct itolo
(yesterday) can intervene between make (mother) and imoto (car), as shown in (124c).

(124) a. Jabulani u-*(yi-)*gez-el-e make itolo.
   Jabulani 1SG-5SG-wash-APPL-IP 1SG.mother yesterday
   Jabulani washed it (the car) for mother yesterday.

b. Jabulani u-yi-*gez-el-e make imoto itolo.
   Jabulani 1SG-5SG-wash-APPL-IP 1SG.mother 5SG.car yesterday
   Jabulani washed it for mother, the car, yesterday.

c. Jabulani u-yi-gez-el-e make itolo imoto.
   Jabulani 1SG-5SG-wash-APPL-IP 1SG.mother yesterday 5SG.car
   Jabulani washed it for mother yesterday, the car.

As shown by the translation of sentence (119b), the argument introduced by the applica-
tive suffix can have various semantic roles. In other words, the applicative suffix itself does
not encode the specific semantic role which is assigned to the argument it licenses. The
specific semantic role of this argument must be deduced from the context. To illustrate this
further, consider the sentences in (125):

(125) a. Timphahla Jabulani u-ti-*gez-e itolo.
   5PL.clothes Jabulani 1SG-5PL-wash-IP yesterday
   The clothes, Jabulani washed (them) yesterday.

b. Timphahla Jabulani u-ti-*gez-el-e imali itolo.
   5PL.clothes Jabulani 1SG-5PL-wash-IP 5SG.money yesterday
   The clothes, Jabulani washed (them) for money yesterday.

The applicative suffix el in (125b) licenses the introduction of the complement NP imali
(money). The semantic role of the argument introduced by the applicative morpheme is
neither benefactive, nor malefactive, but a motive. The ungrammaticality of sentences
(126b) shows that the complement NP timphahla (clothes) cannot occur inside the verb
phrase.

(126) a. Jabulani u-*(ti-)*gez-el-e imali timphahla itolo.
   Jabulani 1SG-5PL-wash-IP 5SG.money 5PL.clothes yesterday
   Jabulani washed the clothes for money yesterday.

b. *Jabulani u-gez-el-e timphahla imali itolo.
   Jabulani 1SG-wash-IP 5PL.clothes 5SG.money yesterday
   Int.: Jabulani washed the clothes for money yesterday.
The obligatoriness of the second prefix ti in (126a) is somewhat surprising, since the applicative NP in the previous sentences did not prevent the other complement NP from occurring within the verb phrase. The obligatoriness of ti can be analysed as being due to the verb ugezele building a verb phrase with NP imali (money) to the exclusion of the NP timphahla (clothes). As N. Thwala pointed out (p.c.), the verb and the NP seem to build some kind of idiomatic expression, as indicated by the fact that the applicative NP cannot be passivised if it is interpreted as a motive.

\[(127) \ * \text{Imali} \ i-\text{gez}-\text{el}-\text{w-e} \ \text{timphahla.} \]
\[5SG.\text{money} \ 5SG.\text{wash-APPL-PASS-IP} \ 5PL.\text{clothes} \]
\[\text{Int.: For the money were washed the clothes.} \]

Despite the fact that the applicative suffix itself does not encode the specific semantic role assigned to the “applicative” argument, the morphosyntactic properties of the applicative construction depend on the specific semantic role (or some other semantic property of the argument, e.g. humanness or animacy) assigned to the “applicative” argument. If the “applicative” argument is assigned the semantic role of benefactive or malefactive, then the complement NP licensed by the verb itself can occur inside the verb phrase. If, however, the “applicative” argument is assigned the semantic role of motive, then the complement NP licensed by the verb itself cannot occur inside the verb phrase.

Unlike other Bantu languages, Siswati does not license the interpretation of an “applicative” NP as an instrument, as shown by (128a). Instead Siswati uses prepositional phrases to encode the semantic role instrument, as shown in (128b).

\[(128) \ a. \ * \text{Ngi-sik-el-e} \ \text{mukhwa} \ \text{sinkhwa.} \]
\[1st.\text{SG-cut-APPL-IP} \ 3SG.\text{knife} \ 5SG.\text{bread} \]
\[\text{Int.: I cut the bread with the knife.} \]

\[b. \ \text{Ngi-sik-e} \ \text{sinkhwa} \ \text{nge} \ \text{mukhwa.} \]
\[1st.\text{SG-cut-IP} \ 5SG.\text{bread} \ \text{with} \ 3SG.\text{knife.} \]
\[\text{I cut the bread with the knife.} \]

Sentence (129a) shows that the applicative morpheme does not only license noun phrases, as in all previous examples of applicative clauses, but also prepositional phrases, or even a clause, as shown by (130). (129b) shows that the applicative argument with the semantic role of location cannot be expressed as a noun phrase.

\[(129) \ a. \ \text{Jabulani u-fundz-el-a} \ \text{e-hlats-ini.} \]
\[\text{Jabulani} \ 1SG.\text{study-APPL-FV} \ \text{LOC-forest-LOC} \]
\[\text{Jabulani studies in the forest.} \]

\[b. \ * \text{Jabulani u-fundz-el-a} \ \text{li-hlatsi.} \]
\[\text{Jabulani} \ 1SG.\text{study-APPL-FV} \ 3SG.\text{forest} \]
\[\text{Int.: Jabulani studies in the forest.} \]
Nhlanhla will play for the game to end in a draw.

If an applicative verb is in the present tense and marked with *ya, then the verb must be prefixed with a second class-prefix which depends on the class of the NP expressing the applicative argument, as shown by (131a). The second class-prefix cannot depend on a complement NP other than the applicative NP, as shown by (131b).

(131) a. Jabulani u-ya-*(si-)gez-el-a imoto (silima).
    Jabulani 1SG-DISJ-4SG-wash-APPL-FV 5SG.car 4SG.fool
    Jabulani washes him (the fool) the car.

    b. *Jabulani u-ya-yi-gez-el-a silima (imoto).
    Jabulani 1SG-DISJ-5SG-wash-APPL-FV 4SG.fool 5SG.car
    Int.: Jabulani washes it (the car) for the fool.

The applicative does not co-occur with the suffix ile.

I shall now sum up some important points about applicative constructions:

• The applicative suffix el licenses an argument whose semantic role is not explicitly encoded, but must be determined on the basis of the meaning of the verb, the related NPs and the context.

• The argument licensed by the applicative suffix can be expressed as a noun phrase, a prepositional phrase and also a clause, depending on the semantic role assigned to the argument.

• The argument licensed by the applicative suffix cannot be assigned the semantic role of instrumental.

• If the applicative argument is expressed by a noun phrase, then it has the same syntactic properties as the complement NP of a transitive verb, i.e. it will occur either inside the verb phrase, or there will be a second class-prefix on the verb which depends on the class of the applicative noun phrase.

• If the verb phrase contains an applicative verb and more than one complement NP, then the default word order is applicative NP before the other complement NP.

• If (i) a verb phrase contains an applicative verb and the applicative NP, and (ii) the applicative NP is interpreted as the motive or reason for the action denoted by the verb, then no other complement NP can occur inside the verb phrase.

• An applicative verb in the disjunctive form must be prefixed with a second class-prefix which depends on the class of the NP expressing the applicative argument.
4.1.5 Causative

Sentence (132b) illustrates the causativisation of sentence (132a):

\[(132)\]
\[
a. \textbf{Bafana } ba-gez-e \textbf{ imoto } itolo.
\text{1PL.boy 1PL-wash-IP 5SG.car yesterday}
\text{The boys washed a car yesterday.}
\]
\[
b. \textbf{Nhlanhla } u-gez-is-e \textbf{ bafana } imoto \textbf{ itolo}.
\text{Nhlanhla 1SG-wash-CAUS-IP 1PL.boy 5SG.car yesterday}
\text{Nhlanhla made the boys wash a car yesterday.}
\]

The privileged NP of the verb \textit{gez} in (132a) is \textit{bafana} (boys). The first class-prefix of the verb depends on the class of this NP, and is therefore \textit{ba}. Note that if the verb is causativised, the first prefix of \textit{gez-is} (make wash) does not depend on the class of the NP \textit{bafana} anymore, but on the class of the NP \textit{Nhlanhla} which is licensed by the causative suffix \textit{is}. The NP \textit{bafana} occurs after the verb, and displays the same morphosyntactic properties as the complement of a monotransitive verb. In particular, it is inside the verb phrase, as shown by the ungrammaticality of (133a), where the adjunct \textit{itolo} (yesterday) immediately follows the verb. The complement NP \textit{imoto} also occurs inside the verb phrase in (132b), as shown by the ungrammaticality of (133b), where the adjunct \textit{itolo} (yesterday) intervenes between the two complement NPs.

\[(133)\]
\[
a. *\textbf{Nhlanhla } u-gez-is-e \textbf{ itolo } \textbf{ bafana } imoto.
\text{Nhlanhla 1SG-wash-CAUS-IP yesterday 1PL.boy 5SG.car}
\text{Int.: Nhlanhla made the boys wash a car yesterday.}
\]
\[
b. *\textbf{Nhlanhla } u-gez-is-e \textbf{ bafana } \textbf{ itolo } \textbf{ imoto}.
\text{Nhlanhla 1SG-wash-CAUS-IP 1PL.boy yesterday 5SG.car}
\text{Int.: Nhlanhla made the boys wash a car yesterday.}
\]

The default word order within the verb phrase is causee NP (\textit{bafana}) before other complement NPs (\textit{imoto}), as shown by the ungrammatical (134):

\[(134)\]
\[
*\textbf{Nhlanhla } u-gez-is-e \textbf{ imoto } \textbf{ bafana } \textbf{ itolo}.
\text{Nhlanhla 1SG-wash-CAUS-IP 5SG.car 1PL.boy yesterday}
\text{Int.: Nhlanhla made the boys wash a car yesterday.}
\]

And again, this default word order inside the verb phrase can be changed in order to position an emphasised NP at the end of the sentence.

\[(135)\]
\[
\textbf{Nhlanhla } u-gez-is-e \textbf{ imoto } BAFANA.
\text{Nhlanhla 1SG-wash-CAUS-IP 5SG.car 1PL.boy}
\text{Nhlanhla made THE BOYS wash a car.}
\]

Next I will show, as for ditransitives and applicatives before, that the presence/absence of either of the two complement NPs \textit{bafana} (boys) and \textit{imoto} (car) in/from the verb phrase correlates with the absence/presence of a second class prefix on the verb which depends on the class of the NP (which is absent from the verb phrase).
shows that if the complement NP \textit{bafana} is not inside the verb phrase (e.g. it is omitted), then the second class-prefix \textit{ba} is obligatory. If the complement NP \textit{bafana} is within the verb phrase, then the a second class-prefix \textit{ba} cannot be attached to the verb, (136b).

(136) a. \textit{Nhlanhla u-*\textit{(ba-)}gez-is-e imoto itolo.}  
Nhlanhla 1SG-1PL-wash-CAUS-IP 5SG.car yesterday  
Nhlanhla made them (the boys) wash a car yesterday.

b. \textit{Nhlanhla u-\textit{\textasteriskcentered{ba-}}gez-is-e bafana imoto itolo.}  
Nhlanhla 1SG-1PL-wash-CAUS-IP 1PL.boy 5SG.car yesterday  
Nhlanhla made the boys wash a car yesterday.

shows that if the complement \textit{imoto} is not inside the verb phrase (e.g. when it is omitted), then a second class-prefix which depends on the class of this NP is obligatory.

(137) \textit{Nhlanhla u-*\textit{(yi-)}gez-is-e bafana itolo.}  
Nhlanhla 1SG-5SG-wash-CAUS-IP 1PL.boy yesterday  
Nhlanhla made the boys wash it (the car) yesterday.

If a causativised verb is prefixed with the disjunctive marker \textit{ya}, then it must be prefixed with a second class-prefix which depends on the class of the noun phrase expressing the causee argument, as shown by (138a). This second class-prefix cannot depend on another complement NP, as shown by (138b).

(138) a. \textit{Nhlanhla u-ya-*\textit{(ba-)}gez-is-a imoto (bafana).}  
Nhlanhla 1SG-DISJ-1PL-wash-CAUS-FV 5SG.car 1PL.boy  
Nhlanhla makes them wash a car.

b. * \textit{Nhlanhla u-ya-yi-gez-is-a bafana (imoto).}  
Nhlanhla 1SG-DISJ-5SG-wash-CAUS-FV 1PL.boy 5SG.car  
Int.: Nhlanhla makes the boys wash it (the car).

The same holds when a causativised verb is suffixed with \textit{ile}:

(139) a. \textit{Nhlanhla u-*\textit{(ba-)}gez-is-ile imoto (bafana).}  
Nhlanhla 1SG-1PL-wash-CAUS-DISJ.PRF 5SG.car 1PL.boy  
Nhlanhla has made them (the boys) wash a car.

b. * \textit{Nhlanhla u-yi-gez-is-ile bafana (imoto).}  
Nhlanhla 1SG-5SG-wash-CAUS-DISJ.PRF 1PL.boy 5SG.car  
Int.: Nhlanhla has made the boys wash it (the car).

In all the previous examples of causative sentences the causee was a human. If the causee is inanimate, then it is not expressed by a noun phrase (140b), but by a prepositional phrase, as shown in (140c).

(140) a. \textit{Sivalo si-limat-e Jabulani.}  
4SG.door 4SG-hurt-IP Jabulani  
The door hurt Jabulani.
b. *Umoya u-limat-is-e sivalo Jabulani.
   1SG.wind 1SG-hurt-CAUS-IP 4SG.door Jabulani
   Int.: The wind caused the door to hurt Jabulani.

c. Umoya u-limat-is-e Jabulani nge sivalo.
   1SG.wind 1SG-hurt-CAUS-IP Jabulani PREP 4SG.door
   The wind caused the door to hurt Jabulani.

The causative verb ulimatise in (140c) can also be prefixed with a second class morpheme which depends on the class of the complement NP Jabulani, as shown in (141a). (141b) shows that the verb cannot be prefixed with a second class-prefix which depends on the class of the prepositional phrase nge sivalo (by means of the door) which expresses the causee.

(141) a. Umoya u-m-limat-is-e nge sivalo (Jabulani).
   1SG.wind 1SG-1SG-hurt-CAUS-IP PREP 4SG.door Jabulani
   The wind caused the door to hurt him (Jabulani).

b. *Umoya u-si-limat-is-e Jabulani nge sivalo.
   1SG.wind 1SG-4SG-hurt-CAUS-IP Jabulani PREP 4SG.door
   The wind caused the door to hurt Jabulani.

If the causee is animate but not human, then there is a preference for expressing the causee by means of a prepositional phrase (142c), as opposed to a noun phrase (142b).

(142) a. Inja i-lum-e umfana.
   5SG.dog 5SG-bite-IP 1SG.child
   The dog bit the child.

b. ?Nhlanhla u-lum-is-e inja umfana.
   Nhlanhla 1SG-bite-CAUS-IP 5SG.dog 1SG.child
   Int.: Nhlanhla made the dog bite the child.

c. Nhlanhla u-lum-is-e umfana nge inja.
   Nhlanhla 1SG-bite-CAUS-IP 1SG.child PREP 5SG.dog
   Nhlanhla made the dog bite the child.

If the causative verb in (140c) occurs in disjunctive form, then a second class-prefix on the verb is required which depends on the NP Jabulani expressing the person hurt, and not on the prepositional phrase (PP) nge sivalo which expresses the causee.

(143) a. Umoya u-m-limat-is-ile nge sivalo (Jabulani).
   1SG.wind 1SG-1SG-hurt-CAUS-IP PREP 4SG.door Jabulani
   The wind caused the door to hurt him (Jabulani).

b. *Umoya u-si-limat-is-ile Jabulani (nge sivalo).
   1SG.wind 1SG-4SG-hurt-CAUS-IP Jabulani (PREP 4SG.door)
   Int.: The wind caused it to hurt Jabulani (the door).

Summing up the properties of causative constructions so far, we have made the following observations and generalisations:
• If the causee is human, then it is expressed by a noun phrase. If the causee is non-human then it is expressed by means of a prepositional phrase.

• The first class-prefix of a causative verb depends on the class of the noun phrase expressing the argument introduced (licensed) by the causative suffix (i.e. the cause). The privileged noun phrase of a verb will be expressed as a complement noun phrase of the causativised verb.

• The default word order within the verb phrase containing a causativised verb and two complement NPs is causee NP before other complement NP.

• If the causee is expressed by means of a prepositional phrase, then it follows the complement noun phrases of the verb.

• If a causative verb is in disjunctive form, and it has two complement NPs, then the second class-prefix depends on the NP expressing the causee argument. If the causative verb has one NP and one PP, then the second class-prefix depends on the NP, and not on the PP expressing the causee.

### 4.1.6 Personal passive

The first type of passive construction – the personal passive – is exemplified by the sentence (144b). Impersonal passives will be the topic of section 4.1.7.

\[(144)\]

a. Bafana ba-shay-e silima itolo.
   1PL.boy 1PL-beat-IP 4SG.fool yesterday
   The boys beat the fool yesterday.

b. Silima si-shay-w-e itolo (ngu bafana).
   4SG.fool 4SG-beat-PASS-IP yesterday by 1PL.boy
   The fool was beaten yesterday (by the boys).

In the active sentence (144a) the first class-prefix of the verb depends on the NP bafana expressing the individuals beating. In other words, the individual beating is expressed as the privileged NP. The individual beaten is expressed as a complement NP.

In the passive sentence (144b) the first class-prefix of the verb depends on the NP silima expressing the individual beaten, and the individuals beating can be expressed by the adjunct phrase nge bafana.

As discussed in section 2.4, basic predicates impose so-called initial construal restrictions on the placeholders. The role assigned to the placeholder which is initially restricted to figure arguments will be called the inherently prominent role. Again, this notion should not be confused with the notion of “privileged NP”, which is simply a label for the NP on whose class the first class-prefix of the verb depends. The semantic argument to which the inherently prominent role is assigned will be called the inherently prominent argument. I
will hypothesise that the personal passive operation does not add or delete semantic roles. Precisely what the personal passive operation does will be the subject of section 4.2.2. In this section I shall only be concerned with the way in which the encoding of the arguments is changed as a result of the passive operation.

In a basic (active) clause the inherently prominent argument is expressed by a noun phrase, and the first class-prefix of the verb depends on this NP. In a personal passive clause, the inherently prominent argument (i.e. the argument which is assigned the inherently prominent role) is expressed as a PP, and an argument other than the inherently prominent argument is expressed as the privileged NP, i.e. as the NP on which the first class-prefix of the passive verb depends. To illustrate, the inherently prominent role of the predicate BEAT is the beater, and thus the argument BOYS (the conceptual representation of a set of boys) is the inherently prominent argument in (the meaning of) both (144a) and (144b). In the active clause (144a) this argument is expressed as the privileged noun phrase bafana, while in the passive sentence (144b) this argument is optionally expressed as the prepositional phrase nge bafana. The argument to which the semantic role of person beaten is assigned is expressed as a complement NP in a basic (active) clause, and as a privileged noun phrase in the passive clause.

If a phrase of an active clause can become the privileged NP of a corresponding passive clause, then I shall say that this phrase has been passivised. (By a “corresponding” passive clause I mean a passive clause which expresses the same truth-conditional meaning as the active clause.) Using this terminology, I shall now illustrate which phrases can be passivised and which cannot.

Both complements of a ditransitive verb can be passivised, as shown in (145):

Jabulani 1SG-give-IP Nhlanhla 5SG.car yesterday.  
Jabulani gave Nhlanhla a car yesterday.

Nhlanhla 1SG-give-PASS-IP 5SG.car yesterday (by Jabulani)  
Nhlanhla was given a car yesterday (by Jabulani).

c. Imoto i-nik-w-e Nhlanhla itolo (ngu Jabulani).  
5SG.car 5SG-give-PASS-IP Nhlanhla yesterday (by Jabulani)  
The car was given (to) Nhlanhla yesterday (by Jabulani).

Turning next to applicative constructions, we observe that if the applicative NP make (mother) in (146a) is interpreted as a benefactive or malefactive, then it can be passivised (146b). The complement NP imoto (car) in (146a) can also be passivised, as shown in (146c).

(146) a. Jabulani u-gez-el-e make imoto.  
Jabulani 1SG-wash-APPL-IP 1SG.mother 5SG.car
Jabulani washed mother a car.

b. Make u-gez-el-w-e imoto (ngu Jabulani).
   1SG.mother 1SG-wash-APPL-PASS-IP 5SG.car (by Jabulani)
   Mother was washed a car.

c. Imoto i-gez-el-w-e make (ngu Jabulani).
   5SG.car 5SG-wash-APPL-PASS-IP 1SG.mother (by Jabulani)
   The car was washed for mother (by Jabulani).

If, however, the applicative NP is interpreted as the motive or reason, as in (147a), then it cannot be passivised, as shown in (147b). The complement NP timphahla (clothes) can still be passivised, as shown in (147c).

   Jabulani 1SG-5PL-wash-APPL-IP 5SG.money 5PL.clothes
   Jabulani washed them (the clothes) for money.

b. * Imali i-ti-gez-el-w-e timphahla (ngu Jabulani).
   5SG.money 5SG-5PL-wash-APPL-PASS-IP 5PL.clothes (by Jabulani)
   Int.: The money was the reason for the clothes being washed (by Jabulani).

c. Timphahla ti-gez-el-w-e imali (ngu Jabulani).
   5PL.clothes 5PL-wash-APPL-PASS-IP 5SG.money by Jabulani
   The clothes were washed for money (by Jabulani).

A locative applicative NP cannot be passivised either, as shown by (148b).

   Jabulani 1SG-study-APPL-FV LOC-forest-LOC
   Jabulani studies in the forest.

b. * Li-hlatsi li-fundz-el-w-a ngu Jabulani.
   3SG.forest 3SG-study-APPL-PASS-FV by Jabulani.
   Int.: The forest is studied in by Jabulani.

Turning to the causative construction we observe that both complements in (149a) can be passivised.

149) a. Nhlanhla u-gez-is-e bafana imoto itolo.
   Nhlanhla 1SG-wash-CAUS-IP 1PL.boy 5SG.car yesterday
   Nhlanhla made the boys wash a car yesterday.

b. Bafana ba-gez-is-w-e imoto itolo (ngu Nhlanhla).
   1PL.boy 1PL-wash-CAUS-PASS-IP 5SG.car yesterday (by Nhlanhla)
   The boys were made to wash a car yesterday (by Nhlanhla).

c. Imoto i-gez-is-w-e bafana itolo (ngu Nhlanhla).
   5SG.car 5SG-wash-CAUS-PASS-IP 1PL.boy yesterday (by Nhlanhla)
   Nhlanhla caused the boys to wash the car.

Note that in the sentence (149c) there is no ambiguity as to the semantic role to be assigned to the privileged NP imoto. The car cannot be interpreted as the person washing (the
causee), it can only be interpreted as the thing washed. The same holds for (146c), where the clothes cannot be interpreted as the individual washing (the causee), but can only be interpreted as the thing washed.

Now consider the following sentences:

\[(150)\] a. Silima si-shay-el-w-e Jabulani (ngu Nhlanhla).
4SG.fool 4SG-beat-APPL-PASS-IP Jabulani by Nhlanhla
Either: On behalf of the fool was beaten Jabulani (by Nhlanhla).
Or: The fool was beaten for Jabulani (by Nhlanhla).

b. Silima si-shay-is-w-e Jabulani (ngu Nhlanhla).
4SG.fool 4SG-beat-CAUS-PASS-IP Jabulani by Nhlanhla
Either: The fool was made to beat Jabulani (by Nhlanhla).
Or: The fool was made to be beaten by Jabulani (by Nhlanhla).

In (150a) the privileged NP *silima* can be interpreted either as the person who was beaten (i.e. the patient), or as the person on behalf of whom (or to the detriment of whom) Jabulani is beaten (i.e. the benefactive or malefactive). In (150b), *silima* is again the privileged argument and can be understood either as the person who was made to beat Jabulani (i.e. the causee), or as the person who was beaten (i.e. the patient).\(^7\)

Sentences (151) show that passive verbs can be prefixed by a second class-prefix which depends on the class of a complement NP.

1SG-give-PASS-IP 5SG.car yesterday (by Jabulani)
Nhlanhla was given a car yesterday (by Jabulani).

ii. Nhlanhla u-yi-nik-w-e itolo (imoto).
1SG-5SG-give-PASS-IP yesterday (5SG.car)
Nhlanhla was given it yesterday (the car).

b. i. Make u-gez-el-w-e imoto itolo (ngu Jabulani).
1SG.mother 1SG-wash-APPL-PASS-IP 5SG.car yesterday (by Jabulani).
Mother was washed a car yesterday (by Jabulani).

ii. Make u-yi-gez-el-w-e itolo (imoto).
1SG.mother 1SG-5SG-wash-APPL-PASS-IP yesterday (5SG.car)
Approx: Mother was benefited by the washing of it yesterday (the car).

c. i. Bafana ba-gez-is-w-e imoto itolo (ngu Nhlanhla).
1PL.boy 1PL-wash-CAUS-PASS-IP 5SG.car yesterday by Nhlanhla
The boys were made to wash a car yesterday (by Nhlanhla).

ii. Bafana ba-yi-gez-is-w-e itolo (imoto).
1PL.boy 1PL-5SG-wash-CAUS-PASS-IP yesterday 5SG.car
The boys were made to wash it yesterday (the car).

\(^7\)N. Thwala informs me that the second interpretation of sentence (150b) is more difficult to arrive at.
In (151a-ii) the recipient NP Nhlanhla has been passivised, and the second class-prefix of the verb depends on the theme NP imoto (car). In (151b-ii) the benefactive NP make (mother) has been passivised, and the second (class) prefix depends on the theme NP imoto (car). In (151c-ii) the causee NP bafana has been passivised, and the second class-prefix depends on the theme NP imoto. If a second class-prefix depending on a certain noun phrase X can be attached to a verb, then I shall say that noun phrase X licenses a second (class) prefix. Using this terminology, we can say that the noun phrase imoto in (151a-ii), (151b-ii) and (151c-ii) licenses a second class-prefix.

If the theme NP imoto is passivised, then the second class-prefix cannot depend on the recipient, benefactive or causee NP, as shown below. In other words, the NP Nhlanhla in (152a-ii), the NP make in (152b-ii) and the NP Nhlanhla in (152c-ii) do not license a second class-prefix on a passive verb:

(152) a. i. Imoto i-nik-w-e Nhlanhla itolo (ngu Jabulani). 5SG.car 5SG-give-PASS-IP Nhlanhla yesterday (by Jabulani) The car was given (to) Nhlanhla yesterday (by Jabulani).
   ii. *Imoto i-m-nik-w-e itolo (Nhlanhla). 5SG.car 5SG-1SG-give-PASS-IP yesterday (Nhlanhla) Int.: The car was given to him yesterday (to Nhlanhla).

b. i. Imoto i-gez-el-w-e make (ngu Jabulani). 5SG.car 5SG-wash-APPL-PASS-IP mother (by Jabulani) The car was washed for mother (by Jabulani).
   ii. *Imoto i-m-gez-el-w-e itolo (make). 5SG.car 5SG-1SG-wash-APPL-PASS-IP yesterday (mother) Int.: The car was washed for her yesterday (for mother).

c. i. Imoto i-gez-is-w-e bafana itolo (ngu Nhlanhla). 5SG.car 5SG-wash-CAUS-PASS-IP 1PL.boy yesterday by Nhlanhla Nhlanhla caused the boys to wash the car.
   ii. *Imoto i-ba-gez-is-w-e itolo (bafana). 5SG.car 5SG-1PL-wash-CAUS-PASS-IP yesterday 1PL.boy Int.: Nhlanhla caused them to wash the car yesterday (the boys).

The reason for the ungrammaticality of sentences (152a-ii), (152b-ii) and (152c-ii) cannot be that the first class-prefix of the verb depends on an NP denoting an inanimate individual, while the second class-prefix depends on an NP denoting a human individual. If this were the case, then (153) should be ungrammatical, since the first prefix si depends on the NP sivalo (door), and the second prefix m depends on the omitted complement NP Jabulani. However, (153b) is grammatical.

(153) a. Sivalo si-limat-e Jabulani. 4SG.door 4SG-hurt-IP Jabulani
   The door hurt Jabulani.
b. Sivalo si-m-limat-ile.
4SG.door 4SG-1SG-hurt-DISJ.PRF
The door has hurt him.

Summing up the observations about the passive construction, we can say that:

• The personal passive rule distinguishes between PP and NP complements. PP complements cannot be passivised, while NP complements can be passivised.

• Passivisation does not distinguish complement NPs. Complement NPs of transitive, ditransitive, applicative and causative clauses can all be passivised, with the exception of an applicative NP which is interpreted as the motive.

• In a personal passive clause the first class-prefix of the passive verb depends not on the NP expressing the inherently prominent argument, but on an NP expressing another argument, which would be expressed by a complement NP in the corresponding active clause. The inherently prominent argument can optionally be expressed by means of a prepositional phrase.

• Some complement NPs of personal passive clauses (NPs expressing themes and patient arguments) can occur outside the verb phrase if a second class-prefix depending on it is added to the verb, other complement NPs (i.e. NPs expressing recipient, benefactive and causee arguments) cannot.

• The complement NPs which cannot occur outside the verb phrase of a passive verb are the same NPs which must be adjacent to the verb in a corresponding active clause, if all complement NPs are inside the verb phrase.

• Therefore some operations, e.g. passivisation or second (class) prefixation of active verbs, do not distinguish complement NPs, while other operations, e.g. word order within VP or second (class) prefixation of passive verbs, do distinguish complement NPs.

4.1.7 Impersonal passive construction

In addition to the personal passive construction, where the first class-prefix depends on an NP expressing an argument of the predicate other than the inherently prominent one, Siswati also has an impersonal passive construction. This construction is characterised by the fact that the first class-prefix of the passive verb does not depend on an NP expressing an argument of the verb, but is invariably ku, which is homophonous to the class 8 marker as well as to the bleached locative particle which roughly corresponds to the locative ‘there’ in English.

\[^8\text{See Thwala et al. (2007)}\]
Ku-nik-w-e 8-give-PASS-IP 1SG.mother 5SG.money
Mother was given money.

The first class-prefix ku of the passive verb kunikwe depends neither on the NP make (the corresponding first class-prefix would be u) nor on the NP imali (the corresponding first class-prefix would be i). This passive construction is called impersonal, because the first class-prefix of the passive verb does not depend on NPs expressing arguments of the predicate.

Since the impersonal passive does not require the first class-prefix to depend on an NP expressing an argument of the verb other than the inherently prominent one, it can also apply to intransitive verbs, as illustrated by:

Ku-fik-w-e 8-arrive-PASS-IP e-kuseni. LOC-morning
It was arrived in the morning.

Another interesting difference between the personal and impersonal passive constructions is that, unlike the personal passive, the impersonal passive does not license the expression of the inherently prominent argument by means of a prepositional phrase. So Jabulani, the person giving money to mother cannot be expressed by the prepositional phrase ngu Jabulani in (156a), and the same holds for the person arriving in (156b).

Ku-nik-w-e 8-give-PASS-IP make 1SG.mother 5SG.money ngu Jabulani.
Int.: Mother was given money by Jabulani.

Ku-fik-w-e 8-arrive-PASS-IP e-kuseni ngu Jabulani.
Int.: It was arrived in the morning by Jabulani.

Moreover, the impersonal passive verb cannot be prefixed with a second (class) morpheme, as shown by the ungrammaticality of (157a) (where the giver argument expressed by make has been omitted) and (157b), where the thing given has been omitted.

Ku-mu-nik-w-e 1SG-give-PASS-IP imali (make).
Int.: Mother was given money.

Ku-yi-nik-w-e 5SG-give-PASS-IP make (imali).
Int.: Mother was given it (the money).

4.1.8 Impersonal active construction

Now compare the impersonal passive construction in (158a) with the active construction exemplified by (158b).

\[\text{Thwala (1995 103)}\]
8-arrive-PASS-IP LOC-morning
It was arrived in the morning.

8-arrive-IP Jabulani LOC-morning
Jabulani arrived in the morning.

In the impersonal passive clause (158a), the NP expressing the inherently prominent argument is omitted, and the first class-prefix is ku. In the active construction illustrated by (158b), the NP Jabulani expressing the inherently prominent argument is immediately postverbal. Sentence (159a) shows that the NP Jabulani cannot be preverbal, (159b) shows that it occurs immediately after the verb if it is not emphasised, and (159c) shows that it can occur sentence-finally if it is emphasised.

(159) a. *Jabulani ku-fik-e e-kuseni.  
Jabulani 8-arrive-IP LOC-morning
Int.: Jabulani arrived in the morning.

8-arrive-IP Jabulani LOC-morning
Jabulani arrived in the morning.

c. Ku-fik-e e-kuseni JABULANI.  
8-arrive-IP LOC-morning Jabulani
JABULANI arrived in the morning.

Since the first prefix ku of the active verb kufike in (158a) does not depend on the inherently prominent argument of ARRIVE, I will refer to this construction as the impersonal active construction. The sentences (160a) show that the impersonal active construction does not apply to predicates with two obligatory arguments. The sentences (160b-i) and (160b-ii) show that the NP insangu is an optional argument of the verb bhema. Sentence (160b-iii) shows that the impersonal active construction can also apply to predicates whose second argument is optional.

(160) a. i. Bafana ba-shay-e Jabulani.  
1PL.boy 1PL-beat-IP Jabulani
The boys beat Jabulani

ii. *Ku-shay-e bafana Jabulani.  
8-beat-IP 1PL.boy Jabulani
Int.: The boys beat Jabulani

Jabulani 1SG-DISJ-smoke-FV
Jabulani smokes.

ii. Jabulani u-bhem-a insangu.  
Jabulani 1SG-smoke-FV 5SG.pot
Jabulani smokes pot.
iii. Ku-bhem-a Jabulani insangu.
   8-smoke-FV Jabulani 5SG.pot
   Jabulani smokes pot.

Thus the impersonal active construction cannot apply to predicates with more than one obligatory argument.

The sentence (161) shows that this construction can also be used to express predicates which do not have an obvious semantic role, like for example ‘weather’ predicates.

(161) Ku-makhata.
   8-cold
   It is cold.

So the impersonal active construction applies to predicates which require at most one obligatory argument.

### 4.1.9 Reversal construction

Consider the following three sentences:

(162) a. Bafana ba-dlal-e nge imali itolo.
   1PL.boy 1PL-play-IP PREP 5SG.money yesterday
   The boys played with money yesterday.

b. *Imali i-dlal-w-e itolo (nge bafana).
   5SG.money 5SG-play-PASS-IP yesterday (by 1PL.boy)
   Int.: Money was played with yesterday (by the boys).

c. Imali i-dlal-e bafana itolo.
   5SG.money 5SG-play-IP 1PL.boy yesterday
   Lit.: Money played the boys yesterday. (The boys played with money.)

(162b) shows that the NP imali in (162a) cannot be passivised, i.e. that imali cannot be the privileged NP of a corresponding passive clause. This is another example of the generalisation that noun phrases inside prepositional phrases cannot be passivised. However, imali can be the privileged NP of a corresponding active clause, as (162c) shows.

In both (162a) and (162b) the inherently prominent argument is BOYS, (the cognitive representation of) a set of boys, and the instrument/commitative argument is MONEY. In the construction illustrated by (162c) the first class-prefix of the active verb does not depend on the NP bafana, but on the NP imali which expresses the non-inherently-prominent argument MONEY, and the inherently prominent argument BOYS is expressed as a complement noun phrase.

Thus this construction can be characterised by saying that (i) an argument other than the inherently prominent one, and which is expressed by means of a prepositional phrase in a basic clause, is expressed as the privileged NP of an active verb, and (ii) the inherently prominent argument is expressed by means of a complement NP.
This construction has three important properties. The first property is that only arguments which are expressed as prepositional phrases in a basic clause can be expressed as privileged NPs of active verbs in this construction. Therefore in Siswati arguments which are expressed as complement NPs in a basic clause cannot be expressed as privileged NPs of active verbs. This is illustrated by the ungrammaticality of the sentence (163b), where the argument ALCOHOL is expressed by the privileged NP, and by a complement NP in the corresponding basic clause (163a):

Nhlanhla 1SG-drink-IP 7.alcohol
Nhlanhla drank alcohol.

7.alcohol 7-drink-IP Nhlanhla
Int.: Nhlanhla drank alcohol.

In other Bantu languages (e.g. Kirundi, source Ndayiragije (1999), quoted from Marten (2004)), sentences comparable to the ungrammatical Siswati sentence (163b) are grammatical.

(164) Amatá y-á-nyöye abána
milk 3SG-PST-drink:PRF children
Lit.: Milk drank children.
Children (not parents) drank milk.

The second important property of this construction is that a non-inherently prominent argument can be expressed as the privileged NP (of an active verb) only if this NP cannot be understood as the inherently prominent argument. The privileged NP bafana in (165b) can be understood as the prominent argument, i.e. as the individuals playing, and therefore (165b) cannot mean that Nhlanhla played with the boys.

(165) a. Nhlanhla u-dlal-e nge bafana.
Nhlanhla 1SG-play-IP PREP 1PL.boy
Nhlanhla played with the boys.

b. *Bafana ba-dlal-e Nhlanhla.
1PL.boy 1PL-play-IP Nhlanhla.
Int.: Nhlanhla played with the boys.

The third important property of this construction is that the inherently prominent argument cannot be omitted from the verb phrase if a second class-prefix is added to the verb, unlike complement NPs of basic clauses. Thus the NP bafana in (162c), repeated as (166a), cannot be omitted from the verb phrase even if a second class-prefix depending on this NP is attached to the verb, as shown by (166b).

(166) a. Imali i-dlal-e bafana itolo.
5SG.money 5SG-play-IP 1PL.boy yesterday
Lit.: Money played the boys yesterday. (The boys played with money yesterday.)

b. *Imali i-ba-dlal-e itolo (bafana).
5SG.money 5SG-1PL-play-IP yesterday 1PL.boy
Lit.: Money played them yesterday (the boys). (The boys played with money yesterday.)

Two more examples illustrate this construction:

(167) a. i. Bafana ba-hamb-a nge-moto.
1PL.boy 1PL-go-FV PREP-car.
The boys go with/by car.

ii. *Imoto i-hamb-w-a ngu bafana.
5SG.car 5SG-go-PASS-FV by 1PL.boy
Int.: The car is travelled with by the boys.

iii. Imoto i-hamb-a bafana.
5SG.car 5SG-go-FV 1PL.boy
Lit.: The car goes the boys (The boys go by car).

b. i. Jabulani u-fundz-el-a e-hlats-ini.
Jabulani 1SG-read-APPL-FV LOC-forest-LOC
Jabulani reads in the forest.

ii. *Li-hlatsi li-fundz-el-w-a ngu Jabulani.
3SG.forest 3SG-read-APPL-PASS-FV by Jabulani
Int.: In the forest there is reading by Jabulani.

iii. Li-hlatsi li-fundz-el-a Jabulani.
3SG.forest 3SG-read-APPL-FV Jabulani
In the forest there is reading by Jabulani.

Note first that both arguments which are expressed as privileged NPs in (167a-iii) and (167b-iii) are expressed by means of prepositional phrases in (167a-i) and (167b-i) respectively. Secondly, note that the NP imoto in (167a-iii) and the NP lihlatsi in (167b-iii) cannot be interpreted as the inherently prominent arguments, i.e. as the individual travelling and the individual reading respectively. And thirdly, note that the complement NPs bafana and Jabulani of (167a-iii) and (167b-iii) respectively cannot be omitted from the verb phrase, as shown in (168).

(168) a. *Imoto i-ba-hamb-a manje (bafana).
5SG.car 5SG-1PL-go-FV now (1PL.boy)
Int.: The car goes them now (the boys).
The boys go by car.

b. *Li-hlatsi li-m-fundz-el-a manje (Jabulani).
3SG.forest 3SG-1SG-read-APPL-FV now (Jabulani)
Int.: In the forest there is reading by him now (by Jabulani).
4.1.10 Reciprocalisation

The reciprocal construction is indicated by the presence of the verb suffix -an. A verb marked with this suffix is interpreted as indicated by the translations of the examples below.

(169) a. Jabulani u-shay-an-is-e bafana.
    Jabulani 1SG-hit-RECP-CAUS-IP 1PL.boy
    Jabulani made the boys hit each other.

    1PL.boy 1PL-hit-CAUS-RECP-IP Jabulani
    The boys made each other hit Jabulani.

Note that in (169a) the reciprocal marker -an occurs immediately after the verb root shay, while in (169b) it occurs immediately after the causative marker -is. This difference results in different meanings. If the order is V-RECP-CAUS, then the predicate which gets reciprocalised is HIT and the predicate which gets causativised is HIT\_REFL. If the order is V-CAUS-RECP, then the predicate which gets causativised is HIT and the predicate which gets reciprocalised is CAUSE\_HIT.

4.2 Analysis

4.2.1 Overview of the analysis

Before I give an overview of the analysis of the Siswati data presented in the previous section, I will recapitulate the basic semantic notions that I introduced in 2.4.2. The most basic notion was that of the speaker’s construal of a situation or event, and in particular the speaker’s construal of the entities and individuals which participate (i.e. the participants) in this situation or event. To give an example, the speaker can construe either the individual beating or the individual beaten in a beating situation as the conceptually prominent individual. The participant construed by the speaker in this way will be called the figure participant. Linguistic expressions are a means of communicating not just the conditions under which a situation or event is true, but also the speaker’s construal of a situation or event. Depending on the construal of the entities or individuals in a situation, the speaker may choose to use different expressions, so that the meaning of the chosen expression matches the construal of the situation. For example, if the person beating is the figure participant, she may choose the active construction a beats b, whereas if the person beaten is the figure, then she may choose the passive construction b was beaten.

This choice is explained by hypothesising that the meaning of the expression beats imposes the initial restriction that the placeholder for the person beating be saturated by the figure participant, whereas the meaning of the expression was beaten contains the final restriction that the placeholder for the individual beaten be saturated by the figure argument. The
idea is that the personal passive construction overrides the initial construal restrictions associated with the placeholders. So the meaning of the expression *beats* is not $\text{BEAT}\{\text{beater}_-, \text{beaten}_-\}$ (this encodes only the what is truth-conditionally relevant), but $\text{BEAT}\{F:\text{beater}_-, G: \text{beaten}_-\}$, where $F: \text{beater}_-$ indicates that the placeholder $\text{beater}_-$ can only be saturated by the figure argument, and $G: \text{beaten}_-$ indicates that the placeholder $\text{beaten}_-$ can only be saturated by a ground argument.

The suffixation of the passive, causative, applicative and reciprocal morphemes to the verb root will be analysed in terms of unary modes (that is modes which take only one sign as argument), the semantic functions of which may alter both the predicate (by adding or removing a semantic role) as well as its construal (by overriding the construal restrictions on the arguments which can saturate a placeholder). The prefixation of the first and second class-prefixes to the verb stem will be analysed in terms of binary modes of combination, whose semantic functions saturate either the placeholder restricted to figure arguments, or the placeholder restricted to ground arguments respectively.

The semantic functions combining the semantic values of the class-prefixes with the predicate of the verb stem identify the placeholders of the predicate in terms of their construal restrictions, and not in terms of the order in which the placeholders are to be saturated, or in terms of truth-conditionally relevant properties of the semantic roles assigned to the arguments saturating a placeholder (see section 2.4). Participants in a situation can be construed as figure, ground or as oblique, and accordingly the placeholders of predicates are restricted either to figure ground or oblique arguments. The applicative, causative, reciprocal and impersonal passive constructions will be analysed in terms of modes of combination which change the predicates to whose form the respective suffixes attach. The “applicative”, “causative” and “impersonal passive” semantic functions change the predicate by adding a new role, whereas the “reciprocal” semantic function changes the predicate by removing a role. These functions also override some of the construal restrictions on the arguments which can saturate placeholders. In contrast, the semantic function for the personal passive does not change the predicate (by adding or removing a role), but only overrides the construal restrictions on the arguments saturating the placeholders.

Figure and ground arguments are expressed by noun phrases and/or by first and second class-prefixes. Oblique arguments are expressed by prepositional phrases. The first class-prefix of a verb depends on the NP expressing the figure argument (i.e. the argument saturating the placeholder restricted to figure arguments), while the second class-prefixes depend on the NP expressing a ground argument (i.e. an argument saturating a placeholder restricted to ground arguments), provided that in both cases the clause contains such an NP. If the clause contains no NP expressing the figure (or ground) argument, then the class of the first (or second) class-prefix restricts the range of arguments which can saturate the placeholders restricted to figure or ground arguments, so that the argument saturating the
placeholder restricted to figure (or ground arguments) should be expressible by an NP whose
class is the same as the class of the first (or second) class-prefix.

Given a ditransitive predicate, the two arguments other than the inherently prominent
argument display similar encoding properties: they can both be figure arguments in a pas-
slave clause, they can both be expressed as VP-internal NPs in an active clause, they can
both saturate the meaning of the second class-prefixes. This similarity will be analysed
by hypothesising that the placeholders for the two arguments other than the inherently
prominent argument are both restricted to arguments construed as ground. Nevertheless,
there are some modes which distinguish between these two arguments, and this difference
will be analysed by introducing the distinction between primary ground arguments $G^+$
and secondary ground arguments $G^-$. The similar coding properties of e.g. recipient
and theme arguments in Siswati are taken as an indication that the speaker construes both
of these participants as ground participants. In contrast, the different encoding properties
of recipient and theme in Romanian are taken as an indication that the speakers construe
the respective participants differently – one as the ground participant and the other as the
background participant.

The personal passive construction is analysed by means of a mode which (i) changes
the exponent of the active verb, and (ii) overrides the initial construal restriction on the
arguments which saturate placeholders with a so-called final construal restriction. In partic-
ular, the restriction that a placeholder be saturated by ground arguments will be overwritten
by the restriction that this argument be the figure argument, and secondly the restriction
that the argument of another placeholder be the figure argument will be overwritten by the
restriction that this argument be construed as oblique.

The impersonal passive construction is analysed by means of a mode which (i)
changes the exponent of the active verb, (ii) changes the predicate by adding the role of
abstract setting $\text{10}$ (iii) restricts the arguments saturating this new role to figure arguments,
and (iv) leaves the inherently prominent role unconstrained. Since the expression of an ar-
gument depends on its construal, this analysis accounts for the fact that the inherently
prominent argument of a predicate expressed by an impersonal passive verb form is not
expressed. It is precisely because the role of abstract setting is not part of the original
predicate to which the impersonal passive mode applies that I assume that the impersonal
mode changes the predicate to which it applies, unlike the personal passive mode, which
only changes the construal of the predicate.

The impersonal active construction is analysed by a mode which (i) changes the
predicate it applies to by adding the role of abstract setting, (ii) restricts the arguments
saturating this new placeholder to (primary) figure arguments, and changes the initial re-

$\text{10}$See Langacker (1991b, 352) for more on this notion.
striction of a placeholder from figure arguments to secondary figure arguments. Analysing the initial figure argument in the impersonal active construction as the final secondary figure and not as a final ground argument accounts for the fact that the NP expressing the inherently prominent argument in impersonal active constructions does not behave like complement NPs (i.e. it cannot be passivised, it cannot license a second class-prefix, it is not inside the VP).

The reversal construction is analysed as (i) changing the (initial) restriction that an argument be a ground argument to the (final) restriction that this argument be the primary figure argument, and (ii) changing the (initial) restriction that an argument be a figure argument to the (final) restriction that this argument be secondary figure. Again, this accounts for the fact that the NP expressing the inherently prominent argument does not behave like a complement NP.

Note that the modes analysing the impersonal active and the reversal construction do not alter the exponent of the verb, unlike the previous modes.

The applicative construction is analysed by means of a mode which (i) suffixes the applicative marker to the verb root, (ii) changes the predicate by adding a new semantic role, and (iii) by imposing the restriction that the argument saturating this placeholder be the (primary) ground argument. The applicative mode does not specify a semantic role for the licensed argument, but only restricts the range of roles which can be assigned. In particular, the argument which is licensed by the applicative operation cannot be interpreted as an instrument. The same restriction holds e.g. in Chishona (see Harford (1993)).

The causative construction is analysed by means of a mode which (i) suffixes the verb root with the causative marker, (ii) changes the predicate it applies to by adding a new semantic role to the predicate, (iii) imposes the restriction that this placeholder be saturated by the figure argument, and (iv) changes the initial restriction that an argument be a figure argument to the final restriction that this argument be a (primary) ground argument if human or an oblique argument otherwise. The semantic role of the new argument is usually the causer, but it should be pointed out that this is not necessarily so. Rugemalira (1993, 237) claims about the Runyambo causative construction, “the choice of semantic role is a reflection of our knowledge of the nature of the particular complements and their relation to each other in the real world.”

The reciprocal construction is analysed by means of a mode which (i) suffixes the verb root with the reciprocal marker, (ii) and changes the predicate by removing a semantic role for the argument(s). 11

11 Morimoto (2006, 166) shows that (what I call) the inherently prominent argument of reversal constructions in Kirundi and Kinyarwanda does not have the usual object properties, and that the promoted argument does not have the usual subject properties. She hypothesises that the promoted argument has the grammatical function of TOPIC, and that the inherently prominent argument has the grammatical function of SUBJECT.
role. For example the reciprocalisation of the predicate BEAT results in:

\[ f_{\text{RECP}}^\mu (\text{BEAT}\{F: \text{beater}:-, G: \text{beaten}:-\}) = \text{BEAT}_{\text{RECP}}\{F: \text{beater} : -1, - : -1\} \]

where \( \text{BEAT}_{\text{RECP}}\{F : X_1, - : -1\} \) represents a true fact in a model \( M \) iff every pair of individuals in the extension of the concept \( X \) belongs to the extension of the concept BEAT (see below for details).

The basic idea for the analysis of second class-prefixes is to hypothesise a mode which (i) prefixes these class-markers to the verb stem, and (ii) saturates a placeholder restricted to ground arguments with the (unsaturated) meaning of the class-prefix. This basic idea is, however, complicated by the fact that the meaning of a second class-marker cannot saturate a placeholder restricted to ground arguments, if at a stage in the derivation the construal restrictions required that the final ground argument was more prominent than the final figure argument (see page \[156\]). For example, if the predicate is \( \text{BEAT}\{\text{OBL}: F: \text{giver}:-, F: \text{thing}:-, G: \text{recipient}:+\} \) (i.e. the meaning of the passive verb shay-w-e, ‘was beaten’), then the recipient argument cannot be expressed by a second class-prefix, since at the initial level of construal the recipient argument is more prominent than the thing given. The initial and final construal restrictions are reminiscent of the syntactic relations 1 and 2 postulated in Relational Grammar \( [\text{Perlmutter} 1983] \), but note that while in Relational Grammar these are entities on the syntactic level, in the present theory the construal restrictions are restrictions on semantic entities. Secondly, my notions of initial and final construal restrictions are always relative to a particular construal-changing operation, so that the final construal restriction with respect to e.g. the causative operation may be the initial construal restriction with respect to the passive operation. Despite this crucial difference I suggest that the data which have been analysed in Relational Grammar in terms of different levels of syntactic representations should be analysed in terms of different levels of construal. The justification for this is that many operations which necessitate the postulation of multiple levels are sensitive to semantic properties of the predicate and must therefore be semantic in nature.

The complementarity between second class-prefixes and VP-internal NPs is analysed as follows: the mode \( f_{\text{GM}} \) attaching a second class-prefix to the verb and the mode \( f_{\text{G}} \) combining a (VP-internal) nominal sign with the verb sign have the same semantic function, and this semantic function saturates a placeholder restricted to ground arguments. Once one of these two modes saturates a particular placeholder restricted to ground arguments, this particular placeholder cannot be saturated again by the other mode, so that the second class-prefix and a VP-internal NP appear in complementary distribution.

Note that this analysis of the second class-prefix allows second class-prefixes to be combined with impersonal active and impersonal passive verbs, which is contrary to fact. This is because these two modes do not actually change the construal restrictions on the placehol-
ers for ground arguments. It is not difficult to prevent this (e.g. by stipulating that these prefixes cannot combine if the figure argument is the abstract setting), but I have not done so in order to point out that there might be an important property of the Siswati grammar that the analysis misses (see section 5.3.3).

**First class-prefixes** are also analysed as pronouns, and their semantic value saturates a placeholder restricted to (primary) figure arguments.

The order of NPs within the VP (i.e. NP expressing the primary ground argument before NP expressing the secondary ground argument) is analysed by stipulating that the particular mode combining nominal and verbal signs saturates the placeholder restricted to primary ground arguments if (i) such a placeholder exists, and (ii) the argument is not emphasised (see section 4.1.2, page 132). Otherwise, this mode simply saturates a placeholder restricted to ground arguments.

To conclude this overview, the reason why arguments bearing different semantic roles are encoded the same way (the individual beating in an active clause and the individual beaten in a passive clause) is that the speaker construes them the same way – they are both figure arguments. Theories which (implicitly or explicitly) deny or disregard the importance of construal of conceptual content postulate instead grammatical (i.e. formal) functions or relations which mediate the relation between the semantic roles of arguments and their morphosyntactic realisation. Such theories postulate linking rules which relate specific semantic roles (or generalised roles, also called macroroles or protoroles) to the grammatical notions of subject, object, and then in a second step link these notions to morphosyntactic realisations. In the present analysis the valency changing constructions of passive, causative, applicative and reciprocal are analysed as operations which change both the predicate itself (by adding (or removing) semantic roles to (or from) the predicate) as well as the construal restrictions on the arguments which can saturate a placeholder of the predicate. Theories which postulate formal notions like subject or object as mediating entities between semantic role and formal realisation either complicate the mapping from roles to grammatical functions in order to account for valency changing constructions (Lexical Mapping Theory of LFG) or they analyse valency changing operations as operations on grammatical functions (e.g. Relational Grammar), keeping the mapping from roles to grammatical functions as simple as possible.

Since the use of the notions subject, object, subject marker, and object marker, primary/secondary object, direct/indirect object in the presentation of the data implies that the relation between semantic roles and formal realisation of arguments is mediated by formal entities (and not by the construal of the semantic roles, as I argue), I have refrained from using these notions. However, in order to compare frameworks, it might be useful to state what these notions correspond to in the present analysis. The notion of “syntactic subject” corresponds to the NP which expresses the figure argument, the notion of “object”
corresponds to the NP which expresses a ground argument. The primary object is the NP which expresses the primary ground argument. The notion of “logical subject” corresponds to the initial figure argument of a predicate. The subject marker is the first class-prefix. The object marker is the second class-prefix. The crucial difference between this notion of e.g. subject and the standard one is that here the subject is defined in terms of the construal of an argument, whereas usually the subject is a formal (‘grammatical’, ‘syntactic’) entity. Chapter 5 will contain a detailed comparison of this analysis with alternative ones proposed in the literature.

4.2.2 Analysis of verbal morphology

In this subsection I will illustrate how morphemes can be combined to yield lexical signs. I will hypothesise the following structure of the finite verb in SiSwati: the root combines with valence changing suffixes first (which attach to the right), then with the object marker (which attaches to the left), then with the tense/aspect affixes (which can attach either to the left or to the right), and last with the first class-marker (which attaches to the left). This is in line with the hypothesis that derivational processes (e.g. the argument-structure changing suffixes) apply before inflectional processes (e.g. first and second class-prefixes, tense morphology).

The root sign with exponent *tseng* (buy) is:

\[
\begin{align*}
&\langle \text{tseng} \rangle \\
&\{\text{CAT} : v, 1 : \ast, 2 : \ast, \text{FIN} : \ast\} \\
&\{\text{BUY} : \{\text{F} : \text{buyer} : \ast, \text{G} : \text{bought} : \ast\}\}
\end{align*}
\]

\[\{\text{CAT} : v, 1 : \ast, 2 : \ast, \text{FIN} : \ast\}\] stands for the type of the verb root exponent.

I have assumed (see page 42) that categories are sets of attribute value pairs, where a value can itself be a set of attribute value pairs. \(\text{CAT} : v\) means that the value of the attribute \(\text{Cat}\) (standing for category) is \(V\), standing for verb. \(1 : \ast\) means that the value of the attribute 1, standing for the first (class) prefix, is \(\ast\), which means that the exponent contains no first class-prefix. \(2 : \ast\) means that the expression does not contain a second (class) prefix. \(\text{FIN} : \ast\) means that the expression is neither finite nor infinite. The meaning of the verb root is the concept \(\text{BUY}\). This predicate has two semantic roles, the role of individual buying expressed by \(\text{buyer} : \ast\), and the role of thing bought \(\text{bought} : \ast\). The placeholder for the buyer is restricted to figure arguments, and the placeholder for the thing bought is restricted to ground arguments.

As mentioned above, the personal passive construction is analysed by an operation which essentially overrides the construal restrictions on the arguments saturating the placeholders of a predicate. This operation, formalised by means of mode \(f_{P-PASS}\) takes a single sign of
formal category \([\text{CAT} : v, 1 : \star, 2 : \star, \text{FIN} : \star]\) (of verbal root category), and results in:

\[
f_{\text{P-PASS}}( \begin{bmatrix} \langle \text{tseng} \rangle \\ \text{CAT} : v, 1 : \star, 2 : \star, \text{FIN} : \star \\ \text{BUY} \{ \text{F} : \text{buyer} : \_ G : \text{bought} : \_ \} \end{bmatrix} ) = \begin{bmatrix} \langle \text{tsengw} \rangle \\ \text{CAT} : v, 1 : \star, 2 : \star, \text{FIN} : \star \\ \text{BUY} \{ \text{OBL} : \text{F} : \text{buyer} : \_ F : \text{G} : \text{bought} : \_ \} \end{bmatrix}
\]

Note that the prefixation and suffixation of two strings \(e_1\) and \(e_2\) is represented by adjoining them as \(e_1e_2\), whereas the concatenation of these two strings is represented as \(e_1\langle e_2 \rangle\).

On the exponent side, the passive mode simply suffixes the root expression with the suffix \(w\). The resulting expression has the same formal category as the root. And semantically, the personal passive mode overrides the (initial) restriction that an argument be a ground argument with the (final) restriction that this argument be a figure argument, and secondly it changes the (initial) restriction that an argument be a figure argument to the (final) restriction that this argument be an oblique argument.

Thus the mode \(f_{\text{P-PASS}}\) is:

\[
f_{\text{P-PASS}}( \begin{bmatrix} \langle e \rangle \\ \text{CAT} : v, 1 : \star, 2 : \star, \text{FIN} : \star \\ \text{PRED} \{ \text{F} : x : \_ G : y : \_ \ldots \} \end{bmatrix} ) = \begin{bmatrix} \langle ew \rangle \\ \text{CAT} : v, 1 : \star, 2 : \star, \text{FIN} : \star \\ \text{PRED} \{ \text{OBL} : \text{F} : x : \_ F : \text{G} : y : \_ \ldots \} \end{bmatrix}
\]

where \(x\) and \(y\) are semantic roles. Since the passive operation is taken to be an operation on the construal restrictions of a predicate, it is not surprising to find languages which show semantic restrictions on passivisation, as witnessed by the oddness of the English sentence Mary is resembled by Anne. This cannot easily be accommodated in a framework where the passive is taken to be an operation on formal entities (e.g. 2 and 1 in Relational Grammar), since there is no formal difference between this sentence and the perfectly grammatical Mary is beaten by Anne.

This analysis assumes first that the active verb is basic, and that the passive verb is derived from it, and secondly that the initial construal of a predicate remains accessible. An alternative would be to derive both the active and the passive forms of verbs from an underlying verb form which is not specified for the construal of its arguments. The advantage of this alternative is that it does not require the construal of a predicate to be changed. In this case the causative and applicative operations would have to apply before the predicate is assigned the active or passive construals. The challenge for this alternative is to account for those phenomena where the initial construal of a predicate must be accessible. An example of such a phenomenon was illustrated by sentence (152a-ii), where the argument encoded

\[12\text{Thanks to Marcus Kracht for pointing this out to me.}\]
by the object marker cannot be higher in prominence than the argument passivised. If this challenge could be met, then this alternative would considerably simplify the semantic operations, since they would not have to change the construal restrictions anymore. Since I have not found a satisfactory solution to the question how to avoid reference to the initial construal, I will defer the simplification of the semantic operations to future work.

The impersonal passive construction is analysed by means of the mode $f_{I-PASS}$ which (i) alters the predicate by adding the abstract setting role to the predicate and (ii) imposes the (final) restriction that this placeholder be saturated by the figure argument, and neutralises the initial construal restriction that the argument saturating a certain placeholder be a figure argument. I shall illustrate the application of this mode to the sign with exponent $nik$ (give),

\[
\begin{align*}
\langle nik \rangle \\
[CAT: v, 1: *, 2: *, FIN: *] \\
\text{GIVE}{F: \text{giver} : \_, G^+: \text{recipient} : \_, G^-: \text{thing} : _} \\
\end{align*}
\]

where the recipient is construed as the primary ground role, indicated by $G^+$, and the thing given is construed as the secondary ground $G^-$. 

\[
f_{I-PASS}(\begin{align*}
\langle nik \rangle \\
[CAT: v, 1: *, 2: *, FIN: *] \\
\text{GIVE}{F: \text{giver} : \_, G^+: \text{recipient} : \_, G^-: \text{thing} : _} \\
\end{align*}) = \begin{align*}
\langle nikw \rangle \\
[CAT: v, 1: *, 2: *, FIN: *] \\
\text{GIVE}{- : F: \text{giver} : \_, G^+: \text{recipient} : \_, G^-: \text{thing} : _, F: \text{setting} : _} \\
\end{align*}
\]

$- : F: \text{giver} : _$ means that this placeholder was initially restricted to figure arguments but has no final construal restrictions a result of the application of the mode. So the impersonal passive mode $f_{I-PASS}$ is:

\[
f_{I-PASS}(\begin{align*}
\langle e \rangle \\
[CAT: v, 1: *, 2: *, FIN: *] \\
\text{PRED}{F: x: _, \ldots} \\
\end{align*}) = \begin{align*}
\langle ew \rangle \\
[CAT: v, 1: *, 2: *, FIN: *] \\
\text{PRED}{- : F: x: _, \ldots, F: \text{setting} : _} \\
\end{align*}
\]

The impersonal active mode $f_{I-ACT}$ adds the abstract setting role, imposes the restriction that this placeholder be saturated by a primary figure argument, and changes the initial restriction that the argument saturating a certain placeholder be the figure argument to the (final) restriction that this argument be the secondary figure argument. As an illustration,
consider the application of this mode to the verb fik (arrive):

\[
\begin{bmatrix}
\langle fik \rangle \\
\text{[CAT: v, 1: *, 2: *, FIN: *]}
\end{bmatrix}
\]\(\rightarrow\)

\[
\begin{bmatrix}
\langle fik \rangle \\
\text{[CAT: v, 1: *, 2: *, FIN: *]}
\end{bmatrix}
\]\(\rightarrow\)

\[
\begin{bmatrix}
\text{ARRIVE[F: arriver : _]}
\end{bmatrix}
\]

The fact that the initial figure argument is construed as the secondary \textit{figure} argument and not as a ground argument accounts for the fact that the NP expressing this argument does not behave like complement NPs (i.e. it cannot be passivised, it cannot be omitted if a second class-prefix is added to the verb).

The causative construction is analysed by means of a mode \(f_{\text{CAUS}}\), which (i) creates a new complex predicate \(\text{CAUSE}\{\text{F:cause: _}, \text{PRED}\{\text{G:F: ...}\}\}\) from \(\text{PRED}\{\text{F: ...}\}\) by adding the new semantic role of causer, (ii) imposes the restriction that the corresponding placeholder be saturated by the figure argument, and (iii) changes the (initial) restriction that the argument saturating a certain placeholder be the figure argument to the (final) restriction that this argument be (primary) ground.

\[
\begin{bmatrix}
\langle \text{gezis} \rangle \\
\text{[CAT: v, 1: *, 2: *, FIN: *]}
\end{bmatrix}
\]\(\rightarrow\)

\[
\begin{bmatrix}
\text{CAUSE}\{\text{F: cause: _}, \text{WASH}\{\text{G: washer: _}, \text{G: washed: _}\}\}
\end{bmatrix}
\]


If, however, the initial figure argument of the basic predicate WASH is not the person washing but e.g. the cleaning detergent, then the restriction on this argument changes not to the restriction that it be a ground argument, but to the restriction that it be an oblique argument. This can be accommodated by distinguishing two cases for the mode \(f_{\text{CAUS}}\):

\[
\begin{bmatrix}
\langle \text{e\#} \rangle \\
\text{[CAT: v, 1: *, 2: *, FIN: *]}
\end{bmatrix}
\]\(\rightarrow\)

\[
\begin{bmatrix}
\text{PRED[F: x: ...]}
\end{bmatrix}
\]

\[
\begin{bmatrix}
\langle \text{e\#} \rangle \\
\text{[CAT: v, 1: *, 2: *, FIN: *]}
\end{bmatrix}
\]\(\rightarrow\)

\[
\begin{bmatrix}
\text{CAUSE_PRED[G\#+]: F: x: ...}, \text{F: cause: _}
\end{bmatrix}
\]
if \( x \) is a role to be assigned to humans, or

\[
\begin{bmatrix}
\langle \text{eis} \rangle \\
\text{CAUSE}_\text{PRED}\{\text{OBL} : F : x : \_ \ldots, \text{cause} : \_} \\
\end{bmatrix}
\]

if \( x \) is a role to be assigned to entities other than humans.

The applicative mode (i) changes the predicate by adding a new semantic role, (ii) imposes the restriction that the corresponding placeholder be saturated by the (primary) ground argument, and (iii) restricts the range of semantic roles which can be assigned to this role.

\[
f_{\text{APPL}}(\begin{bmatrix}
\langle \text{gez} \rangle \\
\text{CAT} : v, 1 : \_*, 2 : \_*, \text{FIN} : \_ \\
\text{WASH}\{F : \text{washer} : \_ G : \text{washed} : \_} \\
\end{bmatrix}) =
\]

\[
\begin{bmatrix}
\langle \text{gezel} \rangle \\
\text{CAT} : v, 1 : \_*, 2 : \_*, \text{FIN} : \_ \\
\text{WASH}\{F : \text{washer} : \_ G : \_ \text{washed} : \_ X : \_} \\
\end{bmatrix}
\]

where \( X \in \{\text{benefactive, malefactive, location, motive, \ldots}\} \). Note that the resulting predicate depends on the specific semantic role of the newly licensed argument, as indicated by indexing the predicate with the semantic role of the applicative argument. However, the mode \( f_{\text{APPL}} \) does not specify this semantic role, but only restricts the range of roles which can be assigned to the newly licensed argument.

The reciprocal mode \( f_{\text{RECP}} \) suffixes the exponent \( \text{an} \) to the verb exponent and changes the predicate from \( \text{PRED}\{F : \_ \ldots, G : \ldots \} \) to \( \text{PRED}_{\text{RECP}}\{F : \_1, \_ : \_1 \ldots \} \). The interpretation of the identical subscripts is specified below. The specification that the second placeholder is restricted to ground arguments is omitted in order to analyse the fact that this placeholder is not available for saturation anymore. For example, the proposition \( \text{BEAT}_{\text{RECP}}\{F : \text{BOYS}_1, \_ : \_1 \} \) is true in a model \( M \) iff all (or most) pairs \( \langle a, b \rangle \) of boys in the extension of the concept \( \text{BOYS} \) are elements of the extension of the concept \( \text{BEAT} \). In order to specify the semantic effect of the reciprocal construction, assume that \( \text{BEAT}' \) is the extension of the concept \( \text{BEAT} \) in the model \( M \), and that \( \text{BOYS}' \) is the extension of the concept \( \text{BOYS} \) in the model \( M \). Then:

\[
\forall x. \forall y. \,[x \in \text{BOYS}' \land y \in \text{BOYS}' \rightarrow \text{BEAT}'(x, y)]
\]

The resulting concept implies that it can only apply to mental representations of sets of individuals. The reciprocisation of the sign with exponent \( \text{shay} \) (hit) is illustrated below:

\[
f_{\text{RECP}}(\begin{bmatrix}
\langle \text{shay} \rangle \\
\text{CAT} : v, 1 : \_*, 2 : \_*, \text{FIN} : \_ \\
\text{BEAT}\{F : \text{beater} : \_ G : \text{beaten} : \_} \\
\end{bmatrix}) =
\]
where the concept $\text{BEAT}_{\text{RECP}}$ is true of a set $X$ of individuals iff for all (or most) pairs $(a, b)$ of individuals in $X$ it holds that $a$ beats $b$.

Before moving on the the analysis of the reflexive construction, I will briefly point out an important aspect of the present analysis. This analysis predicts the difference in meaning between the sentences (169) on page 163. Combining $\text{shayan}$ first with the reciprocal suffix $\text{an}$ results in $\text{shayan}$ whose meaning is the concept $\text{BEAT}_{\text{RECP}} \{F: \text{beater} : -1, G: \text{beaten} : 1\}$.

Combining next with the causative marker results in $\text{shayanis}$ whose meaning is

$$\text{CAUSE}\{F: \text{cause} : _-, \text{BEAT}_{\text{RECP}} \{F: \text{beater} : -1, G: \text{beaten} : 1\}\}$$

(e.g. cause X to beat X). If, however, we combine $\text{shay}$ first with the causative suffix $\text{is}$, the result is the expression $\text{shayis}$ whose meaning is the complex predicate:

$$\text{CAUSE}\{F: \text{cause} : _-, \text{BEAT} \{G^+: \text{beater} : _-, G^{-}: \text{beaten} : _-\}\}$$

If we combine the sign having this meaning with the reciprocal suffix $\text{an}$, then the resulting expression will be $\text{shayisan}$ whose meaning is:

$$\text{CAUSE}_{\text{RECP}}\{F: \text{cause} : -1, \text{BEAT} \{-: -1, G^{-}: \text{beaten} : -\}\}$$

If this is then combined with two arguments (according to the modes to be presented below) $\text{BOYS}$ (the concept for a set of boys $S$) and $b$ (the concept for Bill), then the result is:

$$\text{CAUSE}_{\text{RECP}}\{F: \text{cause} : \text{BOYS}_1, \text{BEAT} \{-: -1, G^{-}: \text{beaten} : b\}\}$$

which in a model $M$ represents a true fact iff:

$$\forall x.\forall y. [x \in \text{BOYS}' \land y \in \text{BOYS}' \rightarrow \text{CAUSE}'(x, \text{BEAT}'(y, b))]$$

The reflexive marker $\text{ti}$ in Siswati is similar to the reciprocal in that it changes the predicate it combines with, but unlike the reciprocal it attaches to the left of the verb root:

$$f_{\text{REFL}}(\text{shayan}) =$$

$$\text{BEAT}\{F: \text{beater} : -1, G: \text{beaten} : 1\}$$

$$f_{\text{REFL}}(\text{tishay}) =$$

$$\text{BEAT}_{\text{REFL}}\{F: \text{beater} : -\}$$
To see the semantic effect of the reflexivisation operation, assume that $\text{BEAT}^\prime$ is the extension of the concept $\text{BEAT}$ in the model $M$, and $A^\prime$ is the extension of the concept $A$ in the model $M$, then:

The proposition $\text{BEAT}^\prime_{\text{REFL}} \{ F : A \}$ represents a true fact in model $M$ iff

$$\begin{cases} 
\forall x. [x \in A^\prime \rightarrow \langle x, x \rangle \in \text{BEAT}^\prime], & \text{if } A^\prime \text{ is a set of individuals.} \\
\langle A^\prime, A^\prime \rangle \in \text{BEAT}^\prime, & \text{otherwise.} 
\end{cases}$$

The disjunctive marker $\text{ya}$ will be analysed as changing the value of the attribute $\text{Disj}$ from $\star$ (meaning unspecified) to $+$ (meaning disjoint). The idea is that the attribute-value pair $\text{DISJ} : +$ will prevent the saturation of a placeholder restricted to ground arguments with the semantic value of a complement NP by means of mode $f_G$, and thus enforces the only other way of saturating this placeholder. This accounts for the fact that disjoint transitive verbs require a second class-prefix on the verb. So the mode $f_{\text{DISJ}}$ is:

$$f_{\text{DISJ}}( \left[ \begin{array}{c} \langle e \rangle \\ \{ \text{CAT} : v, 1 : \star, \text{DISJ} : \star, \text{Tense} : \text{PRES}, \ldots \} \end{array} \right] ) = \left[ \begin{array}{c} \langle \text{ya}e \rangle \\ \{ \text{CAT} : v, 1 : \star, \text{DISJ} : +, \ldots \} \end{array} \right]$$

The obligatoriness of the disjunctive marker $\text{ya}$ on a pre-pausal present tense verb can then be enforced by stipulating that the intonation break (analysed as the exponent $\#$) can only be attached to the right of the present tense verb exponent if the category of the verb exponent contains $\text{DISJ} : +$.

$$f_{\#}( \left[ \begin{array}{c} \langle e \rangle \\ \{ \text{CAT} : v, \text{DISJ} : +, \ldots \} \end{array} \right] ) = \left[ \begin{array}{c} \langle e, \# \rangle \\ \{ \text{CAT} : v, \text{DISJ} : +, \ldots \} \end{array} \right]$$

The disjunctive mode will have to be complicated in order to account for the fact that $\text{ya}$ does not only combine with main verbs but also with adverbs preceding the main verb. If this is the case, a transitive verb does not have to be prefixed by a second class-prefix depending on the ground NP. I shall leave this for future research [17].

Next I will turn to the analysis of first and second class-prefixes. Let me first repeat the basic observations concerning these prefixes.

1. The finite verb in Siswati must be prefixed with a morpheme which depends on the person, number and class features of the NP which expresses (or would express) the figure argument.

13One possible analysis of this observation is to combine the conjunctive verb with the nominal sign first, and then combine the resulting sign with the adverb marked with $\text{ya}$. \}
2. The noun phrase expressing the figure argument can be omitted under certain discourse conditions (essentially if the intended argument can be recovered).

3. A sentence lacking an NP expressing the figure argument is (nevertheless) interpreted as containing an unsaturated figure argument, which must be saturated by an argument which can be expressed by an NP which has the same person, number, and class features as the first class-prefix of the finite verb.

4. A verb (finite or infinite) is prefixed with a second class-prefix depending on an NP expressing a ground argument, if (and only if) this NP is not part of the verb phrase.

5. A verb containing a second class-prefix is interpreted as containing an unsaturated ground argument which must be saturated by an argument which is (or can be) expressed by an NP with the same person, number and class features as the second class-prefix.

6. In Siswati the number of class-prefixes other than the first class-prefix is limited to one, unlike in other Bantu languages.

7. The first and second class-prefixes are often separated by tense markers.

The correlation between the presence of a first or second class-prefix on the verb and the interpretation of such a verb as containing an unsaturated figure or ground argument is analysed by postulating that first and second class-prefixes are pronominal in nature. The different distribution of independent pronouns on the one hand (they can occur wherever NPs can occur) and first and second class morphemes on the other hand (cannot occur wherever NPs can occur) is analysed by attributing first and second class morphemes the status of bound morphemes (i.e. prefixes of the verb or other elements of the verbal compound), and not of autonomous words. This will be implemented by postulating two types of modes. The modes of the first type (f\text{FM} and f\text{GM}) prefix the exponents of first and second class-morphemes (but not nouns or independent pronouns) to the verb exponent, and the modes of the second type (f_{F+FM}, f_{G+GM} and f\text{G}) combine nouns and independent pronouns (but not first or second class morphemes) with the verb.

As pointed out by N. Thwala (p.c.), the occurrence of the first class-prefix not only on the main verb but also on preceding auxiliaries or even adverbs, as in the sentences in (117), could be used to argue that first class-prefixes do not have a meaning, and that therefore they are not pronominal in nature. The argument is that (i) the adverb phindz cannot assign a semantic role, (ii) the meaning of a pronoun must be assigned a semantic role (by its host) in all occurrences of the pronoun, and therefore (iii) the first class-prefix is not a pronoun. My response to such an argument is to argue that the semantic value of a pronoun does not have to be assigned a semantic role in all syntactic contexts in which it occurs. The
transition from pronouns to agreement markers is completed only when there is no syntactic context in which the semantic value of this pronoun is (still) assigned a semantic role, and not as soon as there is one syntactic context in which the semantic value of the pronoun is not assigned a semantic role. To put it slightly differently, I argue that pronouns should not be analysed as agreement markers just because there are some contexts in which their semantic value is not assigned a semantic role. This should be expected if pronouns are used not only to saturate the placeholder of a predicate (which they do in virtue of their semantic value), but also to indicate certain relations between adverbs and verbs (which they do in virtue of their syntactic features). They should only be analysed as agreement markers when there is no context in which their semantic value is assigned a semantic role.

Creissels (2005) hypothesises that bound morphemes evolve in three stages. In the first stage the morphemes are in complementary distribution with the corresponding coreferent NPs. In the second stage they become obligatory, and in the third stage the corresponding NP also becomes obligatory. Based on this hypothesis, I will make a specific proposal for the change from stage one to stage two at the end of section 4.2.3.

Starting with second class-prefixes, I postulate a mode $f_{GM}$ (mnemonic for ground marker) which prefixes second class-morphemes to the verbs, and saturates a placeholder restricted to ground arguments with the meaning of the second class-prefix, provided that at no level of construal is the ground argument more prominent than the figure argument. This analysis does not require multiple levels of syntactic representation; instead it requires that the the initial construal restrictions remain “visible” after the application of a construal-changing operation.

The combination of the second class-prefix (with exponent) $ku$ with the verb sign $tseng$ (buy) results in:

\[
\begin{align*}
    f_{GM}(\langle ku \rangle) \quad &\quad \left[\begin{array}{l}
        CAT : n, PER : 3, NUM : \ast, CLS : 8, Type : B \\
        U
    \end{array}\right] \\
    f_{GM}(\langle tseng \rangle) \quad &\quad \left[\begin{array}{l}
        CAT : v, 1 : \ast, 2 : \ast, FIN : \ast \\
        BUY\{F : buyer : \_ G : bought : \_\}
    \end{array}\right] = \\
    f_{GM}(\langle kutseng \rangle) \quad &\quad \left[\begin{array}{l}
        CAT : v, 1 : \ast, 2 : [CAT : n, PER : 3, NUM : \ast, CLS : 8, TYPE : B], FIN : \ast \\
        BUY\{F : buyer : \_ G : bought : U\}
    \end{array}\right]
\end{align*}
\]

So this mode prefixes a second class-morpheme to the verb, adds the features of the prefix as the value of the attribute 2 of the verb category, and saturates a placeholder restricted to ground arguments with the unsaturated semantic value $U$ of the prefix.
The motivation for introducing the attribute Type as well as the attributes 1 and 2 can be explained as follows. If the first and second class-prefixes were always the same for a given class, then the attribute Type would be unnecessary, but the attributes 1 and 2 would still be necessary in order to capture the fact that the first class-prefix depends on the NP expressing the (primary) figure argument, while the second class-prefix depends on an NP expressing a ground argument. Without the Type attribute one could use the morpheme wa (3PL) as a first class-prefix, and a (also 3PL) as a second class-prefix, which is wrong.

Note that the second condition on the application of the mode \( f_{GM} \) prevents it from applying if the placeholder restricted to ground arguments was at some point earlier in the derivation restricted to figure arguments. To illustrate this consider the passivised verb sign nik-w (give-PASS):

\[
\begin{array}{c}
\langle \text{nikw} \rangle \\
[\text{CAT} : v, 1 : \ast, 2 : \ast, \text{FIN} : \ast] \\
\text{GIVE}\{\text{OBL} : \text{F} : \text{giver} : \ast, \text{G} : \ast, \text{CLS} : \ast, \text{TYPE} : \ast, \text{FIN} : \ast, \text{F} : \ast, \text{G} : \ast, \text{thing} : \ast\}
\end{array}
\]

After passivisation, the theme argument is the final figure and the recipient argument is the final ground argument. However, the theme argument is the initial secondary ground, and the recipient is the primary ground, so that according to the initial construal restrictions the recipient argument is more prominent than the theme argument. This is why the mode \( f_{GM} \) cannot saturate the recipient placeholder, and thus the recipient argument cannot be expressed by means of a second class-marker.

So the mode \( f_{GM} \) is:

\[
f_{GM} (\langle e_1 \rangle, \langle e_2 \rangle) = \begin{cases} 
\langle e_1 e_2 \rangle \\
[\text{CAT} : v, 1 : \ast, 2 : \ast, \text{FIN} : \ast] \\
\text{PRED}\{\text{F} : r_1 : \ast, \text{G} : r_2 : \ast, \ldots\}
\end{cases}
\]

if there is no level of construal at which \( r_2 \) is more prominent than \( r_1 \).

Note that this mode does not specify whether the placeholder to be saturated is restricted to primary or secondary ground arguments. This captures the fact that the second class-prefix can depend on the class of the NP expressing either ground argument. The restriction that disjunctive ditransitive verbs must be prefixed by a morpheme which depends on the NP expressing the primary ground argument will be analysed below.
Note that this mode requires the value for both attributes 1 and 2 of the verb category to be \(*\). First, it is this requirement which guarantees that this mode cannot apply after the mode \(f_{FM}\) which combines the first class-prefix with the verb. After the application of \(f_{FM}\) the value of the attribute 1 would not be \(*\) anymore, so \(f_{GM}\) cannot apply. Given that both modes simply prefix a morpheme exponent to the verb exponent, it follows that the morpheme which depends on the NP expressing the ground argument always occurs after the morpheme which depends on the NP expressing the figure argument. Secondly, this also guarantees that the verb cannot have more than two class-prefixes, because the values of the attributes 1 and 2 can only be specified once.

The immediate past tense mode \(f_{IP}\) suffixes the exponent of the verb sign with \(e\) and changes the value of the finiteness attribute \(F_{in}\) from \(*\) to +, indicating that the exponent is finite.

\[
f_{IP}(\begin{bmatrix}
\langle e \rangle \\
[CAT: v, FIN: \star, \ldots ] \\
PRED
\end{bmatrix}) = \begin{bmatrix}
\langle e \rangle \\
[CAT: v, FIN: +, \ldots ] \\
PRED, PAST
\end{bmatrix}
\]

(The semantics of tense and aspect will be ignored here and throughout.) Applying this mode to the sign with exponent \(ku-tseng\) (8-buy) we get:

\[
f_{IP}(\begin{bmatrix}
\langle ku-tseng \rangle \\
[CAT: v, 1: \star, 2: [CAT: n, PER: 3, NUM: *, CLS: 8], FIN: \star] \\
BUY\{F: buyer, G: bought : U\}
\end{bmatrix}) = \begin{bmatrix}
\langle ku-tseng \rangle \\
[CAT: v, 1: \star, 2: [CAT: n, PER: 3, NUM: *, CLS: 8], FIN: +] \\
BUY\{F: buyer, G: bought : U\}, PAST
\end{bmatrix}
\]

The mode \(f_{FM}\) (mnemonic for figure marker) prefixes a morpheme of \(TYPE: A\) to the exponent of a verb sign \([CAT: v, 1: \star, \ldots ]\), and saturates a placeholder restricted to the (primary) figure argument with the unsaturated value of the morpheme. So the combination of the morpheme (with exponent) \(ba\) with the sign (with exponent) \(ku-tseg-e\) (8-buy-FV) results in:

\[
f_{FM}(\begin{bmatrix}
\langle ba \rangle \\
[CAT: n, PER: 3, NUM: pl, CLS: 1, TYPE: A] \\
U_1
\end{bmatrix}) = \begin{bmatrix}
\langle ku-tseg-e \rangle \\
[CAT: v, 1: \star, 2: [CAT: n, PER: 3, NUM: *, CLS: 8, TYPE: B], FIN: +] \\
BUY\{F: buyer, G: bought : U_2\}, PAST
\end{bmatrix}
\]
Abstracting away from the particulars of this example, the mode $f_{FM}$ is:

$$f_{FM}(\begin{bmatrix} \langle e_1 \rangle \begin{bmatrix} CAT : n, PER : x, NUM : y, CLS : z, TYPE : A \end{bmatrix} \\ U \end{bmatrix}, \begin{bmatrix} \langle e_2 \rangle \begin{bmatrix} CAT : v, 1 : \ast, \ast, \ast, F I N : \ast \end{bmatrix} \end{bmatrix}) = \begin{bmatrix} \langle e_1 e_2 \rangle \begin{bmatrix} CAT : v, 1 : \ast, \ast, \ast, F I N : \ast \end{bmatrix} \\ \text{PRED}\{F^{(+)} : U, \ast, \ast, \ast, \ast, \ast, \ast\} \end{bmatrix}$$

Note that if the predicate has two placeholders which are restricted to figure arguments (as in the case of the impersonal active construction), this mode saturates the placeholder restricted to the primary figure argument with the semantic value $U$. Since in those cases in which two placeholders restricted to figure arguments occur, the primary figure argument is always the abstract setting, it follows that the first class-prefix can only be $ku$. It is therefore necessary to distinguish (at least) three morphemes with exponent $ku$. The first of these has a semantic value which can only be saturated by an abstract setting. The second morpheme with exponent $ku$ can only be saturated by arguments whose NPs belong to class 8 (e.g. kudla (food)). The third morpheme with exponent $ku$ is the infinitive marker. I will not provide an analysis of the infinitive maker $ku$.

I shall illustrate the application of (some of) these modes by deriving the sign $\text{ba-shay-is-an-e}$ (1PL-hit-CAUS-RECP-IP, ‘they caused each other to hit’) from sentence (169b). Applying the mode $f_{CAUS}$ to the verb sign (with exponent) $\text{shay}$ results in:

$$f_{CAUS}(\begin{bmatrix} \langle \text{shay} \rangle \begin{bmatrix} CAT : v, 1 : \ast, 2 : \ast, F I N : \ast \end{bmatrix} \\ \text{HIT}\{F : \text{hitter} : \ast, G : \text{hit} : \ast\} \end{bmatrix}) = \begin{bmatrix} \langle \text{shayis} \rangle \begin{bmatrix} CAT : v, 1 : \ast, 2 : \ast, F I N : \ast \end{bmatrix} \\ \text{CAUSE,HIT}\{G^{+} : F : \text{hitter} : \ast, G^{-} : \text{hit} : \ast, F : \text{causer} : \ast\} \end{bmatrix}$$

The reciprocalisation of this predicate results in:

$$f_{RECP}(\begin{bmatrix} \langle \text{shayis} \rangle \begin{bmatrix} CAT : v, 1 : \ast, 2 : \ast, F I N : \ast \end{bmatrix} \\ \text{CAUSE}\{F : \text{causer} : \ast, \text{HIT}\{G^{+} : F : \text{hitter} : \ast, G^{-} : \text{hit} : \ast\}\} \end{bmatrix}) =$$
The application of the immediate past mode $f_{IP}$ results in:

$$f_{IP}(\langle \text{shayisan} \rangle [CAT : v, 1 : *, 2 : *, FIN : *] \begin{array}{l} \text{CAUSE}\text{RECP}\{F : \text{causer} : -1, \text{HIT}\{G^+ : F : \text{hitter} : -1, G^- : \text{hit} : -\}\} \end{array}) =$$

$$\langle \text{shayisane} \rangle [CAT : v, 1 : *, 2 : *, FIN : +] \begin{array}{l} \text{CAUSE}\text{RECP}\{F : \text{causer} : -1, \text{HIT}\{G^+ : F : \text{hitter} : -1, G^- : \text{hit} : -\}\}, \text{PAST} \end{array}$$

Finally prefixing ba to this sign by means of $f_{FM}$ results in:

$$f_{FM}(\langle \text{ba} \rangle [CAT : n, PER : 3, NUM : pl, CLS : 1, TYPE : A], U \langle \text{shayisane} \rangle [CAT : v, 1 : *, 2 : *, FIN : +] \begin{array}{l} \text{CAUSE}\text{RECP}\{F : \text{causer} : -1, \text{HIT}\{G^+ : F : \text{hitter} : -1, G^- : \text{hit} : -\}\}, \text{PAST} \end{array}) =$$

$$\langle \text{bashayisane} \rangle [CAT : v, 1 : [CAT : n, PER : 3, NUM : pl, CLS : 1, TYPE : A], 2 : *, FIN : +] \begin{array}{l} \text{CAUSE}\text{RECP}\{F : \text{causer} : U_1, \text{HIT}\{G^+ : F : \text{hitter} : -1, G^- : \text{hit} : -\}\}, \text{PAST} \end{array}$$

To sum up, the present analysis of the verbal morphology in Siswati hypothesises that:

- The passive, causative, applicative and reciprocal suffixes are introduced by the respective modes syncategorematically. That is, these suffixes are not analysed as signs which are combined with the verb root sign, but as exponents which are introduced through the application of certain unary modes to a verb root sign.

- The modes postulated for the analysis of the personal passive, the impersonal passive, the causative, the applicative and the reciprocal constructions do not combine two or more signs, but only apply to one sign. These modes may change both the predicate (for example by adding or removing a semantic role) and its construal (by changing the construal restrictions on the placeholders of a predicate). These changes are symbolised formally by suffixing the verb root with the corresponding marker. These modes therefore provide the means for systematically deriving signs with a related verb meaning from signs with a given verb meaning. While in the case of the signs sell and buy the different construal of the same semantic roles is expressed by means of
different lexical items, in the case of beat and was beaten the different construal of the same semantic roles is expressed by means of related lexical items. These modes can thus be viewed as a way of avoiding different lexical items for verb signs whose meaning is systematically related.

- First and second class-prefixes are pronominal signs. They are combined with the verb stem (i.e. the verb root plus valency changing suffixes) by means of two modes which syntactically prefix the verb stem with the class-prefix, and semantically saturate a placeholder restricted to figure or ground arguments with the unsaturated semantic value of the class-prefix sign.

### 4.2.3 Combining nominal and verbal signs

I will now turn to the modes which combine noun or independent pronoun signs with verbal signs. I shall begin with the mode $f_G$. This mode attaches the nominal sign exponent to the right of the verbal sign exponent, and saturates a placeholder restricted to ground arguments provided that verb is not in disjunctive form. I will illustrate the application of this mode by combining the verb sign $u$-ba-nik-e (1SG-1PL-give-IP) with the nominal sign kudla (8.food).

$$
\begin{align*}
\left[ \langle \text{ubanike} \rangle, \\
[\text{CAT} : v, 1 : 1SG, 2 : 1PL, \text{FIN} : +, \text{DISJ} : *] \\
\text{GIVE}\{\text{F} : \text{giver} : U_1, \text{G}^+ : \text{recipient} : U_2, \text{G}^- : \text{thing} : .\} \\
\left[ \langle \text{kudla} \rangle, \\
[\text{CAT} : n, \text{PER} : 3, \text{NUM} : *, \text{CLS} : 8] \\
\text{FOOD} \right) 
\end{align*}
$$

Note that this semantic function requires the placeholder to be empty, which means that it cannot apply if the placeholder is filled by the semantic value of the second class-prefix $U_2$. This is why the semantic value of the expression kudla cannot be assigned the role restricted to primary ground arguments. This analysis presupposes that class-prefixes do not impose a restriction on what a particular placeholder can be filled with, but provide an entity (whose properties are as yet unspecified) which actually saturates the placeholder. The properties of this entity are saturated by applying the mode $f_G + \text{GM}$.

If we had combined $u$-nik-e (1SG-give-IP) with kudla by $f_G$, and then the resulting sign with bafana also by $f_G$, we would derive the sign with exponent $\text{unike,kudla,bafana}$, which

---

14ISG is an abbreviation of the more elaborate $[\text{CAT} : n, \text{PER} : 3, \text{NUM} : sg, \text{CLS} : 1]$. 
is ungrammatical in Siswati (unless the exponent bafana is emphasised). To account for this, I stipulate that if the predicate contains two placeholders restricted to ground arguments, then the mode $f_G$ saturates the placeholder restricted to primary ground arguments, and otherwise it simply saturates the placeholder restricted to ground arguments. So the mode $f_G$ is

$$f_G\left( \begin{bmatrix} \langle e_1 \rangle \\ \text{CAT} : v, 1 : x, \text{DISJ} : *, \ldots \\ \text{PRED}\{G(+) : \ldots \} \end{bmatrix} , \begin{bmatrix} \langle e_2 \rangle \\ \text{CAT} : n, \ldots \\ \text{ARG} \end{bmatrix} \right) =\begin{bmatrix} \langle e_1, e_2 \rangle \\ \text{CAT} : v, 1 : x, \text{DISJ} : *, \ldots \\ \text{PRED}\{G(+) : \text{ARG}, \ldots \} \end{bmatrix}$$

Note that this mode requires the value for Disj to be $*$ (i.e. unspecified) and thus cannot apply to a verb sign which has the attribute-value pair DISJ : $+$ in its category specification. Since the attachment of the disjunctive marker ya results in this attribute-value pair, it follows that if the predicate (of a disjoint verb) has placeholder restricted to ground arguments, it cannot be saturated through an application of mode $f_G$, so that this placeholder must have been saturated by combining a second class-prefix with the verb stem. It therefore follows that ya-marked transitive verbs always have a second class-prefix.

Since the mode $f_G$ saturates a placeholder, it follows that this mode cannot apply if this placeholder has already been saturated with the (unsaturated) semantic value of a second class-prefix. If the semantic contribution of second-class prefix was just a restriction on a particular placeholder, then the placeholder would still be empty, and could therefore be saturated by an entity satisfying all restrictions on the particular placeholder. However, since I argue that the semantic contribution of the second-class prefix is a singular or plural entity, this entity saturates the placeholder, so that the placeholder itself (unlike the properties of the entity) cannot be further saturated. Secondly it follows that this mode must apply to combine a nominal sign with the verbal sign if the placeholder has not been saturated with the meaning of a second class-prefix. This accounts for the complementary distribution of second-class-prefixes and VP-internal complement NPs.

The second way of combining a nominal sign with a verbal sign is analysed by means of mode $f_{G+GM}$ (mnemonic for ground marker plus ground NP). This mode is postulated in order to analyse the co-occurrence of second class-prefixes with coreferential VP-external complement NPs. On the exponent level, this mode does not concatenate the verb exponent with the nominal exponent, but builds a tuple containing both the verb exponent and the nominal exponent. So if the verb exponent is $\langle e_1 \rangle$ and the noun exponent is $\langle e_2 \rangle$, then the

15The fact that the order of primary ground NP before secondary ground NP is only a default and can be overridden by the requirement of placing an emphasised nominal sign at the end of the sentence will remain unanalysed.
resulting exponent will be $\langle e_1, e_2 \rangle$, and not $\langle e_1 \cdot e_2 \rangle$. So essentially the exponent function of this mode postpones concatenation. On the category level, the mode checks that the features of the noun sign match the value of the attribute 2 of the verb category. On the conceptual level, this mode saturates an unsaturated value $U$ – which itself saturates a placeholder restricted to ground arguments – with the meaning of the nominal sign. Let me illustrate by combining the verb sign (with exponent) $u$-ba-nik-e $kudla$ (1SG-1PL-give-IP 8.food, 'he gave them food') with the noun sign (with exponent) $bafana$ (1PL.boy, 'boys').

$$f_{G+GM}(\langle u\text{-}banike\_kudla \rangle, [CAT:v, 1:1SG, 2:1PL, FIN:+] \ GIVE\{F: \text{giver} : U_1, G^+: \text{recipient} : U_2, G^-: \text{thing} : \text{FOOD}\}) = $$

$$[\langle bafana \rangle, [CAT : n, PER : 3, NUM : pl, CLS : 1] \ BOYS ] =$$

Abstracting away from the particulars of this example, the mode $f_{G+GM}$ is:

$$f_{G+GM}(\langle e_1, \ldots, e_n \rangle, [CAT : v, 2 : [CAT : n, PER : x, NUM : y, CLS : z, \text{TYPE} : B], \ldots ] \ PRED\{G : \text{U}, \ldots \} ) = $$

$$[\langle e_m\rangle, [CAT : n, PER : x, NUM : y, CLS : z] \ ARG ] =$$

$$[\langle e_1, e_m, e_2, \ldots, e_n \rangle, [CAT : v, 2 : [CAT : n, PER : x, NUM : y, CLS : z, \text{TYPE} : B], \ldots ] \ PRED\{G : \text{ARG}, \ldots \} ]$$

I assume that the number $n$ of strings in an exponent tuple is actually quite low (3?), and reflects a limitation on how many strings can be kept separate during parsing or production. (What is limited is not the number of words that can concatenate to form a string of words, but the number of strings of words.)

Semantically, this mode saturates the unsaturated semantic value $U$ which itself saturates a placeholder restricted to ground arguments. Syntactically, it postpones the formal combination (concatenation) of the nominal exponent with the verb exponent. The idea is that we can then for example concatenate the exponent of the figure argument to the left of the verb exponent, and then concatenate the exponent of the ground argument to the left
of the resulting exponent, deriving the word order \( e_{NP_2} \prec e_{NP_1} \prec e_V \). The dissociation of semantic composition from formal concatenation is the first part of the analysis of long distance dependencies. The second part consists in passing on the dissociated elements, and the third part consists in linearising dissociated elements. This mode also accounts for the clause-internal co-occurrence of a second class-marker and a coreferential complement NP (provided that the complement NP is VP-external).

The third way of combining a nominal sign with a verbal sign is by means of mode \( f_{F+FM} \). This mode is used to combine an NP sign expressing the figure argument with the verbal sign. I will illustrate this mode by combining the sign with exponent \( \langle ubanike, kudla, bafana \rangle \) with the sign (with exponent) \( Nhlanhla \).

\[
\begin{align*}
    f_{F+FM} & \left( \begin{array}{c}
        \langle ubanike, kudla, bafana \rangle \\
        [CAT : v, 1 : 1SG, 2 : 1PL, FIN : +] \\
        GIVE \{ F : giver : U_1, G^+ : recipient : BOYS, G^- : thing : FOOD \}
    \end{array} \right), \\
    \begin{array}{c}
        \langle Nhlanhla \rangle \\
        [CAT : n, PER : 3, NUM : sg, CLS : 1]
    \end{array}
    = \\
    NHL
\end{align*}
\]

Abstracting from the particulars of this example, the mode \( f_{F+FM} \) is therefore:

\[
\begin{align*}
    f_{F+FM} & \left( \begin{array}{c}
        \langle e_1, \ldots, e_n \rangle \\
        [CAT : v, 1 : [CAT : n, PER : x, NUM : y, CLS : z, TYPE : A], \ldots] \\
        PRED \{ F : U_1, \ldots \}
    \end{array} \right), \\
    \begin{array}{c}
        \langle e_m \rangle \\
        [CAT : n, PER : x, NUM : y, CLS : z]
    \end{array}
    = \\
    ARG
\end{align*}
\]

\[
\begin{align*}
    f_{F+FM} & \left( \begin{array}{c}
        \langle e_1, e_m, e_2, \ldots, e_n \rangle \\
        [CAT : v, 1 : [CAT : n, PER : x, NUM : y, CLS : z, TYPE : A], \ldots] \\
        PRED \{ F : ARG, \ldots \}
    \end{array} \right)
\end{align*}
\]

The exponent \( \langle ubanike, kudla, Nhlanhla, bafana \rangle \) can be linearised by means of the modes \( f_{LIN_1} \), or \( f_{LIN_2} \). The exponent functions of these linearisation modes essentially take the second element of a tuple and concatenate it either before or after the first element of the tuple. So \( f_{LIN_1}(\langle a, b, c, d \rangle) = \langle a, b, c, d \rangle \), while \( f_{LIN_2}(\langle a, b, c, d \rangle) = \langle b, a, c, d \rangle \).

\[
\begin{align*}
    f_{LIN_1}(\langle e_1, e_2, \ldots, e_n \rangle) = \langle e_1 \cup e_2, \ldots, e_n \rangle
\end{align*}
\]
and
\[ f_{\text{LIN}_2}(\langle e_1, e_2, \ldots, e_n \rangle) = \langle e_2 \cdot e_1, \ldots, e_n \rangle, \]

The category and semantic functions of the linearisation modes are the identity function \( \lambda x.x \). Applying the linearisation mode \( f_{\text{LIN}_2} \) to

\[ \langle \text{unbanike, kudla, Nhlanhla, bafana} \rangle \]

results in:

\[ f_{\text{LIN}_2}(\langle \text{unbanike, kudla, Nhlanhla, bafana} \rangle) = \langle \text{Nhlanhla, unbanike, kudla, bafana} \rangle \]

and another application of mode \( f_{\text{LIN}_2} \) to this sign results in:

\[ f_{\text{LIN}_2}(\langle \text{Nhlanhla, unbanike, kudla, bafana} \rangle) = \langle \text{bafana, Nhlanhla, unbanike, kudla} \rangle \]

Next I will derive the exponent in (170):

(170) Bafana Nhlanhla u-cabang-a kutsi u-ba-nik-e kudla.
1PL.boy Nhlanhla 1SG-think-FV that 1SG-1PL-give-IP 8.food
To the boys Nhlanhla thinks that he gave (them) food.

First the sign \( \text{unbanike} \) combines with the sign \( \text{kudla} \) by means of \( f_G \), then the result combines with the sign \( \text{bafana} \) by means of \( f_{G+GM} \) (this is essentially as in the previous example). The resulting sign is:

\[
\begin{bmatrix}
\langle \text{unbanike, kudla, bafana} \rangle \\
\text{[CAT:} v, 1 : 1SG, 2 : 1PL, FIN : +] \\
\text{GIVE}\{F: \text{giver} : U, G^+ : \text{recipient} : \text{BOYS}, G^- : \text{thing} : \text{FOOD}\}
\end{bmatrix}
\]

Next we combine this sign with the complementiser sign \( \text{kutsi} \) by means of the mode \( f_{\text{COMP}} \), which concatenates the complementiser exponent to the left of the first element of the verb exponent. So \( f_{\text{COMP}}((e_1, \ldots, e_2)) = (e_2 \cdot e_1, \ldots) \):

\[
\begin{bmatrix}
\langle \text{unbanike, kudla, bafana} \rangle \\
\text{[CAT:} v, 1 : 1SG, 2 : 1PL, FIN : +] \\
\text{GIVE}\{F: \text{giver} : U, G^+ : \text{recipient} : \text{BOYS}, G^- : \text{thing} : \text{FOOD}\}
\end{bmatrix}
\]

\[
\begin{bmatrix}
\langle \text{kutsi} \rangle \\
\text{[CAT: COMP]}
\end{bmatrix}
\]

\[ = \lambda x.x \]

\[
\begin{bmatrix}
\langle \text{kutsi, unbanike, kudla, bafana} \rangle \\
\text{[CAT:} v, 1 : 1SG, 2 : 1PL, FIN : +] \\
\text{GIVE}\{F: \text{giver} : U, G^+ : \text{recipient} : \text{BOYS}, G^- : \text{thing} : \text{FOOD}\}
\end{bmatrix}
\]
This sign is then combined with the verb sign \textit{ucabanga} (think) by means of the mode \textit{f}_G:

\[
\begin{align*}
\text{\textit{ucabanga}} &\quad \left[ \text{\textit{CAT}}: v, 1: 1SG, 2: \ast, \text{\textit{FIN}}: + \right] \\
\text{THINK}&\{ F: \text{thinker} : U_1, G: \text{thought} : \} \\
\langle \text{\textit{kutsi\_ubanike\_kudla, bafana}} \rangle &\quad \left[ \text{\textit{CAT}}: v, 1: 1SG, 2: 1PL, \text{\textit{FIN}}: + \right] \\
\text{GIVE}&\{ F: \text{giver} : U_2, G^+: \text{recipient} : \text{BOYS}, G^- : \text{thing} : \text{FOOD} \} \\
\langle \text{\textit{ucabanga\_kutsi\_ubanike\_kudla, bafana}} \rangle &\quad \left[ \text{\textit{CAT}}: v, 1: 1SG, 2: \ast, \text{\textit{FIN}}: + \right] \\
\text{THINK}&\{ F: U_1, G: \text{GIVE}\{ F: U_2, G^+: \text{BOYS}, G^- : \text{FOOD} \} \}
\end{align*}
\]

Next this sign is combined with the sign \textit{Nhlanhla} by means of mode \textit{f}_{F+FM}:

\[
\begin{align*}
\langle \text{\textit{Nhlanhla}} \rangle &\quad \left[ \text{\textit{CAT}}: n, \text{\textit{PER}}: 3, \text{\textit{NUM}}: sg, \text{\textit{CLS}}: 1 \right] \\
\text{NHL}&
\end{align*}
\]

\[
\begin{align*}
\langle \text{\textit{ucabanga\_kutsi\_ubanike\_kudla, Nhlanhla, bafana}} \rangle &\quad \left[ \text{\textit{CAT}}: v, 1: 1SG, 2: \ast, \text{\textit{FIN}}: + \right] \\
\text{THINK}&\{ F: \text{NhL}, G: \text{GIVE}\{ F: U_2, G^+: \text{BOYS}, G^- : \text{FOOD} \} \}
\end{align*}
\]

Applying the linearisation mode \textit{f}_{LIN_2} to this sign results in:

\[
\begin{align*}
\langle \text{\textit{Nhlanhla\_ucabanga\_kutsi\_ubanike\_kudla, Nhlanhla, bafana}} \rangle &\quad \left[ \text{\textit{CAT}}: v, 1: 1SG, 2: \ast, \text{\textit{FIN}}: + \right] \\
\text{THINK}&\{ F: \text{NhL}, G: \text{GIVE}\{ F: U_2, G^+: \text{BOYS}, G^- : \text{FOOD} \} \}
\end{align*}
\]

And another application of the same linearisation mode results in:

\[
\begin{align*}
\langle \text{\textit{Nhlanhla\_ucabanga\_kutsi\_ubanike\_kudla, Nhlanhla, bafana}} \rangle &\quad \left[ \text{\textit{CAT}}: v, 1: 1SG, 2: \ast, \text{\textit{FIN}}: + \right] \\
\text{THINK}&\{ F: \text{NhL}, G: \text{GIVE}\{ F: U_2, G^+: \text{BOYS}, G^- : \text{FOOD} \} \}
\end{align*}
\]
I will now summarise the derivation of the exponent in order to point out the three steps in the analysis of long distance dependencies. First the secondary ground exponent kudla (8.food, ‘food’) is combined with the verb exponent u-ba-nik-e (1SG-1PL-give-IP, ‘he gave them’) by means of $f_G$ resulting in:

$$f_G((\text{ubanike}, \langle \text{kudla} \rangle)) = \langle \text{ubanike}, \text{kudla} \rangle$$

Next $f_{G+GM}$ combines this exponent with the exponent bafana of the primary ground argument:

$$f_{G+GM}((\text{ubanike}, \text{kudla}), (\text{bafana})) = \langle \text{ubanike}, \text{kudla}, \text{bafana} \rangle$$

Next this exponent is combined with the exponent of the complementiser:

$$f_{COMP}((\text{ubanike}, \text{kudla}, \text{bafana}), (\text{kutsi})) = \langle \text{kutsi}, \text{ubanike}, \text{kudla}, \text{bafana} \rangle$$

This exponent is then combined with the exponent of the matrix verb by means of $f_G$:

$$f_G((\text{ucabanga}), (\text{kutsi}, \text{ubanike}, \text{kudla}, \text{bafana})) =$$

$$\langle \text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla}, \text{bafana} \rangle$$

The resulting exponent is then combined with the exponent of the figure argument of the matrix predicate by means of $f_{F+FM}$:

$$f_{F+FM}((\text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla}, \text{bafana}), (\text{Nhlanhla})) =$$

$$\langle \text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla}, \text{Nhlanhla}, \text{bafana} \rangle$$

This exponent is then linearised by applying $f_{LIN^2}$ twice. The first application results in,

$$f_{LIN^2}((\text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla}, \text{Nhlanhla}, \text{bafana})) =$$

$$\langle \text{Nhlanhla}, \text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla}, \text{bafana} \rangle$$

and the second application of $f_{LIN^2}$ results in:

$$f_{LIN^2}((\text{Nhlanhla}, \text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla}, \text{bafana})) =$$

$$\langle \text{bafana}, \text{Nhlanhla}, \text{ucabanga}, \text{kutsi}, \text{ubanike}, \text{kudla} \rangle$$

Note first the difference between the exponent function $f_G$ on the one hand and $f_{G+GM}$ and $f_{F+FM}$ on the other hand:

$$f_G((a, b), (c, d)) = (a \times, b, d)$$

$$f_{G+GM}((a, b, c), (d)) = (a, d, c, b)$$

$$f_{F+FM}((a, b, c), (d)) = (a, b, c, b)$$
The function $f_G$ (i) concatenates the first element $c$ of the second component to the right of the first element $a$ of the first component, (ii) adds the dissociated elements of the first component (if there are any), and then (iii) adds the dissociated elements of the second component (if there are any). The functions $f_{G+GM}$ and $f_{F+FM}$ (i) do not concatenate the first element of the second component, but simply place it after the first element of the first component. The difference is that $f_G$ fixes the position of the nominal exponent, whereas $f_{G+GM}$ and $f_{F+FM}$ do not.

Secondly, note that when the matrix verb *ucabanga* combines with the subordinate clause exponent which contains the dislocated exponent *bafana*, this exponent is passed on to the resulting exponent, so that *bafana* becomes the dislocated element of the resulting exponent $\langle*ucabanga_kutsi_ubanike_kudla,bafana\rangle$.

And thirdly, note that the exponent *bafana* (boys) is concatenated a few derivations steps after the corresponding semantic value *BOYS* has been combined with the predicate.

Next I will discuss the interaction between the modes $f_G, f_{FM+M}, f_{G+GM}$ and $f_G$ with the mode $f_{DISJ}$. The mode $f_G$ has been set up such that it cannot apply to a disjunctive verb, i.e. a verb whose category contains the attribute-value pair $DISJ:+$. So far, the only other way of saturating a placeholder restricted to ground arguments is by applying $f_{G+GM}$, which however requires the presence of a second (class) prefix. This correctly predicts that a disjunctive verb whose predicate has one placeholder restricted to ground arguments will contain a second class-prefix which depends on the NP expressing the ground argument. However, in those cases where a predicate has two placeholders restricted to ground arguments, this analysis does not enforce the dependence of the second prefix on the NP expressing the primary ground argument, and thus allows for the second class-prefix to depend either on the NP expressing the primary ground argument (which is correct) or on the NP expressing the secondary ground argument (which is contrary to fact). To account for this I will modify the disjunctive mode $f_{DISJ}$ so that it cannot apply if the predicate contains a placeholder restricted to primary ground arguments.

\[
f_{DISJ}(\langle e \rangle
\begin{array}{c}
\text{CAT} : v, 1: *, DISJ : *, . . . \\
PRED
\end{array}
) = \langle yae \rangle
\begin{array}{c}
\text{CAT} : v, 1: *, DISJ : +, . . . \\
PRED
\end{array}
\]
if PRED does not contain an placeholder restricted to primary ground arguments $G^+$.2

Moreover, the analysis so far does not account for the fact that the NP *kudla* in [171] can be expressed outside the verb phrase even though the verb contains no second class-prefix *ku* depending on it. This is because a nominal sign can only saturate a placeholder restricted
to ground arguments by \(f_G\), which cannot apply when the verb is disjoint, or by \(f_{G+GM}\), which cannot apply either since the verb cannot contain a second and a third class-prefix.

(171) \(\text{Kudla bafana \ bay-

\(\text{silima).}\)

8.food 1PL.boy 1PL-DISJ-4SG-give-FV (4SG.fool)

The food the boys give to him (the fool).

In order to account for sentences like (171) I introduce a new mode \(f_{\text{EXC}} \rightarrow G\) which combines \(\text{kudla}\) with \(\text{bayasinika}\). I suggest that the introduction of a new mode for this particular case is an adequate analysis in view of the fact that this is the only exception to the generalisation that the presence/absence of a second class-prefix correlates with the absence/presence of the corresponding NP from the verb phrase. The proposed mode \(f_{\text{EXC}} \rightarrow G\) (mnemonic for exceptional ground mode) (i) saturates a placeholder restricted to (secondary) ground arguments, provided that the verb is disjunctive and the features of the NP and the second class-prefix do not match, and (ii) places the nominal exponent after the first element of the verb exponent.

\[
\begin{align*}
&f_{\text{EXC}} \rightarrow G(\langle e_1, \ldots, e_n \rangle, \langle e_m \rangle, \langle e_{e_2}, \ldots, e_{e_n} \rangle, \langle e_{e_{x_1}},\langle e_{y_1}, e_{z_1}, e_{y_2}, e_{z_2} \rangle, \ldots \rangle) = \\
&\langle e_N e_v e_V \rangle, \langle e_N \cup e_V \rangle, \langle e_N \cup e_V \rangle) \\
&\begin{cases}
\langle e_1, \ldots, e_n \rangle, \\
\langle e_m \rangle, \\
\langle e_{e_1}, \ldots, e_{e_n} \rangle, \\
\langle e_{e_{x_1}}, x_1, \ldots, e_{e_{x_2}}, y_1, z_1, \ldots \rangle, \\
\langle e_{e_{x_1}}, x_1, y_1, z_1, \ldots \rangle, \\
\langle e_{e_{x_1}}, y_1, z_1, \ldots \rangle, \\
\langle e_{e_{x_1}}, z_1, \ldots \rangle, \\
\langle e_{e_{x_1}} \cup e_{x_2}, \ldots \rangle, \\
\langle e_{e_{x_1}} \cup e_{e_{x_2}}, \ldots \rangle, \\
\langle e_{e_{x_1}} \cup e_{e_{x_2}} \cup e_{x_2}, \ldots \rangle, \\
\langle e_{e_{x_1}} \cup e_{e_{x_2}} \cup e_{x_2} \cup e_{x_2}, \ldots \rangle.
\end{cases}
\end{align*}
\]

if \(x_1 \neq x_2 \lor y_1 \neq y_2 \lor z_1 \neq z_2\). (This condition ensures that there is a difference between the features of the NP and the features of the second class-prefix.) The fact that a ditransitive disjunctive verb requires the second class-prefix to depend on the NP expressing the primary ground argument (see section 5) is derived indirectly by stipulating that the exceptional mode can only saturate placeholders restricted to secondary ground arguments.

Lastly, I will suggest an analysis for the change of the first class-prefix from stage one (being in complementary distribution with the corresponding NP) to stage two (being obligatory, irrespective of the presence or absence of the corresponding NP). Stage one is characterised by a mode \(f_F\) which combines a nominal sign (either a noun or a bound morpheme) with the verb, and concatenates the nominal exponent to the left of the verbal exponent. So the exponent function of \(f_F\) is \(f_F((e_v), \langle e_n \rangle) = \langle e_N \cup e_V \rangle\). This accounts for the fact that NPs and bound morphemes are in complementary distribution. In addition to this, at stage one the grammar also contains a mode \(f_{F+FM}\) which combines ‘dislocated’ NPs with the
verb. The exponent function of this mode is \( f_{F+FM}(⟨e_V⟩, ⟨e_N⟩) = ⟨e_V, e_N⟩ \). This tuple is then linearised either by \( f_{LIN_1} \) or \( f_{LIN_2} \). The proposal, then, is that the transition from stage one to stage two is characterised by the the mode \( f_{F+FM} \) starting to be used in those cases where previously the mode \( f_F \) was used, i.e. to combine NPs which are left-adjacent to the verb. At the completion of the transition from stage one to stage two, the mode used to saturate the placeholder for the figure argument with the semantic value of a nominal sign is always mode \( f_{F+FM} \) and not mode \( f_F \) anymore. This then accounts for the fact that the first class-prefix has become obligatory. Note that in this analysis the first class-prefix can co-occur with the corresponding nominal sign, without having to postulate that in this case the first class-prefix has lost its semantic value. This framework allows for the possibility that the semantic value of a first class-prefix can and does co-exist in diachronic development with clause-internal NPs expressing the figure argument, which is what the principle of functional uniqueness in Lexical-Functional grammar precludes. Consequently, what we have here are different hypotheses about grammaticalisation. I am not claiming that pronouns never lose their semantic value (this is what happens in stage three of the development of bound morphemes which depend on NPs expressing arguments of the verb). What I claim is that there must have been a period of diachronic development (the transition from stage one to stage two) in which the semantic value of the first class-prefix co-occurs with a clause-internal NP expressing a figure argument, which is precluded from happening in an LFG analysis.

4.2.4 Conclusion

I will conclude this chapter by summing up the main points of the analysis:

- The relation between the semantic role assigned to an argument and the morphosyntactic encoding of this argument is mediated by the construal restrictions on the arguments saturating the placeholders of predicates. Thus, the morphosyntactic realisation of two arguments is similar if and only if these arguments are construed similarly by the speaker.

- The placeholders of predicates are restricted to either figure, ground or oblique arguments. Moreover, I have argued that in some cases primary and secondary figure arguments must be distinguished, as well as primary and secondary ground arguments.

- Semantic functions identify placeholders in terms of their construal restriction.

- Certain verbal suffixes may change both the content as well as the construal of a predicate (e.g. the passive, causative, applicative and reciprocal suffixes). The content of a predicate may be changed by adding or removing a semantic role. The construal of a predicate may be changed by modifying the construal restrictions on the arguments
saturating the placeholders. These suffixes which change the content/construal of a predicate are attached to the verb root syncategorematically by means of unary modes, and thus constitute a way of avoiding morphologically unrelated lexical items for verb signs whose meaning is systematically related.

- Class-prefixes are analysed as pronominal signs. The semantic value of the first class-prefix saturates the placeholder restricted to the (primary) figure argument, and the semantic value of the second class-prefix saturates the placeholder restricted to the (primary) ground argument.

- Some modes of combination do not distinguish between placeholders restricted to primary or secondary ground arguments, whereas some others do.

- There are two different modes for combining complement signs with verb signs. Either by mode $f_G$, which (i) concatenates the nominal exponent to the right of the verb exponent, and (ii) saturates a placeholder restricted to ground arguments with the semantic value of the complement sign, or by mode $f_{G+GM}$ which (i) delays the concatenation of the nominal exponent to the verb exponent, and (ii) saturates the unsaturated semantic value – which itself saturates a placeholder restricted to ground arguments – with the semantic value of the complement sign.

- The application of the disjunctive mode $f_{DISJ}$ essentially blocks further applications of the mode $f_G$, so that a placeholder restricted to ground arguments must have been saturated by means of $f_{G+GM}$.

- To account for the exceptional occurrence of VP-external complement NPs in the absence of a corresponding second class-prefix (this is the case when both complements of a ditransitive disjunctive verb occur outside the VP, but only one second class-prefix can be attached to the verb stem), an additional mode $f_{EXC-G}$ has been postulated.

- There is only one mode for combining the privileged NP sign with the verb sign, i.e. mode $f_{F+FM}$. This accounts for the obligatoriness of the first class-prefix.

- The lack of a mode $f_F$ which saturates a placeholder restricted to figure arguments with the semantic value of an NP in the absence of a first class-prefix is analysed as the result of the grammaticalisation of a preference for combining all privileged NPs by means of $f_{F+FM}$ (i.e. the mode which at an earlier diachronic stage applied only to clause-external privileged NPs), as opposed to mode $f_F$ which is hypothesised to have combined only clause-internal privileged NPs (at an earlier diachronic stage).

- Long distance dependencies between nominal and verbal signs have been analysed by combining the two signs locally, but by deferring the concatenation of the two
exponents. This analysis is only possible if the exponent functions operate on tuples of strings, rather than just on strings (in which case the deferral of concatenation could not be expressed).

- In the present analysis there is no principled difference between on the one hand modes which derive a related sign from a given sign, and on the other hand modes which combine component signs into a composite sign. The difference is not in the modes themselves, but in the types of signs which a mode applies to. Modes which combine complete words may be called grammatical, whereas modes which combine morphemes may be labelled lexical, but the distinction is not theoretically relevant.
Chapter 5

Comparison

5.1 The basic comparative claims

Before I proceed with the comparison of the present analyses with other analyses, I will sum up the main comparative claims that emerge from the separate analyses of weak pronouns in Romanian and object marking in Siswati.

The first comparative claim is that both weak pronouns as well as subject and object markers are pronominal signs. No difference between weak pronouns or object markers is hypothesised in order to analyse their co-occurrence with clause-internal coreferent object NPs.

The second comparative claim is that accusative weak pronouns in Romanian and object markers in Siswati always saturate a placeholder restricted to ground arguments, even if the sentence contains a coreferent clause-internal object NP.

The third comparative claim is that the entities represented by the semantic values of object NPs in both Romanian and Siswati can be combined with the predicates by means of essentially the same two semantic functions. The first semantic function saturates a placeholder restricted to ground arguments, whereas the second semantic function saturates the unsaturated meaning of a weak pronoun – which itself saturates the placeholder restricted to ground arguments – with the semantic value of the object NP. The co-occurrence of these pronominal signs (i.e. weak pronouns or object markers) with object NP signs is analysed by hypothesising that the meaning of the pronominal signs first saturates the placeholder for ground arguments, and then the meaning of the object sign saturates the unsaturated semantic value of the pronominal sign.

The fourth comparative claim is that in Romanian the placeholders for the object arguments of a ternary predicate have different construal restrictions, whereas in Siswati the construal restrictions of these placeholders are the same.

The fifth comparative claim is that in Siswati object markers and VP-internal object NPs
are in complementary distribution (with one exception), whereas in Romanian this is not the case. That is, in Siswati if an object NP does not form a VP constituent with the verb, then the verb must contain an object marker whose class depends on this NP. In Romanian, the verb cluster does not have to contain an accusative weak pronoun if the object NP is not part of the verb phrase.

5.2 Comparison of formalisms – part one

In this section I will review the basic hypotheses made in the present analysis concerning the formal structure, the semantic structure, and the relation between formal and semantic structure. In the course of doing so, I will point out some important similarities and differences with competing analyses of the same phenomena. In the next section I will then provide a detailed comparison of the present analysis with Monachesi’s HPSG analysis of weak pronouns in Romanian, the LFG analysis of argument structure and subject and object markers in Bantu, and the Dynamic Syntax analysis of weak pronouns and object markers.

5.2.1 Formal structure

The formal structure of expressions is analysed in terms of associations between phonological functions, exponent functions and category functions. The exponent functions dictate how certain exponents are to be combined, and thus determine the word order of an expression. Exponents are not strings but tuples of strings, and exponent functions are not operations on strings but operations on tuples of strings. The category functions specify the category of the exponents. The phonological functions account for the obligatory phonological reduction in the Romanian verb cluster.

The modes combining accusative weak pronouns with the verb cluster contain the same category function, but different exponent functions. Verb exponents are pairs of strings. The verb string itself is part of the second string of the pair. The perfective marker and the monosyllabic intensifiers are concatenated to the left of the verb string itself, auxiliaries and weak pronouns attach to the left of the first string in that order. The pair can be linearised by positioning the first string of the pair either to the left of the second string (e.g. indicative or negative imperative constructions) or to the right of the second string (e.g. positive imperative or inverted conditional).

The formal structure of the expression:

(172) \text{vi=le=a\text{"a}} \text{mai fi trimis}
\text{DAT.2PL=ACC.3PL=would.1SG again PERF sent}

I would have sent them to you again

can be represented as:
The linear order of monosyllabic adverbs and the perfective marker with respect to the verb is fixed at the point they are combined with the verb by (i) hypothesising that the first two elements concatenate to the left of the verb, and (ii) that the perfective must combine with the verb before the monosyllabic adverb. Similarly, the order between auxiliary, accusative weak pronoun and dative weak pronoun is fixed at the point where the weak pronouns are introduced. However, what is not fixed is the position of the string containing the weak pronouns (and possibly the auxiliary) with respect to the string containing the verb. This is done by so-called linearisation rules, which concatenate the first string either to the left or to the right of the second string.

In the present analysis the verb clusters containing a verb and a weak pronoun have the same phrase structure (i.e. the same tectostructure), irrespective of whether the weak pronouns precede or follow the verb. The position of weak pronouns with respect to the verb is analysed in terms of exponent functions which concatenate the first string to the second string (i.e. in terms of the phenostructure).

I will now compare the basic ideas of my analysis of the verb cluster in Romanian with analyses of the same data proposed within the Government and Binding framework (GB) developed in Chomsky (1981). I will not compare the details, but restrict myself to pointing out four important differences.

In GB analyses, the difference between expressions with preverbal or postverbal weak pronouns is analysed in terms of different phrase structures. To give a representative example, in Dobrovie-Sorin (1994) postverbal weak pronouns are analysed in terms of head movement of the verb from INFL (over the weak pronoun which is adjoined to an INFL phrase) to a functional projection outside the INFL phrase, whereas in the case of preverbal weak pronouns the verb remains the head of the INFL phrase. So the first important difference is that whereas GB postulates different tectostructures for the analysis of preverbal and postverbal weak pronouns, the present analysis postulates the same tectostructure.

The second important difference concerns the separation between formal and semantic structure. In the GB approach, both θ-roles as well as semantically motivated coindexation
are part of the formal structure, as for example in Borer (1981). In the present approach this is not the case: Semantic roles are part of the semantic structure, formal functions (rules, constraints) cannot and should not operate on semantic roles.

The third important difference concerns the interface between formal and semantic structure. In GB analyses it is assumed that the semantic value of an NP can only be assigned a \( \theta \)-role if (i) the NP occurs in a certain syntactic position (e.g. complement of V) or (ii) if it is co-indexed with an element occurring in this position. This is a consequence of the Uniform Theta Assignment Hypothesis\(^1\) (UTAH), which requires that “identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-Structure”\(^2\). In the present theory no such assumption is made. Both the accusative weak pronoun in (173) as well as the direct object in (174) are assigned the same semantic role, but they do not have to be in the same syntactic position.

\[
\begin{align*}
\text{L=am} & \quad \text{reparat.} \\
\text{ACC.M3SG=have.1} & \quad \text{repaired} \\
\text{I/we repaired it.}
\end{align*}
\]

\[
\begin{align*}
\text{Am} & \quad \text{reparat un dulap.} \\
\text{have.1} & \quad \text{repaired a wardrobe} \\
\text{I/we repaired a wardrobe.}
\end{align*}
\]

In the present analysis weak pronouns and direct object NPs are combined by the same semantic function, but different formal functions. Moreover, coindexation in sentence (173) of the weak pronoun with a formal element (trace or PRO) in the same position as the direct object in (174) is unnecessary. This is because I allow for the same semantic function (the function saturating a placeholder restricted to ground arguments) to be associated with different formal functions: on the one hand with the formal functions combining weak pronouns, and on the other hand with formal functions combining a verb cluster with a direct object.

The fourth important difference between the present analysis and some GB analyses (e.g. Borer (1981)) is this. In the present analysis, if the verb cluster contains an accusative weak pronoun, then the placeholder restricted to the ground argument is always saturated by the semantic value of the weak pronoun. In other words, the accusative weak pronoun always satisfies both the syntactic and semantic requirements of the verb. If the sentence also contains a coreferent direct object NP, then the semantic value of the direct object saturates the semantic value of the weak pronoun. The modes which combine direct objects with verb clusters ensure that the NPs are adequately marked, irrespective of whether the verb cluster contains an accusative weak pronoun or not. In contrast, in some GB analyses

---

\(^1\)See Baker (1988).
\(^2\)See Jackendoff and Culicover (2005, p. 74ff) for a detailed discussion and critique of this hypothesis.
(e.g. in Borer (1981)), the weak pronoun does not satisfy the subcategorisation requirements of the verb, and thus is not assigned a $\theta$-role.

My basic hypothesis that weak pronouns are pronominal signs which are combined with the verb is opposed to the hypothesis that weak pronouns are phonological realisations of certain features of verb categories, which has been put forward in Borer (1981), Anderson (2005) and Monachesi (2005) among others. The first hypothesis accounts in a straightforward way for the meaning of a verb cluster containing a weak pronoun: the weak pronoun is a sign which has a semantic value, and this value saturates the placeholder restricted to ground arguments. If on the other hand, one proposes that weak pronouns are the phonological manifestation of certain syntactic features of the verb category, then the explanation of why the Romanian expression *o iubesc* (ACC.FEM3SG love.1SG) means “I love her” is not so straightforward. One may, of course, suggest that the pronoun ‘her’ in the interpretation ‘I love her’ has the same source as the pronoun ‘I’, namely the invisible pronoun PRO. The basic problem with this is that the expression *iubesc* does not mean ‘I love her’ – it means ‘I love’. In other words, the presence of ‘her’ in the translation actually correlates with the presence of the weak pronoun *o*. It is this simple observation which makes it appear unlikely (to say the least) that the weak pronoun *o* does not have a meaning. But if it does have a meaning, then it cannot just be the phonological realisation of certain syntactic features, but must be analysed as an association of certain shape, certain syntactic features, and a certain meaning – i.e. as a sign.

5.2.2 Argument structure and linking theory

Let me repeat the basic hypotheses about the argument structure and the linking theory of the present analysis. First, the speaker construes the participants in a situation differently as figure, ground, background or oblique participants. Secondly, linguistic expressions encode not just the properties of a situation which are truth-conditionally relevant, but also the way in which the speaker construes the situation and the participants in it. Thirdly, the meanings of verbs match the speaker’s construal of participants: the placeholders of predicates are restricted to arguments of a certain construal type, and this construal type correlates with the speaker’s construal of a participant. Fourthly, certain semantic functions change not just the predicate of the verbal sign they apply to, but also the construal restrictions associated with the placeholders of this predicate (e.g. causative in Siswati changes the predicate by adding a new semantic role, as well as the construal of the predicate: the placeholder for the argument licensed by the causative is restricted to figure arguments, and the initial restriction that a placeholder be saturated by figure arguments is changed to the final restriction that this placeholder be saturated by a (primary) ground argument. Fifthly, the encoding of arguments cannot be determined purely on the basis of the properties of the
semantic role itself, but depends essentially on the construal of this argument.

The basic claim concerning the linking between the semantic role of arguments and their morphosyntactic realisation is that the morphosyntactic realisation of an argument does not depend on the syntactic function of the NP expressing this argument, but on the construal of this argument. The syntactic notions ‘subject’ and ‘object’ have been replaced by the construal notions ‘figure’ and ‘ground’. This is not just a terminological issue, but a fundamental difference in linking theory. This explains why rules which were claimed to operate on syntactic entities are often sensitive to semantic properties: these rules do not operate on syntactic entities, but on semantic/conceptual entities.

This linking theory makes essential use of the construal restrictions on predicate placeholders. In other linking theories (for example in Bresnan and Moshi (1990) or Van Valin (2005 129n)) the generalised semantic roles are mapped onto syntactic functions, and the syntactic function is then mapped onto a certain morphosyntactic realisation. The crucial difference is that the present linking theory postulates that e.g. the nominative case in German correlates with a certain conceptual property, i.e. the construal of an argument as figure, whereas the other linking theories do not hypothesise a semantic/conceptual correlate to the syntactic function ‘subject’.

By emphasising the importance of construal, I do not intend to claim that other semantic factors do not play a role in the morphosyntactic realisation of arguments. As argued in Levin and Rappaport Hovav (2005 128), “four broad types of semantic factors play a part in argument realisation: causal notions, aspectual notions (e.g. telicity, incremental theme), event complexity, and notions such as sentience, animacy, and volitionality.” The point is that in addition to these semantic factors there is another factor which plays a crucial role – the speaker’s construal of a participant, and the corresponding construal restriction of a placeholder of a predicate. If construal is indeed an essential factor in the realisation of arguments, it is no surprise that “it is impossible to formulate a thematic hierarchy which will capture all generalisations involving the realization of arguments in terms of their semantic role.” (Levin and Rappaport Hovav 2005 183)

The construal of certain participants in a given situation is not necessarily uniform across languages. For example, in Romanian the participants in situations expressed by ditransitive predicates (e.g. recipient and theme participants) are construed differently by speakers, and this is arguably the reason why these arguments are encoded differently. In Siswati, these arguments are construed similarly enough – this is why they share important morphosyntactic properties.
5.2.3 Semantic composition

Semantic composition by means of functional application has been abandoned, and replaced by semantic composition by means of functions which identify placeholders of predicates in terms of their construal restriction. I have hypothesised different semantic functions for the combination of the two arguments of a binary predicate. The first function saturates the placeholder restricted to figure arguments, the second function saturates the placeholder for ground arguments. The existence of two different semantic functions for the saturation of the two placeholders of a binary predicate provides a principled explanation for why – in many languages – the two arguments of a binary predicate have different morphosyntactic realisations: The different morphosyntactic realisations symbolise different ways of combining an argument with a predicate.

Moreover, in order to account for the co-occurrence of pronominal signs and clause-internal coreferent object NPs, I have hypothesised two different semantic functions for combining object signs with verb signs. The first function saturates the placeholder restricted to ground arguments, and is used to combine the meaning of an object sign with the meaning of a verbal sign, provided that the verbal sign has not been combined with a weak pronoun or an object marker. The second semantic function saturates the meaning of a weak pronoun or object marker (which itself saturates the placeholder restricted to ground arguments) with the meaning of an object sign. The second semantic function accounts for the co-occurrence of pronominal signs (i.e. weak pronouns or object markers) with coreferential clause-internal NPs.

The above mentioned semantic functions combine two or more component semantic values into a composite semantic value. In addition to this kind of semantic function, I have also postulated semantic functions which apply to only one semantic value. These semantic functions do not combine two (or more) semantic values into a composite semantic value, but change the single semantic value (a predicate) in two different ways: either by adding or removing a semantic role, or by changing the construal restrictions on the arguments saturating the placeholders of the predicate. These two types of functions play different roles in the framework. The semantic functions combining two or more component semantic values into a composite semantic value (i) characterise the relation between the component semantic values, as well as (ii) the relation between the component semantic values and the composite semantic value. For example, the semantic function $f_G^\nu(\text{ARG}, \text{PRED}\{G : \cdot \ldots\}$) specifies that the semantic value ARG is the ground argument of the predicate PRED. The semantic functions of the second type alter a given semantic value in a systematic way. The role of these functions is not to specify the relation between two (or more) component semantic values or the resulting composite value, but to provide a systematic way of increasing the expressive power of a vocabulary without increasing the number of basic lexical items.
The unary mode which turns for example an active verb sign into a personal passive verb sign contains a semantic function which does not actually add or remove semantic roles from the predicate. Instead it changes the construal restrictions on the arguments saturating the placeholders of the predicate, so that the personal passive verb sign matches a situation in which the speaker construes an argument other than the inherently prominent one as figure. This semantic function thus extends the use of a basic predicate, so that it can not only be used if the inherently prominent argument is construed by the speaker as the figure, but also if another argument (whose default construal would be as ground) is construed as figure. The expressive power of a vocabulary can be extended not only by adding or removing semantic roles to/from a predicate (applicative and reciprocal respectively), but also by changing the construal restrictions on the arguments saturating the predicate (personal passive).

5.3 Comparison of formalisms – part two

In this section I will provide a more detailed comparison of the present analysis with three analyses: First, with the analysis of weak pronouns in Monachesi (2005), which is arguably one of the most detailed and comprehensive analyses of the verb cluster in Romanian. Secondly, I will compare the present analysis with the theory of object asymmetries (TOA) in Lexical Functional Grammar, which is arguably one of the most comprehensive and detailed analyses of Bantu argument structure and object markers. Lastly, I will compare the present analyses of weak pronouns and object markers with those proposed in Dynamic Syntax. Dynamic Syntax is a formalism which expresses grammatical rules not in abstraction from processing rules, but in terms of them. This distinguishes Dynamic Syntax from all other frameworks discussed in this chapter, including the present framework.

5.3.1 HPSG

The basic claim about Romanian weak pronouns in Monachesi (2005) is that weak pronouns are not signs, but the phonological realisation of certain features of a verb category. Since this analysis is arguably one of the most comprehensive analyses of the Romanian verb cluster, I will begin with a summary of the analysis of Romanian accusative and dative weak pronouns in Monachesi (2005). Then I will point out some problems for this analysis, and finally I will compare it with the present analysis.

The first component of Monachesi’s theory of weak pronouns in Romance is the Complement Cliticization Lexical Rule (cclr), which reduces the subcategorization requirement of a verb by removing a complement sign from the COMP list, and placing it onto the CLTS list. The idea behind this rule is that if it applies, a full complement NP cannot be combined anymore, whereas if the rule does not apply, then a weak pronoun cannot be produced.
Thus this rule accounts for the cases where weak pronouns and coreferent noun phrases are in complementary distribution, as for example in Italian and French.

\[
\begin{bmatrix}
\text{word} \\
\text{HEAD} \\
\text{VAL} \mid \text{COMPS} \\
\text{CLTS} \\
\end{bmatrix}
\begin{array}{c}
\text{verb} \\
\text{clts} \\
\end{array}
\begin{bmatrix}
\text{val} \\
\text{comps} \\
\text{elist} \\
\end{bmatrix}
\begin{bmatrix}
\text{VAL} \mid \text{COMPS} \\
\text{CLTS} \\
\end{bmatrix}
\begin{bmatrix}
1 \\
2 \\
\text{list(cl-ss)} \\
\end{bmatrix}
\rightarrow
\begin{bmatrix}
\text{VAL} \mid \text{COMPS} \\
\text{CLTS} \\
\end{bmatrix}
\begin{bmatrix}
1 \\
2 \\
\text{list(cl-ss)} \\
\end{bmatrix}
\]

This is a lexical rule (indicated by the arrow $\mapsto$), and not a implicational constraint (which are indicated by the arrow $\rightarrow$). Note in particular that it only applies to verb signs whose value for the feature clts is an empty list, and that it results in a verb sign whose value for clts is a list containing one or more complement signs. In other words, this rule can only apply once to a particular verb, and therefore all the complement signs which will be realised as weak pronouns attached to that verb are moved onto the CLTS list in one step.

To account for clitic doubling, Monachesi proposes a Clitic Doubling Lexical Rule (cdlr) which does not remove a complement sign from the COMPS list, but requires that the structure of one of the signs on the COMPS list be identical to the structure of a sign on the CLTS list.

\[
\begin{bmatrix}
\text{word} \\
\text{HEAD} \\
\text{VAL} \mid \text{COMPS} \\
\text{CLTS} \\
\end{bmatrix}
\begin{array}{c}
\text{verb} \\
\text{clts} \\
\end{array}
\begin{bmatrix}
\text{val} \\
\text{comps} \\
\text{elist} \\
\end{bmatrix}
\begin{bmatrix}
\text{VAL} \mid \text{COMPS} \\
\text{CLTS} \\
\end{bmatrix}
\begin{bmatrix}
1 \\
2 \\
\text{NP[dat]} \\
\end{bmatrix}
\rightarrow
\begin{bmatrix}
\text{VAL} \mid \text{COMPS} \\
\text{CLTS} \\
\end{bmatrix}
\begin{bmatrix}
1 \\
2 \\
\text{NP[dat]} \\
\end{bmatrix}
\]

Since not all complements can be doubled, she suggests identifying the complements which can be doubled either by appropriate features or by introducing a specific typing system, “which classifies the synsem of the NP on the basis of the specific semantic and pragmatic conditions underlying clitic doubling”. Monachesi (2005) does not provide an analysis of the fact that (i) for certain types of complements doubling is obligatory, while with others it is optional, and that (ii) the doubling of preverbal and postverbal direct object NPs is asymmetric.

Monachesi essentially adopts the view that “object clitics do not receive a theta-role from the verb but instead agree with the verb’s relevant argument.”(p. 84) If this were the case, then it is left unexplained why e.g. the direct objects pe cineva (DOM somebody) and pe nimeni (DOM nobody) cannot be doubled. If however, we hypothesise that the weak pronoun does indeed have the same semantic value as a pronoun which must be saturated by an identifiable entity, then it follows that these direct objects cannot be doubled, since their semantic value does not represent an identifiable entity.

Note that CCLR and CDLR do not add an affix to the verb, but only manipulate the subcategorization information encoded in the features COMP and CLTS.
The presence of an affix is guaranteed by postulating implicational constraints. For example, the presence of the weak pronoun \( \ddot{\text{i}}i \) (DAT.3SG) is guaranteed by the fact that all feature structures have to satisfy the following implicational constraint:

\[
\left[ \begin{array}{l}
\text{complex-morph} \\
\text{stem}\langle \text{ss} | \text{clts} \langle \text{np} [\text{dat}]_{3\text{sg}} \rangle \rangle \\
\end{array} \right] \rightarrow \left[ \begin{array}{l}
\text{affix} \\
\text{prefix} \langle \ddot{\text{i}}i \rangle \\
\text{phon} \langle \ddot{\text{i}}i \rangle \\
\end{array} \right]
\]

This constraint “applies to morphologically complex words and it states that if this word contains the information about a dative, third singular masculine element in the clts list, then the clitic \( \ddot{\text{i}}i \) must also be present in the structure.”

So far, the lexical rules for complement cliticization (cclr) and for clitic doubling (cdlr) add complement signs to the clts list, while implicational constraints (one for every weak pronoun and for every combination of weak pronouns) ensure that verbs with a non-empty clts list contain appropriate affixes. The linear order of the affixes and the verb is then determined by a second set of implicational constraints which correlate the type of the verb with the position of the affix relative to the verb stem. I shall refer to this set of constraints as the linearization constraints, and to the previous set as the realisation constraints.

It is important to point out that in Monachesi’s analysis weak pronouns are not analysed as signs, i.e. as form-meaning units, but as affixes which have only phonological properties (see Monachesi (2005, 98)) – that is they have no meaning. This, of course, begs the question of how the different meanings of (175a) and (175b) are analysed.

\[(175) \begin{align*}
a. \quad \ddot{\text{i}}i & \quad \text{and} \\
\text{ACC.F.3SG} \quad \text{hear.1SG} \\
\text{I hear her.}
\end{align*} \]

\[b. \quad \text{and} \\
\text{hear.1SG} \\
\text{I hear.}\]

I take it to be obvious that the meaning difference correlates with the presence or absence of the weak pronoun \( \ddot{\text{i}}i \), but precisely this generalisation is not captured by hypothesising that weak pronouns are affixes lacking a semantic value. As far as I can tell this important point has not been addressed in Monachesi (2005).

I will illustrate Monachesi’s analysis by discussing how the sign whose string is \( \dddot{\text{t}}i\text{-am} \text{dat-o} \) (DAT.2SG-have.1 given-ACC.F.3SG) is licensed. The three relevant realization constraints are:

**R1** If the clts list contains the structure np[acc]_{3sg} and the verb is not a vowel initial auxiliary, then the verb sign must contain the affix \( \ddot{\text{i}}i \). (constraint (282) in Monachesi (2005, 170f))

**R2** If the clts list contains the structure np[dat]_{2sg} and the verb is not a past participle or
an infinitive, then the verb sign must contain the affix \( \text{i} \). (constraint (287) Monachesi (2005, 174))

R3 If the CLTS list contains the structure NP\[dat\]_{2sg} and the structure NP\[acc\]_{3sg}, and the verb is not a past participle or an infinitive, then the verb sign must contain the affix \( \text{i}=\circ \). (analogous to constraint (180) in Monachesi (2005, 106))

It should also be pointed out that Monachesi stipulates that weak pronouns cannot be realised as affixes of past participles or on bare infinitives, except for the ACC.F.3SG pronoun \( \text{o} \). The two linearization constraints are:

L1 If the verb is finite and contains an affix, then the affix is prefixed to the verb. (constraint (274) in Monachesi (2005, 168))

L2 If the verb is non-finite or imperative and contains an affix, then the affix is suffixed to the verb. (constraint (285) in Monachesi (2005, 172))

The application of the cliticization lexical rule CCLR derives a cliticised verb form from the non-cliticised verb form \( \text{dat} \). This rule removes the accusative NP sign from the COMPS list, and puts it on the CLTS list. The satisfaction of the first realization constraint R1 requires that the verb contain the affix \( \text{o} \). The satisfaction of the second linearization constraint L2 requires that the affix \( \text{o} \) be encliticised to \( \text{dat} \), resulting in \( \text{dat-}\circ \). By argument composition, the auxiliary sign \( \text{am} \) and the sign \( \text{dat-}\circ \) are combined, resulting in a sign which contains the accusative NP sign in its COMPS list. A second application of the cliticisation lexical rule CCLR moves this accusative NP sign from the COMP list to the CLTS list. The satisfaction of the second realization constraint R2 requires that the sign \( \text{am dat-}\circ \) contain the affix \( \text{i} \). The satisfaction of the second linearization constraint L2 requires that the affix \( \text{i} \) be prefixed to the verb, resulting in \( \text{i}-\text{am dat-}\circ \).

The main problem with this analysis is that it cannot explain the ungrammaticality of \( \text{ti-}\circ \text{am dat} \). Nothing precludes the argument composition of \( \text{am} \) with \( \text{dat} \), resulting in a sign containing both the accusative and the dative NP in the COMP list. A single application of the cliticisation lexical rule CCLR moves these two signs from the COMP list to the CLTS list. The satisfaction of the realisation constraint R3 guarantees that the sign contains the affix \( \text{ti-}\circ \), and the satisfaction of the linearisation constraint requires that the affix \( \text{ti-}\circ \) be prefixed to the string \( \text{am dat} \), resulting in the licensing of the ungrammatical string \( \text{ti-}\circ \text{am dat} \).

The second problem with this analysis is the linearisation constraint L2 (285), which essentially requires that the affixes be suffixed to non-finite or imperative verbs. But as shown in section 3.2, weak pronouns are not always suffixed to imperative verbs, but only if the imperative verb is in the positive form. In negative imperative constructions, as in many other Romance languages, the weak pronouns always precede the verb. The challenge
for the extension of this analysis to the negative imperative constructions is to allow for
weak pronouns to be realized with an infinitive, if the infinitive verb is part of the negative
imperative construction, but to prevent the realization if the infinitive verb is part of the
future construction. Even if this distinction could be implemented by elaborating the real-
ization constraints, I believe that this distinction should not be captured by restricting the
realization of the weak pronouns, but by restricting their linearization.

Thirdly, the realization constraint R1 prevents the weak pronoun o from being realized,
if the verb is a vowel initial auxiliary. However, as I have shown in section 3.2 this is not the
correct generalization – if the auxiliary precedes the verb o cannot occur in front of a vowel
initial auxiliary; but when the auxiliary follows the verb, then o can precede the auxiliary.

Fourthly, note that the realization constraint R2 stipulates that the weak pronoun is the
reduced form ı of the (unreduced) dative weak pronoun ıı. As shown in section 3.2 if the auxiliary is vowel initial, then phonological integration is obligatory. The question
is therefore, how the realization of the unreduced form ıı is prevented in this particular
case. In discussing the alternation of the weak pronouns m and m on page 104, Monachesi
postulates a realization constraint which states that “if there is a lexical verb which begins
with either the vowel a or o and it has one element in the CLTS list which is the first singular
accusative NP, this can be realized as the clitic m or m. […] A similar constraint can
be formulated to account for the fact that if the verb begins with a consonant or a vowel
which is different from a or o, only the clitic m is possible.” (Monachesi 2005, 104f) So
the alternation between phonologically reduced and unreduced weak pronouns is simply
stipulated by means of realization constraints, as if there were no regularity. Despite the
fact that similar realization constraints would be necessary in order to account for the
alternation between v and v, since they behave exactly like m and m, Monachesi does
not suggest a phonological rule in order to express the underlying phonological regularity.
When discussing the ne and ni alternation, she claims that “[t]he forms ending in i cannot
be explained by means of phonological rules”, because the form ni “surfaces only when it
is in combination with another pronominal clitic” [94]. To be precise, the form ni occurs if
and only if the dative weak pronoun precedes a weak pronoun or an auxiliary either of whose
nucleus is the vowel o or i. If the dative weak pronoun proclitics to a weak pronoun or
auxiliary either of whose nucleus is the vowel o or a, then it occurs in the unaltered form
ne. Moreover, the same phonological rule governs the alternation between the dative weak
pronouns v/vi (DAT.2PL) and le/li. The generalizations governing the shape of the
dative weak pronouns are therefore:

- If the dative weak pronoun begins with a vowel, then prosodic integration results in
  the deletion of the initial vowel. For example, the prosodic integration of ııı results
  in m.
• If the dative weak pronoun does not begin with a vowel (i.e. ne, vâ, le (dative)), and this weak pronoun precedes a weak pronoun or an auxiliary whose nucleus is either e or i then prosodic integration results in the replacement of the vowel of the dative weak pronoun by the vowel i. Examples: the prosodic integration of ne and ňi results in ni=ň, the integration of vâ and le (ACC.3PL) results in vi=le. On the other hand, the phonological integration of ne and the auxiliary am results in ne=am, and the phonological integration of le with âs results in le=âs.

Fifthly, when discussing the cases where a weak pronoun which precedes a verb enclitics to a preceding verb (e.g. nu=ň aud, NEG=ACC.M.3SG hear.1SG), Monachesi suggests that “it is possible to percolate the information related to the clitics, which is contained in clts, on to the relevant host.” In other words, it is suggested that the clts list is passed on from the verb aud to the negation nu, and that “appropriate constraints are responsible for the spell out of the cliticized form.” Given the hypothesis that weak pronouns are the phonological realisation of certain syntactic features it is not only “possible” but necessary in Monachesi’s analysis that every phonological host of a weak pronoun actually subcategorises syntactically for the weak pronoun – unless the phonological host contains the appropriate value for the syntactic feature clts, the weak pronoun cannot be realised. This is, in my view, symptomatic of a systematic failure to distinguish the position of weak pronouns with respect to their syntactic host (which is a word order phenomenon to be analysed in terms of subcategorisation features) from the direction in which the weak pronouns cliticise (if they cliticise at all), which is a phonological phenomenon largely independent of syntactic categorisation. To put it in a nutshell, in Monachesi’s analysis an expression X is a syntactic host of a weak pronoun Y if and only if X is the phonological host of Y, whereas in my analysis the syntactic host of the weak pronoun is always the verbal exponent, whereas the phonological host may vary, depending on whether or not a preverbal weak pronoun can procliticise or not.

Lastly, I would like to address Monachesi’s two main arguments that the “[c]ombination of two clitics constitutes a unit, and does not result from the composition of two single forms.” (Monachesi 2005 94).

The first argument is that the phonological alternation of reduced and unreduced forms cannot be analysed by means of a phonological rule, since e.g. the forms ni (DAT.1PL), vi (DAT.2PL) and li (DAT.3PL) “surface only in the presence of other object clitics” (Monachesi 2005 162). The argument is that since there can be no fully general phonological rule which accounts for the alternation between e.g. ne and ni forms, the combination ni=ň (DAT.1PL=ACC.M.3SG) cannot be analysed as composed of two forms which are reduced by the application of a general phonological rule. Note the implicit assumption that an analysis of the form ni=ň as composed of two weak pronouns would need a gen-
eral phonological rule which applies in every syntactic environment. This is precisely the assumption that I have abandoned in my analysis of obligatory phonological reduction in section 3.2.3.2. In my analysis the application of this rule of phonological reduction has been restricted by pairing the phonological function which performs this reduction with a categorial function which essentially requires that the two elements which get integrated are weak pronouns. So the fact that a phonological rule which integrates (and thus changes the shape of) two weak pronouns is not general is not necessarily an argument against analysing the expression \textit{ni=}1 as composed of two weak pronouns, provided that this phonological rule is paired with a categorial rule which restricts the application of the phonological rule.

The second argument is that if the weak pronouns were combined with the verb one by one, and not as a unit or cluster, then we would expect the reverse order if the weak pronouns follow the verb than when they precede the verb. That is, if the expression \textit{mi=}o dā (DAT.1SG=ACC.F.3SG gives) is generated by prefixing o to dā, and then prefixing \textit{mi} to o dā, then if the order in which the weak pronouns are suffixed to the imperative is the same as the order in which they are prefixed to the indicative verbs, one would expect the ungrammatical string dā=o=mi, and not the grammatical dā=mi=o. (Suffixing first the accusative weak pronoun o to the imperative dā results in dā=o, and the suffixation of \textit{mi} to this string results in ungrammatical dā=o=mi.) Again, this argument depends on an implicit assumption which I have dropped. The implicit assumption is that the only way in which these strings can be combined is by concatenation of strings. I have argued that the exponent of the verb is a pair of strings, that both the accusative and the dative weak pronouns are prefixed to the left element of the pair, and that the postverbal occurrence of weak pronouns is analysed by means of inverting the two elements of the pair. So o combines with \langle \epsilon, \text{dā} \rangle, resulting in \langle o, \text{dā} \rangle, and the dative weak pronoun \textit{mi} is prefixed to the first element of this pair and results in \langle \textit{mi=}o, \text{dā} \rangle. The indicative string is derived by concatenating the two elements, resulting in \langle \textit{mi=}o \text{dā} \rangle, whereas the imperative string is obtained by inverting the two elements of the pair, thus resulting in \langle \text{dā=}\textit{mi=}o \rangle.

After discussing and rejecting these two arguments for why clusters of weak pronouns should be analysed as a lexical unit, I’d like to mention an argument for analysing these clusters as consisting of two units: only by analysing weak pronoun clusters as consisting of two lexical units is it possible to explain why for example the cluster \textit{tī=}o (DAT.2SG=ACC.F.3SG) looks so much like the composition of \textit{tī} and o. The trivial observation is simply that the shape of all weak pronoun clusters is very similar to the composition of two weak pronouns, and precisely this admittedly trivial observation cannot be captured if weak pronoun clusters are analysed as lexical units.
### 5.3.2 Lexical-Functional Grammar

Work within the framework of Lexical Functional Grammar provides much the most extensive account of Bantu argument structure and object markers. I will first provide a detailed presentation of the analysis of argument structure and object markers in LFG, and then I will compare the LFG analysis of argument structure and subject and object markers with the present analysis. I will conclude with some proposals concerning an alternative theory of object asymmetries in Bantu.

Givón (1976, 151) claims that agreement and pronominalisation are “fundamentally one and the same phenomenon, and that neither diachronically nor, most often, synchronically could one draw a demarcating line on any principled grounds.” Bresnan and Mchombo (1987, 742) claim to “show that both grammatical and anaphoric agreement can be found in the same language, and can be distinguished by interrelated effects in discourse, syntax, and phonology.” The main argument in their paper is that there are asymmetries in the properties of subject markers and object markers, and that these asymmetries can be accounted for by distinguishing (contra Givón (1976)) agreement from pronominalization.

Bresnan and Moshi (1990) showed that the behaviour of objects in Kichaga and Chichewa displays “multiple syntactic differences that appear to covary systematically” (Bresnan and Moshi, 1990, 147). For example it was shown (i) that in Chichewa passive verbs cannot be object marked, while in Kichaga passive verbs can be object marked, (ii) that in certain Chichewa constructions a reciprocalised verb cannot be object marked, while in Kichaga this was shown to be possible, and (iii) that in Chichewa multiple object marking is impossible, while it is possible in Kichaga. The theory of object asymmetries aimed to explain these (and similar) observations by claiming that in both (types of) languages, “a single underlying property of internal arguments is responsible for the ability of an argument to display what we may call ‘primary object properties’: being expressed as a passive subject, being represented by means of an object marker, being affected by reciprocalization, and (often) being expressed as an object NP adjacent to the verb” (Alsina, 1996, 674), but that while in Kichaga more than one internal argument can be assigned the underlying property simultaneously, in Chichewa only one argument per clause can display the underlying property.

The relation between semantic roles and the morphosyntactic realisation of arguments bearing those roles is mediated by syntactic functions. The LEXICAL MAPPING THEORY is a characterisation of the relation between the semantic roles of a predicate and the syntactic functions of the arguments bearing those functions. The lexical mapping theory consists of the following statements:

1. The semantic roles of a predicate are linearly ordered according to the following hier-
The sequence of semantic roles of a predicate is called the argument structure of a predicate.

2. There are two binary valued features RESTRICTED and OBJECTIVE which give rise to four possible combinations. These combinations are related to the four syntactic functions SUBJECT, UNRESTRICTED OBJECT, OBLIQUE and RESTRICTED OBJECT as follows.

   If a semantic role is classified as unrestricted and unobjective (\([-r, -o]\)), then it has the SUBJECT function \(S\).

   \[S = [-r, -o]\]

   If a role is classified as unrestricted and objective, then it has the UNRESTRICTED OBJECT function \(O\).

   \[O = [-r, +o]\]

   If a role is classified as restricted and unobjective, then it has the OBLIQUE function \(OBL_\theta\).

   \[OBL_\theta = [+r, -o]\]

   And finally, if a role is classified as restricted and objective, then it has the RESTRICTED OBJECT function \(O_\theta\).

   \[O_\theta = [+r, +o]\]

3. A semantic role is assigned features either on the basis of its intrinsic properties (intrinsic classification), or on the basis of its position on the hierarchy compared to the other roles of the predicate (default classification).

   The intrinsic classification of semantic roles depends on whether a semantic role is “external” or “internal”. The agent or cause of an action is an “external” role, while patient, theme, applicative, and causee roles are all “internal” roles. Internal roles are intrinsically classified either as unrestricted or as objective. External roles are intrinsically classified as unobjective.

   The default classification depends on whether or not the role is the highest in the argument structure. If it is, then it is classified as unrestricted, if it is not then it is classified as restricted.

   If neither the intrinsic nor default classification has assigned a certain value to a feature, then this feature can be either plus or minus, provided that the well-formedness constraints are satisfied.
4. Well-formedness conditions:

- Every argument structure contains a role which is assigned the syntactic function $S$.
- Every semantic role is assigned exactly one syntactic function (unless it has been suppressed). Every syntactic function is assigned to at most one semantic role.

5. The passive suppresses the highest semantic role of the argument structure. The applicative adds an internal semantic role to the argument structure.

6. A semantic role can only be reciprocalised or suppressed if it is classified as unrestricted.

This concludes the part of the theory which is common to the analyses of different Bantu languages. I shall now turn to the parameters of variation.

The first parameter of variation concerns the intrinsic classification of internal roles as unrestricted. Some languages are hypothesised to be constrained by the so-called Asymmetric Object Parameter (AOP), which restricts the number of internal roles which can be classified simultaneously as unrestricted to one per predicate. These languages are referred to as asymmetric languages. Other languages are hypothesised not to be subject to this parameter, and thus to allow more than one internal role to be simultaneously (intrinsically) classified as unrestricted. These languages are referred to as symmetrical languages.

If only one internal role can be intrinsically classified as unrestricted, then one role of a passivised argument structure will be mapped onto the subject function, while the other role can only be mapped onto the restricted object function. Take for example the passivisation of the benefactive applicative argument in Chichewa. The argument structure of the verb $\text{gul-ir}$ (buy-AP) is $\langle \text{ag, ben, th} \rangle$. The agent is the external role, while the benefactive and the theme roles are the internal roles. In order to be passivised, an internal role must be intrinsically classified as unrestricted. Therefore, by the Asymmetric Object Parameter, the second internal role cannot be intrinsically classified as unrestricted. Therefore, the only other option for the theme role is to be intrinsically classified as objective. The external agent role is intrinsically classified as unobjective. In a second step, the passive operation suppresses the agent role. Since the theme is an internal role, it will be classified by default as restricted. This is illustrated below.

\[
\begin{array}{c|ccc}
\text{buy-AP-PAS} & \text{ag} & \text{ben} & \text{th} \\
\hline
\text{IC} & \text{[-o]} & \text{[-r]} & \text{[+o]} \\
\text{PAS} & \emptyset \\
\text{DC} & \text{[+r]} \\
\end{array}
\]

Since the theme is classified as objective and restrictive, it will be mapped onto the syntactic function of RESTRICTED OBJECT. The benefactive is unrestricted and can therefore be mapped either onto the SUBJECT or the UNRESTRICTED OBJECT function. Every
clause must contain a SUBJECT, therefore the benefactive role is mapped onto the SUB-
JECT function. This is illustrated below.

\[\text{buy-AP-PAS} \quad \langle \text{ag ben th } \rangle\]

\[\begin{array}{c|ccc}
\text{IC} & [-o] & [-r] & [+o] \\
\text{PAS} & \emptyset & & \\
\text{DC} & & [+r] & \\
\text{w.f.} & & S/O & O_{\theta} \\
\end{array}\]

For languages like Chichewa it is stipulated that the object marker can only encode the UN-
RESTRICTED OBJECT function. It therefore follows that the theme cannot be expressed
by means of an object marker, because it is not mapped onto an UNRESTRICTED but a
RESTRICTED OBJECT function.

If either internal role of a double object construction can be assigned the unrestricted
object function, either role can be encoded by means of an object marker. However, only one
object marker is possible at a time, because of the function-biuniqueness condition which
requires a one-to-one mapping between roles and syntactic functions. Therefore an active
verb can have at most one object marker. Since a semantic role can only be reciprocalised
(i.e. bound to another semantic role) if it is intrinsically classified as unrestricted, it also
follows that the reciprocal suffix cannot co-occur with e.g. an object marker, since both
internal role would have to be intrinsically classified as unrestricted, which is precisely what
the Asymmetric Object Parameter precludes. This is illustrated below:

\[\text{hit-AP-RCP} \quad \langle \text{ag inst th } \rangle\]

\[\begin{array}{c|ccc}
\text{IC} & [-o] & [-r] & [+o] \\
\text{RCP} & \emptyset & & \\
\text{DC} & & [+r] & \\
\text{w.f.} & & S/O & O_{\theta} \\
\end{array}\]

Allowing only one internal argument to be intrinsically classified as unrestricted and stipulat-
ing that only unrestricted object functions can be expressed by an object marker constitute
the core of the analysis of asymmetrical languages in the theory of object asymmetries.

If, however, a language is not subject to the Asymmetric Object Parameter, then more
than one internal role can be intrinsically classified as unrestricted. In these languages one
internal argument role of a passive verb can be assigned the SUBJECT function, while the
other role can be assigned either the UNRESTRICTED OBJECT function, and can therefore
be object marked. To illustrate this, consider the passivised applicative verb lyi-i-o (eat-
AP-PAS) from Kichaga.
So in Kichaga it is possible to passivise one internal role and to object mark another, which was impossible in Chichewa, the main reason being that in Kichaga, unlike in Chichewa, it is possible to intrinsically classify more than one internal object as unrestricted.

Notice, however, the following difference between Chichewa and Kichaga. In Chichewa it was hypothesised that the object marker can only express the UNRESTRICTED OBJECT function. If one would stipulate this also for Kichaga, then one would predict that in an active double object construction only one argument could be object marked, since by the function biuniqueness condition only one argument can bear the UNRESTRICTED OBJECT function. This is however contrary to fact, and therefore for symmetrical languages it must be hypothesised that these languages allow not only UNRESTRICTED but also RESTRICTED OBJECTS (and even OBLIQUES) to be object marked. To illustrate this, consider the active applicative verb lyi-i-a (eat-AP-FV) from Kichaga.

<table>
<thead>
<tr>
<th>IC</th>
<th>PAS</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-o]</td>
<td>[r]</td>
<td>[r]</td>
</tr>
<tr>
<td>[o]</td>
<td>[o]</td>
<td>[o]</td>
</tr>
<tr>
<td>S/O</td>
<td>S/O</td>
<td>S/O</td>
</tr>
</tbody>
</table>

Since a clause can only have one SUBJECT function, neither the benefactive nor the theme can be SUBJECT. But they cannot both be UNRESTRICTED OBJECTS either, therefore the intrinsic classification of both internal roles as unrestricted leads to ungrammaticality. The only other alternative is to classify one internal argument as unrestricted and the other as objective:

<table>
<thead>
<tr>
<th>IC</th>
<th>PAS</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-o]</td>
<td>[r]</td>
<td>[+o]</td>
</tr>
<tr>
<td>[-r]</td>
<td>[+r]</td>
<td>[+r]</td>
</tr>
<tr>
<td>S</td>
<td>S/O</td>
<td>O_9</td>
</tr>
<tr>
<td>S</td>
<td>O</td>
<td>O_9</td>
</tr>
</tbody>
</table>

If the theme is intrinsically classified as objective, then it can be classified by default as restrictive, and thus be assigned the syntactic function of RESTRICTED OBJECT. And since the agent must be assigned the function SUBJECT, the benefactive can only be assigned the other unrestricted syntactic function, which is UNRESTRICTED OBJECT. But since both benefactive and theme roles can be expressed by object marking in Kichaga simultaneously,
CHAPTER 5. COMPARISON

the object marker must be allowed to express also the RESTRICTED OBJECT function.

In my opinion, therefore, it is not accurate to claim that "[a]ll of the differences enumerated above between Kichaga and Chichewa follow from this theory, given a single parameter of variation." (Bresnan and Moshi, 1990, 171) The Asymmetric Object Parameter does not predict which syntactic functions can be object marked. A second parameter of variation has also been postulated, albeit implicitly, and it concerns the question of which syntactic functions an object marker can express. In Chichewa (and asymmetrical languages generally) it is postulated that only the UNRESTRICTED OBJECT function can be expressed by object markers, while in Kichaga (and symmetrical languages generally) it is necessary (given the functional bi-uniqueness condition) to postulate that not only UNRESTRICTED OBJECTS, but also RESTRICTED OBJECTS and even OBLIQUES (for Kinyarwanda) can be expressed by object markers.

The next parameter of variation concerns the question of which objects in multiple object constructions can passivise (i.e. become the subject of a corresponding passive clause). As shown in Harford (1993, 98n), in Kitharaka both the benefactive and the theme of a benefactive applicative construction can be passivised.

(176) a. Mw-iki na-a-ra-tum-iir-w-e nguo ne-ekuru.
The bride had clothes sewn for her by the women.

b. Nguo ni-i-ra-tum-iir-w-e mw-iki ne-ekuru.
The clothes were sewn for the bride by the women.

In Chichewa, however, only the benefactive argument of an applicative construction can be passivised, as Alsina and Mchombo (1993, 23) show.

(177) a. Atsikana a-na-gul-ir-idw-a mhatso (ndi chitsiru).
2.girls 2-PST-buy-AP-PAS-FV 9.gift by 7.fool
The girls were bought a gift (by the fool).

9.gift 9-PST-buy-AP-PAS-FV 2.girls by 7.fool
ght Int.: A gift was bought for the girls (by the fool).

To account for this distinction Alsina (1996, 689) proposes that in Chichewa (and other languages, e.g. Swahili, Chi-Mwini, and OluTsootso) internal roles which are higher than instrumental on the thematic hierarchy (i.e. causees, benefactives and recipients) cannot be intrinsically classified as objective. This is the so-called Thematic Restriction. Therefore, in languages where only one internal role can be classified as unrestricted, the direct consequence of the Thematic Restriction is that the secondary objects in these construc-

3Since the glosses are part of the analysis, I have taken over the glosses of the quoted examples. The key gloss is AP which stands for the applicative.
tions cannot be intrinsically classified as unrestricted, and thus cannot be passivised, object marked, or reciprocised.

For Kitharaka (and some other languages, e.g. Kikuyu and Gitonga) it is proposed that this restriction does not hold. Therefore in these languages it is possible for either internal role of a benefactive applicative verb to be intrinsically classified as unrestricted. Thus either internal role can be mapped on the SUBJECT function, if the verb is passivised, and either role can be mapped onto the UNRESTRICTED OBJECT function, thus guaranteeing that either role can be expressed by an object marker.

One of the predictions made by the theory of object asymmetries so far is that in asymmetrical languages an argument can be passivised if and only if it can be object marked. By the Thematic Restriction, the benefactive role cannot be intrinsically classified as objective, therefore it must be classified as unrestricted. Therefore, by the Asymmetric Object Parameter the secondary role cannot also be intrinsically classified as unrestricted, and must therefore be classified as objective. By the default the secondary object role will also be classified as restricted. A role classified as objective and restricted can only be mapped onto the syntactic function of RESTRICTED OBJECT, and therefore cannot be passivised or object marked.

This prediction is born out in the benefactive applicative construction in Chichewa, since the secondary object in a benefactive applicative construction can neither be passivised nor object marked.

However this prediction is falsified by the instrumental applicative construction in Chichewa. In this construction the secondary object cannot be passivised, but it can be object marked. In other words, only the instrument argument can passivised, but both the instrument and the theme argument can be object marked, as shown by Alsina and Mchombo (1993):

\begin{align*}
(178) & \text{ a. } \text{Mwala u-ku-phwany-ir-idw-a dengu (ndi anyani).} \\
& \quad 3.\text{stone 3-PR-break-AP-PAS-FV 5.basket by } \quad 2.\text{baboons} \\
& \quad \text{The stone is being used (by the baboons) to break the basket.} \\
& \quad b. *Dengu li-ku-phwany-ir-idw-a mwala (ndi anyani). \\
& \quad 5.\text{basket 5-Pr-break-AP-PAS-FV } \quad 3.\text{stone by } \quad 2.\text{baboons.} \\
& \quad \text{Int.: The basket was broken with the stone (by the baboons).}
\end{align*}

\begin{align*}
(179) & \text{ a. } \text{Anyani a-ku-u-phwany-ir-a dengu (mwala).} \\
& \quad 2.\text{baboons 2-PR-3-break-AP-FV 5.basket 3.stone} \\
& \quad \text{The baboons are breaking the basket with it.} \\
& \quad b. \text{Anyani a-ku-u-phwany-ir-a mwala (dengu).} \\
& \quad 2.\text{baboons 2-PR-5-break-AP-FV 3.stone 5.basket} \\
& \quad \text{The baboons are breaking it (the basket) with the stone.}
\end{align*}

The Thematic Restriction prevents the benefactive role in a benefactive applicative construction in Chichewa from being classified as objective. However, it does not prevent the
Instrumental role in an instrumental applicative construction from being intrinsically classified as objective. This in turn means that the second internal role can be intrinsically classified as unrestricted. Since it has been classified as objective and unrestricted, the second internal role can be mapped onto the UNRESTRICTED OBJECT function, predicting thus that the theme role (or better, the argument assigned the theme role) can be expressed by object marking.

<table>
<thead>
<tr>
<th>break-AP</th>
<th>( ag inst th )</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>[-o] [+o] [-r]</td>
</tr>
<tr>
<td>DC</td>
<td>[-r] [+r]</td>
</tr>
<tr>
<td>w.f.</td>
<td>S Oθ S/O</td>
</tr>
</tbody>
</table>

This classification and mapping onto syntactic functions accounts for the fact that the theme can be object marked in an instrumental applicative construction, as illustrated by (179b).

However, the analysis so far also predicts that the theme can be mapped onto the SUBJECT function in a passive clause, which is contrary to fact, as evidenced by (178b):

<table>
<thead>
<tr>
<th>break-AP-PAS-FV</th>
<th>( ag inst th )</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>[-o] [+o] [−r]</td>
</tr>
<tr>
<td>PAS</td>
<td>∅</td>
</tr>
<tr>
<td>DC</td>
<td>[+r]</td>
</tr>
<tr>
<td>w.f.</td>
<td>Oθ S/O</td>
</tr>
</tbody>
</table>

This mapping to syntactic functions is not well-formed since no argument can be mapped to the SUBJECT function.

Alsina and Mchombo (1993, 27) therefore stipulate a default classification rule specific for Chichewa, which states that “a theme or patient be mapped onto an objective function in the presence of a higher objective argument”. The consequence of this stipulation is that if the instrumental is intrinsically classified as objective, then the theme must also be classified as objective, thus preventing it from being mapped onto the SUBJECT function.

<table>
<thead>
<tr>
<th>break-AP-PAS-FV</th>
<th>( ag inst th )</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC</td>
<td>[-o] [+o] [−r]</td>
</tr>
<tr>
<td>PAS</td>
<td>∅</td>
</tr>
<tr>
<td>DC</td>
<td>[+r] [+o]</td>
</tr>
<tr>
<td>w.f.</td>
<td>Oθ O</td>
</tr>
</tbody>
</table>

This mapping to syntactic functions is not well-formed since no argument can be mapped to the SUBJECT function.

This analysis of the Chichewa instrumental applicative construction thus allows for the second internal role to be object marked, while preventing it from being mapped onto the
SUBJECT function.

Note two important points about this analysis. First, it claims that the second internal roles of benefactive and instrumental applicatives respectively cannot be passivised for different reasons. These two second internal roles cannot be mapped onto the SUBJECT function because they both must be classified as objective. However, they must be classified as objective for different reasons. In the benefactive applicative case, the second role must be intrinsically classified as objective because the benefactive must be intrinsically classified as unrestricted by the Thematic Restriction. In the instrumental applicative case, the instrumental role does not have to be intrinsically classified as unrestricted (the Thematic Restriction does not apply to instrumental roles). The second role is prevented from being objective if another higher role is also objective simply by stipulation. The second important point to note is that this analysis does not say why the benefactive role cannot be objective, or why the second role in an instrumental must be objective if another higher role is objective.

I shall now sum up some important points concerning the theory of object asymmetries and compare them with an alternative account of object asymmetries.

In order to account for the fact that some languages do not allow the object marking of passive or reciprocal verbs, the TOA hypothesises (i) that only internal roles intrinsically classified as unrestricted can be passivised, object marked, and reciprocalised, and (ii) that only one internal role can be intrinsically classified as unrestricted. In order to account for the fact that some other languages do allow the object marking of passive or reciprocal verbs, the TOA hypothesises (i) that only internal roles classified as unrestricted can be passivised, object marked, and reciprocalised, and (ii) that more than one internal role can be intrinsically classified as unrestricted. So the main difference between asymmetric and symmetric languages is analysed by introducing the feature unrestricted, and by stipulating how many internal roles can simultaneously be classified as unrestricted.

However, in order to analyse the fact that in many constructions both in asymmetric and in symmetric languages either of two internal roles can be passivised or object marked, the TOA neutralises the effect of the feature UNRESTRICTED by hypothesising that in these constructions either internal role can be intrinsically classified as UNRESTRICTED.

This analysis therefore begs the question whether it is possible to account for the difference between symmetrical and asymmetrical languages without introducing a distinction which must eventually be neutralised. This is precisely what I shall propose. In the present theory, arguments can be passivised and object marked only if they saturate a placeholder restricted to ground arguments. (I shall suggest an analysis of reciprocalisation below). I propose to analyse the difference between symmetric and asymmetric languages by hypothesising that in asymmetrical languages at most one placeholder restricted to ground arguments (per predicate) can be targeted by verbal morphemes, while in symmetrical languages more
than one verbal morpheme can target placeholders restricted to ground roles. Crucially, no distinction between the roles assigned to the arguments saturating these placeholders is introduced in order to analyse the difference between symmetrical and asymmetrical languages. While in the TOA this difference is analysed by distinguishing internal roles (ground roles in my terminology) in the present theory this difference is analysed in terms of the complexity of the verbal morphology. What remains is to account for the distinction between alternating and non-alternating passives.

The analysis of the distinction between alternating and non-alternating passives in the theory of object asymmetries is descriptively adequate, but as I have shown above, this analysis comes at the cost of postulating different reasons for the second internal role’s inability to passivise in benefactive and instrumental applicatives. The alternative analysis that I propose is based on the observation that the alternating passive constructions tend to be found if there is no risk of misassigning semantic roles to an argument, whereas non-alternating passive patterns tend to be found if there is a risk of misassigning semantic roles to an argument. The risk of misassigning a semantic role is high e.g. if a binary predicate like INSULT requiring a human ground argument is causativised and then passivised. In this case the subject of the passivised causative verb could be interpreted either as the person caused to insult somebody or as the person insulted. The same holds if this verb is suffixed with the applicable marker and then passivised. In these cases Chichewa has developed a non-alternating passive. If, however, the semantic properties of an argument are only compatible with one semantic role, then there is virtually no risk of misassignment of semantic roles. In these cases Chichewa has retained an alternating passive.

I therefore suggest that the difference between alternating and non-alternating passives (at least in Chichewa) is not due to different classifications of ground (internal) roles, but due to the grammaticalisation of a preference for interpreting subjects of passive clauses as the arguments licensed by the valency-changing suffix, if the subject could be assigned more than one semantic role. The fact that in Chichewa the secondary ground argument of a benefactive or instrumental applicative cannot be passivised is not due to different reasons relating to the classification of the internal semantic roles (as argued in the TOA), but to the grammaticalised preference for interpreting the subject of a passivised benefactive or instrument applicative as the benefactive or instrument, and not the second internal role.

In the alternative theory which I propose arguments which saturate a placeholder restricted to ground arguments can all be expressed as VP-internal noun phrases. This property of being expressible as a VP-internal noun phrase therefore picks out a natural class of the theory I propose. In the TOA, however, this property does not pick out a natural class of the theory, since both UNRESTRICTED as well as RESTRICTED OBJECTS must be allowed to occur within the verb phrase. Note, moreover, that despite being a property of objects both in symmetric and in asymmetric languages, in the TOA the property of being
expressable by a VP internal NP cannot be analysed on a par with other object properties such as being expressable by an object marker and being able to be the subject of a passive clause. If this property was considered a primary object property, then the TOA would collapse, since in order to analyse the ungrammaticality of object markers on passive verbs (in asymmetric languages), the TOA states that only one primary property can be expressed per clause, but in order to account for the fact that an object can be expressed within the VP, while another object is expressed by an object marker (which is possible even in asymmetric languages), it would have to allow for more than one primary object property per clause.

A similar point can be made with respect to the property of an argument being expressible by an object marker. In the present theory, all ground arguments can be expressed by means of object markers, and thus this property picks out a natural class of the theory. However, in the TOA whether or not an argument has this property depends on whether or not the language is asymmetric or not. If it is asymmetric, then only UNRESTRICTED OBJECTS can be expressed by means of an object marker, whereas if the language is symmetrical then the object marker must be allowed to express the UNRESTRICTED OBJECT, the RESTRICTED OBJECT and sometimes even the OBLIQUE function. Thus in the TOA the property of being expressible by means of an object marker does not pick out a natural class of the theory.

Finally, I shall discuss an important objection to the TOA made in Alsina (2001), discuss the modification of TOA presented there, and suggest an analysis of this phenomenon within the alternative theory I proposed. Remember that the TOA predicts that a reciprocalised verb cannot be object marked. The data motivating this analysis were sentences like the one below, quoted from Alsina (2001, 359):

(180) a. Akadzidzi a-na-men-er-an-a mkondo.
2.owls 2-PS-hit-AP-RCP-FV 3.spear
The owls hit each other with a spear.

b. *Akadzidzi a-na-u-men-er-an-a (mkondo).
2.owls 2-PS-3hit-AP-RCP-FV 3.spear
The owls hit each other with it (the spear).

The ungrammaticality of (180b) was analysed by hypothesising that the reciprocalisation operation can only bind a role which is intrinsically classified as unrestricted, and that the object marker can only express UNRESTRICTED OBJECTS, and thus arguments whose roles are intrinsically classified as unrestricted. However, since not more than one internal role can be intrinsically classified as unrestricted, it follows that (180b) must be ungrammatical. This analysis predicts that the co-occurrence of an object marker and a reciprocal morpheme on the same verb is always ungrammatical. This is, however, contrary to fact, as shown by the grammaticality of (181b), quoted from Alsina (2001, 368):

...
(181) a. Nungu i-na-meny-an-its-a nkhandwe.
9.porcupine 9-PS-hit-RCP-CST-FV 10.foxes
The porcupine made the foxes hit each other.

b. Nungu i-na-zi-meny-an-its-a (nkhandwe).
9.porcupine 9-PS-10-hit-RCP-CST-FV 10.foxes
The porcupine made them (the foxes) hit each other.

As observed by Alsina, the grammaticality of (181b) is a problem for the TOA, since the licensing of this example requires that two internal roles are intrinsically classified as unrestricted (the reciprocalised role and the causee role) which is prevented in Chichewa by the Asymmetric Object Parameter, which allows only one internal role to be intrinsically classified as unrestricted.

A number of modifications to the TOA are suggested in Alsina (2001) in order to account for this observation while at the same time accounting for the generalisations which motivated the TOA.

First, in the TOA the distinction between restricted and unrestricted internal roles has been encoded both on the level of argument structure and on the level of syntactic functions. On the level of argument structure we have the features restricted [+r] and unrestricted [−r], while on the level of syntactic functions we have for example the restricted object function and the unrestricted object function. In Alsina’s new TOA, referred to as N-TOA, this distinction is only encoded on the level of argument structure, by means of the feature [R]. The level of syntactic functions does not distinguish unrestricted from restricted object functions anymore – there is only one OBJECT function, as opposed to an UNRESTRICTED and a RESTRICTED OBJECT in the old TOA.

Secondly, Alsina (i) replaces the Asymmetric Object Parameter of the TOA with the Restricted Argument Parameter, which requires that “in an argument structure with two morphosyntactically distinct internal arguments, one of them must be [R]” (Alsina (2001, 370)), and (ii) hypothesises that the reciprocal, passive and object marking operations (operations expressed by verbal morphology) can only target internal arguments which are not [R]. The notion of “morphosyntactically distinct internal arguments” is crucial, in that it limits the application of the Restricted Argument Parameter to cases where the internal roles have different indices.

So there are two important differences between the TOA and the N-TOA. First, in order to be targeted by passivisation, object marking and reciprocalisation, TOA requires that a role must be marked as unrestricted, whereas the N-TOA requires that it must not be marked as restricted. Secondly, and crucially, in TOA internal roles must be intrinsically classified differently, even if they are co-indexed by the reciprocalisation operation, while in the N-TOA two internal roles cannot be classified differently if they are co-indexed. The two theories therefore make different predictions if two internal roles are co-indexed by the
reciprocalisation operation, as is the case in (181b). The AOP of the TOA requires them to be marked differently, as shown below:

\[
\begin{array}{c|ccc}
\text{hit-REC-CAUS-FV} & \text{cause} & \text{causee} & \text{theme} \\
\hline
\text{IC} & -o_1 & +o_2 & -r_2 \\
\text{REC} & \emptyset \\
\text{DC} & -r & +r \\
\text{w.f.} & S & O_0 \\
\end{array}
\]

The theme role must be unrestricted in order for the reciprocalisation operation to apply. By the Asymmetric Object Parameter only one internal role can be intrinsically classified as unrestricted, therefore the causee role must be classified as objective. And therefore it can only be mapped onto the RESTRICTED OBJECT function, and thus cannot be object marked, contrary to fact.

On the contrary, the Restricted Argument Parameter of the new theory of object asymmetries does not apply in this case, since the two internal arguments are co-indexed, and thus not “morphosyntactically distinct”. Consequently, these co-indexed roles are not classified as restricted, and therefore the causee role can be object marked, passivised or even reciprocalised again.

\[
\begin{array}{c|cccc}
\text{hit-REC-CAUS-FV} & \text{cause} & \text{causee} & \text{agent} & \text{theme} \\
\hline
\text{REC} & \emptyset & \emptyset & \emptyset & \emptyset \\
\text{CAUS} & \emptyset_2 & \emptyset_1 & \emptyset_1 & \emptyset_1 \\
\text{w.f.} & S & O \\
\end{array}
\]

The reciprocal operation binds the agent role to the theme role, as indicated by the indices. The causativisation operation binds the causee role to the agent role. The index on the causer role simply indicates that this role is “morphosyntactically distinct” from the other. What is crucial is that although the causee, agent and theme roles are all internal roles, none of them has to be classified as restricted, because they are all co-indexed and thus not “morphosyntactically distinct”. And since the causee role is an internal role which is not marked as restricted, it can be expressed as an object marker.

Since this analysis capitalises on whether or not an internal role is restricted, it is a challenge to any analysis which does not postulate a difference between internal roles. However, I think that the challenge can be met. In fact, it has almost been met by hypothesising that in Chichewa (and other asymmetrical languages) the verbal morphemes can only target at most one placeholder restricted to ground arguments. Note that the occurrence of reciprocal marker and object marker is disallowed if and only if both markers target placeholders (restricted to ground placeholders) of the same predicate. I argue that the causativisation operation changes the predicate by adding a semantic role, so that the object marker and the reciprocalisation markers in (181b) actually target ground roles of different predicates.
What remains is to alter my hypothesis about asymmetrical languages so that verbal morphemes can target at most one ground placeholder of a given predicate. So I hypothesise that the difference between symmetrical and asymmetrical languages consists in whether or not the verbal morphemes can target more than one ground placeholder of the same predicate.

Lastly, I will address the argument put forward in Alsina (2001) that the distinction between asymmetrical and symmetrical languages must be a syntactic one. Essentially, the argument goes like this. Premise one is that the feature which is responsible for the distinction between asymmetric and symmetric languages is either syntactic or semantic. Premise two is that this difference cannot be due to a semantic feature alone. The conclusion is that therefore the responsible feature must be syntactic.

It is argued that there is no semantic feature which is in common to both reciprocalised and passivised verbs, and which might be responsible for the distinction. The point is that there is no truth-conditionally relevant semantic property which is common. But as argued above, linguistic semantics cannot be restricted to what is truth-conditionally relevant, simply because languages encode more than what is truth-conditionally relevant. What both the passive and the reciprocal verbal signs have in common is that one of the placeholders restricted to ground arguments has been manipulated: in the case of the passive the construal restriction has been changed, whereas in the case of the reciprocal sign the placeholder has been removed. In addition, I would like to argue that premise one is not correct. It is not obvious that the feature responsible for the symmetric/asymmetric distinction is either syntactic or semantic. I have suggested that instead of searching for such a feature it can be hypothesised that some languages allow only one verbal morpheme to target a placeholder restricted to ground arguments. Note that this restriction involves essentially both morphosyntactic and semantic notions, and that therefore the premise one of Alsina’s argument cannot be taken for granted. It is worth noting that Alsina bites the bullet and claims that the level of argument structure must be a syntactic level, because (i) in his view the feature responsible for the a/symmetric distinction is syntactic, and because (ii) this feature must already be available at the level of argument structure. Again, this does not follow either, if there is no syntactic feature which is responsible for the a/symmetric distinction.

5.3.3 Dynamic Syntax

5.3.3.1 A brief introduction

Dynamic Syntax (Kempson et al., 2001; Cann et al., 2005) is a grammar formalism in which grammatical knowledge is characterised in terms of transitions from processing states to processing states, not in abstraction from them. DS is a parsing-oriented formalism in the sense that the processing states are taken to be the states in the process of understanding
CHAPTER 5. COMPARISON

a linguistic expression. These states are represented by means of pointed partial trees (i.e. partial trees plus a pointer indicating the node in the tree which is under development), and the processing rules (called computational rules) characterise the permissable transitions from partial trees to (partial) trees. Words are analysed as instructions to perform certain actions on a partial tree, provided that certain conditions are fulfilled.

There are three ways in which a tree may be partial. First, a tree is partial if it contains a requirement which is not (yet) satisfied – aspects of underspecification have by definition an associated requirement for a fixed value. Secondly, a tree is partial if it contains a node whose position with respect to the root node is not fixed. Thirdly, a tree is partial if it contains a node whose formula value (i.e. the actual semantic value associated with that node) is a metavariable. This is the case for example if a node has been annotated by a pronoun.

A lexical entry associates a word with a rule of the form IF X THEN Y ELSE Z, meaning that if the partial tree at the point when the word is parsed satisfies X, then actions Y can be performed on the partial tree, otherwise actions Z are performed.

A linguistic expression \( w_1 w_2 \ldots w_n \) is well-formed with respect to a certain context if starting from the initial state \( S_0 \) it is possible to arrive at a state \( S_m \) (a complete tree) whose semantic value is of type proposition (represented as \( Ty(t) \)) by applying only computational rules and all the actions associated with the words \( w_1, \ldots, w_n \):

\[
S_0 \xrightarrow{CR} S_1 \xrightarrow{w_1} S_2 \xrightarrow{CR} S_3 \xrightarrow{w_2} \ldots \xrightarrow{w_{m-1}} S_{m-1} \xrightarrow{CR} S_m
\]

In DS, dislocated expressions can be analysed in two different ways. First, they can be analysed as annotating an unfixed node, i.e. a node whose relation with respect to the root node is unspecified. Since the goal state is a complete tree of type \( Ty(t) \), the position of this node with respect to the root node must be fixed in the parsing process. The position of this unfixed node can be specified by merging this node with a node whose position relative to the root node is fixed. This is the basic idea for the analysis of left dislocated sentences, e.g. Mary, I haven’t invited.

Secondly, dislocated expressions can be analysed as annotating a LINKed node, i.e. a node which is related to the root node not by means of the transitive closure of the daughter relation, but by means of the LINK relation. The basic idea is that this LINK relation between two nodes imposes a requirement that the tree of type \( Ty(t) \) contain a node which has the same semantic value as the LINKed node of type \( Ty(e) \). If, for example, a type \( Ty(e) \) node is LINKed to a type \( Ty(t) \) node, and the semantic value of the type \( Ty(e) \) node is \( Fo(mary') \), then the type \( Ty(t) \) node contains a requirement that some node below it has the same semantic value \( Fo(mary') \). This requirement can then be satisfied in two steps. First, a pronoun annotates a node with \( Fo(U) \), where \( U \) is a metavariable standing for a semantic value, and secondly this metavariable is updated with the semantic value \( mary' \).
This is the basic idea for the analysis of hanging topic sentences, e.g. *As for Mary, I haven’t invited her.*

**5.3.3.2 DS analysis of weak pronouns in Romance**

In Dynamic Syntax weak pronouns are analysed as introducing an unfixed node which gets annotated with (i) a metavariable $Fo(U)$ as the value of the formula predicate, (ii) a requirement that the node be the sister node of a type $Ty(e \rightarrow t)$ node (for accusative weak pronouns), or the sister of a type $Ty(e \rightarrow (e \rightarrow t))$ (for dative weak pronouns), and (iii) a requirement that this node be a terminal node. For examples of lexical entries, see Bouzouita and Kempson (2006). The order of dative before accusative weak pronouns can be analysed by changing the conditions on the application of the dative weak pronoun to the effect that the root node of type $Ty(t)$ may not dominate a node with a requirement that it be a sister of a type $Ty(e \rightarrow t)$ node. Since this is precisely the requirement introduced by accusative weak pronouns, it is guaranteed that the dative weak pronoun cannot be processed after the accusative weak pronoun. The occurrence of weak pronouns after the verb can be analysed by specifying in the IF clause of the lexical entry the environment in which weak pronouns occur preverbally, and by specifying in the ELSE clause the environment in which weak pronouns occur postverbally.

The main finite verb in Romance languages is analysed as introducing a whole propositional template, that is a tree containing the node annotated with the semantic value of the verb and all necessary argument nodes of type $Ty(e)$. The unfixed nodes introduced by the weak pronouns are then merged with suitable argument nodes, so that both the requirement for a fixed tree position and the requirement of being the sister of a $Ty(e \rightarrow t)$ or $Ty(e \rightarrow (e \rightarrow t))$ are satisfied.

Since the weak pronoun annotates the unfixed node with $Fo(U)$, this metavariable can be substituted with a concrete semantic value, so that no overt object NP is necessary in order to express a complete proposition.

The obligatory doubling of strong pronouns by means of a weak pronoun is analysed as follows. First, it is hypothesised that strong pronouns do not annotate the argument nodes introduced by the main finite verb, but that they annotate LINKed nodes of type $Ty(e)$. This $Ty(e)$ node is annotated with the formula value $Fo(U)$, which is then substituted with a concrete semantic value, say *mary’*. This LINK relation between the $Ty(e)$ and the $Ty(t)$ nodes imposes the requirement that the $Ty(t)$ node dominate a node which is annotated by the same formula value $Fo(U)$ as the $Ty(e)$ node. The obligatoryness of the weak pronoun is predicted if only a weak pronoun can satisfy the requirement imposed by the LINK relation. This requirement is satisfied by having a weak pronoun annotate an unfixed node with $Fo(V)$, and by substituting the metavariable $V$ the same way that the
metavariable \( U \) introduced by the strong pronoun was substituted – i.e. with the semantic value \( mary' \).

Preverbal object NPs which cannot be resumed by a weak pronoun (e.g. generic object NPs or indefinite object NPs which are contrastively focused, see section 3.3.1.2) are analysed as annotating an unfixed node. Preverbal object NPs which are obligatorily resumed by a weak pronoun are analysed as annotating LINKed structures, so that the presence of a corresponding weak pronoun is necessary in order to satisfy the requirement for an anaphoric relation between the LINKed nodes.

Postverbal object NPs which are separated from the verb by an intonation phrase are analysed as annotating a LINKed node. As discussed above, the consequence of this is that a weak pronoun is predicted to be obligatory in order to satisfy the requirement for an anaphoric relation between the two LINKed nodes. Postverbal object NPs which are not separated by an intonation break and which are doubled by a weak pronoun (e.g. dative objects in Spanish) are analysed as annotating an unfixed node. Since this unfixed node \( n_1 \) merges with the node \( n_2 \) annotated by the weak pronoun, it is important that the node \( n_2 \) is not a terminal node, since \( n_1 \) may contain daughter nodes. So in order to analyse the co-occurrence of a weak pronoun with a co-referent postverbal object NP annotating an unfixed node, it is hypothesised that the pronoun has lost its terminal node restriction.

The same loss of the terminal node restriction is hypothesised to be involved in the co-occurrence of object markers and clause-internal object NPs in Bantu languages. But before turning to the Bantu analysis, I will first point out some challenges presented to the analysis of the Romance data by Romanian, and then I will compare some aspects of the DS analysis with the present analysis.

The first important challenge is the analysis of dislocated case-marked NPs. Since the DS formalism cannot distinguish two nodes \( n_1 \) and \( n_2 \) which are related to a certain root node \( n_3 \) in the same way (e.g. if both have an unspecified position with respect to \( n_3 \), or if both are LINKed to \( n_3 \)), a sequence of preverbal object NPs poses a certain challenge for the analysis, if the subject NP is analysed as annotating an unfixed node.

(182)  
\begin{align*}
\text{Director-ul-ui} & \quad \text{pachet-ul Ion} \quad i=1=a \\
\text{director-DEF-DAT} & \quad \text{parcel-DEF Ion DAT.3SG=ACC.M3SG=has sent.} \\
\text{It was John who sent the parcel to the director.}
\end{align*}

If the subject NP annotates an unfixed node, then none of the other two preverbal NPs can annotate an unfixed node, since the unfixed nodes cannot be distinguished. On the other hand the preverbal object NPs cannot both annotate a LINKed node either, since again only one LINKed node can be distinguished. A possible solution is to have these preverbal NPs annotate unfixed nodes, and to use the case information in order to fix the position of this node with respect to the root node before the next unfixed node is introduced. But if the preverbal object NPs are analysed as annotating an unfixed node, then we have lost
the analysis of the obligatory doubling of these NPs by a weak pronoun. Remember that
in order to account for the obligatory doubling of these preverbal NPs it was hypothesised
that they annotate LINKed nodes, with the requirement for an anaphoric relation between
the LINKed nodes essentially enforcing the presence of a weak pronoun. But if the case
of these NPs is used to fix the position of the node they annotate with respect to the root
node, then these object NPs cannot annotate LINKed nodes. To put this challenge in a
 nutshell: sequences of preverbal case-marked object NPs are best analysed as annotating
unfixed nodes (whose position is fixed by case), whereas the obligatory doubling of certain
preverbal object NPs is best analysed by having the doubled NPs annotate LINKed nodes.

The second challenge is posed by definite direct objects with inanimate referents. Such
objects must be doubled if they are preverbal (183a) or right-dislocated (183b), but cannot
be doubled if they are postverbal but not right-dislocated (183c).

(183) a. Dulap-ul *(L=)am reparat ieri seara.
       wardrobe-DEF.M ACC.M.3SG=have.1 repaired yesterday evening
       The wardrobe I repaired last night.

       b. *(L=)am reparat ieri seara # dulap-ul.
       ACC.M.3SG=have.1 repaired yesterday evening IB wardrobe-DEF.M
       I’ve repaired it last night, the wardrobe.

       c. *(L=)am reparat dulap-ul ieri seara.
       ACC.M.3SG=have.1 repaired wardrobe-DEF.M yesterday evening
       I’ve repaired the wardrobe last night.

The problem is this: If the preverbal NP dulapul in (183a) is analysed as annotating an
unfixed node which merges with the node annotated by the weak pronoun, what is it that
prevents the weak pronoun from co-occurring with the postverbal but not right-dislocated
NP in (183c)? Secondly, what is it that makes the occurrence of the weak pronoun obligatory
if the direct object is postverbal, pe-marked and refers to a human or to an animal?

(184) a. *(L=)am reparat dulap-ul ieri seara.
       ACC.M.3SG=have.1 repaired wardrobe-DEF.M yesterday evening
       I’ve repaired the wardrobe last night.

       b. *(L=)am auzit pe Ion ieri seara.
       ACC.M.3SG=have.1 heard DOM John yesterday evening
       I have heard John last night.

The third point that I would like to raise is the diachronic change in doubling postverbal
direct object NPs which are not right-dislocated. As pointed out in section 3.3.1.3 only
hundred years ago direct objects expressed by proper names were not doubled by a weak
pronoun. Nowadays, their doubling is obligatory. Note that the loss of the terminal node
restriction of a weak pronoun only allows for the co-occurrence of this pronoun with the
corresponding object NP, but does not enforce it.
Since the DS analysis models the interpretation of linguistic expressions, it cannot easily be compared with a theory which models the structure of an expression but not the way in which this structure is computed. With this caveat in mind, it is nevertheless possible to point out an important similarity and an important difference between the DS analysis of weak pronouns and the present analysis. Both in the DS analysis and in the present analysis weak pronouns retain their semantic value, irrespective of whether the doubled NP is clause-internal or clause-external. In other words, weak pronouns retain their semantic value, they do not become pure agreement markers. The main difference in this respect is that in DS it is the loss of the terminal node restriction which permits a clause-internal object NP to be doubled, while in the present analysis it is the grammaticalisation of a preference for combining certain NPs by a certain mode and not another mode which leads to the obligatory doubling of these NPs.

5.3.3.3 DS analysis of subject markers in Bantu

Next I will turn to the DS analysis of subject and object markers in Bantu languages. The discussion will be based mainly on Marten and Kempson (2002). The analysis of the asymmetry between the clause-internal co-occurrence of subject or object markers with coreferent NPs in Dynamic Syntax is essentially parallel to the analysis of the doubling of clause-internal object NPs in Romance: it hinges on the presence or absence of the terminal node restriction in the lexical entry of the subject and object markers. If a marker retains this terminal node restriction, it cannot co-occur with a clause-internal coreferent NP. This is because clause-internal NPs are analysed as annotating an unfixed node, and unfixed nodes with internal structure cannot be merged with a node which contains a restriction that it be terminal. Therefore, subject or object markers which retained their terminal node restriction can only co-occur with coreferent NPs which annotate LINKed nodes or with nodes without internal structure. If a marker loses its terminal node restriction it can merge with an unfixed node annotated by a clause-internal NPs, and thus allows for the co-occurrence of subject or object marker and coreferent clause-internal NP. Again, it is important to note that the subject and object markers do not lose their semantic value, so that no distinction is made between pronouns which have a semantic value, and pronouns which have lost their semantic value and therefore function as agreement markers, as e.g. in Bresnan and Mchombo (1987). On the other hand it should be pointed out that the DS analysis postulates two different types of weak pronouns in order to deal with the asymmetry between subject and object markers: the first type of weak pronoun has retained its terminal node restriction, the second type has lost this restriction. The DS analysis and the analysis presented in Bresnan and Mchombo (1987) both have in common that they locate the source of the asymmetry between subject and object markers...
in the lexical entry of the markers themselves, albeit in different ways. To account for the co-occurrence of subject markers with clause-internal subject NPs, Bresnan and Mchombo (1987) hypothesise that the subject marker has lost its semantic value, while Marten and Kempson (2002) hypothesise that the subject marker retained the semantic value, but lost its terminal node restriction. The present analysis differs from both these analyses in that it hypothesises that the co-occurrence of subject markers and clause-internal subject NPs is due not to a change in the lexical entry of the subject marker itself, but to a change in what modes are used to combine clause-internal subjects. The hypothesis was that the mode which combines clause-external subject NP began to be used to combine not just clause-external but also clause-internal subject NPs, and eventually the preference for this mode over the mode which combines clause-internal subjects only has been grammaticalised (see end of section 4.2.3).

As shown in section 4.1.7 on page 158 impersonal passives (and impersonal actives) cannot be object marked. Marten (2004) suggested an analysis of similar data within the framework of Dynamic Syntax. His analysis, however, predicts not only that impersonal passives cannot contain a second class-prefix, but that personal passives cannot contain second class-prefixes either. This is the case in some Bantu languages, but not in Siswati, where personal passives can be prefixed by a class affix which depends on a complement NP. In the present analysis, this is accounted for by hypothesising that the impersonal constructions change the construal restrictions on the arguments, so that the argument which is initially required to be the figure argument is finally required to be the secondary figure argument, and not a ground argument. Since only ground arguments can be expressed by a second class-prefix, it follows that the initial figure arguments of impersonal constructions cannot be expressed by a second class-prefix.
Chapter 6

Conclusion

The aim of this thesis was to provide a comparative analysis of the function played by Romanian weak pronouns and by Siswati subject and object markers in the encoding of argument structure.

In the second chapter I have introduced and motivated the grammatical formalism within which the two analyses have been expressed. This formalism is a particular version of sign grammars, with the following four main properties. First, this formalism imposes a strict separation between formal and semantic/conceptual structure. The formal structure is defined in terms of exponent and category functions, whereas the semantic structure is defined in terms of semantic functions. This strict separation has been argued to be necessary in order to explain the successful communication of new thoughts. Secondly, within this formalism grammatical knowledge is expressed in terms of associations between formal and semantic functions, so-called modes of combination. A grammar, then, is a set of modes which derive all and only the signs of a language. Thirdly, formal structure has been expressed in terms of simple Literal Movement Grammars, whose rules essentially separate the context-free backbone of the rules (i.e. the category function) from the exponent functions themselves, which operate on tuples of strings of expressions, rather than just strings of expressions. The two main features of simple LMGs is that (i) they guarantee that an expression can be parsed in polynomial time, and (ii) they allow for an analysis of reduplication and coordination, an arguably necessary property of an adequate grammar formalism. Fourthly, I have motivated the departure from the standard theory of semantic composition towards an alternative theory in which semantic functions do not identify placeholders of predicates in terms of the order in which the placeholders must be saturated, but in terms of the construal restrictions of the placeholders. This construal restriction of the predicate placeholder correlates with the speaker’s construal of a participant in a certain event or situation.

In the third chapter I have provided a detailed analysis of the use of weak pronouns in
CHAPTER 6. CONCLUSION

the encoding of argument structure in Romanian. I have started with an analysis of the verb cluster in Romanian. The first main properties of weak pronouns – their proximity to the verb – has been analysed by associating exponent functions with category functions, whereas the obligatory cliticisation of certain weak pronouns was analysed only in terms of exponent functions. The hypothesis that exponent functions operate on tuples of strings rather than just on strings allows for the deferral of the concatenation of a weak pronoun and its syntactic host, while the separation of exponent functions from category functions allows for weak pronouns to be combined by the same category function, irrespective of whether they are preverbal or postverbal. I have argued that weak pronouns have the same meaning as strong pronouns, despite the co-occurrence of weak pronouns with clause-internal coreferential direct object NPs. This co-occurrence has been analysed by hypothesising that direct object arguments can combine with verb meanings by the application of two different semantic functions. The first function saturates a placeholder restricted to ground arguments with the meaning of the object sign, while the second semantic function saturates the unsaturated meaning of the weak pronoun which itself saturates the placeholder restricted to ground arguments.

Differential object marking in Romanian has been analysed by postulating two different types of modes of combining direct objects. The modes of the first type require the direct object to be pe-marked and apply if the semantic value of the direct object satisfies certain semantic and pragmatic conditions \( C \), whereas the modes of the second type require the direct object to be unmarked for case, and apply under certain other semantic and pragmatic conditions \( C' \). The optional pe-marking of some direct objects is then viewed as a consequence of some direct object arguments being combinable by both types of modes.

I have argued that direct objects which end up in a dislocated position (either left- or right-dislocated) must be combined semantically with the verb before the verb is combined with the matrix verb. This requires the delay of the concatenation of direct object exponent and the verb exponent, which is analysed in terms of exponent functions on tuples of strings rather than strings. I completed the analysis of Romanian weak pronouns and their function in the encoding of argument structure by providing an explicit formulation of all the modes for combining (pre- or postverbal) direct object signs (with or without pe-marking with verb signs (with or without accusative weak pronouns).

In the fourth chapter I presented and analysed the function played by subject and object markers in the encoding of argument structure in Siswati. I began with a detailed presentation of the encoding of arguments in the basic clause, in personal and impersonal passive clauses, in applicative clauses, in causative clauses, in reciprocal clauses, in the reversal construction, and in the impersonal active construction. This was followed by an analysis of these constructions. At the heart of the analysis of the Siswati data was the hypothesis that certain semantic functions may change not only the predicate of the sign they apply
to (e.g. by adding or removing a semantic role), but also the construal of the predicate by changing the construal restrictions on the placeholders of the predicate. Unlike in Romanian, in Siswati the construal of the two placeholders for the object arguments of a ternary predicate is the very similar. However, like weak pronouns in Romanian, (i) object markers in Siswati are analysed as pronominal signs whose meanings saturate the predicate placeholder restricted to ground arguments, and (ii) there are two semantic functions combining the meaning of an object NPs sign with the predicate of a verb: the first function saturates the placeholder restricted to ground arguments, and the second function saturates the meaning of a weak pronoun or object marker which itself saturates the placeholder restricted to ground arguments.

In the fifth chapter I summed up the main similarities and differences between the function of weak pronouns and subject and object markers in the encoding of argument structure in Romanian and Siswati respectively, and then I compared the present analysis with various analyses of the role of weak pronouns and subject and object markers. I have then first pointed out some similarities and differences between the basic assumptions made in the present analysis and those made in other theories, and secondly I have provided a detailed comparison of my analysis with (i) a HPSG analysis of weak pronouns in Romanian, (ii) an LFG analysis of subject and object markers in Bantu, and (iii) a Dynamic Syntax analysis of weak pronouns and object markers.

To conclude, I have defended the claim that both weak pronouns in Romanian as well as object (and subject) markers in Siswati are pronominal signs which satisfy the syntactic as well as the semantic requirements of the verbal sign they combine with. The grammatical framework in which the analyses have been formulated has been motivated by certain requirements imposed by the explanation of successful linguistic communication of new thoughts, and integrates ideas from mathematical linguistics (the notion of a simple Literal Movement Grammar) and from Cognitive Grammar (the notion of construal of conceptual content).
Bibliography


Gottlob Frege. Funktion und Begriff. Lecture at the meeting of Jena’s Society for Medicine and Natural Science, 1891. Printed in *Patzig (1994).*


