Typological variation in grammatical relations

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Abbreviations

1,2,3 person
A (unless specified otherwise) most agent-like argument of transitive (and ditransitive) predicate
ABL ablative
ACT.PTCP active participle
ADD additive focus
ADJ adjective
ADV adverbial
AGR agreement
ALL allative
anim anim
ANTIP antipassive
ASP aspect marker
ATT attenuative Aktionsart
AUX auxiliary
BEN benefactive
BM boundary marker
CLF classifier
CLM clause-linkage marker
COM comitative
COMP complementizer
COMPL completive
COND conditional
CONT continuous
COMPL completive status
COP copula
CVB converb
d dual
DAT dative
DECL declarative
DEF definite
DEM demonstrative
DIR direct
DIST discourse particle
DIST distal
DS different subject
DUR durative
DYN dynamic
EMPH emphatic
EPEN epenthetic
ERG ergative
e exclusive
EXCL exclusive
EXCLA exclamation
EXPL expletive
EXP experiential aspect
exper. experiencer
F feminine
FIN final
FV final vowel
FOC focus
G most goal-like argument of ditransitive clause
GEN genitive
GEN.LOC generic locative
h honorific
h.anim higher animate
HIAF high affectedness *Aktionsart*
IDEOPH ideophonic
i inclusive
IMP imperative
inanim inanimate
INCOMPL incompletive status
IND indicative
INDEF indefinite
INDIV individuation particle
INF infinitive
INS instrumental
INTERJ interjection
INTR intransitive
INTS intensive *Aktionsart*
IPFV imperfective
IRR irrealis
l.anim lower animate
LAT lative
LOC locative
M masculine
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REP</td>
<td>reportative</td>
</tr>
<tr>
<td>RES</td>
<td>resultative</td>
</tr>
<tr>
<td>RESTR</td>
<td>restrictive</td>
</tr>
<tr>
<td>s / sg.</td>
<td>singular</td>
</tr>
<tr>
<td>S</td>
<td>single argument of canonical intransitive verb</td>
</tr>
<tr>
<td>SEQ</td>
<td>sequential</td>
</tr>
<tr>
<td>SG</td>
<td>singular</td>
</tr>
<tr>
<td>SIM</td>
<td>simultaneous</td>
</tr>
<tr>
<td>SREL</td>
<td>subject relativizer</td>
</tr>
<tr>
<td>SS</td>
<td>same subject</td>
</tr>
<tr>
<td>T</td>
<td>most theme-like argument of ditransitive clause</td>
</tr>
<tr>
<td>UT</td>
<td>unspecified time</td>
</tr>
<tr>
<td>TEL</td>
<td>telic</td>
</tr>
<tr>
<td>TNS</td>
<td>default tense</td>
</tr>
<tr>
<td>TOP</td>
<td>topic</td>
</tr>
<tr>
<td>TR</td>
<td>transitive</td>
</tr>
<tr>
<td>V</td>
<td>verb, verbal derivational affix</td>
</tr>
<tr>
<td>VALID</td>
<td>validator (= first hand witness knowledge)</td>
</tr>
<tr>
<td>VOC</td>
<td>vocative</td>
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Chapter 1

Introduction

1.1 Grammatical relations

Grammatical relations are a broad and ill-defined notion and, in principle, this term can be used to refer to any grammatical dependency relations. In practice, however, it is used to denote the relations between a clause or a predicate and its arguments.\(^1\) The major relational categories subject, direct object, and indirect object are among the most basic concepts of many models of grammar and are often regarded, either explicitly or implicitly, as universal (cf. Chomsky 1981; Dixon 1994, 2009a). Moreover, they belong to the fundamental concepts in descriptions of most languages. Chung, for instance, claims that ‘all languages have rules referring to subject and direct object, which are central to the syntactic organization’ (Chung 1978: 99f.). If, by contrast, a linguist finds that the categories of subject and object are not useful or applicable for the description of a language, this decision requires explicit justification (cf. Durie 1985, 1987 on subject in Acehenese; Nakayama 2001 on object in Nuuchahnuht).

 Until the early 1970’s, surface morphological criteria, such as case marking, agreement, and constituent order, played a pivotal role in identifying individual grammatical relations. To a certain extent the tradition of regarding

\(^1\)Synonymously to ‘grammatical relation’ or ‘grammatical function’ some linguists use such terms as ‘syntactic function’ (Falk 2006) or ‘syntactic role’ (Croft 2001).
these morphosyntactic properties as major tests of subjecthood and object- 
hood has survived until today and can be vividly illustrated by the following 
statement:

[I]t should be possible to identify the linguistic clues ensuring 
communication; e.g. the clues helping to distinguish the subject 
and the object. [...] I want to consider the following three 
factors, belonging to different grammatical levels, which may help 
to identify the elements of the sentence: the organising power of 
verbal valency; the nominal and verbal inflection and the word 
order. It will be shown that these factors cooperate in order to 
facilitate the identification of the subject and the direct object. 
(Schøsler 2001: 273)

If the German sentences in (1) are considered from this perspective, *ein * 
*Mann* ‘INDEFsM.NOM man’ and *der Hund* ‘DEFsM.NOM dog’ can be iden-
tified as the subject, as they trigger agreement on the verb (suffix -t for 
‘3sPRS’) and the definite articles are in the nominative case, whereas *einen* 
*Mann* ‘INDEFsM.ACC man’ in (1b) can be identified as the object of the 
clause, as it does not trigger agreement on the verb and bears the accusative 
case marking:

\[\begin{align*}
\text{(1) German} \\
a. & \text{Ein} \quad \text{Mann} \quad \text{starb.} \\
& \text{INDEFsM.NOM man die.1sPST} \\
& \text{‘One man died.’} \\
b. & \text{Der} \quad \text{Hund} \quad \text{ha-t} \quad \text{einen} \quad \text{Mann} \\
& \text{DEFsM.NOM dog have-3sPRS INDEFsM.ACC man} \\
& \text{ge-biß-en.} \\
& \text{PTCP-bite-PTCP} \\
& \text{‘The dog has bitten a man.’}
\end{align*}\]

\footnote{Glossing follows the Leipzig Glossing Rules (http://www.eva.mpg.de/lingua/ 
files/morpheme.html) with some additions (see Abbreviations). I took the liberty to 
standardize the original abbreviations in examples reproduced from other sources 
and, if necessary, to modify the glosses in accordance with the Leipzig Glossing 
Rules. Examples without a reference to a source were elicited from native speakers.
1.1 Grammatical relations

The 1970s saw a fundamental change in the discussion of grammatical relations. It was triggered by an increasing interest in languages exhibiting ergative traits and appearance of a number of important descriptive accounts. Thus, Dixon’s (1972) grammar of Dyirbal was followed by a discussion of a range of previously largely ignored languages with ergative characteristics (e.g. Comrie 1973, 1979c on Chukchi; Blake 1976 on some Australian languages; Woodbury 1977 on West Greenlandic Eskimo). As in these languages morphological criteria do not identify subjects familiar from most European languages, some of the frequently asked questions at that time were whether such languages (as well the so-called Philippine-type and active languages, cf. Schachter 1976) have a subject at all and which of the arguments it is.

As an illustration of the problems arising when trying to identify grammatical relations in languages with ergative characteristics, consider the following examples from Kâte, one of the languages discussed in Anderson (1976) when examining possible criteria of subjecthood in such languages (cf. Section 2.2). In Kâte, the only argument of an intransitive verb is in the unmarked absolutive, such as ŋic ‘man.ABS’ in (2a). In transitive clauses, one of the arguments is also in the absolutive case, such as ŋic ‘man.ABS’ in (2b), whereas the other argument is marked with the ergative marker, such as qâto-zi ‘dog-ERG’ in the same example:

(2) Kâte (Trans New Guinea; Papua New Guinea; Pilhofer 1933: 44)

a. ŋic moc hâmo-jec.
   man.ABS one die-NEARPST.3sS/A
   ‘One man died.’

b. qâto-zi ŋic ki-jec.
   dog-ERG man.ABS bite-NEARPST.3sS/A
   ‘The dog has bitten the man.’

If we compare Kâte examples in (2) with the corresponding German clauses in (1), it turns out that the two categories established by case marking in

---

3Not every A argument in Kâte is marked with the ergative marker; its distribution is conditioned by a range of factors including rhematicity and part of speech distinction (for a recent account, see Suter 2010+). These details are, however, irrelevant for the present discussion.
Kâte (ergative-marked qâto-zi ‘dog-ERG’ on the one hand and absolutive-marked njic ‘man.ABS’ on the other) do not correspond to the two categories of subject and direct object established by case marking in German (nominative-marked einen Mann ‘INDEFsM.ACC man’ and der Hund ‘DEFsMASC.NOM’ versus accusative-marked den Mann ‘DEFsMASC.ACC man’).

As Anderson summarizes this discrepancy, in ergative languages like Kâte “the morphology appears to establish the existence of a category which includes subjects of some verbs, and objects, but not subjects of other verbs” (Anderson 1976: 3).

While attempting to answer the question what is the subject and object in languages with ergative traits like Kâte, it became a common practice to extend the inventory of tests beyond morphological marking and word order and to include syntactic processes, such as Equi-NP deletion, raising, conjunction reduction, and the behavior of the reflexives, as diagnostics of grammatical relations (for the discussion of some other tests see the contributions in Li 1976 and Plank 1979). For instance, in the discussion of Kâte, Anderson considers a type of clause-chaining which is characterized by marking all but the last chained clause with special verb forms indicating the relative temporal relation of each clause to the following one, such as sequential and simultaneous verb forms in (3). Moreover, if the intransitive subject or the agent argument of a transitive clause is identical to the intransitive subject or the agent argument of the following clause, the verb of the first clause is not marked for the person and number of this argument, such as the verbs hone-lâ ‘see-SEQ.SS’, gasacke-lâ ‘run-SEQ.SS’, and lo-lâ ‘take-SEQ.SS’ in (3a). If, however, the intransitive subject or the transitive agent argument of the following clause has a different reference, the verb of the preceding clause is marked for the person and number of its intransitive subject or the transitive agent argument, such as lo-ha-me ‘take-SIM-3sDS’ and hone-pe ‘see-SEQ.1sDS’ in (3b):

(3) Kâte (Trans New Guinea; Papua New Guinea; Pilhofer 1933: 35f.)

a. bec hone-lâ gasacke-lâ tepe lo-lâ pig.ABS see-SEQ.SS run-SEQ.SS gun.ABS take-SEQ.SS mulu-nʒa-ŋ.
   shoot-IRR-2s
   ‘If you see a pig, you would run, take a gun, and shoot it.’
b. *fiuc* *lo-ha-me* *hone-pe* *wise-wec.*

illlegitimately take-SIM-3sDS see-SEQ.1sDS flee-REM.PST.3s

‘While he was stealing, I saw him, and he ran away.’

This construction is used by Anderson (1976) to argue that Kâte has a subject after all and it can be identified on the basis of switch-reference markers distribution. In contrast to German, Kâte subject is not case-marked consistently.

Though common in the investigation of grammatical relations, the practice of picking out a particular morphosyntactic feature of a range of possibilities and then treating it as providing the only right diagnostics requires a strong motivation. Anderson’s explanation of ranking switch-reference marking above case marking in case of Kâte is based on the postulated primacy of syntactic tests over morphological tests for determining grammatical relations. But is it a valid explanation? Moreover, this approach runs into a number of other problems. First, though Anderson does not discuss Kâte any further, one could consider other syntactic constructions of Kâte and it is quite possible that they might provide support for a different kind of subject than the one identified by the switch-reference construction. In cases of a mismatch, the uncomfortable question of which one to choose or how to weight different criteria becomes unavoidable (for examples and discussion see Van Valin and LaPolla 1997; Croft 2001; for the discussion of this problem as presented by ditransitives see Hudson 1992; Malchukov et al. 2007). Second, to identify the subject in Kâte Anderson proposes to rely on the evidence from switch-reference marking. But other languages (e.g. English and German) do not have any construction reminiscent of the Kâte switch-reference marking. In such languages other constructions are traditionally used to determine the grammatical relations. But now the question arises whether it is legitimate to equate the grammatical relations established on the basis of different criteria. Why should the relation established by switch-reference marking in Kâte be associated with the relation established by conjunction reduction in German or English?

Such an approach to characterizing language structures has been severely criticized for suffering from what Croft labels ‘methodological opportunism’, i.e. using ‘language-specific criteria when the general criteria do not exist in the language, or when the general criteria give the “wrong”
results according to one’s theory” (Croft 2001: 30). Being logically inconsistent, ad hoc and often circular, cross-linguistic methodological opportunism is not a rigorous scientific method for discovering the properties of language structures and thus must be abandoned (Croft 2001).

One of the accepted alternatives to the methodological opportunism in the domain of grammatical relations research is to consider all morphosyntactic properties of grammatical relations without prioritizing among them. Once this equitable approach is accepted, one has to recognize that various morphosyntactic features of arguments (i.e. what used to serve as subject and object tests) do not necessarily identify a single set of grammatical relations (e.g. one subject and one object or one ergative and one absolutive) in a language. Instead, every single construction can, in principle, establish a different grammatical relation. Thus, instead of viewing grammatical relations as uniform categories, it became common to regard them as construction-specific categories (cf. Comrie 1978b; LaPolla 2006; Moravcsik 1978a; Van Valin 1981, 1983, 2005; Van Valin and LaPolla 1997; Dixon 1994; Palmer 1994; Croft 2001; Bickel 2004, 2010+b).

The increasing interest in syntactic tests of subjects and objects and the acceptance of their construction-specific nature had another effect on the study of grammatical relations. As individual constructions are language-specific (e.g. German has no Kâte-style switch-reference mechanisms), grammatical relations established by various constructions are language-specific as well (Croft 2001). In turn, the language-specific nature of grammatical relations and, in particular, the fact that certain languages have no morphosyntactic constructions whatsoever restricted to a particular subset of arguments resulted in the emergence of serious doubts about the universality of subject in particular (Blake 1976) and grammatical relations in general (Durie 1987; Bhat 1991; Dryer 1997; Van Valin and LaPolla 1997; Van Valin 2005; Evans and Levinson 2009).

Skeptics of the construction-specific approach to grammatical relations frequently criticized it for presenting, for instance, subjects as being ‘no more than ad hoc clustering of construction-based properties’ and for failing to provide a basis for explaining ‘an impressive list of unique properties’ displayed by subjects (Falk 2006: 21; see also Marantz 1984: 309f.; Williams 1984). Criticism of this kind can be countered by observing that, apart from
a number of comprehensive investigations on case marking and agreement (e.g. Comrie 2005; Haspelmath 2005a; Siewierska 2004, 2005), there are no large-scale typological surveys on subject and object properties to begin with. And it is only on the basis of such large-scale cross-linguistic investigations that generalizations about grammatical relations going beyond ad hoc clustering of properties and compiling lists of unique subject and object characteristics are possible. Only if the clustering of properties can be established as an empirical fact (which is by no means guaranteed) is a theoretical explanation required. In other words, a precondition for an explanatory theory of grammatical relations (in the traditional sense) is the attested cross-linguistic reality of subjects and objects. In this sense, the typology of grammatical relations developed in the present thesis and its database implementation is a key prerequisite for cross-linguistic testing of whether traditional grammatical relations are more than just an epiphenomenon of impressionistically identified construction clusters.

1.2 Goals and overview

Against the background of the construction-specific and language-specific nature of grammatical relations, as outlined in the previous section, the general goal of the cross-linguistic research on grammatical relations can be formulated in the following way:

[I]t is rather misleading to speak of ergative languages, as opposed to nominative-accusative languages, since we have seen that it is possible for one phenomenon in a language to be controlled on an ergative-absolute basis while another phenomenon in the same language is controlled on a nominative-accusative basis. Thus one should ask rather to what extent a language is ergative-absolute or nominative-accusative, or, more specifically, which constructions in a particular language operate on the one basis and which on the other. (Comrie 1978b: 350f.)

To be able to answer these questions it is essential to provide a mechanism for measuring the degree of ergativity and absolutivity (or any other alignment pattern) in a language and for comparing grammatical relations
across languages despite their construction-specific and language-specific nature. Though a lot of research has been carried out on individual constructions which traditionally figure as identifiers of grammatical relations (e.g. case or agreement marking) and on certain common variations in alignment patterns of languages (for instance, the so-called non-nominative subjects or differential object marking, cf. Chapter 6), an all-inclusive framework of how to typologize grammatical relations fully acknowledging their construction-specific and language-specific nature has not been suggested till now. The development of such a framework is the major goal of this thesis. On the one hand, I aim to provide a comprehensive and systematic account of all variables known to specify grammatical relations. In other words, my goals is to isolate all those aspects of arguments, predicates, or clauses that affect or interact with grammatical relations and result in various kinds of splits and to develop a framework that would allow one to exhaustively integrate these aspects when working on the typology of grammatical relations. The second major goal of this thesis is to develop a typology of the relevant constructions (such as case marking, agreement, conjunction reduction, etc.) in a way that allows for their reliable comparison within and across languages. This results in what Bickel (2010+a) calls a multivariate typology, where cross-linguistic variation can be explored and measured in a single unified analytical framework (also cf. Bickel 2007). The empirical basis of this multivariate typology is a detailed survey of almost 600 languages. They were coded in the AUTOTYP database (Bickel and Nichols 2002) for constructions identifying grammatical relations and for various variables co-determining grammatical relations.  

The thesis is organized as follows. Chapter 2 reviews the major developments in the study of grammatical relations and introduces Bickel’s (in press) approach to grammatical relations to be further elaborated in this thesis. Chapter 3 discusses the methodological foundation of the present study, and, in particular, addresses the issues of variables and their values

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4At the present moment, the prevailing majority of coded constructions in the AUTOTYP database are case and agreement marking constructions exhaustively coded for splits in these two domains. The sampling of other constructions is in its initial stage with only some 100 language-specific constructions coded.
1.2 Goals and overview

In typological investigations and presents the autotypologizing method of variable identification suggested by (Bickel and Nichols 2002).

In Chapter 4, I address the issue of argumenthood and argument role distinction. After reviewing some popular approaches, I present the model of semantic role determination adopted in the present thesis, which relies heavily on Dowty’s (1991) agent and patient proto-role properties. Chapter 5 provides the first illustration of grammatical relations as equivalence sets of arguments and discusses the compatibility of this representation of grammatical relations with alignment in the traditional sense.

Chapters 6 to 10 look closer at three common types of constructions which have been playing a central role in the discussion of grammatical relations (viz. case marking, agreement marking, and passivization and antipassivization). In each case, a more thorough investigation of the phenomenon at hand results in the extension and refinement of the list of variables and their possible values that are needed to account for grammatical relations established by these three construction types. Chapters 6 to 8 illustrate the application of the construction-centered approach to grammatical relations on the basis of case (or dependent marking). Chapter 6 is devoted to the properties of arguments as variables co-determining grammatical relations, whereas Chapters 7 and 8 consider the effects of the larger syntactic context on grammatical relations, specifically, Chapter 7 investigates how the properties of individual predicates and predicate classes interact with argument selection, whereas Chapter 8 considers the effects of such clausal properties as tense, aspect, polarity, etc. In a similar vein, two other construction clusters are investigated: agreement (or head marking) in Chapter 9 and some diathesis alternations in Chapter 10.

Chapter 11 addresses the issue of argument selector distinction and variables required to account for the properties of individual constructions. For this purpose, a wider range of constructions relevant to grammatical relations is surveyed. Chapter 12 draws all the threads together and summarizes the new approach to the typology of grammatical relations. In addition, it provides an overview of the AUTOTYP database on grammatical relations and discusses possible directions for further investigation and the application potential of the typology developed here.
Chapter 2

Major developments in the study of grammatical relations

2.1 Introduction

In this section I present some major developments in the research on grammatical relations and underline those aspects that are integrated into the present approach. As the body of literature on grammatical relations is immense, I concentrate on studies with particular relevance for qualitative typology. This chapter begins with an overview of two articles — Anderson (1976) and Keenan (1976) — that played an important role in shaping the idea of construction-specific nature of grammatical relations (Sections 2.2–2.3). Section 2.4 provides a summary of Dixon’s approach to grammatical relations. In Section 2.5 the treatment of grammatical relations in Role and Reference Grammar is presented. Finally, Section 2.7 outlines the approach adopted here, individual aspects of this approach will be discussed in greater detail in subsequent chapters.

2.2 Anderson (1976)

Traditionally, determination of grammatical relations and, specifically, of the subject was often exclusively based on surface morphological criteria. Morphologically ergative languages with ‘subjects’ marked with different
case or agreement markers presented a real challenge to this approach and brought about various analyses denying the very existence of grammatical relations in morphologically ergative languages. Anderson’s (1976) response was to provide for criteria to identify subjects ‘despite the morphology’. He was one of the first to apply the cyclic syntactic rules of transformational grammar to ergative languages and to rely exclusively on syntactic means in determining the subject. At the same time, the role of morphology was downplayed to ‘a misleading indicator of syntactic function in ergative languages’ (Anderson 1976: 11).

On the basis of the behavior of Equi-NP deletion in Basque, subject raising in Tongan, conjunction reduction in Kâte, and reflexivization in Abkhazian dialects Anderson came to the following conclusion:

[F]rom a syntactic point of view [ergative] languages are organized in the same way as are accusative languages, and the basically-syntactic notion of ‘subject’ has essentially the same reference in both language types. (Anderson 1976: 16)

Commenting on Dixon’s (1972) account of Dyirbal, Anderson had to admit that this language is different from accusative languages with respect to its syntax, but regards it as an insignificant anomaly:

Dyirbal, which as noted, differs fundamentally from the usual type, is in fact the exception which proves the rule. (Anderson 1976: 23)

Anderson’s analysis has been criticized for a number of conceptual and methodological shortcomings (for instance, by Van Valin 1981; Croft 2001: 149ff.). On the one hand, his conclusion is based on a very limited data set (four studied language cases listed above with only one syntactic operation considered in each of them). On the other hand, though Anderson applies a number of tests as possible identifiers of grammatical relations, he ignores the possibility that these tests might be unable to identify a unique subject per clause. However, Anderson himself admits that there are a few languages for which the provided tests give the opposite results and of them at least Dyirbal is ergative in a syntactic sense. Despite these weaknesses,
Anderson's (1976) discussion of the subject in ergative languages was a significant contribution to the study of grammatical relations in that it encouraged other linguists to focus on syntactic rules in determining grammatical relations (e.g. the contributions in Plank 1979).

The present approach differs substantially from Anderson's approach in that no a priori categories such as subject or object are adopted and, consequently, any argument selector is considered no matter whether it supports these categories or not and no matter whether it is characterized by morphological marking or syntactic behavior.

2.3 Keenan (1976)

In the same collection of papers (Li 1976), Keenan aimed to ‘provide a definition of the notion “subject of” which will enable us to identify the subject phrase(s), if any, of any sentence in any language’ (Keenan 1976: 305). To provide for this, he extended the list of possible identifiers of the subject integrating inputs from different theoretical frameworks (including subject properties suggested in Chomsky 1965 and Perlmutter and Postal 1974) and combining morphological, syntactic and semantic properties. His list of over 30 subject properties included, for instance, the addressee of the imperative, switch-reference constructions, advancement in passivization, aptness to be relativized upon, and launch of floating quantifiers.

Significantly, in the view of the numerous considered subject properties, Keenan expresses the following idea:

‘[S]ubject’ does not represent a single dimension of linguistic reality. It is rather a cluster concept, or as we shall say, a multi-factor concept. (Keenan 1976: 312)

Besides, a language can have more and less subject-like subjects. This point is illustrated with the behavior of subjects derived by passivization.

To summarize, Keenan’s contribution is important in that it was one of the first attempts to put together all properties ever associated with the notion of subject and an important step in elaborating the idea of subject as a cluster concept.
In the core of Dixon’s\textsuperscript{1} approach to grammatical relations is the system of three basic syntactic categories S (intransitive subject), A (transitive subject), and O (transitive object). The definition of these categories is in turn dependent on the notion of transitivity.\textsuperscript{2} Dixon (2009a) considers transitivity to be exclusively a syntactic matter:

\begin{quote}
It makes little sense to say, for example, that a given verb is ‘semantically transitive’ or ‘semantically intransitive’. It is more important to describe it as having a semantic profile which is consistent with a certain transitivity profile at the syntactic level.
\end{quote}

(Dixon 2009a: 116)

On the basis of syntactic transitivity, Dixon (2009a) differentiates two major clause structures: an intransitive one, which has one syntactic argument S (intransitive subject), and a transitive one, which has two syntactic arguments A (transitive subject) and O (transitive object). Whether a semantic argument is also a syntactic argument (i.e. S, A, or O) depends on ‘the function role which these core argument types play in the grammar’

\begin{quote}
Many ideas presented in this section were first expressed in Dixon (1972, 1977) and then summarized in Dixon (1979). For the sake of consistency I will stick to the updated versions of the approach presented in Dixon (1994, 2009a) and only in case of relevant deviations refer to previous accounts. The discussion of the basic functions S, A, and O, and transitivity is based on Dixon (2009a), as there have been some significant modifications in comparison to the previous accounts. The discussion of subject and pivot is based on Dixon (1994), as it is treated more profoundly there than in Dixon (2009a).

In Dixon (1994), S, A, and O functions and verb transitivity are frequently referred to as ‘semantic-syntactic’ or ‘syntactic-semantic’ categories and their semantic component is recurrently emphasized. For instance, a transitive clause is characterized as having a verb and two obligatory NPs, whereas obligatory does not imply that these NPs must occur in the surface structure, but rather that ‘the speaker and hearer must have some understanding of them if the clause is to form a conceptual whole, with the potential of referring to some actual, possible or habitual events’ (Dixon 1994: 117). In Dixon (2009a), however, the three functions and transitivity are treated as exclusively syntactic categories.
\end{quote}
In other words, for a semantic argument to be qualified as a syntactic argument it has to have some of the traditional syntactic subject and object properties. The ones Dixon mentions include constraints on formation of coordinate and subordinate constructions, valency-changing derivations, reflexive and reciprocal formation.

Apart from the two major clause structures (intransitive and transitive clause), Dixon (2009a) recognizes a number of minor transitivity types: extended intransitive (with two core arguments S and E (‘extension to the core’) and extended transitive (with three core arguments, A, O, and E). These extended transitivity types are apparently introduced to somehow accommodate semantic arguments which cannot be allocated in S, A, or O functions, as, for instance, the following comment suggests:

> In some languages we find a small number of verbs for which three semantic roles must be stated (or understood). That is, they occur in an extended transitive syntactic frame. (Dixon 2009a: 134)

Whether a semantic argument is in one of the three core functions S, A, or O, or is an E(xtension) can be generally recognized by surface coding (e.g. case marking). Surface coding, however, is only an indicator. Thus, apart from canonically marked functions, a language may also have non-canonically marked S, A, and O functions.

Apart from the three universal syntactic relations S, A, and O, two other categories, namely subject and pivot, are central to Dixon’s treatment of grammatical relations. Before discussing these two categories, it is necessary to introduce the idea of various operation levels of morphosyntactic processes. The primary distinction is made between the morphological and the syntactic level (this is reflected, for instance, in referring to certain languages as being syntactically or morphologically ergative). In turn, language-specific syntactic properties and processes operate on one of the two syntactic levels: either on the level of underlying (or deep) structure or on the level of derived (or surface) structure (Dixon 1994: 126f.).

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3At least on one occasion the term ‘indirect object’ is used synonymously to the E function (Dixon 2009a: 135).
underlying syntactic structure refers to the level of structure with a verb in its basic underived form; syntax codes the semantic description of event on this level. The derived structure emerges after syntactic derivations like passive, antipassive or causative applied. In the majority of cases the derived structure is identical to the underlying structure. The two categories of subject and pivot differ as to the structural level they operate on.

On the basis of the universal functions S, A, and O, Dixon defines subject as the class \{S, A\}. Crucially, subject is defined as a category belonging to the level of underlying structure. This implies that every language has a certain degree of accusativity at this level and every clause has a subject (Dixon 1994: 129). The universality of the subject category manifests itself in the invariability of certain syntactic properties. One of such properties is representing the addressee phrase of imperative constructions. Dixon links this restriction on imperative formation to the similarity in the semantics of imperatives (the addressee is told to be an agent of an activity) and the semantics of subject (‘the NP whose referent can be agent, if anything can’) (Dixon 1994: 131). Other syntactic operations that depend on the universal category of subject include control of reflexives, control constructions with with modal and aspectual verbs, such as ‘want’, ‘need’, ‘can’, ‘begin’, ‘finish’ if they are realized as lexical verbs in a language, and with jussive verbs, for instance, ‘tell’, ‘order’ (Dixon 1994: 134ff.).

Dixon emphasizes that the universal identification of S and A is semantically motivated:

We have seen that certain constructions — imperatives, reflexives, verbs like ‘can’ and ‘begin’ — must involve identification of S and A at the underlying syntactic level, purely because of their semantic content and the semantic nature of A and S functions (it is these semantic factors that lead to the grouping of S and A as the universal category ‘subject’). (Dixon 1994: 141)

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4The discussion of jussive verbs is found only in Dixon (1979) and is absent in Dixon (1994), whereas the discussion of reflexives was added in the later work.
The category of subject is opposed to the category of pivot. In contrast to subject, pivot is not a universal but a language-specific category operating at the level of derived structure (i.e. after passivization, antipassivization, causativization, etc. took place). Primarily, it refers to grouping of the universal functions S, A and O when defining the omission of coreferential constituents in clause-combining (e.g. by coordination, subordination, relativization). However, pivot can also regulate some syntactic process within a clause, for instance, questioning of an NP (Dixon 1994: 143).

In contrast to subject, pivot is the grouping of either \{S, A\} or \{S, O\} functions. Unlike the universal subject, only some languages operate in terms of pivot, and only they can be characterized as ‘accusative’ or ‘ergative’, whereas some other languages have no constraints whatsoever at the level of derived structure. Moreover, some languages employ both major pivots (i.e. accusative and ergative), for instance, Yidin (Dixon 1994: 220).

To summarize, Dixon’s approach to grammatical relations builds on the three universal syntactic functions S, A and O. Syntactic rules in every language are framed in terms of these basic functions. Some syntactic rules universally refer to S and A (this grouping is referred to as ‘subject’) and every language is claimed to have a subject and with this a certain degree of accusativity. Other syntactic processes can either refer to \{S, A\} or \{S, O\} functions; in this case, one speaks of accusative or ergative pivots correspondingly.

The approach adopted here departs substantially from Dixon’s approach to grammatical relations. First, central to Dixon’s treatment of grammatical relation is the system of syntactic categories S, A, and O and the related notion of syntactic transitivity. As has been pointed out above, only syntactic tests can serve as diagnostic criteria of these core functions. For instance, in case of extended transitives (i.e. semantic ditransitives), only one semantic argument may be placed into O function. The determining criterion is
whether a semantic argument exhibits any of ‘the defining properties of an O argument’ (Dixon 2009a: 136). These defining properties do not receive adequate discussion. The most prominent criterion considered is the ability of an argument to be put into S function of a passive construction. As for other criteria, Dixon claims the following:

Many other tests may be invoked to distinguish an O from other arguments, within a specific language. These include: being realizable by a bound pronoun, and having a role in rules for coreferential NP omission. (Dixon 2009a: 137)

It is by no means obvious how such language-specific distinguishing criteria of the O (or any other) function are established in a language, if one cannot determine the O function otherwise to begin with. The proposed procedure suffers from what Croft (2001) calls cross-linguistic methodological opportunism, i.e. falling back on language-specific criteria when more general criteria do not exist in the language, or when the give unexpected results according to one’s theory. Besides, it is unclear how to proceed if a language has no ‘tests’ for the O function whatsoever (cf. Nakayama 2001 on objects in Nuuchahnuilt), or if syntactic criteria provide conflicting evidence. The distinction of S and A functions presents similar difficulties related to their exclusively syntactic nature. For instance, if potential S and A share all properties and there is no tests for O, it is then impossible to tell S and A apart (i.e. to determine numerical transitivity) and with this, for instance, extended intransitive and transitive clauses. In contrast to Dixon’s approach, the present approach operates exclusively on the basis of semantic roles and semantic transitivity and thus overcomes the shortcomings resulting from the reliance on syntactic transitivity (for a detailed discussion, see Chapter 4).

Second, and related to the preceding point, Dixon has to assume a number of minor transitivity types (extended intransitive and transitive) to accommodate those semantic arguments that do not meet the criteria to qualify as S, A, or O. In the present approach all semantic arguments, i.e. the arguments of one- and two-argument predicates, the arguments of semantically three-argument predicates, and any ‘non-canonically’-marked arguments are treated uniformly. Related to this point is the way single proper-
ties of grammatical relations are treated by Dixon: only some syntactic criteria are applied to diagnose core functions, whereas others, for instance, the surface morphological coding have a minor status. In the present approach all argument selectors and the grammatical relations they yield are treated equally (i.e. sets of arguments).

Finally, Dixon assumes that every language has a subject \( \{S, A\} \) category which is semantically motivated and manifests itself in the invariability of certain syntactic properties. The unifying semantic nature of S and A functions refers to the ability to be an initiating or controlling agent (Dixon 1994: 125). Significantly, however, A is grouped together with S independent of the agentivity of S with particular verbs. For instance, discussing languages which allow imperatives with non-controlled (or non-agentive) S, Dixon claims that this is possible since the property of some S and A noun phrases to function as addressee of imperatives is extendable to verbs where S has little or no control at all (Dixon 1994: 132). This aspect, however, contradicts the purely semantic motivation of the \( \{S, A\} \) cluster. Moreover, potentially one can consider the extension of some properties of non-agentive or non-controllable S to other verbs with agentive or controllable S and thus motivate the \( \{S, O\} \) cluster (cf. Moravcsik 1978a; Keenan 1984). The present approach does not assume any \textit{a priori} categories, such as subject, and whether certain argument selectors universally select the \( \{S, A\} \) argument set is regarded as an empirical question.

### 2.5 Role and Reference Grammar

The universality of the category of subject and the cross-linguistic validity of grammatical relations in general was also central to the foundational work in Role and Reference Grammar (RRG) (Foley and Van Valin 1977, 1984; Van Valin 1977, 1981). This section provides a brief summary of the RRG and the status of grammatical relations in it.\(^6\)

RRG is a monostratal, non-derivational theory. The two major representations in the organization of RRG are the syntactic and the semantic rep-

\(^6\)This section is largely based on Van Valin and LaPolla (1997) and Van Valin (2005).
representations of a sentence. These two representations are linked directly via a set of rules called the ‘linking algorithm’. There is only one syntactic representation of a sentence, which corresponds to its overt form. There are no underlying syntactic structures, transformational rules, or derivations. Clause structure is represented in RRG in a semantically-based model known as the ‘layered structure of the clause’. It consists of two projections: the ‘constituent projection’ and the ‘operator projection’. The constituent projection includes (i) the nucleus (the syntactic unit which contains the verbal or non-verbal predicate), (ii) the core (the unit which contains the nucleus and the semantic arguments of the predicate in the nucleus), and (iii) a periphery for every layer (which includes adjuncts). These aspects of the layered structure of the clause are universal.

Central to the semantic representation of the clause is the dichotomy between reference and predication, i.e. between situations that happen (‘states of affairs’) and the participants involved in them (‘participant roles’). The participant role of an entity in a state of affairs (e.g. patient, instrument, force, goal, etc.) is a function of the nature of the state of affairs. Consequently, the semantic interpretation of an argument is a function of the logical structure in which it occurs, i.e. it depends exclusively on the predicating element it occurs with. In other words, states of affairs are fundamental (or basic), whereas participant roles are derived (Van Valin and LaPolla 1997: 89, 113).

Reflecting the priority of states of affairs, the semantic representation of a sentence is based on the lexico-semantic representation of the predicing element. RRG employs the system of lexical decomposition of verbs based on Aktionsart (Vendler 1967), according to which predicating elements are classified into states, achievements, accomplishments, and activities on the basis of their inherent temporal properties. To identify the class membership of single predicating elements, an adjusted version of the tests proposed in Dowty (1979) is utilized. State and activity predicates are taken as basic predicates and other predicate classes are derived from them.

Participant roles are properties of states of affairs in the real world. They are expressed by arguments, which are linguistic entities. The semantic relations between predicates and their arguments are called thematic relations. Following Jackendoff (1976), thematic relations are defined
in terms of argument positions in logical structure (Van Valin and LaPolla 1997: 114f.). For instance, hear has two argument positions (hear’ (x, y)). On the basis of meaning, hear can be classified as a perception verb. The two argument positions of hear are then referred to as the ‘first argument of a state predicate of perception’ (or PERCEIVER, for convenience) and the ‘second argument of a state predicate of perception’ (or STIMULUS). As there are independent criteria for assigning logical structure to verbs (i.e. modified tests proposed in Dowty 1979), thematic relations, which are a function of the argument positions in its logical structure, cannot be assigned arbitrarily.

Thematic relations are generalizations over verb-specific semantic roles. In turn, there is another level of generalization across thematic relations termed ‘macroroles’. Macroroles represent generalizations across argument-types occurring with particular verbs, such that each macrorole stands for a range of specific thematic relations (e.g. for EFFECTOR, MOVER, CONSUMER, COGNIZER, etc.). The introduction of macroroles is motivated by the fact that for certain grammatical processes groups of thematic relations are treated alike. For instance, a number of thematic relations behave as a subject in an active sentence and the same group of thematic relation behaves as an object in a passive sentence. In other words, grammatical rules refer predominantly to macroroles, rather than to specific thematic relations.

RRG differentiates two semantic macroroles: the AGENT-type macrorole is called ‘actor’, the PATIENT-type macrorole is named ‘undergoer’. With intransitive verbs the single argument can be either actor or undergoer, thus, semantically, there is no counterpart to the intransitive subject. With verbs taking more than one argument, the selection of macroroles follows a number of principles captured in the actor-undergoer hierarchy (see Van Valin and LaPolla see 1997: 146). In a nutshell, the thematic relation of agent is the unmarked choice for the actor macrorole, whereas patient is the unmarked choice for the undergoer macrorole. For any verb there is only one

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There are over 20 types of state and activity predicates and only some of them are discussed in Van Valin and LaPolla (1997). There are no tests to determine the semantic type of a predicate, this is done on the basis of meaning alone.
possible actor. A marked choice of actor (i.e. non-agent thematic role) is only possible if no higher-ranking arguments are present in the clause. For undergoer, however, there might be a choice in the case of some verbs. If a certain verb has two non-actor arguments (for instance, a theme and a recipient), it is possible to code either of them as an undergoer. The choice is conditioned by the speaker’s choice to present one of the non-agent arguments as the ‘primary affected participant’ (Van Valin and LaPolla 1997: 145).

Macrorole assignment is closely related to the issue of valence or transitivity. RRG differentiates between semantic valence and syntactic valence. Semantic valence refers to the number of semantic arguments a verb takes (i.e. the ones a verb has in its logical structure). Syntactic valence (or S-transitivity) denotes the number of overt morphosyntactically coded arguments and corresponds to the number of direct core arguments in RRG terms. Finally, transitivity reflects the availability of arguments to certain syntactic operations. For instance, if a verb taking two overt arguments cannot occur in a passive, although other two-argument verbs of a language can, then it is intransitive despite being syntactically bivalent (Van Valin and LaPolla 1997: 148f.). Transitivity in this sense — called M-transitivity — is defined in terms of the number of macroroles a verb takes. As the maximal number of macroroles is limited to two, there is no notion of ‘ditransitive’ in terms of M-transitivity.

For the majority of verbs in a language the number of macroroles is predictable from their logical structure: if there are two or more arguments in the logical structure of a verb, it will take two macroroles; if a verb has only one argument, it will have one macrorole. However, there are some systematic exceptions and to accommodate them a number of specific principles governing the macrorole number of certain verb classes is introduced. For instance, verbs of change of location (such as ‘go’ in She went to the house) have only one macrorole in many languages despite having two semantic arguments (for details, see Van Valin and LaPolla 1997: 153, Van Valin 2005: 63).

In RRG, traditional grammatical relations like subject and direct object are not considered to be universal (Van Valin 2005: 250ff.). Not being universal implies two aspects. On the one hand, RRG does not claim that every language has grammatical relations in addition to universal semantic roles.
On the other hand, in those languages that do have grammatical relations, they need not be identical across all languages, for instance, a grammatical relation identified as the subject in one language might have different properties than the subject in another language. A language has grammatical relations only if there is a restricted neutralization of semantic relations (actor and undergoer) and pragmatic relations (topic and focus) for syntactic purposes. Grammatical relations in this sense are referred to as privileged syntactic arguments (abbreviated to PSAs). In complex syntactic constructions, two types of PSAs are differentiated. One of them is called controller; it refers to an overt argument that provides a referential interpretation for another argument, for instance, Lisa in (4). This second argument is left covert and is called pivot, for instance, the unexpressed argument in the second clause of (4), which is obligatorily interpreted as being coreferential with Lisa.

(4) Lisa, kissed Bob, and ___i/x ran away.

Significantly, controller and pivot are defined by language-specific morphosyntactic phenomena, and various constructions of a language may define various PSAs.\(^8\) The traditional notion of subject subsumes both controllers and pivots, and codifies the assumption that a given language is consistent across constructions in its choice of controllers and pivots.

RRG distinguishes two types of PSAs. In case of variable syntactic pivots and controllers the speaker can decide which semantic argument will function as PSA (e.g. by applying passivization or antipassivization). If there is no such choice, a language has an invariable syntactic pivot and controller (Van Valin 2005: 281).

The macroroles presented above play a crucial role in the linking of semantic relations to grammatical relations (in terms of PSAs). Not every macrorole can function as a PSA. Rather in languages with grammatical relations the accessibility to PSA selection is regulated by a hierarchy. The actor-undergoer hierarchy mentioned above is interpreted in such a way that the actor is the highest-ranking macrorole and the undergoer is the

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\(^8\)Both controller and pivot can also be semantic; in this case they obviously do not define a PSA.
lowest-ranking macrorole. Now, for syntactically accusative constructions the highest-ranking macrorole is the default choice for PSA, whereas for syntactically ergative constructions it is the lowest-ranking macrorole. With intransitive predicates, the hierarchy is irrelevant, as the single macrorole functions as PSA no matter whether it is an actor or an undergoer.

As has been pointed out above, the maximal number of macroroles is limited to two. Thus, there is no notion of ‘ditransitive’ in terms of M-transitivity (for a discussion, see Van Valin 2005: 64ff.). Haspelmath (2008b) summarized some problems related to the integration of semantically ditransitive predicates into RRG and below I present two of his arguments that are also relevant for semantically transitive predicates. First, undergoer selection seems to be heavily dependent on the operation of passivization, whereas other behavioral properties are not considered. As Haspelmath (2008b) points out, passivizability is just one of many behavioral properties and it is unclear why it should be more important than any other argument properties. Second, some languages (e.g. Martuthunira) have fully neutral alignment, that is, both the recipient and the theme of semantically ditransitive predicates are marked in the same way and exhibit identical syntactic properties (e.g. both can be promoted by passivization). Discussing a similar example from Kinyarwanda, Van Valin (2007: 56) suggests that passivization is different in Kinyarwanda from passivization in other languages in that it allows all non-macrorole direct core arguments to function as PSA. In this case, however, it is not obvious which of the two non-actor arguments is the undergoer. Haspelmath comes to the following conclusion:

[P]resumably in a fully neutral language, there would be no undergoer at all (or at least no evidence for it). This position is probably consistent with the overall framework [...], but intuitively it is strange to claim that ditransitive constructions are intransitive. (Haspelmath 2008b: 90)

Now, the problem of finding evidence for macroroles is not limited to semantic ditransitives. It is not clear how M-transitivity of a verb of any semantic transitivity is determined in RRG if a language has positive syntactic evidence only for the actor macrorole, but no syntactic operations whatsoever making reference to the undergoer macrorole (i.e. no passivization, as this
is the most relevant operation in RRG). Finally, as the attempt to accommodate Kinyarwanda passive shows, the ability to function as PSA is not limited to macroroles. Some other languages are also analyzed as allowing non-macrorole core arguments to function as PSAs (e.g. non-macrorole core arguments of ‘dative subject’ verbs in Icelandic can be passivized and, thus, act as PSAs, cf. Van Valin and LaPolla [1997: 359ff.]). In this case, however, the status of macrorole and M-transitivity can be questioned, as macroroles are motivated by identical syntactic treatment of a group of thematic relations. But if syntactic processes can also refer to non-macroroles, what motivates the postulation of macroroles? And how can one decide on M-transitivity other than by referring to specific syntactic processes (e.g. passivization)?

To summarize, RRG regards grammatical relations as non-universal and construction-specific phenomena. A language has grammatical relations (PSAs) only if there is a restricted neutralization of semantic relations for syntactic purposes. Besides, PSA is the only type of grammatical relations in RRG in contrast to several grammatical relations recognized by traditional approaches (subject, direct object, and indirect object).

The approach to grammatical relations adopted here is similar in many respect to the RRG treatment of grammatical relations. As in RRG, central to the present approach is the construction-specific and language-specific nature of grammatical relations. As in RRG, a grammatical relation is present only if there is an instance of argument selection (this is comparable to the restricted neutralization). The present approach differs, however, from RRG in that no interface level of the macro-role type is adopted. Instead, in the present approach individual constructions operate on exclusively generalized semantic roles by assigning some of them particular morphological or syntactic properties. Thus, all arguments of semantically transitive (and ditransitive) predicates are regarded as arguments and their morphosyntactic properties are considered as representative no matter whether these properties are of the type that would permit to call such a predicate macrorole-transitive (or macrorole-ditransitive) or not. This allows for a

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9The notion of syntactic transitivity by Dixon (2009a) has the same flaw, cf. the discussion in Section 2.4 above.
consistent treatment of arguments with adjunct-like properties (e.g. arguments of ditransitive predicates and experiential predicates). Finally, the exclusively semantic approach also overcomes the problem of determining numerical valence and, respectively, argumenthood even if a language has no constructions whatsoever that enable such a determination on syntactic grounds (e.g. if a language has no passive and S and A arguments are always treated identically).

### 2.6 Radical Construction Grammar

This section gives a brief introduction of the treatment of grammatical relations in Radical Construction Grammar (Croft 2001). Following Dryer (1996, 1997) and Van Valin and LaPolla (1997), Croft (2001) also supports the view that grammatical relations like subject and objects are language-specific and construction-specific.

As the name suggests, Croft’s Radical Construction Grammar is a radical version of Construction Grammar (see Fillmore et al. 1988; Goldberg 1995; Kay and Fillmore 1999). Construction Grammar is a theory — or a family of theories, to be precise — of syntactic representation for cognitive linguistics. The major principle of Construction Grammar can be boiled down to regarding our grammatical knowledge as organized in constructions and with this construction as the basic form of syntactic structure. In turn, construction is understood as a conventional symbolic unit (Langacker 1987: 56). In Construction Grammar, every aspect of grammar — from words to very general semantic and syntactic rules — can be represented as constructions (the idea of this non-modular representation is known as ‘syntax-lexicon continuum’, cf. Croft 2005). With this, the notion of a construction is broad enough to encompass any morphosyntactic criterion or test of identifying syntactic categories and relations. In turn, constructions are organized in a network (‘a structured inventory’ in the terminology of Langacker 1987: 63ff.).

Radical Construction Grammar differs from other versions of Construction Grammar in the following three aspects (for a concise summary, see Croft 2007). First, constructions are regarded as the primitive elements of syntactic representation, whereas grammatical categories as such are
derived from constructions. Second, the formal representation of constructions encompasses only a (complex) construction and its components. Consequently, there are no syntactic relations at all. Third, there are no universal constructions. In other words, all constructions are language-specific.

With respect to grammatical relations, one of the most important theses of Radical Construction grammar is the denial of syntactic categories, such as subject and object, as universal categories or as primitive elements of syntactic representation. This thesis is supported by the problems arising when applying the distributional method of syntactic analysis to cross-linguistic data and language-internal data. On the one hand, morpho-syntactic constructions used as a diagnostic for grammatical relations in one language may be unavailable in another language. For instance, German does not have any construction similar to the switch-reference construction of Kâte illustrated in (3) and used by Anderson (1976) to argue that Kâte has the subject category. On the other hand, even if a language has an equivalent diagnostic construction, its distribution might differ from other languages. For instance, though both English and Dyirbal have a conjunction reduction construction, in English this construction establishes a category of the S and A arguments, whereas in Dyirbal the established category refers to the S and P arguments. A frequent response to such a mismatch is to chose only those constructions as diagnostic which deliver expected results (e.g. establish English-like subjects, which group the S and A arguments). The procedure of relying on language-specific criteria both when some more general criteria are not applicable to a language or when they deliver the “wrong” result are criticized by Croft for suffering from methodological opportunism (Croft 2001: 30ff.).

Apart from the typological problems outlined above, Croft (2001) also recognizes a logical inconsistency between the distributional method and the theoretical assumption that the relations defined by constructions (e.g. subject and object) are the syntactic primitives used to represent grammatical knowledge. On the one hand, it is in the essence of the distributional method that constructions are used to define categories. On the other hand, the categories themselves are taken as primitives which define constructions. This leads to circularity (Croft 2001: 45).

The alternative suggested in Radical Construction Grammar is to regard
constructions and not syntactic categories as the primitive elements of syntactic representation. Categories, in turn, are defined by constructions. Thus, syntactic categories, such as subject and object, exist only derivatively as established by the constructions they occur in.

Another important distinction made in Radical Construction Grammar is the one between syntactic roles and syntactic relations. Whereas syntactic relations relate a syntactic element to another syntactic element (e.g. subject to the predicate), syntactic roles relate a syntactic element to the whole construction (e.g. subject to the transitive construction) (Croft 2001: 220ff.). Radical Construction Grammar argues that if one posits syntactic roles (and the otherwise mandatory symbolic relations), syntactic relations are no longer required. Thus, Radical Construction Grammar regards subjects as syntactic roles and not as syntactic relations.

In many respects Radical Construction Grammar approach to grammatical relation is similar to Bickel’s (2010+b) approach adopted in this thesis. In both approaches grammatical relations are regarded as construction-specific and language-specific entities. What differentiates Radical Construction Grammar approach from the present approach is the status of the semantic participant roles S, A, and P. In Radical Construction Grammar semantic participant roles are regarded as concepts in cognition (i.e. as belonging to the conceptual space with a hypothesized universal structure). Semantic participant role clusters are specific to various event types (intransitive, transitive, and ditransitive events) (Croft 2001: 137). In the present approach, however, semantic argument roles are seen as semantic entailments of predicates in the lexicon and as such do not refer to regions of conceptual space. Though this difference in the status of participant roles is not significant for cross-linguistic research on grammatical relations, it leads to significant distinctions in theoretical implications.

2.7 Bickel (in press) and the present approach

The approach to grammatical relations to be further developed in this thesis is to a large extent based on the account of grammatical relations as suggested in Bickel (2010+b) and also in Bickel and Nichols (2008a) and Bickel et al. (2010+).
Building on the previous findings that abandon the concept of global grammatical relations and emphasized their construction-specific nature (Comrie 1978b; Moravcsik 1978a; Van Valin 1981; Croft 2001 among others), this approach is characterized by a radical shift of attention from such generalized notions as subject or pivot to single characteristics or properties of these phenomena. In this vein, grammatical relations are reconceptualized as ‘the syntactic relation that an argument bears TO A SPECIFIC CONSTRUCTION OR RULE rather than to the clause in which the argument is realized’ (Bickel 2010+b, emphasis in the original).

To illustrate the application of this above definition of grammatical relations, consider again the examples from Kâte repeated in (5) for convenience. The case marking constructions establishes two grammatical relations in (5a) and (5b) by marking some arguments with the absolutive case (ŋic ‘man.ABS’ in both sentences) and other arguments with the ergative case (qâto-zi ‘dog-ERG’ in (5b)). The distribution of the so-called ‘same subject’ and ‘different subject’ markers establishes another grammatical relation which contrasts the patient argument of transitive clauses on the one hand with the only argument of intransitive clauses and the agent argument of transitive clauses on the other hand, as (5c) and (5d) illustrate. Finally, the examples presented illustrate one more grammatical relation not discussed previously: the only argument of intransitive clauses and the agent argument of transitive clauses bear the same grammatical relation by the virtue of triggering agreement on the verb, for instance, the finite verb in (5c) shows the marking for the 2nd person singular argument:

(5) Kâte (Trans New Guinea; Papua New Guinea; Pilhofer 1933: 35f., 44)

a. ŋic moc hâmo-jec.
man.ABS one die-NEARPST.3s
‘One man died.’

b. qâto-zi ŋic ki-jec.
dog-ERG man.ABS bite-NEARPST.3s
‘The dog has bitten the man.’
c. *bec* hone-lâ gasacke-lâ *tepe* lo-lâ
pig.ABS see-SEQ.SS run-SEQ.SS gun.ABS take-SEQ.SS
mulu-n3a-ŋ.
shoot-IRR-2s
‘If you see a pig, you would run, take a gun, and shoot it.’

d. *fiuc* lo-ha-me hone-pe wise-wec.
illegitimately take-SIM-3sDS see-SEQ.1sDS flee-REM.PST.3s
‘While he was stealing, I saw him, and he ran away.’

Adopting the construction-centered perspective, different grammatical relations can then be represented in terms of sets of arguments, as the following definition suggests:

G[rammatical] R[elations]s are equivalence sets of arguments, treated the same way by some construction in a language, e.g. being assigned the same case in a language, or triggering the same kind of agreement. (Bickel 2010+b).

A brief note on terminology is in order here. In this thesis, I primarily use the term *argument selector* instead of *construction* in the sense implied by the definition above to avoid any misunderstanding or unintended connotations the latter term might evoke, for instance, in connection with the notion of construction in Construction Grammar (Goldberg 1995).

The definition above implies that a language has as many grammatical relations as there are argument selectors, i.e. constructions, rules, or constraints applying only to some arguments. For instance, Kâte illustrated in (5) above has at least four grammatical relations: two grammatical relations established by the absolutive and ergative case marking, another one established by the verb agreement, and, finally, a grammatical relation established by the distribution of switch-reference markers.\(^{10}\) Moreover, as Kâte examples show, individual grammatical relations established this way need not be the same within a language, instead individual argument selectors can build unequal sets. For instance, in Kâte, there is an \{S, A\}

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\(^{10}\)Later it will be shown that switch reference construction actually establishes two grammatical relations, viz. a controller and a controllee of switch reference (cf. Section 11.6).
grammatical relation established by agreement and switch reference, and an \( \{S, P\} \) and \( \{A\} \) grammatical relations established by the case marking.\(^{11}\)

In the description of the Kâte grammatical relations above I was referring to the argument roles S, A, and P. The use of these letters might evoke an unintended association with Dixon’s universal functions (cf. Section 2.4 above).\(^{12}\) Bickel’s 2010+b approach adopted here, however, differs significantly from a number of previous treatments of grammatical relations (including Dixon 1994, 2009a) in that argument roles (S, A, P, etc.) are defined exclusively on the semantic basis applying an adjusted version of Dowty’s (1991) entailment tests (these tests are discussed in detail in Sections 4.3.2 and 4.3.3). Saying that argument roles are strictly semantic implies that their definition is completely dissociated from their morphological expression in a clause and how grammatical patterns (constructions, processes) apply to them. In other words, if a noun phrase is semantically entailed by a verb, it is a semantic argument of this verb no matter what case- or adposition-marking it carries in a clause, whether it triggers agreement, controls switch-reference marking, etc. The primacy of semantic argument roles is pivotal to the present approach in that it makes possible to circumvent circularity in the definition of grammatical relations, as the *tertium comparationis* established this way is completely independent of the comparanda (i.e. morphosyntactic properties of arguments under investigation).

The examples from Kâte in (5) above illustrate how case assignment, agreement, and switch reference select equivalence sets of arguments and thus establish grammatical relations. Which other morphosyntactic operations are known to be restricted in a similar way and thus figure as argument selectors? Previous work on grammatical relations abounds with

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\(^{11}\) The issue of argument selection will be discussed in detail in Chapter 5 after the principles of determining argument roles (i.e. S, A, and P in the sets above) are introduced.

\(^{12}\) The three letters S, A, and P have been used to refer to arguments of intransitive and transitive verbs since Comrie 1989 and are by far the most common symbols used in this context (cf. Croft 1990, 2001, Palmer 1994). Other common symbols — though not necessarily with the identical conceptual content — are S, A, and O Dixon 1972, S, A and U Van Valin and LaPolla 1997, and Z, X and Y Lazard 1998.
possible tests, diagnostics, features, properties and constructions characterizing grammatical relations. First collections of subject properties in [Anderson (1976) and Keenan (1976)](cf. Sections 2.2 and 2.3) were followed by a whole range of more or less elaborate lists, including [Moravcsik (1978a), Dixon (1994), Van Valin and LaPolla (1997), Falk (2006) and Malchukov et al. (2007), to name just a few. Ideally, the present approach should integrate all properties ever suggested as argument selectors that have the potential to establish grammatical relations. However, as [Marantz (1984: 2)] points out, the properties discussed are often theory-internal generalizations about grammatical relational terms in a particular theoretical framework and different theories might in principle account for different ranges of data. Besides, caution is required when considering some commonly recognized tests of subjecthood, as instead of being syntactic restrictions they might turn out rather to be sensitive to such parameters as topicality and semantic role superiority (for a discussion, see [Bickel 1999]). For instance, claims about subject properties of dative experiencers in Indo-European languages are frequently based on the converbial coreference test (e.g. Klaiman 1979; Davison 1985; Mohanan 1994). However, thorough investigations of natural discourse data has shown that converbs are not syntactically restricted to subjects in many Indo-European languages (see Haspelmath 1995 for an overview of findings on English and French; Schumacher 1977 on Hindi; Bickel and Yadava 2000 on Maithili and Nepali).

Apart from argument selectors and selected arguments, a whole range of other phenomena have been known to interact with grammatical relations. Among them are referential properties of arguments, for instance, such values as animate vs. inanimate, certain predicate types, for instance, experiencer predicates, and a whole range of clausal properties, including tense-aspect-mood values, polarity, and others. These phenomena are often treated under different rubrics and are sometimes regarded as deviations from the major alignment pattern of a language. In Bickel’s (2010+) proposal all these aspects are consistently integrated as either properties co-defining arguments, as in the case of referential properties (for details, see Chapter 6), or as conditions on argument selection (see Chapters 7 and 8). The integration of these aspects results in the following definition of grammatical relations to be used in this thesis:
Grammatical relations are equivalence sets of arguments (including their role and referential properties), treated the same way by an argument selector under certain conditions.

To summarize, adopting the perspective of grammatical relations presented above, the major research topics in the field of grammatical relation typology include such questions as how argument selectors are compared across languages, how arguments are selected and what factors affect argument selection, how grammatical relations are defined for each argument selector, to what degree their distribution varies across constructions, how different types of grammatical relations correlate with each other and what is their distribution in the languages of the world. Some of these topics will be addressed in the respective sections of this thesis, whereas to answer other questions a profound cross-linguistic investigation with a sufficiently rich typological database is needed. In this sense, the typology of grammatical relations to be developed in this thesis is an essential step towards providing answers to the question of cross-linguistic correlations and distribution of grammatical relations.

### 2.8 Conclusion

This chapter presented a few approaches to grammatical relations relevant for qualitative typology. Section 2.7 outlined the approach to grammatical relations suggested by Bickel (2010+b), which provides the foundation for the framework to be further developed in this thesis. Characteristic of this approach is the rejection of global grammatical relations and recognition of the language-specific and construction-specific nature of grammatical relations (this aspect is shared with a number of other approaches). What, however, significantly differentiates the present approach from other frameworks is the exclusively semantic definition of argument roles completely dissociated from their morphosyntactic realization in a clause.

Before coming to individual aspects of the present typology of grammatical relations in greater detail, the next chapter embeds the present investigation into the overall agenda of modern linguistic typology and provide some relevant methodological background.
2.8 Conclusion
Chapter 3

Methodological background

3.1 Introduction

This chapter introduces a methodological framework for the present investigation. First, Section 3.2 briefly outlines the goals of modern linguistic typology. Then, Section 3.3 introduces the multivariate approach to typology, discusses its major principles and outlines some advantages of its application to the phenomenon of grammatical relations.

3.2 The goals of modern linguistic typology

The goals of linguistic typology have changed significantly in recent years. Nowadays, linguistic typology is increasingly less interested in exploring the limits of possible human languages and thereby determining what constitutes language universals (Bickel 2007; Holman et al. 2007; Nichols 2007). The principle goals of modern linguistic typology were first explicitly stated in Nichols (1992), who suggested treating typology as a linguistic counterpart of population biology and population genetics. As a population science, the objective of typology is to explore principles governing the distribution of structural features among languages, or, in other words, to explain “what’s where why” (Bickel 2007).

Answering these questions was made easier due to massive technological progress. On the one hand, the past two decades have witnessed a rapid increase in the number of comprehensive typological databases, of which The
World Atlas of Language Structures (Haspelmath et al. 2005) provides the most prominent example. On the other hand, simultaneously to the development of extensive typological databases, statistical methods of exploring typological distributions have been refined and adjusted to the data at hand (for a survey, see Cysouw 2005; Bickel 2007).

Apart from a technological breakthrough, the very methodology of exploring cross-linguistic variation has undergone an important transformation. Modern methods no longer operate with mass types of traditional typology, such as “ergative alignment” or “agglutinating morphological system”. Instead, they work with much more fine-grained variables (e.g. Bickel 2010a). A similar tendency is observed in handling individual languages. Modern typology has moved away from typologizing entire languages (for instance, into “ergative”, “head-marking”, “SVO”, “active” or “fluid”) and thereby reducing language-internal diversity. Instead, individual structural patterns (constructions, rules, constraints, etc.) are compared across languages, which allows to measure linguistic diversity (Bickel 2007, 2010a). How such complex linguistic structures as grammatical relations can be compared without reducing diversity is discussed in the next section.

Finally, if the diversity of linguistic patterns is appropriately coded, it can be directly measured by tools developed in other disciplines, e.g. various clustering and scaling techniques familiar from other disciplines to investigate the possibility that some language-specific patterns are more similar to each other than others, i.e., they form cross-linguistic clusters (for a survey of techniques, see Cysouw 2007; for an example of application, see Bickel 2010a). If such clusters are attested, it is then empirically justified to refer to them as “prototype” and to attempt a theoretical explanation.

### 3.3 Multivariate approach

As has been pointed out in the previous section, the goal of modern linguistic typology is to explore principles governing the distribution of linguistic structural features in the world’s languages (their frequency, their interaction with other aspects of grammar, their geographic and genealogical patterns, etc.). In order to capture and test distributions of structural fea-
tures, typologists operate with sets of variables (also known as ‘comparative notions’, ‘features’, ‘parameters’, or ‘properties’) that allow one to measure similarities and differences between languages.

What does measuring linguistic diversity actually mean? Following Bickel (2010+a), any two structures \( S_1 \) and \( S_2 \) are considered similar if they are identical in some variables, but differ with respect to some other variables. To compare any two structures — either between languages or within a language — these structures must be decomposed into sets of variables able to capture all those structural aspects that may be different or identical. Bickel (2010+a) calls this decomposition ‘multivariate analysis’.1

What characterizes a set of correctly designed variables then? Ideally, they should satisfy a number of criteria. First, traditional descriptive variables applied in the domain of grammatical relations, such as “has nominative-accusative alignment”, “has passive” or “has subject-oriented conjunction reduction” are often too crude and lump together parameters that, in principle, might have independent geographic or genealogical distributions and interesting historical profiles of their own. Moreover, comparing, for instance, “passive” or “conjunction reduction” in one language with “passive” or “conjunction reduction” in another language might show some similarities, as well as some distinctions (Croft 2001). The traditional way of dealing with such incomparability is to introduce a cross-linguistically viable definition of “passive” and “conjunction reduction”. However, it is often impossible to come to a definition which everybody would agree on. Thus, a properly designed set of variables must be large and fine-grained enough so as to exhaustively capture the observed variation of the phenomenon under investigation. Only then can it form just the right input for research on how structures are distributed in the world (Bickel 2007; Plank 2007).

Second, ideally the set of variables should remain close to observed data and, eventually, fieldwork. On the one hand, this is motivated by practical reasons, as variables of a higher level of abstraction are difficult to survey

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1The term is borrowed from statistics where it stands for simultaneous analysis of multiple variables in a single relationship or a set of relationships. The meaning of the term is extended to include the development of the sets of variables for such an analysis (Bickel 2010+a).
in sufficiently large samples of languages by using exclusively the available reference grammars. Such samples can only be compiled by doing supplementary fieldwork, which is rarely possible. On the other hand, there is a theoretical reason for this decision because the definition of abstract variables is based on some Universal Grammar model that already presents an abstraction from the observed linguistic diversity (Bickel 2007).

Variables represent sets of primitive concepts called ‘typological types’ (Bickel and Nichols 2002), ‘values of typological features’ (Haspelmath et al. 2005), or ‘comparative notions’ (Haspelmath 2007) that are required for the analysis of at least one language. Such typological types can be either scalar or categorical. There are two strategies to establish such sets of typological types. On the one hand, they can be declared a priori, building what is sometimes referred to as ‘etic grid’ or ‘conceptual space’. Every language in a sample is then assigned to one of the pre-established types (for the discussion of the limitations of this approach, see Bickel and Nichols 2002; Cysouw et al. 2005). In this thesis, an alternative technique known as ‘autotypologizing method’ (Bickel and Nichols 2002) is adopted. Applying this method, lists of typological types are compiled in a bottom-up fashion during data collection as needed for distinguishing observed structures. This method seeks to abstract away from language-specific categories to exactly that degree that is needed to capture all language-specific distinctions of the phenomenon at hand encountered in a sample of languages. If an observed typological type is different from any other type on the list, a new type is established and, if necessary, already classified data are reconsidered. The resulting inventories of typological types have the advantage that they are continually updated and are derived inductively, i.e. are not based on assumed models of possible and impossible human languages. In practice, the two strategies of compiling lists of typological types are often combined: one starts in a top-down fashion with a predefined list based on previous investigations on the topic, but when a number of unclassifiable types reaches a certain critical mass, a new type can be declared.

To summarize, to capture and explore linguistic diversity and test typological distributions of phenomena they are decomposed into relatively large sets of fine-grained variables that allow one to measure variance
between languages. Correctly developed typological variables are cross-
linguistically applicable in formally precise ways. Moreover, being based
on thorough analyses of language-specific structures, they define an ex-
plicit ontology of similarities and differences (a *tertium comparationis*)
(Bickel 2007: 241).

### 3.4 Summary and outlook

To provide for a robust basis for comparison of grammatical relations across
and within languages they must be decomposed into sets of variables. Thus,
a major goal of this thesis is to develop such a set of fine-grained variables
allowing for an adequate coding and exploration of grammatical relations
cross-linguistically. As in this thesis grammatical relations are understood
as relations between sets of arguments and argument selectors under cer-
tain conditions, I first discuss variables and their values necessary to ac-
count for the variation of arguments (Chapters 4 and 6). Variables of condi-
tions on argument selection are introduced in Chapters 7 and 8. Finally, in
Chapter 11 I propose a set of variables necessary to decompose individual
argument selectors.
3.4 Summary and outlook
Chapter 4

Argument structure and semantic roles

4.1 Introduction

The definition of grammatical relations adopted in Section 2.7, according to which grammatical relations are regarded as equivalence sets of arguments treated the same way by an argument selector, makes direct reference to the notion of argument. In a later chapter (Chapter 6.2), I examine in detail the nature of arguments and those of their aspects which are relevant to argument subset formation. However, before addressing the issue of various aspects of arguments co-determining grammatical relations, I first discuss the notion of valency and argumenthood, i.e. the distinction between arguments and adjuncts (Section 4.2). Then, once arguments have been distinguished from adjuncts, I turn to the question of how different semantic arguments of a predicate can be differentiated from each other if there is more than one (Section 4.3).

4.2 Valence and argument structure

Valence (or valency) is a term originally introduced into linguistics by Tesnière to emphasize the parallel with chemistry. Valence refers to the potential of the verb and was originally defined as "le nombre d’actants qu’il [le
Valence and argument structure

Verb] est susceptible de régir” (Tesnière 1959: 238). In other words, valence of a verb designates “its inherent relationality that allows it to govern a particular number of arguments of a particular type” (Haspelmath and Müller-Bardey 2004: 1130). The configuration of arguments a verb takes (or governs, or subcategorizes for) is in turn referred to as its argument structure (Grimshaw 1990; Comrie 1993), other common terms include valence pattern (Haspelmath and Müller-Bardey 2004), or predicate frame (Dik 1978).

In studying argument structure, it is commonly assumed since at least Tesnière (1959) that there is a distinction between arguments (Tesnière’s ‘actants’) and adjuncts (‘circonstants’). The distinction is crucial to most current linguistic frameworks (see, among others, Bresnan 1982, 2001; Chomsky 1981, 1986; Van Valin and Foley 1980; Van Valin 2005) and is assumed in the present thesis. Theoretically, the essence of the distinction is clear: arguments are tightly associated with the verb and the verb determines the number and type of arguments, whereas adjuncts provide supplementary information and refer to the circumstantial features of the setting (including its manner, place, and time). In practice, however, pinpointing the difference between them in individual languages turns into a Herculean task (cf., for instance, the collection of papers in Dimmendaal 2009). A number of tests to diagnose the argumenthood were suggested, however, they are known to suffer from a number of limitations (for discussion, see Comrie 1993).

Traditionally, the difference between arguments and adjuncts was identical to the issue of (syntactic) optionality and obliquloneriness of constituents (see the discussion in Helbig and Schenkel 1991). Thus, for instance, sentence (7b) is grammatical without in the park and this fact would suffice to diagnose this prepositional phrase as an adjunct, whereas omitting the arguments Lisa in (7d) or her fiancé in (7d) results in the ungrammaticality of the sentences:

1 Though the majority of linguistic work on verbal lexical information and argument structure assumes this rigid distinction between arguments and adjuncts, there are a few alternative suggestions which blur such a strict division (cf., for instance, Marten 2002).
(7)  

a. *Kissed her fiancé.

b. *Lisa kissed.

c. Lisa kissed her fiancé.

d. Lisa kissed her fiancé in the park.

However, once the dataset is extended to include other predicates, the situation becomes less clear: in (8a), the mushroom would intuitively be considered a semantic argument of the predicate has eaten, however, as (8b) shows, leaving the mushroom out still results in a perfectly grammatical sentence:

(8)  

a. Lisa has eaten the mushroom.

b. Lisa has eaten.

One can, in principle, broaden the definition of arguments based on the obligatory principle in terms of analogy (Comrie 1993). In this case, the mushroom in (8b) can be considered an argument because its behavior is comparable to the behavior of the non-omittable argument her fiancé in (7). For instance, both noun phrases become subjects under passivization. However, there is no guarantee that every language has a constructions such as English passivization to make this analogy work (consider, for instance, the discussion of argumenthood in Nuuchahnulth in Nakayama 2001).

A further range of problems emerges once one considers languages which allow a (relatively) free omission of noun phrases with any verb (the so-called ‘pro-drop’ languages). For instance, in Mandarin, one can intuitively assume that the verb kàn ‘see’ requires two arguments as talking about seeing implies that there is someone who does the seeing and someone who is seen, however, as (9b) shows, this predicate can be used without any overt noun phrases if they are retrievable from previous discourse:

(9)  

Mandarin (Sino-Tibetan; Chine; Li and Thompson 1981)

a. Nǐ kàn guo Lisa méiyǒu?
   you see EXP Lisa not
   ‘Have you seen Lisa?’

b. Méi kàn guo.
   not see EXP
   ‘(I) haven’t.’
4.2 Valence and argument structure

As the examples above show, determining the valence of a predicate is not always straightforward and various types of criteria are applied. As Haspelmath and Müller-Bardey (2004) point out, most common characterizations of valence often involve both semantic and syntactic terms (see, also the discussion of Matthews 1981 criteria of argumenthood in Croft 2001: 272f.). Nonetheless, there are good reasons to differentiate between semantic valence and syntactic valence or between levels of argument structure² (i.e. between semantic argument structure versus syntactic argument structure, and, respectively, semantic arguments versus syntactic arguments) as the two need not coincide (Comrie 1993; Van Valin and LaPolla 1997; Culicover and Jackendoff 2005).

What are the implications of applying syntactic criteria of argumenthood? This view is adopted, for instance, in Dixon (2009) (for details and discussion, see Section 2.4), where the three functions S, A, and O and the notion transitivity as such are treated as exclusively syntactic categories. In this approach, whether a semantic argument is also a syntactic argument S, A, or O depends on whether it possesses some of the traditional syntactic subject and object properties. Such an approach is problematic in many respects. On the one hand, as Dowty points out, if one cannot use meaning alone to decide which noun phrases are subcategorized by a verb and thus assigned a thematic role, one would need to justify which morphosyntactic differences one regards as indicating role assignment (i.e. subcate-

²Apart from the term valence, the term transitivity is frequently used in a number of similar contexts. Some authors contrast the two terms. For instance, Dixon and Aikhenvald (2000) regard valence as referring to the number of semantic arguments of a predicate (or ‘core arguments’ in their terms), whereas transitivity refers to the number of syntactic arguments. In other usages, transitivity is contrasted to the notion of valence with reference to the level of application, so that transitivity is regarded as a clausal or situational phenomenon, whereas valence refers to the level of verb forms (for discussion of the use of the two term, see, for instance Klaiman 1991; Lazard 2009; Naess 2007). In practice, however, transitivity is often used synonymously to valence; in this case one speaks of semantic and syntactic (or formal) transitivity (e.g. Shibatani 1985) and semantic and syntactic valence (e.g. Van Valin 2001: 92f.; Broadwell 2006b). In this thesis, the two terms are used synonymously and, in any case, I differentiate between semantic and syntactic valence (or transitivity).
4.2 Valence and argument structure

gorization) and which not (Dowty 1991: 554). In other words, why should, for instance, case and adposition marking be considered a better predictor of argumenthood, than, for instance, constituent order or the ability to be promoted via passivization or antipassivization? Answering this question is even more difficult if various morphosyntactic properties of noun phrases do not overlap to allow a clean distinction between would-be arguments and non-arguments.

On the other hand, as has been pointed out in Section 2.7, the present approach to grammatical relations is construction-centered and the major goal of this thesis lies in the development of a framework to explore language-specific grammatical relations cross-linguistically. In this view, it would be counter-intuitive to consider only those semantic arguments (or respective verbs) that exhibit certain morphosyntactic patterns established a priori, and to ignore the others. Systematic cross-linguistic comparison of grammatical relations is impossible without a flexible and precise coordinate system defined independently of the phenomena under investigation, i.e. independently of morphosyntactic properties of arguments (cf. Croft 2001; Lehmann 2006; Haspelmath 2007). In contrast to syntactic argumenthood, semantic argumenthood and the system of exclusively semantic roles to be presented in the next section provide such a stable and language-neutral tertium comparationis.

To determine semantic transitivity of a predicate a number of criteria have been proposed (for some other proposals not discussed here, see Comrie 1993; Croft 2001). Helbig and Schenkel (1991: 37), for instance, suggest testing the “restoration” potential of a noun phrase or an adpositional phrase into a corresponding full clause (“die Zurückführung der freien Angaben auf entsprechende Sätze”), such as an adverbial clause of time, manner, or place. If such periphrasis is possible, then a phrase is an adjunct.3

3This test is reminiscent of Davidson’s (1967) event semantics. Davidson introduces an additional event variable into the argument structure of a verb. Adjuncts (locative, temporal, and adverbial modifiers) are then regarded as predicates of this additional existentially-qualified event variable, whereas arguments are seen as related to the event variable by the n-place predicate denoted by the verb. Thus, according to this approach, the sentence in (a) below makes a statement about the existence of a past event which is Lisa’s kissing of her fiancé and which takes place
Thus, the fact that *im Büro* ‘in the office’ (10a) can be “restored” into a separate clause, as in (10b), identifies this prepositional phrase as an adjunct, whereas there is no such option for the argument *in den Niederlanden* in (10c), as the ungrammaticality of (10d) shows:

(10) German

a. *Er aß seinen Joghurt im Büro.*
   he.NOM eat.3sPST his.ACC yogurt in.DAT office
   ‘He ate his yogurt in the office.’

b. *Er aß seinen Joghurt, als er im Büro war.*
   he.NOM eat.3sPST his.ACC yogurt when he.NOM in.DAT office be.3sPST
   ‘He ate his yogurt, when he was in the office.’

c. *Er wohnte in den Niederlanden.*
   he.NOM live.3sPST in the.pDAT Netherlands
   ‘He lived in the Netherlands.’

d. *Er wohnte, als er in den Niederlanden war.*
   he.NOM live.sPST when he.NOM in the.pDAT Netherlands be.3sPST
   ‘He lived, when he was in the Netherlands.’

Comrie suggests that “the meaning of an adjunct does not vary as a function of the meaning of the predicate, while the meaning of an argument can vary as a function of the meaning of the predicate” (Comrie [1993] 907). To illustrate this point, consider the examples in (11). The meaning of *last year* and *in London* remains constant in all three sentences. The meaning of *Basil*, by contrast, changes from the initiator of an event in (11a) and (11b) to the experiencer of an emotion in (11c). In a similar fashion, *portrait of Dorian* is a thing created by an action in (11a), affected by an action in (11b), and causing emotions in (11c):

in the park, as it is schematically represented in (b):

(a) *Lisa kissed her fiancé in the park.*

(b) ∃e[ kiss(e,l,f) ∧ location(e,s) ]
4.2 Valence and argument structure

(11)  a. *Basil painted the portrait of Dorian last year in London.*

   b. *Basil destroyed the portrait of Dorian last year in London.*

   c. *Basil admired the portrait of Dorian last year in London.*

The criteria of distinguishing arguments and adjuncts adopted here are based on the lexico-semantic analysis applying a slightly modified and extended version of semantic entailments in the sense of Dowty \(1991\) (to be discussed in Section 4.3.2.1 below). A noun phrase is then considered an argument of a predicate only if it is assigned a semantic role by a predicate, as shown by such entailments (for discussion and an example of application, see Bickel et al. 2010+).

To summarize, in this section I discussed the concept of valence and gave a survey of possible criteria to distinguish arguments from adjuncts. In practice, it is often the case that both syntactic and semantic criteria are applied to determine argumenthood. This approach is, however, incompatible with the goals of this thesis. As the major objective of the present investigation is to provide a framework for comparison of cross-linguistic expressions of grammatical relations and investigation of their construction-specific and language-specific nature, the application of syntactic criteria of argumenthood results in circularity. By contrast, semantic argumenthood as determined, for instance, by Dowty-style lexical entailments provides a reliable common platform for cross-linguistic comparison of arguments’ morphosyntactic properties, as semantic argumenthood is determined completely independently of the morphosyntactic properties establishing grammatical relations.

While a predicate has often more than just one semantic argument, morphosyntactic processes often refer to just one of them and do not apply to the other(s). To account for such selective processes, it is necessary to be able to distinguish between individual semantic arguments. In this case again the basis of distinction has to be exclusively semantic and independent from the morphosyntactic properties of arguments. The next section is devoted to the criteria of distinction between individual semantic arguments of a predicate.
4.3 Semantic roles

After one has been able to establish what counts as a semantic argument of a particular verb and how many semantic arguments a verb has, the next challenge is to enable the differentiation of single arguments if there is more than one. The semantic relations between an argument and a predicate have been described under a plethora of names including case roles (Fillmore 1968), thematic relations or roles (Gruber 1965; Croft 1983; Dowty 1991; Primus 1999), theta roles (Chomsky 1981), and semantic roles (Givón 2001). The later term will be used in this thesis.

The number and the semantic content of semantic roles has been a matter of continuous debate since the groundbreaking works of Gruber (1965), Fillmore (1968) and Jackendoff (1972, 1976). One line of research (the so-called ‘role-list approaches’) regards semantic roles as unanalyzable entities that are registered in the lexical representation of a predicate. According to the other view (the ‘decompositional approach’) a few general roles are defined in terms of basic notions such as causation, motion, or sentience or in terms of structural positions in the lexical representation of verbs. In the following sections these two approaches are presented in greater detail and their suitability for a construction-centered account of grammatical relations is evaluated.

4.3.1 Role-list approaches to semantic roles

A lot of work has been done with the goal of providing lists of relatively informally defined discrete roles. These roles were then hierarchized to account for the linking of predicate arguments to grammatical relations (as, for instance, in Fillmore’s (1968) subject selection rule). Fillmore’s Case Grammar (Fillmore 1968, 1977) is a founding work in this line of research. His semantic roles (or ‘deep cases’) are characterized relative to the action or state expressed by the verb, so that agentive is the case of the typically animate instigator of the action identified by a verb, dative is the typical animate being affected by the action or state, etc. (Fillmore 1968 24f.). Role lists of this kind were adopted by many influential approaches, including Dik’s Functional Grammar (1997), Lexical Functional Grammar (Bresnan 2001),
4.3.2 Decompositional approaches to semantic roles

and mainstream generative grammar (Chomsky 1981, 1995; Baker 1988, 1997) to name just a few.

The semantic roles that linguists felt need to be recognized differed from author to author and the major alternatives include the ones presented in Fillmore (1968, 1970), Chafe (1970), Platt (1971), and Longacre (1976). One extreme is represented by proposals in the spirit of the so-called ‘localist’ approach to semantic roles, in which single semantic roles were characterized in local terms (Anderson 1971, 1977, Jackendoff 1972, 1987). Thus, for instance, Anderson (1971) differentiates just three semantic roles (Source, Location, and Goal) from which all non-local values are derived. These ‘reductionist’ approaches to semantic relations are often criticized for their vagueness and overgenerality when applied to the richness of the typological data (Croft 1983: 157). As an alternative, there were numerous attempts to extend the list of semantic roles. For example, Givón’s (2001: 107) list contains eight semantic roles: Agent, Patient, Dative, Instrument, Benefactive, Locative, Associative, and Manner. However, as Fillmore (2003) points out, there has always been a difficulty in providing a working list of semantic roles, which lies in knowing when to stop while compiling the list. No matter that approach to compiling lists of semantic roles one adopts, there might always be reasons both to recognize more fine-grained distinctions between semantic roles and to strive for a higher level of generalization so that there is no possibility of coming up with a single list of semantic roles (for discussion, see Croft 1983: 156ff.). Finally, as has been repeatedly pointed out, the definitions of discrete roles in the list approach have often been impressionistic and opportunistic and an independently motivated characterization of these semantic roles was missing (for discussion, see Dowty 1989, 1991; Ackerman and Moore 2001; Primus 2006, 2008).

4.3.2 Decompositional approaches to semantic roles

The limitations of the semantic role list approaches mentioned in the previous section encouraged a range of alternative proposals (e.g. Nilsen 1972; Fillmore 1985; Foley and Van Valin 1984; Dowty 1991; Primus 1999). In the non-list approach to semantic roles, two major developments can be identified. On the one hand, beginning with Lakoff (1977) and Hopper and
Thompson (1980) the idea of prototypes was introduced into this area of research. Also Dowty’s (1991) prototypical entailments of agents and patients to be discussed below are rooted in a Lakoff-style description of prototypical agent-patient sentences. On the other hand, instead of regarding semantic roles as unanalyzable entities, alternative decompositional approaches define the few general roles in terms of basic notions such as causation, motion, or sentience (Foley and Van Valin 1984; Dowty 1991; Van Valin and LaPolla 1997) or in terms of structural positions in the lexical representation of verbs (Wunderlich 1997, 2006). In what follows two decompositional approaches to semantic roles will be presented in detail: Section 4.3.2.1 gives an overview of Dowty’s (1991) prototype approach to semantic roles, Section 4.3.2.2 presents Primus’s (Primus 1999) approach to semantic roles.

### 4.3.2.1 Dowty (1991)

The approach to semantic roles adopted here is based on Dowty’s (1991) prototype approach to semantic roles and its further development in Primus (1999, 2008). Dowty rejects the by-then traditional system of discrete roles and, as an alternative, proposes to treat semantic roles as cluster concepts labeled proto-agent and proto-patient. These two categories are composed of proto-agentive and proto-patientive properties, which are construed as entailments of predicates.

Dowty begins his argumentation with considering what logical type semantic roles must be given in a formal semantic theory so that the theory would be equipped to model those properties linguists have traditionally ascribed to semantic roles. Dowty acknowledges that

> From the semantic point of view, the most general notion of thematic role (type) is A SET OF ENTAILMENTS OF A GROUP OF PREDICATES WITH RESPECT TO ONE OF THE ARGUMENTS OF EACH. (Dowty 1991: 552; emphasis in the original)

By entailment Dowty understands entailment in the standard logical sense. However, as the expressions involved are non-logical predicates, entailments are equated to analytic implications (termed ‘lexical entailments’), so that the implication follows solely from the meaning of the predicate under
consideration. Besides, lexical entailments differ from logical entailments in another important way: they cannot be questioned or asserted and are unaffected by negation. In principle, Dowty’s entailments correspond to the semantic features of other approaches (e.g. Lakoff 1977), the major difference is that entailments are formulated as statements and fit into the format of model-theoretical semantics.

Dowty’s (1991) original list of entailments consists of those in (12) for Proto-Agent and in (13) for Proto-Patient.

(12) Contributing properties for the Agent Proto-Role:
- a. volitional involvement in the event or state
- b. sentience (and/or perception)
- c. causing an event or change of state in another participant
- d. movement (relative to the position of another participant)
- e. (exists independently of the event named by the verb)

(13) Contributing properties for the Patient Proto-Role:
- a. undergoes change of state
- b. incremental theme
- c. causally affected by another participant
- d. stationary relative to movement of another participant
- e. (does not exist independently of the event, or not at all)

Although most verbs entail more than one Proto-Agent or Proto-Patient property for their argument, each of these properties is semantically independent and can, in principle, occur in isolation. (14) and (15) provide examples from English illustrating Proto-Agent and Proto-Patient entailments:

(14) Examples illustrating Proto-Agent entailments:
- a. VOLITION:
  \textit{John is being polite to Bill. John is ignoring Mary.}
- b. SENTIENCE/PERCEPTION:
  \textit{John knows this statement. John sees Mary.}
- c. CAUSATION:
  \textit{Teenage unemployment causes delinquency.}
4.3.2 Decompositional approaches to semantic roles

d. MOVEMENT:
   *The bullet overtook the arrow. Water filled the boat.*

e. INDEPENDENT EXISTENCE:
   *John needs a new car.*

(15) Examples illustrating Proto-Patient entailments:

a. CHANGE OF STATE:
   *John made a mistake. John moved the rock.*

b. INCREMENTAL THEME:
   *John crossed the driveway. John filled the glass with water.*

c. CAUSALLY AFFECTED:
   *Smoking causes cancer.*

d. STATIONARY RELATIVE TO ANOTHER PARTICIPANT:
   *The bullet entered the target. The bullet overtook the arrow.*

e. EXISTENCE NOT INDEPENDENT OF EVENT:
   *John built a house. John needs a car.*

In principle, the proto-role properties in (12) and (13) make it possible to define the traditional roles of the role-list approach. For instance, an agent can be defined by volitional involvement and possibly other properties, an experiencer can be defined by sentience, etc. Thus, as Primus (1999) points out, decomposition allows for a large number of specific roles to be subsumed under a small set of proto-roles thereby elegantly combining differentiation with generalization.

One of Dowty’s motivations to introduce the proto-properties in (12)–(13) was to provide a foundation for his Argument Selection Principle. According to this principle, syntactic argument selection is determined by the number of consistent properties an argument accumulates for a given Proto-Role:

In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-
4.3.2 Decompositional approaches to semantic roles

Patient entailments will be lexicalized as the direct object.4
(Dowty 1991: 576)

By ‘argument selection’ Dowty does not understand a stage during the
derivation of a sentence or linking of the semantic and syntactic levels of rep-
resentation, rather he means a constraint on the type of lexical predicates
that may exist in a natural language. Moreover, the Argument Selection
Principle is regarded as a tendency, and not as an absolute principle, and is
violable in that lexicalizations not predicted by the principle are possible.

Dowty’s Argument Selection Principle does not find any application in the
framework developed in this thesis for obvious reason. On the one hand, as
indicated in Section 2.7 grammatical relations such as subject and object
are not regarded as discrete notions. On the other hand, Dowty (1991: 576)
links grammatical relations to case marking, so that semantic arguments
expressed by a preposition phrase (e.g. rely on smb.) are not considered
syntactic arguments and are excluded from the selection on the basis of case
marking alone. In the approach adopted here, case marking is only one of
many facets of grammatical relations and by no means a superior one.

Dowty (1991) regarded the lists of Proto-Agent and Proto-Patient entail-
ments in (12) and (13) as preliminary and not necessarily exhaustive, and,
in principle, further properties can be added or deleted without changing
the essence of his approach. The lists of Proto-Agent and Proto-Patient, in-
deed, underwent some modifications in a number of approaches built up
on Dowty’s initial suggestion. For instance, Primus (1999: 42f.) suggests
removing the property STATIONARY from the list of Proto-Patient prop-
erties. This is desirable as, on the one hand, the list of Proto-Patient prop-
erties would otherwise contain two incompatible properties (STATIONARY
and MOVED); on the other hand, the patient analogue of the agent prop-
erty of AUTONOMOUS MOVEMENT is not necessarily stationary, for instance,

---

4The Principle only holds for what Dowty (1991) calls accusative languages, for
ergative languages the syntactic association is reversed: the argument with the
greatest number of Proto-Agent properties bears the more marked ergative case.
However, Dowty limits the reversal of the Principle to languages where ergativity is
relevant not only for case marking and agreement, but also for the syntactic organi-
zation of the grammar and ignores languages with what he calls ‘mixed ergativity’
in *John moved the rock* both referents move. Concerning the Proto-Agent properties, Primus (2006) does away with the property CAUSATION, which is given a special status in her approach, and includes POSSESSION, following, among others, Jackendoff (1990).

Another property whose status is frequently questioned is INCREMENTAL THEME. Rappaport Hovav and Levin (2008: 148ff.) suggest removing INCREMENTAL THEME from the lists of Proto-Patient entailments altogether. They argue that the inference of completion is an implicature and not an entailment, and its availability is heavily influenced by pragmatic factors and INCREMENTAL THEME verbs may sometimes show noncompletive readings even with quantized objects (see also Levin and Rappaport Hovav 2005, Rappaport Hovav 2008). In a similar vein, Bickel et al. (2010+) argue that the INCREMENTAL THEME property is rather a property derived from Ak-
tionsart on the verb phrase or clause level and is not grounded in semantic roles. For the purposes of this thesis, I omit incremental theme as a Proto-
Patient property.

The lists of Proto-Agent and Proto-Patient entailments in (12) and (13) are not mutually independent. As Primus (2006) points out, the list of properties characterizing the Proto-Patient is derivable from the ones of the Proto-
Agent. In causal terms, the type of event denoted by the verb and how the Proto-Patient is involved in it depends on the nature of involvement of the Proto-Agent (for discussion, see Primus 2006: 56ff.). This interdependency allows to abandon the positively defined Proto-Patient properties altogether in the case of transitive arguments (cf. the summary in 4.3.3), however, they are still required for the differentiation of the arguments of ditransi-
tive verbs in the present approach.

Dowty’s (1991) Proto-Role approach is superficially similar to the multi-
factor treatment of transitivity by Hopper and Thompson (1980) and the predictions they make are partially overlapping. As a matter of fact, Primus (1999: 56ff.) relates 8 of 9 semantic parameters defining the multi-factor concept of transitivity in Hopper and Thompson (1980) to Dowty’s proto-
role entailments. However, the two approaches are fundamentally different. Whereas Hopper and Thompson (1980) regard transitivity as a discourse-
based concept, the Proto-Role approach treats semantic roles independently from the discourse component of the grammar.
4.3.2 Decompositional approaches to semantic roles

### 4.3.2.2 Primus (1999)

Dowty’s Proto-Role approach was further elaborated by Primus (1999). In her approach the semantic structure of predicates is composed from more primitive predicates (CONTROL, CAUSE, MOVE, and EXPER). These primitive predicates are formal representations of Dowty’s (1991) entailments.

The Proto-Agent properties are reduced to a hierarchically organized chain of these primitive predicates, whereas each property defining the Proto-Agent is regarded as a unilateral entailment of the control relation (Primus 1999: 50f.). Contrary to Dowty’s independent treatment of the Proto-Patient entailments, Primus (1999: 52f.) considers that the core of the patient prototype is its semantic dependence on another participant (namely, on the Proto-Agent). This type of information is represented by the relative structural position of the arguments in the semantic structure of a verb.

Semantic dependence also plays an essential role in the integration of an additional proto-role into Primus’s approach. Observing that some well-attested semantic roles such as benefactive and recipient were not dealt with by Dowty, she introduced a third proto-role dubbed ‘Proto-Recipient’. Proto-Recipient is used as a convenient label to refer to the proto-role combining Proto-Agent and Proto-Patient properties. A characteristic property of Proto-Recipient is that it is the first argument of a semantic predicate (similar to Proto-Agents), whereas this predicate in turn is embedded into the semantic representation of the second argument of a higher semantic predicate such as CONTROL or CAUSE (similar to Proto-Patients). Thus, the semantic structure for three-argument verbs such as give and show can be represented as in (16):

\[
\text{(16) } \begin{align*}
\text{a. } & \text{Peter gave Mary an apple.} \\
& \forall x \forall y \forall z [\text{GIVE}(x, y, z) \rightarrow \text{P-CONTROL}(x, \text{BECOME}(\text{POSS}(y, z)))]
\text{b. } & \text{Peter showed Mary his new car.} \\
& \forall x \forall y \forall z [\text{SHOW}(x, y, z) \rightarrow \text{P-CONTROL}(x, \text{BECOME}(\text{EXPER}(y, z))))]
\end{align*}
\]

Primus (1999: 54)

The semantic dependence of Proto-Recipient on Proto-Agent is rendered by the fact that \(y\) is part of the second participant of CONTROL — a property shared with Proto-Patient (the role of the variable \(z\)). The similarity of
Proto-Recipient to Proto-Agent is represented by the fact that it is the first participant of a semantic predicate (POSS in (16a), EXPER in (16b)).

In the next section, I discuss how Dowty’s [1991] proto-role approach and its extension by Primus (1999) fit into the approach to argument roles adopted in the present framework.

### 4.3.3 Argument roles: wrapping up and looking forward

The approach to argumenthood and argument differentiation adopted here is based on the generalized argument roles framework of Bickel and Nichols (2008a), Bickel (2010+b) and Bickeletal. (2010+). Generalized argument roles are first defined by the number of arguments, that is, one differentiates between the only semantic argument of one-argument (intransitive) verbs and arguments of two-argument (monotransitive) and three-argument (ditransitive) verbs. A noun phrase is considered an argument if and only if it is assigned a semantic role by a predicate, as shown by semantic entailments in the sense of Dowty (1991) presented in the previous section. Semantic argumenthood is fundamentally independent of morphological marking or syntactic behavior of noun phrases (cf. Section 4.2).

Next, if there is more than one argument, arguments are differentiated by Dowty-style entailment tests listed in 12 and 13, distinguishing more agent-like from more patient-like arguments. As has been pointed out in Section 4.3.2.1, incremental theme included in the original list of Proto-Patient properties by Dowty (1991) is excluded from the list of Proto-Patient entailments adopted in the present approach, as I am not convinced that this property is a genuine lexical property of argument roles. Instead, it seems to be a property of Aktionsart determined on the verb phrase or clause level (see Rappaport Hovav and Levin 2008: 148ff.; Bickel et al. 2010+). As Dowty’s list of proto-properties was meant to be preliminary, further modifications or extensions of the list might be required, which goes beyond the scope of this thesis.

To distinguish the arguments of two-argument predicates it is sufficient to consider only the Proto-Agent properties, as the Proto-Patient properties are causally dependent on them. Three-argument predicates define an agent-like and two non-agent-like arguments. For these two non-agent-
like arguments, I assume a basic distinction between an affected, stationary ‘Goal’ argument and a manipulated, moved ‘Theme’ argument. According to Bickel et al. (2010+), the relevant entailments identifying the Goal argument positively as being the more patient-like role include:

(17) Entailments contributing to the more patient-like role (‘Goal’) in three-argument predicates:
   a. undergoing a change of state or in experience (give him smth., show him smth.);
   b. causally affected by another participant (cut it with smth., load it with smth.);
   c. stationary relative to movement of another participant (load it with smth.).

To summarize, the approach adopted here results in the following list of arguments provided with their abbreviations:

(18) Generalized semantic roles:
   S: the only argument of a one-argument predicate;
   A: the more agent-like argument of a two-argument predicate;
   P: the more patient-like argument of a two-argument predicate;
   A: the more agent-like argument of a three-argument predicate;
   G: the more patient-like argument of a three-argument predicate.

5The two terms ‘Goal’ and ‘Theme’ arguments are applied here as mere mnemonics and abbreviations standing for the more patient-like argument (‘Goal’) and the neither more agent-like, nor more patient-like (‘Theme’) argument of a three-argument predicates. They are by no means comparable to discrete semantic roles discussed in Section 4.3, which are frequently referred to by these names.

6The treatment of non-agent-like arguments adopted here differs from the one suggested in Primus (1999, 2006), in which the Theme argument is regarded as being the most Patient-like one.

7As is obvious from the previous discussion, I do not differentiate between $S_A$ and $S_P$ — an otherwise common practice to provide an account of the so-called split-S languages (cf. Dixon 1994). Section 7.4.1 investigates in detail this type of phenomena and provide an explanation of why the introduction of $S_A$ and $S_P$ is not required in the present approach.
T: neither more agent-like, nor more patient-like argument of a three-argument predicate.

In (18) above, I introduced two different roles for the more agent-like arguments of two-argument and three-argument predicates. First, this is done to reflect the fact that the generalized semantic roles are first differentiated by the numerical valence of the respective predicates. However, there is an additional motivation to this distinction: in some languages the two arguments \( A_{tr} \) and \( A_{ditr} \) do not necessarily share morphosyntactic properties. In Cogtse Gyarong, for instance, the \( A \) argument of two-argument predicates is in the ergative case, such as \( nəyo-ki ’2s-ERG’ \) in (19a), whereas the \( A \) argument of three-argument predicates is in the nominative case, such as \( nəyo ’2sNOM’ \) in (19b):

(19) Cogtse Gyarong (Sino-Tibetan; China; Nagano 1984 as cited in Bickel 2010+b)

a. \( nəyo-ki chigyo kəw-nasño-ch ko. \)
   \( 2s-ERG 1duNOM 2>1-scold-1du AUX \)
   ’You\textsuperscript{sg} scold us\textsuperscript{du}.’

b. \( nəyo chigyo kəw-wu-ch ko. \)
   \( 2sNOM 1duNOM 2>1-give-1du AUX \)
   ’You\textsuperscript{sg} give (it to) us\textsuperscript{du}.’

However, as in many cases \( A_{tr} \) and \( A_{ditr} \) have identical morphosyntactic properties, I will refer to these two generalized semantic roles as \( A \) for notational convenience. Only if the contrast is of importance, I will use \( A \) with subscripts to indicate the respective transitivity, that is, \( A_{tr} \) for the more agent-like argument of two-argument predicates and \( A_{ditr} \) in the case of three-argument predicates.

To conclude, it must be emphasized that the present approach to generalized argument roles differs substantially from some popular approaches like, for instance, Dixon’s (1994, 2009) approach, in which S, A, and O are syntactic functions, so that the syntax interacts in determining what function a certain nominal element has (cf. Section 2.4). In the approach adopted here, generalized argument roles are defined exclusively by semantic entailments. Consequently, the question of whether a noun phrase is an S,
A, or P is fully independent of the morphosyntactic properties of these elements. The exclusively semantic criteria of argumenthood imply that S, A, and P can also have morphosyntactic properties which are traditionally regarded as the properties of adjuncts and would not generally be associated with syntactic argumenthood. For example, if a noun phrase denoting the goal of a directed motion or caused motion verb is semantically entailed by this verb, it counts as an argument even if it is marked or treated like an adjunct: the goal argument of English *go* counts as the P argument and the goal argument of *send* counts as the G argument despite their optional status and adpositional marking (for more examples, see [Bickel et al., 2010+]). By the same token, if passivization results in, for instance, the instrumental marking of the A argument, this does not indicate that this noun phrase is no longer an A (it definitely still is, semantically nothing changed), this fact only means that the A argument does not belong to the set of arguments selected by the nominative case marker.

### 4.4 Conclusion

Defining grammatical relations as equivalence sets of arguments treated the same way by an argument selector I assume that it is possible to distinguish argument from non-arguments and among individual arguments. This chapter discussed the general principles behind this distinction. Once single arguments have been identified, it is possible to come back to grammatical relations and the issue of building equivalence sets of arguments. This is the topic of the next chapter.
Chapter 5

Argument selection

5.1 Introduction

The previous chapter discussed how individual arguments of a predicate can be differentiated. I proposed to adhere to exclusively semantic criteria of distinguishing arguments from adjuncts and differentiating between individual arguments if there is more than one. In contrast to syntactic argumenthood, semantic argumenthood provides a reliable basis for comparison of the morphosyntactic argument properties across and within languages. Once single arguments have been identified semantically, it is possible to return to the issue of building equivalence sets of arguments on the basis of their morphosyntactic properties and to demonstrate how it works in practice (Section 5.2). Section 5.3 discusses the general principles of treatment of various kinds of split alignment systems in the present approach and how such systems can be reconciled with the traditional view of alignment.

5.2 Argument selection and alignment

The generalized roles S, A, P, T, and G, presented in the previous chapter, often suffice to define grammatical relations in a language (as specified in Section 2.7). Frequently, argument selectors (constructions, rules, etc.) refer exclusively to these generalized argument roles, treating arguments of certain roles in a special, preferred way and discriminating against the others, or marking some of them with a dedicated case or agreement marker.
5.2 Argument selection and alignment

and reserving a different marker for the others. Thus, various argument selectors pick out only arguments with certain argument roles and form equivalence sets.

The distribution of case marking in Nias in (20) provides a simple illustration of how this type of argument subset formation works. The S argument in (20a), the P argument in (20b), and the T argument in (20c) are in the absolutive case. The A arguments in (20b) and (20c) are in the ergative case.\(^1\) Finally, the G argument is in the dative,\(^2\) as in (20c):

\[(20)\] Nias (Austronesian; Indonesia; Brown 2001: 270, 343, 395f.)

\(a\). \textit{m-örö ya.} DYN-sleep 3sABS
‘He is asleep.’

\(b\). \textit{ma=i-tane’ö mbaluse-nia} Fanambai.
PRF=3s.REAL-prepare shield.ABS-3s.POSS Fanambai.ERG
‘Fanambai prepared his shield.’

\(c\). \textit{I-be’e gefe khô zondrôö Ama Dali.}
3sREAL-give money.ABS DAT healer.ABS Ama.ERG Dali
‘Ama Dali gave money to the village healer.’

The equivalence sets formed by the three case markers in Nias are summarized in Table 5.1.

It is common to represent alignment patterns of this type by diagrams reminiscent of semantic maps (for discussion and overview of common representations, see Malchukov 2010+). Thus, the grammatical relations established by case marking in Nias can be represented as in Figure 5.1. However, this type of representation is only practical when the range of relevant variables is limited to one or two (for instance, when only generalized semantic roles are of relevance, as in the Nias examples). When more intricate

\(^1\)Traditionally, nouns in Nias are described as having two forms, a ‘mutated’ one and an ‘unmutated’ one. The unmutated form of a noun is its citation form. The mutated form differs from the unmutated form in its initial segment, in accordance with a set of regular morphophonemic alternations. The two forms have a variety of uses, among them the unmutated form is used as the ergative case, whereas the mutated form is used as the absolutive case (for details, see Brown 2001: 69ff.).

\(^2\)The dative preposition \textit{khô} requires the absolutive (mutated) form of nominals (Brown 2001: 349).
cases are considered, such traditional representation fails to accommodate the range of relevant variables without it becoming too messy. For this reason, I stick to the set notation representation as in Table 5.1.

Figure 5.1: Alignment of Nias dependent marking

To account for grammatical relations established by Nias case marking it is sufficient to make reference to the generalized argument roles S, A, P, etc. and indicate their subset formation. Grammatical relations in this sense — that is, as defined exclusively on the basis of sets of argument roles — have been known as ‘alignment types’ beginning with Plank (1979) (cf. Bickel and Nichols 2008a: 305, Bickel 2010+b). The task of alignment typology then is often characterized in the following way:

Alignment typology investigates the cross-linguistic regularities in the similarities and contrasts between the agent A and the patient P (or O) in the basic construction of prototypical action.

3 The provided characterization of alignment typology is limited to one- and two-argument predicates, however, since Dryer (1986) it has been common to extend the notion of alignment to include three-argument predicates.
verbs, and the sole core argument S of monovalent verbs. (Cres-sels 2009b: 446)

Some sets of generalized argument roles are recurrent in the languages of the world and have a range of established names summarized in Table 5.2 based on Bickel (2010+b). For instance, the essential aspect of ‘subject’ in the traditional sense is the selection of the set {S, A} by a whole cluster of language-specific argument selectors (that is, by what is traditionally referred to as ‘subject properties’), the set {P, T} is known as direct object, and the set {G} as indirect object (for other examples and discussion, see Dryer 1986; Haspelmath 2005a).

Table 5.2: Conventional names of recurrent grammatical relations defined as sets of generalized argument roles (after Bickel 2010+b)

<table>
<thead>
<tr>
<th>Sets of roles</th>
<th>Common names for grammatical relations</th>
<th>Alignment types</th>
</tr>
</thead>
<tbody>
<tr>
<td>{S, A}</td>
<td>subject, nominative</td>
<td>accusative</td>
</tr>
<tr>
<td>{P}</td>
<td>object, accusative</td>
<td>accusative</td>
</tr>
<tr>
<td>{S, P}</td>
<td>absolutive</td>
<td>ergative</td>
</tr>
<tr>
<td>{A}</td>
<td>ergative</td>
<td>ergative</td>
</tr>
<tr>
<td>{S, A, P}</td>
<td></td>
<td>neutral</td>
</tr>
<tr>
<td>{P, T}</td>
<td>direct object, directive, accusative</td>
<td>indirective</td>
</tr>
<tr>
<td>{G}</td>
<td>indirect object, indirective, dative</td>
<td>indirective</td>
</tr>
<tr>
<td>{P, G}</td>
<td>primary object, primative</td>
<td>secundative</td>
</tr>
<tr>
<td>{T}</td>
<td>secondary, secundative</td>
<td>secundative</td>
</tr>
</tbody>
</table>

Alignment in this sense (i.e. as subsets containing some or all of either three or six — if three-argument predicates are included — argument roles) has been essential for multiple typological investigations, for instance, for discovering correlations between alignment of case marking and agreement and constituent order (Greenberg 1963; Nichols 1992; Siewierska 1996; and the reference therein), between case marking and geography (Bickel and Nichols 2008b), or between case marking, constituent order and geography (Dryer 2002). For cross-linguistic investigations of this kind, it is often convenient to classify whole languages as exhibiting a certain alignment type of case or agreement marking, for instance, German and Russian as accusative
with respect to case marking, Basque or Kâte as ergative, Mundari as neutral, etc. Such a classification is, however, not always straightforward and in the next section I outline how the so-called split alignment systems are dealt with in the present approach.

5.3 Argument selection and alignment splits

Characterizing a language as, for instance, having \{S, A\} vs. \{P\} (i.e. nominative-accusative) alignment implies that every S, A, and P of a language behave uniformly with respect to an argument selector (e.g. case marking). However, a characterization of whole languages as representing a particular alignment pattern in case marking, agreement, etc. is known to provide a simplified picture as languages can show variations in their alignment patterns often referred to as alignment splits. This section gives a brief overview of the existing splits and discusses how these patterns of argument selection can be reconciled with traditional alignment typology. In the following Chapters (Chapter 6 to 8) individual types of alignment splits are discussed in greater detail.

One type of very common variation in argument selection is caused by referential properties of arguments (e.g. definite vs. indefinite, SAP vs. non-SAP; for a detailed discussion, see Chapter 6). In languages showing reference-related type of alignment splits, there is no way to determine an alignment type without dealing with the referential properties of arguments as S, A, or P arguments with different referential properties exhibit non-uniform marking or behavior.\(^4\) These properties have been playing a prominent role in alignment typology, particularly in the domain of case marking. A number of typological generalizations have been proposed which assume a kind of a referential hierarchy governing the alignment patterns one

\(^4\)In practice, one of several alignment patterns is often chosen as the most representative for comparative purposes. For instance, Comrie (2005) chooses to maximize the occurrence of overt case marking in his sample, thus, if one kind of the P argument is unmarked and another kind is marked (for instance, is in the accusative case), the marked variant is coded. Another option is to extend the inventor of types with a special type ‘split alignment’ (Siewierska 2005).
finds (Silverstein 1976; Moravcsik 1978a; Comrie 1981c; DeLancey 1981; Aissen 2003; cf. Section 6.4). Apart from properties of arguments, properties of the wider syntactic environment can condition argument subset formation. One type of variation in alignment patterns results from the fact that the arguments of various predicates do not necessarily exhibit identical coding or behavior properties, for instance, the S and A arguments of experiencer predicates (i.e. the experiencer) are frequently coded differently from other S and A arguments (cf. Chapter 7). Traditionally, when whole languages are characterized as belonging to a particular alignment type, certain one-, two-, and three-argument predicates are chosen as the most representative ones for whatever reasons and the properties of their S, A, P, T, and G arguments are then compared. For instance, in the definition of alignment typology provided in Section 5.2 Creissels (2009b) refers to arguments of ‘prototypical action verbs’; similar restrictions to a particular class of verbs is often implicitly made in many investigations on alignment typology (for instance, in Dryer (2002); Siewierska (2005)). Another type of variation (or split) in alignment patterns is conditioned by properties of the whole clause, such as its tense-aspect-mood properties, clause type, or polarity (cf. Section 8).

In set-theoretical terms and for coding grammatical relations in a relational database (see Section 12.5) grammatical relations exhibiting various types of splits can be easily accounted for. Each grammatical relation established by an argument selector can be represented as a subset of the Cartesian product of a number of sets $S \subseteq A \times R \times P \times T \times X_1 \times X_2 \times \ldots \times X_n$, where $A$ is the set of argument roles, $R$ is the set of referential properties of arguments, $P$ is the set of predicate classes, and $T$ is the set of tense-aspect-mood features, etc. Appearance of a particular tuple $(a, r, p, t, \ldots, x)$ in this set means that an argument selector (for instance, the accusative case) selects the argument with the role $a$ (for instance, $P$) of the referential type $r$ (for instance, an animate noun) in the context of tense-aspect-mood $t$ (for in-

---

5An alternative strategy has been to limit the sample to just one representative predicate per transitivity class. For instance, Haspelmath (2005b) compares three-argument predicates with the meaning ‘give’ with typical two-argument predicates (‘catch’ and ‘kill’).
stance, perfective), etc.. The arity of the relation is then determined by all relevant argument properties and conditions on argument selection. One equivalence set can thus contain a number of tuples with recurrent argument roles (for instance, the A arguments in the past and non-past tenses).

Grammatical relations established this way, however, are incompatible with traditional alignment typology, where a particular argument role can be represented only once. For instance, such a frequent pattern as \( \{A_{\text{nominal}}\} \) vs. \( \{S, A_{\text{pronominal}}, P\} \) with two instantiations of the A argument role does not belong to the commonly recognized alignment types (cf. Table 5.2). However, as for many research questions it is of importance to be able to operate with traditional alignment patterns, the question arises how grammatical relations that make reference not only to the argument roles, but also to other argument and clausal properties can be transformed (or split) into a number of subsystems characterizable in terms of the traditional alignment patterns (neutral, accusative, ergative, direct and indirect object, etc.).

As an example of how such a transformation is possible in the approach adopted here, consider the distribution of case marking in Jingulu (discussion and examples are provided in Section 6.3.3). Jingulu exhibits a split of case marking conditioned by the lexical class of arguments along the line of pronoun vs. noun such that pronominal P and T arguments receive a dedicated accusative case marking distinct from the absolutive marking of S arguments and nominal P and T arguments; A arguments are invariably in the ergative case, G arguments are in the dative case (Pensalfini 2003). Table 5.3 gives a synopsis of the distribution of Jingulu case markers which corresponds closely to accounts provided in reference grammars.

In this representations, individual argument selectors (case markers in my example) are shown as selecting a subset of arguments represented as lists of pairs of the form \((a, r)\) where \(a\) stands for the argument role and \(r\) for the referential property of the argument. If the referential property is not specified, the value of this attribute is set to \(\text{any}\), as in the case of the A argument.

Now, to transform such a representation into the one allowing the determination of familiar alignment patterns it is necessary to provide for a complete comparability of argument roles. For every subsystem of six argu-
Table 5.3: Grammatical relations of Jingulu case marking (a list representation)

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: Role Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-rni ERG</td>
<td>{ (A, any) }</td>
</tr>
<tr>
<td>-Ø ABS</td>
<td>{ (S, any); (P, noun); (T, noun) }</td>
</tr>
<tr>
<td>-u ACC</td>
<td>{ (P, pronoun); (T, pronoun) }</td>
</tr>
<tr>
<td>-rna DAT</td>
<td>{ (G, any) }</td>
</tr>
</tbody>
</table>

ment roles (S, A\textsubscript{tr}, P, A\textsubscript{ditr}, T, and G) this is only possible if all other attributes apart from the role attribute have the same value (i.e. the same referential properties in the Jingulu example). If the relevant domain of an attribute includes only two positively specified values (noun and pronoun in Jingulu), then two subsystems of six arguments are built, as in Table 5.4. Each argument with the underspecified referential property value any from Table 5.3 is expressed as two specified arguments with the values noun and pronoun.

Table 5.4: Grammatical relations of Jingulu dependent marking (an intermediate representation)

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø ABS</td>
<td>{ (S, noun); (P, noun); (T, noun) }</td>
</tr>
<tr>
<td>-rni ERG</td>
<td>{ (A, noun) }</td>
</tr>
<tr>
<td>-rna DAT</td>
<td>{ (G, noun) }</td>
</tr>
<tr>
<td>-Ø ABS</td>
<td>{ (S, pronoun) }</td>
</tr>
<tr>
<td>-rni ERG</td>
<td>{ (A, pronoun) }</td>
</tr>
<tr>
<td>-u ACC</td>
<td>{ (P, pronoun); (T, pronoun) }</td>
</tr>
<tr>
<td>-rna DAT</td>
<td>{ (G, pronoun) }</td>
</tr>
</tbody>
</table>

Having provided for a comparability of argument roles it is possible to ex-
tract the argument sets established by each argument selector $S$ per referential type $p$ (i.e. one set of sets for nouns and one for pronouns) via (21).

$$\text{Arg}(S, p_i) := \{ a \in A \mid (a, p_i) \in S \}$$

As Table 5.4 summarizes, for nouns Jingulu has the sets given in (22):

$$\begin{align*}
(a) \quad S_{ABS} & := \{(S, \text{noun}), (P, \text{noun}), (T, \text{noun})\} \\
(b) \quad S_{ERG} & := \{(A, \text{noun})\} \\
(c) \quad S_{DAT} & := \{(G, \text{noun})\}
\end{align*}$$

The extracted sets for pronouns are given in (23):

$$\begin{align*}
(a) \quad S_{ABS} & := \{(S, \text{pronoun})\} \\
(b) \quad S_{ERG} & := \{(A, \text{pronoun})\} \\
(c) \quad S_{ACC} & := \{(P, \text{pronoun}), (T, \text{pronoun})\} \\
(d) \quad S_{DAT} & := \{(G, \text{pronoun})\}
\end{align*}$$

Alignments are then defined by set complementation, e.g., accusative alignment defines $\{S, A\}$ as opposed to $\{P\}$, ergative alignment defines $\{S, P\}$ as opposed to $\{A\}$, direct object alignment defines $\{P, T\}$ as opposed to $\{G\}$, etc.. This can be captured by the set of sets via (24):

$$\text{Alignment}(p_i) := \{ \text{Arg}(S, p_i) \mid S \text{ is an argument selector in the language} \}$$

For $p = \text{‘noun’}$ in Jingulu it is possible to derive (25) resulting in (26), i.e. ergative and direct object alignment (cf. Table 5.5).

$$\begin{align*}
(a) \quad \text{Arg}(S_{ABS}, \text{noun}) & = \{S, P, T\} \\
(b) \quad \text{Arg}(S_{ERG}, \text{noun}) & = \{A\} \\
(c) \quad \text{Arg}(S_{DAT}, \text{noun}) & = \{G\}
\end{align*}$$

$$\text{Alignment(noun)} = \{ \{S, P, T\}, \{A\}, \{G\}\}$$

The database coding closely corresponds to the simplified representation as in Table 5.3 found in most reference grammars (cf. Section 12.5). The

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6This point was developed jointly with Taras Zakharko.
derivations resulting in traditional alignment patterns are implemented not in the database but as an algorithm in R (R Development Core Team 2008). This procedure is extremely flexible as alignments for any type of argument selector conditioned by numerous factors can be easily computed.

The alignment splits conditioned by other features are, in principle, dealt with in a similar fashion. However, in a few cases the arguments cannot be compared directly and it is necessary to resort to alternative techniques of extracting traditional alignment patterns. These cases are dealt with in Sections 7.2 and 8.6.

### 5.4 Conclusion

As stated in Section 2.7 grammatical relations in the present approach are defined as equivalence sets of arguments treated the same way by an argument selector. In this chapter I addressed the question of how to determine arguments of a language and how to differentiate between them. It was shown that the generalized argument roles form the basis of the traditional research on alignment typology and in many languages it is sufficient to refer to them to determine grammatical relations. Apart from argument roles, other argument and clausal properties interact with argument subset formation. How exactly they co-determine grammatical relations is discussed using the example of dependent marking in the next three chapters: in Chapter 6 I turn to the referential properties of arguments, Chapter 7 discusses
the effects of individual predicates and predicate classes on grammatical relations, finally, Chapter 8 investigates the effects of such properties as the tense and aspect of the clause, the clause type, its polarity, etc..
Chapter 6
Dependent marking and referential properties

6.1 Introduction

As outlined in Section 2.7, the selection of arguments by various constructions and the formation of argument subsets are pivotal for defining grammatical relations in the approach adopted here. Arguments, in turn, are defined by generalized argument roles and referential properties (cf. Section 5.3 above). This chapter focuses on the referential properties of arguments and discusses the range of values required to accommodate this type of ‘splits’ in alignment into the framework developed in this thesis.

The argument selector chosen to illustrate the effects of referential properties on argument subset formation is dependent marking on the clause level (also referred to as ‘case marking’ or sometimes ‘argument flagging’). In this thesis dependent marking is considered in the broad sense. It includes morphological cases (these can be marked by affixes, clitics, stem ablaut, tone changes) and adpositions (for an overview of the morphological forms of case, see Bickel and Nichols [2008b]). \(^1\) I defer a detailed discussion of varieties of dependent marking and its comparison to other selectors to Sections 9.2.3–9.2.4 and Chapter 11.

\(^1\)As the term ‘dependent marking on the clause level’ is very unhandy, I frequently use the term ‘case’ as an absolute synonym in this thesis.
The choice of dependent marking as the first argument selector to be discussed is not accidental. For one thing, dependent marking is the selector that played the most fundamental role in the history of research on grammatical relations (cf. Primus 2010+). In addition, it is often the most profoundly described argument selector in reference grammars. Besides, at the moment dependent marking is the most coded argument selector in the AUTOTYP database of grammatical relations (extensively coded for over 400 languages).

This chapter begins with a survey of how referential properties of arguments have come to play an important role in alignment typology (Section 6.2). Section 6.3 furnishes a concise overview of referential properties that are known to co-determine argument selection. Section 6.4 discusses some tendencies in the interaction of referential properties and the distribution of dependent marking. Sections 6.5 and 6.6 deal with two related issues of interaction of properties and inflectional classes.

6.2 Role and reference aspects of argument

In the past four decades, research on grammatical relations has been largely dominated by the role-centered approach to arguments. Starting with Gruber (1965), there has been a growing body of studies dedicated to linking lexical semantics of verbs to syntactic generalization via semantic roles (including Foley and Van Valin 1984 Dowty 1991 Primus 1999; cf. Section 7.3). In Chapter 4, I have given an overview of some approaches to semantic roles and introduced Dowty’s (1991) approach, a modified version of which is adopted in the present thesis. In (18), repeated in (27) for convenience, the possible generalized argument roles are listed:

(27) Generalized semantic roles:
S: the only argument of a one-argument predicate;
A_{1tr}: the more agent-like argument of a two-argument predicate;
P: the more patient-like argument of a two-argument predicate;
A_{ditr}: the more agent-like argument of a three-argument predicate;
G: the more patient-like argument of a three-argument predicate;
6.3 Referential properties

The referential properties of arguments and different referential hierarchies became the subject of ongoing discussions after the groundbreaking paper by Silverstein (1976). Despite the growing attention to the effects of referential properties of arguments on argument selection, they have often been discussed in a different light from the effects of the semantic role properties. As Evans (1997) notices, most theories fail to integrate referential properties into theories of argument projection and the effects of referential properties have been predominantly treated in connection with the organization of morphological markedness. This perspective resulted in a profusion of studies addressing the distribution of morphologically overt ergative or accusative case marking (e.g. Comrie 1979b, 1986, 1989; Bossong 1985; Croft 1988; Aissen 2003), or the functional economy of zero marking within case and agreement systems (DuBois 1987). Put differently, the referential properties of arguments have been studied as affecting the morphological realization of given grammatical relations, rather than as co-determining grammatical relations themselves. This approach to referential properties of arguments is reflected in such widely used terms as ‘differential subject marking’ and ‘differential object marking’.

Being aware of the existing bias, in the framework developed here I aim to equalize the effects of referential properties with the ones of argument roles. Following Evans (1997), Bickel and Nichols (2008a) and Bickel (2010+b), I define arguments not only by their semantic role, but also by their referential properties, that is, the two are treated as equal aspects of arguments in determining grammatical relations. As the argument role variable and its values were already introduced and discussed in Section 4.3.3 in this chapter I focus on various types of referential properties of arguments that are known to co-determine argument selection.

6.3 Referential properties

The effects of referential properties on formation of argument subsets by any construction (i.e. argument selector) in general and by dependent mark-
ing in particular have been investigated under a variety of labels and focusing on various aspects of the phenomenon. The most common general terms include ‘split’ (Silverstein 1976) or, more specifically, ‘split conditioned by semantics of NPs’ (Dixon 1994), ‘differential marking’ (Comrie 1989), ‘differential argument marking’ (Baerman 2008) or ‘case asymmetry’ (Iggesen 2005, 2008).

Among specific manifestations of splits, the best studied patterns are splits in the marking of the P argument commonly referred to as ‘differential object marking’ — a term coined and popularized by Bossong (1982, 1985, 1998) — or ‘limited accusative marking’ (Mallinson and Blake 1981). The studies of Silverstein (1976), Comrie (1979b, 1989), Bossong (1985), Croft (1990), Lazard (1998), and Aissen (2003), among many others, have shown that in many languages P arguments higher on hierarchies of prominence, animacy, definiteness and the like receive different case marking from the P arguments lower on the hierarchy. Moreover, it is often predicted that higher P arguments should carry overt (‘accusative’) case marking in contrast to lower P arguments, which should carry no overt case marking (i.e. be in the unmarked ‘nominative’) (Comrie 1978b, 1989). I will return to the hierarchies of referential properties and their interaction with dependent marking in Section 6.4.

Another well-studied pattern is split in the marking of the A argument. It is often referred to as either ‘split-ergativity’2 (Silverstein 1976) or as a variant of ‘differential subject marking’. The latter umbrella term, however, is used to denote a whole range of phenomena including situations where the S and/or A arguments can get different dependent marking depending

2Though still commonly used, this term is misleading, as it does not refer to a situation where the ergative pattern is split but rather to a situation where the A argument is marked with different cases (or different agreement markers or shows different syntactic behavior) whereby none of the resulting patterns is necessarily ergative (cf. also the criticism in DeLancey 2006 and McGregor 2009). Recently, Zúñiga (2007: 12) introduced the term *polynomy* as a hypernym to any type of split alignment. In contrast to the traditional term, this new term does not imply that some fundamental unit has been split but rather that two different principles are operating simultaneously. In this thesis, however, I will stick to the old familiar term split to enhance readability.
on either their referential properties (to be discussed in this chapter) or on some other conditions to be discussed in Chapters 7 and 8. The phenomenon at hand has been extensively studied both in particular languages (e.g., Comrie 1981a; Camp 1985; Valenzuela 2000, 2003; Guillaume 2006) and in typological perspective (e.g., Silverstein 1976; Dixon 1979, 1994; DeLancey 1981). The prediction here is reversed to the one for differential object marking: the A argument lower on the hierarchies of prominence, animacy, definiteness, etc. tends to receive overt case marking in contrast to the A argument higher on the hierarchy, which carries no overt case marking (Silverstein 1976; Comrie 1978b, 1981b).

The range of referential properties affecting the formation of argument sets is not homogenous. It covers inherent referential categories like ‘human’ or ‘kin’, discourse-based referential categories like ‘speaker’ or ‘topical’, and part of speech categories like ‘nouns’ and ‘pronoun’. Though many of these and related categories are language-specific and can only be identified by language-specific criteria (cf. Comrie 1989: 134f.; Haspelmath 2007; 2008a), a certain level of generalization is possible due to the existing semantic overlap across languages. Thus, for instance, it seems plausible that a category such as ‘1st person singular’ in one language is to a certain degree comparable to the category ‘1st person singular’ in another language. However, such categories as ‘topical’ or ‘proximative’ might be less predisposed for direct cross-linguistic comparison (cf. the discussion in Bickel and Witzlack-Makarevich 2008). The standard solution in comparative linguistics has been to operate with a list of category types abstracted away from language specific details, thus allowing for a cross-linguistic comparison of language-specific referential categories. Such category types have been known as ‘typological types’ (Bickel and Nichols 2002), ‘values of typological features’ (Haspelmath et al. 2005), or ‘comparative concepts’ (Haspelmath 2008a).

Lists of category types can be compiled deductively or derived inductively on the basis of registered language-specific categories. Most lists of referential properties proposed in the literature are probably produced combining these two techniques. They include such typological types as 1st vs. 2nd vs. 3rd person; singular vs. dual vs. plural; pronoun vs. noun; definite vs. indefinite; human vs. nonhuman; animate vs. inanimate; proper noms
6.3.1 Animacy and humanness

The interrelation of animacy and dependent marking has long been discussed in the literature (for an overview and examples, see Comrie 1981b, Croft 1990, Malchukov 2008, de Swart et al. 2008). The most frequent typological types are animate vs. inanimate and human vs. non-human. However, some languages call for finer distinctions. One of them is Ritharngu.

At first sight, the examples from Ritharngu suggest that the accusative suffix -n̪a marks only human P arguments, as in (28a), whereas non-human
P arguments remain unmarked (i.e. in the nominative case\(^3\)), as in (28b) and (28c).\(^4\)

(28) Ritharngu (Pama-Nyungan; Australia; Heath 1980: 37, 45, 127)

a. ŋay ma:-na miyalk-ŋa ya.
   3sNOM take-PST girl-ACC ya
   ‘(...) he took the girl.’

b. Ṽuka-ri ra ḡa:ŋgu ba:pa-ŋʔ-guŋu.
   consume-PRS 1sNOM meat.NOM father-my-ORIG
   ‘I eat meat from (i.e. provided by) my father.’

c. pa:-wala ra guya.
   see-PST 1sNOM fish.NOM
   ‘I saw the fish.’

The distribution of accusative and absolutive case marking does not, however, exactly reflect the human vs. non-human opposition, as the comparison of (28c) and (29) demonstrates. Rather, the dividing line runs between ‘lower’ and ‘higher’ animates. Lower animates — treated identically to inanimates — include lower animals, such as spiders or fish, as in (28c), whereas higher animates include humans and some higher animals, such as dogs, kangaroos or emus, as in (29) (for discussion, see Heath 1980: 34, 45):

(29) Ritharngu (Heath 1980: 89)

bu-mara=ŋan-ŋu ra wurpan-ŋa ba:pa-ŋʔ-guŋu.
kill-PST=3s-DAT 1sNOM emu-ACC father-my-DAT
‘I kill the emu for my father.’

Now, as has been pointed out in Section 5.3 if a grammatical relation is regarded as the set of arguments selected by an argument selector, the grammatical relations established by each case marker in Ritharngu can be represented as a subset of the Cartesian product of two sets \(S \subseteq \mathcal{A} \times R\), where

---

\(^{3}\)Throughout this thesis, I count a zero-marked case category as representing an instance of dependent marking if it is a member of an otherwise overtly marked case paradigm.

\(^{4}\)For the sake of simplicity this section gives an overview of alignment patterns only for nominal arguments of Ritharngu. Pronominal arguments show an \{S, A\} vs. \{P\} alignment pattern. The argument marking of three-place predicates is not considered here; for examples, see Heath (1980).
A is the set of argument roles and R is the set of argument referential properties. Appearance of a particular tuple (a, r) in this subset means that an argument selector (for instance, the accusative case) covers the argument with the role a (for instance, P) of the referential type r (for instance, a higher animate noun). An incomplete picture of the relations instantiated by dependent marking in Ritharngu is summarized in Table 6.1.

Table 6.1: Grammatical relations of Ritharngu dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role</th>
<th>reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-d̪u/y ERG</td>
<td>(A, any)</td>
<td></td>
</tr>
<tr>
<td>-Ø NOM</td>
<td>(S, any)</td>
<td>(P, inanim. &amp; lower anim. noun)</td>
</tr>
<tr>
<td>-Na ACC</td>
<td>(P, higher anim. noun)</td>
<td></td>
</tr>
</tbody>
</table>

The representations of grammatical relations as in Table 6.1 do not allow a straightforward determination of alignment patterns of Ritharngu, as traditional alignment patterns cannot deal with the same argument roles treated differently (the P argument in Ritharngu example) and {S, P_{inanim/l:anim}} vs. {P_{h:anim}} vs. {A} is not a commonly recognized alignment type (cf. Section 5.3). To transform these grammatical relations into more familiar alignment patterns the system is split into two subsystems along the line of higher animate nouns vs. inanimate and lower animate nouns. In turn, within each subsystem it is possible to determine the alignment patterns in the traditional sense, as is summarized in Table 6.2.

Table 6.2: Grammatical relations of Ritharngu dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role</th>
<th>reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-d̪u/y ERG</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>-Ø NOM</td>
<td>S</td>
<td>higher animate noun</td>
</tr>
<tr>
<td>-Na ACC</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>-d̪u/y ERG</td>
<td>A</td>
<td>inanimate &amp; lower</td>
</tr>
<tr>
<td>-Ø NOM</td>
<td>S, P</td>
<td>animate noun</td>
</tr>
</tbody>
</table>
6.3.2 Definiteness and specificity

Another group of features having the potential to affect argument subset formation can be loosely referred to as ‘definiteness’ or ‘specificity’ (Comrie 1978a, 1981b: 132f.; Dixon 1994: 91; Lyons 1999; Aissen 2003). The distinction between the two features and their subtypes is notoriously difficult both from the theoretical perspective (cf. Enç 1991; von Heusinger 2002; Farkas 2002, and references therein) and in the description of single languages (a typical example is provided by numerous analyses of the distribution of the marker ṛā in Persian; for discussion, see Browne 1970; Comrie 1978a; Karimi 1989, 1996; Lazard 1982, 1992; Shokouhi and Kipka 2003). I will return to the question of definiteness vs. specificity distinction in Section 6.5 and present some additional typological types.

The phenomenon at hand can be illustrated with the coding of the P argument in Kham. According to Watters (2002: 67ff.), definiteness determines the distribution of the accusative/dative marker -lai so that the suffix -lai marks only those P arguments of which the speaker assumes the hearer can uniquely identify them, as in (30c) and (30d). Moreover, (30a) and (30d) show that the marking of arguments with the suffix -lai is orthogonal to the animate vs. inanimate distinction.

(30) Kham (Sino-Tibetan; Nepal; Watters 2002: 68, 286, 290, 327)

a. kahbul u-ri:h-zya-o o leo.
   blanket.ABS 3s-weave-CONT-NMLZ MIR
   ‘She’s weaving a blanket!’

   we.NOM road-ON person-PL.ABS 1p-NEG-3p-find-IPFV
   ‘We met no people on the way.’

c. ao bohl-e te ge-gata:-lai
   this flood-ERG FOC 1p-mill-DAT
   bagai-d-ya-si-khe-ho.
   sweep-NFIN-BEN-1p-PROB-HO
   ‘The flood has probably swept our mill away.’

---

5As Watters (2002: 67) notices, though the form of the suffix may be partially patterned after the Nepali -lai, an accusative function has likely existed in Kham all along.
d. *no:* _say-lai ma-səih-də ma-ras-o._
   that animal-DAT NEG-kill-NFIN NEG-release-3sIPFV
   ‘He won’t release the animal before killing it.’ (said of a good hunting dog)

Besides, examples in (30a) shows that the effect of the referential properties is restricted to the marking of the P argument; they do not affect the marking of the T argument of three-argument predicates which is invariably in the absolutive case:

(31) Kham (Sino-Tibetan; Nepal; Watters 2002: 248f.)
   a. *no-e ŋa-lai o-bənduk loi-na-ke-o._
      he-ERG 1s-DAT 3s-gun.ABS loan-me-PFV-3s
      ‘He loaned me his gun.’
   b. _gaola-e ge-lai gukhi tubu tubu_
      shepherd-ERG 1p-DAT guard.dog.ABS one one
      _ya-si-ke-o._
      give-1p-PFV-3s
      ‘The shepherd gave us each a watch dog.’

Table 6.3 summarizes the discussed alignment patterns of Kham dependent marking. A complete overview of grammatical relations established by dependent marking in Kham is provided in Section 6.3.4.

**Table 6.3: Definiteness effects on grammatical relations of Kham dependent marking**

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø</td>
<td>ABS {S, P, T}</td>
</tr>
<tr>
<td>-e/-ye</td>
<td>ERG {A} indefinite noun</td>
</tr>
<tr>
<td>-lai</td>
<td>DAT {G}</td>
</tr>
<tr>
<td>-Ø</td>
<td>ABS {S, T}</td>
</tr>
<tr>
<td>-e/-ye</td>
<td>ERG {A} definite noun</td>
</tr>
<tr>
<td>-lai</td>
<td>DAT {P, G}</td>
</tr>
</tbody>
</table>

**6.3.3 Lexical class**

Splits conditioned by the lexical class (or, traditionally, part of speech) of arguments along the line of pronoun vs. noun distinction are common in

One language exemplifying this type of split is Jingulu. As (32a) and (32b) illustrate, pronominal P arguments receive a dedicated accusative case marking distinct from the absolutive marking of S arguments. Examples (32c) and (32d) demonstrate that this generalization is valid for all persons. Besides, as (32d) and (32f) show, the animacy or humanness of the argument does not affect dependent marking:

(32) Jingulu (Mirndi; Australia; Pensalfini 2003: 104, 149, 152f., 251)

a. milyamilyayi-nya-nu nyama.
   late-2s-did 2s.ABS
   ‘You were late.’

b. angkurla larrinγka-nga-ju nganku.
   NEG understand-1s-do 2sACC
   ‘I didn’t understand you.’

c. angkula lankaj-nga-ju ngarru.
   NEG hear-1s-do 1sACC
   ‘You are not listening to me.’

d. angkula jangkijbi-nga-ju wurraku.
   NEG know-1s-do 3pACC
   ‘I don’t know any of them.’

e. ngunjajumbuma-kaji ngirri-marriyimi ngayi.
   burn-cook-through 1pEXCL-DIST.PST 3sACC.FEM
   ‘Then we’d cook it [echidna] up.’

f. irdbija-rru nga-ju nga jurrujurrujibila-nga-ju
   smoothen-CENTRIPETAL 1s-do-FOC smoothen-1s-do
   ngarnu.
   3sACC.MASC
   ‘I’m making it [a nulla-nulla] smooth.’

Nominal P arguments are unmarked (i.e in the absolutive case), be they inanimate as in (33b), animate non-human as in (33c), or human as in (33d). With respect to dependent marking they are treated identically to the S argument (33a):
(33) Jingulu (Pensalfini 2003: 117, 151, 227)

a. *ngini-rni jundurru duwa-jiyimi.*
   DEM(n)-FOC dust.ABS rise-come
   ‘Dust is rising.’

b. *ngayi-rni binjama-nga-ju babirdimi.*
   1s-ERG grow-1s-do yam.ABS
   ‘I grow potatoes.’

c. *miyi-nginyu-nu nginyiylirni wardabanmarra.*
   kill-1duEXCL-did 1duEXCL.ERG male.kangaroo.ABS
   ‘We two killed a big red roo.’

d. *mindubala Jurlinginja nginyi-rruku,*
   1duEXCL.ABS J.ABS 1duEXCL-went
   *miji-nginyi-rryi ngindaniki Jiminginja.*
   get-1duEXCL-will.go this.MASC J.ABS
   ‘Me and Jurlinginja, went to collect this Jiminginja here.’

Table 6.4 gives a synopsis of the grammatical relations established by Jingulu dependent marking: one alignment pattern ({S, P, T} vs. {A} vs. {G}) established by nominal arguments and a different alignment pattern ({S} vs. {P, T} vs. {A} vs. {G}) established by pronominal arguments. The argument marking of three-place predicates is not illustrated here; for examples and discussion, see Pensalfini (2003: 179f.).

Table 6.4: Alignment patterns of Jingulu dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments:</th>
<th>role</th>
<th>reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø</td>
<td>ABS</td>
<td>{S, P, T}</td>
<td>noun</td>
</tr>
<tr>
<td>-rni</td>
<td>ERG</td>
<td>{A}</td>
<td>pronoun</td>
</tr>
<tr>
<td>-rna</td>
<td>DAT</td>
<td>{G}</td>
<td></td>
</tr>
<tr>
<td>-Ø</td>
<td>ABS</td>
<td>{S}</td>
<td></td>
</tr>
<tr>
<td>-rni</td>
<td>ERG</td>
<td>{A}</td>
<td></td>
</tr>
<tr>
<td>-u</td>
<td>ACC</td>
<td>{P, T}</td>
<td></td>
</tr>
<tr>
<td>-rna</td>
<td>DAT</td>
<td>{G}</td>
<td></td>
</tr>
</tbody>
</table>

The difference in dependent marking between nouns and pronouns materializes not only in the presence or absence of overt markers, such as the special accusative suffix -u on Jingulu pronouns. It can also manifest itself in the presence of special bound forms. Araki, for instance, has
a morpho-phonologically bound form for pronominal P arguments, as -ko ‘-2sACC’ in (34a), different from the free pronouns used for S and A arguments, as inko ‘2sNOM’ in (34b). Nouns do not differentiate between A and P arguments, as hadiv ‘rat.NOM’ in (34c) and Ral ‘Ralph.NOM’ and Pen ‘Ben.NOM’ (34d) show:

(34) Araki (Austronesian, Oceanic; Vanuatu; François 2002: 39, 113, 122, 141)
   a. nam=po-i-ko.
      1sREAL=like-TR-2sACCC
      ‘I love you.’
   b. inko o=pa=polo hap.
      2sNOM 2sIRR=SEQ=light fire
      ‘(Meanwhile) you should light a fire.’
   c. hadiv mo=kadu.
      rat.NOM 3REAL=swim
      ‘So the Rat started to swim.’
   d. nam=sov Ral nida-n Pen ro.
      1sREAL=wait Ralph.NOM with-CONSTRUCT Ben.NOM PROG
      ‘I’m waiting for Ralph and Ben.’

The fact that the Araki bound pronouns are treated in this chapter implies that I consider them as an instance of dependent marking instead of head marking. The motivation for this decision will be discussed in Section 9.2.4.

The summary in Table 6.5 is a simplified representation of the Araki alignment patterns, as this language also exhibits a further split in the pronominal dependent marking. Moreover, arguments of three-argument predicates show again a different kind of split, for details, see François (2002).

6.3.4 Person


This type of reference-driven split can be illustrated with Kham again. The distribution of the ergative marker is restricted such that only A argu-
Table 6.5: Alignments of Araki dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø</td>
<td>NOM {S, A, P} noun</td>
</tr>
<tr>
<td>-Ø</td>
<td>NOM {S, A} pronoun</td>
</tr>
<tr>
<td>bound form</td>
<td>ACC {P} pronoun</td>
</tr>
</tbody>
</table>

ments of the 3rd person may be marked with it no matter whether they are expressed by nouns, as in (35c), or pronouns, as in (35d). S arguments and 1st and 2nd person pronominal A arguments are in the unmarked absolutive, as in (35a)-(35b) and (35e) respectively:

(35) Kham (Sino-Tibetan; Nepal; Watters 2002: 67, 224, 229, 349)

a. ɳa: ɳa-kəre:-ke.
   1sABS 1s-hungry-PFV
   ‘I got hungry.’

b. o-za: ɳəhl-ke.
   3s-child.ABS fall.asleep-PFV
   ‘Her child fell asleep.’

c. la:-ye sohmlo basma-rə ya-səih-ke-o.
   leopard-ERG three mountaine.goat-PL 3p-kill-PFV-3s
   ‘The leopard killed three mountain-goats.’

d. no:-ye la: səih-ke-o.
   3s-ERG leopard.ABS kill-PFV-3s
   ‘He killed a leopard.’

e. ɳa: la: ɳa-səih-ke.
   1sABS leopard.ABS 1s-kill-PFV
   ‘I killed a leopard.’

Adding up the information about the two types of splits — the split in the marking of P and T arguments along the definite vs. indefinite line (discussed in Section 6.3.2), and another one in the marking of A arguments conditioned by person — results in the alignment patterns summarized in Table 6.6.

Thus, 1st and 2nd person pronouns establish an {S, A, T} vs. {P, G} alignment pattern (i.e. nominative and secundative object alignment), 3rd person pronouns and definite nouns show {S, T} vs. {A} vs. {P, G} (i.e ergative
Table 6.6: Definiteness effects on grammatical relations of Kham dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments:</th>
<th>role</th>
<th>reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø</td>
<td>ABS</td>
<td>{S, A, T}</td>
<td>1st &amp; 2nd person pronoun</td>
</tr>
<tr>
<td>-lai</td>
<td>DAT</td>
<td>{P, G}</td>
<td>3rd person pronoun &amp;</td>
</tr>
<tr>
<td>-Ø</td>
<td>ABS</td>
<td>{S, T}</td>
<td>definite noun</td>
</tr>
<tr>
<td>-e/-ye</td>
<td>ERG</td>
<td>{A}</td>
<td>indefinite noun</td>
</tr>
<tr>
<td>-lai</td>
<td>DAT</td>
<td>{P, G}</td>
<td></td>
</tr>
<tr>
<td>-Ø</td>
<td>ABS</td>
<td>{S, P, T}</td>
<td></td>
</tr>
<tr>
<td>-e/-ye</td>
<td>ERG</td>
<td>{A}</td>
<td></td>
</tr>
<tr>
<td>-lai</td>
<td>DAT</td>
<td>{G}</td>
<td></td>
</tr>
</tbody>
</table>

and secundative object) alignment, finally, indefinite nouns show \{S, P, T\} vs. \{A\} vs. \{G\} (i.e. ergative and indirective object) alignment.

As the summary of Kham dependent marking in Table 6.6 makes clear, dependent marking in a language can exhibit splits along more than one line. In Kham, the category of person with such typological types as SAP versus non-SAP determines the dependent marking of the A argument, whereas the category of definiteness determines the dependent marking of the P argument. Essentially, though more than one category is involved in determining dependent marking in Kham, the established referential types discretely define the case marking, that is, for instance, an indefinite nominal A argument is always in the absolutive. This situation is different from the one in languages where a range of referential properties simultaneously determine the marking of the arguments. Such cases are discussed in detail in Section 6.5.

### 6.3.5 Other referential features

The typological types presented in Sections 6.3.1-6.3.4 above are recurrent in the languages of the world. However, they do not represent the complete list of referential properties affecting the formation of argument subsets with respect to dependent marking on the clause level. Some less common typological types that determine or — along with other types — co-determine dependent-marking include number-related types (singular vs. plural, etc.),
kin vs. non-kin terms, and proper vs. common nouns. For instance, in
the Saibai dialect of Kalaw Lagaw Ya such categories as number, proper
vs. common noun distinction and a category called kinship term of address
co-determine dependent marking along with lexical class (for details and
discussion, see Comrie 1981a).

6.4 Referential hierarchy

Since Silverstein’s (1976) investigation of the effects of nominal referential
properties on case marking and agreement patterns in several Australian
languages and Chinook, it has been widely acknowledged that these effects
are not random. To account for the dependence of argument selection on
referential properties, the typological types surveyed in Sections 6.3.1–6.3.5
are commonly represented as arranged into hierarchies either as, for in-
stance, in (36), or into combined hierarchies which integrate several prop-
erties, as in (37) (some of these and other hierarchies are suggested in
Croft 1990; Dixon 1994; Aissen 2003; Siwerksa 2004; de Swart 2007;
Bickel 2010+b):

(36)  a. Lexical class: pronoun > noun
    b. Individuation: proper noun > common noun
    c. Person: 1st and 2nd person > 3rd person
    d. Animacy: human > non-human animate > inanimate
    e. Specificity: specific > non-specific referential > generic / non-
       referential
    f. Definiteness: definite > indefinite
    g. Number: singular > plural

6There is no commonly accepted opinion as to the internal ranking of speech-act-
participants. According to some suggestions (DeLancey 1981; Wierzbicka 1981)
the first and second person are not ranked with respect to each other, whereas
some others argue for 1>2 ranking (Dixon 1994 88f.). For a recent comprehen-
sive survey of various positions on the relative ranking of 1st and 2nd person, see
6.4 Referential hierarchy

(37) a. 1st person pronouns > 2nd person pronouns > demonstratives and 3rd person pronouns > proper nouns > human nouns > animate nouns > inanimate nouns (Dixon 1994: 85)

b. local person (SAP) > pronoun 3rd > proper noun 3rd > human 3rd > animate 3rd > inanimate 3rd (Aissen 1999: 674)

c. pronoun > name > definite > indefinite > indefinite specific > non-specific (Aissen 2003: 444)


The effects of referential properties on dependent marking have two possible interpretations. According to one interpretation (cf. Comrie 1978b, 1989), referential hierarchies affect the distribution of overt case marking, so that, if a language exhibits a split, an A argument with a low rank on a referential hierarchy and an P argument with a high rank are predicted to carry an overt case marker, whereas a high-ranking A argument and a low-ranking P argument are predicted to carry no overt case marker. According to the other interpretation associated with Silverstein (1976), referential hierarchies affect relational markedness, so that a low-ranking A argument and a high-ranking P argument are predicted to be mapped onto marked grammatical relations, contrary to a high-ranking A argument and a low-ranking P argument mapped onto unmarked grammatical relations. ‘Marked’ in this interpretation stands for a functionally more specified or reserved relation which in terms of set building implies those relations that exclude the S argument, i.e. are either {A} or {P} relation in contrast to ‘unmarked’ {S, A} and

\[ 7 \] In a related interpretation, the degree of overt marking (i.e. phonological markedness based on independently motivated phonological criteria or morphological specificity of case exponence) are also taken into consideration (Keine and Müller 2008).

\[ 8 \] For the possible functional motivation of splits consider (Dixon 1994: 85).
{S, P} relations (for discussion, see Bickel and Witzlack-Makarevich 2008). These two hypothesis were tested in Bickel and Witzlack-Makarevich (2008). After surveying the dependent marking in some 330 languages coded in the AUTOTYP database on grammatical relations, no evidence for a universal trend of hierarchical effects could be found. Though there are a few families that do show such effects, there is no evidence that these effects are based on a shared universal principle. Instead, family-specific hierarchies were found; very likely they are dependent on individual histories of each family, such as an ergative case system decay in lexical nouns earlier than in pronouns (cf. Filimonova 2005; Haig 2008), reanalyses of instrumentals as ergatives on inanimates (Garrett 1990), contact-induced calquing of definite versus indefinite contrasts by means of case marking, or other idiosyncrasies. Besides, a strong Eurasian areality effect could be observed. The overall conclusion was that rather than being “among the most robust generalizations” (Aissen 1999), referential hierarchy effects on case marking are at best weak generalizations applicable to a few families (for methodology and a detailed discussion, see Bickel and Witzlack-Makarevich 2008).

6.5 Interaction of features

As has been illustrated above, in certain languages it is possible to isolate a single category of referential information which affects the subset formation of arguments, for instance, a noun vs. pronoun distinction determines the dependent marking of the P argument in Jingulu. However, for a vast majority of languages it is impossible to reduce the effect on argument selection to just a single parameter (Comrie 1989: 133ff.; Aissen 2003).

This situation can be illustrated with Dolakha Newari: the P argument can be either in the absolutive case (unmarked), as in (38a) and (38b), or marked by the dative clitic =ta, as in (38c) and (38d):

(38) Dolakha Newari (Sino-Tibetan; Nepal; Genetti 1997: 38, 106, 110, 114)

a. āmun hirā=e mālā khoŋ-an.
   3sERG diamond=GEN necklace.ABS see-PTCP
   ‘He saw the diamond necklace... .’
Using a corpus of fifteen texts Genetti (1997) investigated the factors affecting the occurrence of the dative case marker. She came to the conclusion that such features as animacy or activation state alone do not suffice to predict the distribution of the dative marker. Instead, she proposed to arrange the relevant parameters on parallel interacting hierarchies as in (39).\(^9\)

\[(39) \quad \text{Human} > \text{Animate} > \text{Inanimate} \]
\[\quad \text{Given} > \text{Accessible} > \text{New} \]

The generalization is as follows: the higher the position of the P argument on these hierarchies, the more likely it is to bear the dative case marker. Genetti (1997) ultimately links these features as contributing to the superfeature of topicality or topicworthiness.

The situation of Dolakha Newari is not unique. Other frequently discussed examples of languages whose case marking is simultaneously determined by a number of parameters include Hindi (Masica 1982; Butt 1993; Mohanan 1994; Aissen 2003; de Hoop and Narasimhan 2005; Kachru 2006).

---

\(^9\)This is different from the the situation in Kham as discussed in Section 6.3.4. Though to account for the distribution of dependent marking in Kham one has to consider two referential categories (person and definiteness), when determining the marking of single arguments they do not interact, as in Dolakha Newari, and only individual categories are of relevance: person determines the marking of A arguments, whereas definiteness determines the marking of P arguments.

\(^10\)Genetti (1997) also includes a third parameter Recipient > Patient to account for the fact that the G argument of three-argument predicates is always in the dative case, whereas the T argument can be either in the dative or in the absolutive. In the present approach, however, this fact is accounted for by direct reference to G arguments whose referential properties do not need to be further specified.

In Section 6.3 I pointed out that though single typological types are language-specific, in certain cases it is possible to generalize over them, as they show a high degree of semantic overlap. For instance, the typological type ‘speech-act-participant’ in one language is directly comparable with ‘speech-act-participant’ in another language. With such types as ‘topical’ or ‘salient’, however, it is less straightforward. In such cases, for comparative purposes the effects of referential properties on argument selection can be best captured by such typological super-types as ‘higher discourse rank’ as opposed to ‘lower discourse rank’. ‘Discourse rank’ is a probabilistic notion determined simultaneously by a range of factors (animacy, humanness, definiteness, specificity, etc.) whose weights may differ from language to language. For Dolakha Newari then, the distribution of dependent marking can be represented as in Table 6.7.

Table 6.7: Alignment patterns of Dolakha Newari dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>role</td>
</tr>
<tr>
<td>(=n(a)) ERG</td>
<td>{A}</td>
</tr>
<tr>
<td>(-\emptyset) ABS</td>
<td>{S, P, T} lower discourse rank</td>
</tr>
<tr>
<td>(=ta) ACC</td>
<td>{G}</td>
</tr>
<tr>
<td>(=n(a)) ERG</td>
<td>{A}</td>
</tr>
<tr>
<td>(-\emptyset) ABS</td>
<td>{S} higher discourse rank</td>
</tr>
<tr>
<td>(=ta) ACC</td>
<td>{P, T, G}</td>
</tr>
</tbody>
</table>

As Bickel (2010+b) points out, to account for the effects of such interacting referential properties on grammatical relations one has to apply statistical techniques, that is, multiple logistic regression controlling simultaneously for multiple variables (i.e. animacy, definiteness, etc.) as proposed by Bresnan et al. (2004). In practice, however, there are no corpora of adequate size for the majority of languages, so that for the time being many statements as to the effects of single referential properties on grammatical relations must remain impressionistic hypotheses.
Inflectional classes

Apart from genuinely referential properties of arguments which co-define grammatical relations, inflectional classes are also known to result in split alignment patterns. In contrast to the categories discussed in Section 6.3, it is, however, impossible to account for argument selection variations in such systems exclusively on the basis of referential features. Russian examples in (40) illustrate the issue. Whereas the nouns doč' 'daughter' and reč' 'speech' are identically marked in the A and P roles, as in (40a) and (40b), the nouns sestra 'sister' and muzyka 'music' receive a dedicated accusative case marker, when they function as P arguments, as the comparison of (40c) with (40d) shows:

(40) Russian (Indo-European; Russia)

a. Doč' / reč' utomila nas.
daughter.NOM speech.NOM exhaust we.ACC 'The daughter / speech exhausted us.'

b. On uslyšal doč' / reč'.
he.NOM heard daughter.NOM speech.NOM 'He heard the daughter / speech.'

c. Sestr-a / muzyk-a utomila nas.
sister-NOM music-NOM exhaust we.ACC 'The sister / the music exhausted us.'

d. On uslyšal sestr-u / muzyk-u.
he.NOM heard sister-ACC music-ACC 'He heard the sister / the music.'

As the examples above show, it is not animacy, humanness or any other of the features discussed in this chapter that leads to the differential argument marking. Instead, the availability of the dedicated marker is restricted to individual lexemes, which are traditionally grouped together into inflectional classes (cf. Bickel and Nichols 2007).

One way to deal with the effects of inflectional classes on argument selection is to ignore the distinctions altogether and to consider dependent marking as a phrase-level phenomenon (cf. the discussion in the following Section 6.7). Under this view, Russian dependent marking consistently exhibits the \{S, A\} vs. \{P\} alignment (at least for the two inflectional classes
illustrated in (40)), as agreeing modifiers are always in the accusative, as examples in (41) illustrate:

(41) Russian (Indo-European; Russia)

a. Starša-ja doč’ / et-a reč’ utomila
   elder-NOM daughter this-NOM speech.NOM exhaust
   nas.
   we.ACC
   ‘The elder daughter / this speech exhausted us.’

b. On uslyšal staršu-ju doč’ / et-u
   he.NOM heard elder-ACC daughter.NOM this-ACC
   reč’.
   speech.NOM
   ‘He heard the elder daughter / this speech.’

However, such an approach deviates from the word-level perspective on alignment established by dependent marking prominent in various referential hierarchies (cf. Section 6.4). To treat alignment variations determined by inflectional classes, as in Russian, consistently with other types of reference-related splits I provisionally suggest to extend the value of typological types with a range of language-specific inflectional classes. These classes will be ignored when testing various hypothesis referring to genuine referential features, as for instance in Bickel and Witzlack-Makarevich (2008). For the purposes of determining the degree of individual alignment types as defined in the lexicon, such language specific-information can be easily integrated (cf. the suggested solutions for a similar problem as presented by predicate-class and scenario-conditioned grammatical relations summarized in Section 12.3). Further research is needed, however, to provide for a consistent integration of inflectional classes into the suggested framework of typologizing grammatical relations.

6.7 Conclusion

In this chapter, I discussed the status of referential properties of arguments in the present approach. On a par with argument roles (discussed in Chapter 4.3.3), referential properties represent a co-defining aspect
of arguments. In this chapter I provided an overview of common typological types of referential properties. Whereas in some languages the diagnosis of a referential category co-determining argument selection is straightforward (e.g. human vs. non-human), in other languages more than one referential category can co-determine argument selection in a probabilistic way. For the purposes of cross-linguistic comparison two super-types (‘higher discourse rank’ and ‘lower discourse rank’) were introduced. Table 6.8 provides the complete list of the 56 referential types attested so far in the sample of dependent marking in 409 languages (cf. Bickel and Witzlack-Makarevich 2008).

An important issue remains unresolved in this chapter. Treating various referential properties of arguments I followed the tradition of regarding case as a word-level phenomenon. Primarily, this decision is motivated by the fact that suggested referential scales like the ones given in (37) make sense only with reference to the word-level case and the way case is considered in the present approach allows for a consistent testing of such hypotheses (cf. Bickel and Witzlack-Makarevich 2008). However, case can be also regarded as a phrase level phenomenon. For instance, Spencer (2006, 2008) distinguishes between two notions of case, viz. syntactic case (‘a property of the phrasal node’) and morphological case (‘a property of word forms’) (Spencer 2006: 3). For languages like German, whose noun morphology distinguishes far fewer case forms than modifiers and articles do, morphological case defines different alignment patterns from the ones of the phrasal level. How various levels of case marking are to be integrated into the present approach to grammatical relations remains an area for further investigation (for related issues concerning the domain of head marking, cf. Section 9.3).

In the next chapters, I focus on those properties of the larger syntactic environment that co-determine argument subset formation, namely, on the nature of single predicates (Chapter 7) and of the whole clause (Chapter 8).
Table 6.8: List of referential types attested while coding argument selection by dependent marking in 409 languages (Bickel et al. 2010)

<table>
<thead>
<tr>
<th>Ref. type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>any</td>
<td>argument with any referential properties</td>
</tr>
<tr>
<td>Pro</td>
<td>free pronoun</td>
</tr>
<tr>
<td>1sgPro</td>
<td>1st person singular pronoun</td>
</tr>
<tr>
<td>1duPro</td>
<td>1st person dual pronoun</td>
</tr>
<tr>
<td>1plPro</td>
<td>1st person plural pronoun</td>
</tr>
<tr>
<td>2sgPro</td>
<td>2nd person singular pronoun</td>
</tr>
<tr>
<td>2duPro</td>
<td>2nd person dual pronoun</td>
</tr>
<tr>
<td>2plPro</td>
<td>2nd person plural pronoun</td>
</tr>
<tr>
<td>3sgPro</td>
<td>3rd person singular pronoun</td>
</tr>
<tr>
<td>3duPro</td>
<td>3rd person dual pronoun</td>
</tr>
<tr>
<td>3plPro</td>
<td>3rd person plural pronoun</td>
</tr>
<tr>
<td>Pro-high</td>
<td>pronoun with a higher discourse rank than ‘Pro-low’ (where rank is determined by discourse factors with language-specific weights)</td>
</tr>
<tr>
<td>Pro-low</td>
<td>pronoun with a lower discourse rank than ‘Pro-high’ (where rank is determined by discourse factors with language-specific weights)</td>
</tr>
<tr>
<td>3Pro-high</td>
<td>3rd person pronoun with a higher discourse rank than ‘3Pro-low’</td>
</tr>
<tr>
<td>3Pro-low</td>
<td>3rd person pronoun with a lower discourse rank than ‘3Pro-high’</td>
</tr>
<tr>
<td>3sgPro-high</td>
<td>3rd person sg. pronoun with a higher discourse rank than ‘3sgPro-low’</td>
</tr>
<tr>
<td>3sgPro-low</td>
<td>3rd person sg. pronoun with a lower discourse rank than ‘3sgPro-high’</td>
</tr>
<tr>
<td>3plPro-high</td>
<td>3rd person pl. pronoun with a higher discourse rank than ‘3plPro-low’</td>
</tr>
<tr>
<td>3plPro-low</td>
<td>3rd person pl. pronoun with a lower discourse rank than ‘3plPro-high’</td>
</tr>
<tr>
<td>3sgPro-hum</td>
<td>3rd person singular pronoun with human reference</td>
</tr>
<tr>
<td>3sgPro-non-hum</td>
<td>3rd person singular pronoun with non-human reference</td>
</tr>
<tr>
<td>Ref. type</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pro-anim</td>
<td>pronoun referring to an animate</td>
</tr>
<tr>
<td>Pro-inanim</td>
<td>pronoun referring to an inanimate</td>
</tr>
<tr>
<td>Pro-kin</td>
<td>kinship pronoun</td>
</tr>
<tr>
<td>DEM</td>
<td>demonstrative</td>
</tr>
<tr>
<td>N</td>
<td>lexical noun of any kind</td>
</tr>
<tr>
<td>N-sg</td>
<td>noun in singular</td>
</tr>
<tr>
<td>N-pl</td>
<td>noun in plural</td>
</tr>
<tr>
<td>N-nsng</td>
<td>noun in non-singular (i.e. either in plural or dual)</td>
</tr>
<tr>
<td>N-anim</td>
<td>animate noun</td>
</tr>
<tr>
<td>N-inanim</td>
<td>inanimate noun</td>
</tr>
<tr>
<td>N-low-anim</td>
<td>noun denoting a lower animate</td>
</tr>
<tr>
<td>N-high-anim</td>
<td>noun denoting a higher animate (humans and some animals)</td>
</tr>
<tr>
<td>N-pl-anim</td>
<td>animate noun in pl.</td>
</tr>
<tr>
<td>N-pl-inanim</td>
<td>inanimate noun in pl.</td>
</tr>
<tr>
<td>N-hum</td>
<td>human noun</td>
</tr>
<tr>
<td>N-non-hum</td>
<td>non-human noun</td>
</tr>
<tr>
<td>N-non-hum-sg</td>
<td>non-human noun in sg.</td>
</tr>
<tr>
<td>N-non-hum-pl</td>
<td>non-human noun in pl.</td>
</tr>
<tr>
<td>N-def</td>
<td>definite noun</td>
</tr>
<tr>
<td>N-indef</td>
<td>indefinite noun</td>
</tr>
<tr>
<td>N-high</td>
<td>noun with a higher discourse rank than ‘N-low’ (where rank is determined by discourse factors with language-specific weights)</td>
</tr>
<tr>
<td>N-low</td>
<td>noun with a lower discourse rank than ‘N-high’ (where rank is determined by discourse factors with language-specific weights)</td>
</tr>
<tr>
<td>N-kin</td>
<td>kin term</td>
</tr>
<tr>
<td>N-non-kin</td>
<td>any noun apart from kin terms</td>
</tr>
<tr>
<td>N-spec</td>
<td>noun with specific reference</td>
</tr>
<tr>
<td>N-non-specific</td>
<td>noun without specific reference</td>
</tr>
<tr>
<td>N-proper</td>
<td>proper noun</td>
</tr>
<tr>
<td>N-common</td>
<td>common noun</td>
</tr>
<tr>
<td>N-common-sg</td>
<td>common noun in sg.</td>
</tr>
<tr>
<td>N-common-pl</td>
<td>common noun in pl.</td>
</tr>
<tr>
<td>N-pers</td>
<td>personal name</td>
</tr>
<tr>
<td>N-non-pers</td>
<td>noun which is not a personal name (i.e. any common noun or proper non-personal noun)</td>
</tr>
<tr>
<td>N-pers-male</td>
<td>male personal name</td>
</tr>
<tr>
<td>N-pers-female</td>
<td>female personal name</td>
</tr>
</tbody>
</table>
Chapter 7
Dependent marking and predicates

7.1 Introduction

In the previous chapter, I examined how role and referential properties of arguments co-determine argument subset formation in the case of dependent marking. In addition to these two aspects of arguments, some properties of the larger syntactic environment, namely, the properties of the whole clause (to be discussed in Chapter 8) and the properties of individual predicates might also condition the inclusion or exclusion of a particular argument (with its role and reference properties) into a selected set of arguments established by a particular argument selector (dependent marking or any other). This chapter deals with predicates as a conditioning factor of argument selection.¹

Traditionally, the lexicon has been perceived as ‘an appendix of the gram-

¹The term predicate has been used in two different senses in linguistic studies (Comrie 1993). In one sense — familiar from Aristotle’s term logic — it refers to one of the two terms of a proposition, the other one being the subject. For instance, the sentence Lisa kissed Nils would consist of two terms: the subject Lisa and the predicate kissed Nils. In the other sense, in which I am using the term here, predicate refers to the basic element of predication (often a verb, for instance, kiss in the previous example), which is listed in the lexicon in form of a predicate frame containing a specific number of arguments.
7.2 Generalized predicate classes and the default class

The effects of individual predicates on dependent marking are illustrated by the following examples from Chechen. Semantic A and P arguments can be marked in a number of ways. In (42a), the A argument is in the ergative (as ‘1sERG’), whereas the P argument is in the nominative (wazh ‘apple(B).NOM’). In (42b), the A argument is in the nominative (so ‘1sNOM’) and the P argument is in the lative (hwo-x ‘2s-LAT’). In (42c), the A argument in the nominative (hwo-x ‘2s-LAT’).
7.2 Generalized predicate classes and the default class

ment is in the genitive (san ‘1sGEN’) and the P argument is in the nominative (jisha ‘sister.NOM’). Finally, in (42d), the A argument is in the dative (suuna ‘1sDAT’) and the P argument is in the nominative (Zaara ‘Zara.NOM’):

(42) Chechen (Nakh-Daghestanian; Russia; Molochieva p.c.)

a. $A_{ERG} P_{NOM}$
   \[
   \text{as } \text{wazh } b-u'-u. \\
   1sERG \text{ apple(B).NOM B-eat-PRS} \\
   \text{‘I eat apples.’}
   \]

b. $A_{NOM} P_{LAT}$
   \[
   \text{so } \text{hwo-x taxan qiet-a.} \\
   1sNOM \text{ 2s-LAT today meet-PRS} \\
   \text{‘I am meeting you today.’}
   \]

c. $A_{GEN} P_{NOM}$
   \[
   \text{san } \text{jisha } j-u. \\
   1sGEN \text{ sister(J).NOM J-be.PRS} \\
   \text{‘I have a sister.’}
   \]

d. $A_{DAT} P_{NOM}$
   \[
   \text{suuna } \text{Zaara } j-iez-a. \\
   1sDAT \text{ Zara(J).NOM J-love-PRS} \\
   \text{‘I love Zara.’}
   \]

The distribution of these case markers does not depend on the referential properties of the involved arguments. It is the predicate alone that determines the marking of the A and P arguments. In other words, the only possible case marking of the arguments of $d.ieza$ ‘D.love’ is the dative case on the A argument and the nominative case on the P argument.

This situation is neither unique to Chechen, nor is it limited to the marking of A and P arguments. Chintang illustrates how the case marking of T and G arguments is conditioned by various three-argument predicates. With the three-argument verb $bopt$- ‘cover’ both the T and the G arguments are in the unmarked nominative case, such as $chatta$ ‘umbrella.NOM’ and $hana$ ‘2sNOM’ in (43a). With the semantically similar verb $bhukt$- ‘cover’ the T argument is in the instrumental case and the G argument is in the nominative, such as $munjei-ga$ ‘shawl-INS’ and $hana$ ‘2sNOM’ in (43b). Finally, with the verb $phatt$- ‘fill’ the T argument is in the nominative case and the G argument is in the locative case, as $cuwa$ ‘water.NOM’ and $gagri-be$
7.2 Generalized predicate classes and the default class

‘container-LOC’ in (43c) show:

(43) Chintang (Sino-Tibetan, Kiranti; Nepal; Bickel et al. 2010+)

a. $A_{NOM/ERG}^4 T_{NOM} G_{NOM}$

$huĩsa-ŋa$ hana chatta $na$-bopt-e.
DEM-ERG 2sNOM umbrella.NOM 3>2-cover-PST
‘She covered you with an umbrella.’

b. $A_{NOM/ERG} T_{INS} G_{NOM}$

$a$-ma-ŋa hana $munjei-ŋa$ na-bhukt-e.
1sPOSS-mother-ERG 2sNOM shawl-INS 3>2-cover-PST
‘Mother covered you with a shawl.’

c. $A_{NOM/ERG} T_{NOM} G_{LOC}$

$huĩsa-ŋa$ cuwa gagri-be phatt-e.
DEM-ERG water.NOM container-LOC [3sA-]fill-PST[-3sP]
‘S/he filled the the container with water.’

Finally, the examples in (44) illustrate the variety of case patterns with one-argument verbs in Malayalam. The S argument is either in the nominative case, as in (44a), or in the dative case, as in (44b). Here, again, the case marking on the only argument is determined exclusively by the lexical predicate:

(44) Malayalam (Dravidian; India; Asher and Kumari 1997: 63, 111)

a. $S_{NOM}$

$petţennə ayaal apratyakşanaayi.$
suddenly he.NOM disappear.PST
‘Suddenly he disappered.’

b. $S_{DAT}$

$kuţti-kkə vifakkunnu.$
child-DAT feel.hungry.PRS
‘The child feels hungry.’

The phenomenon illustrated above and to be discussed in this chapter is known under a variety of names including dative subject, differential subject

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$^4$The distribution of the nominative and ergative case markers on the A argument is conditioned by the argument’s referential properties (for details, see Bickel et al. 2010+).
marking, non-canonical subject and object marking, split intransitivity, split-S and fluid-S systems, unaccusativity and unergativity to name just a few.\(^5\) This variety of terms reflects the fact that lexical predicates as conditioning genuine alignment splits are hardly ever treated uniformly. To illustrate this point, consider the treatment of predicates in Dixon (1994). Dixon regards predicate types as a condition of alignment splits only with reference to split-S and fluid-S systems (Dixon 1994: 70ff.), whereas splits in case marking of A and P arguments of (semantically) two-argument predicates are treated under two vaguely defined categories: either as ‘varying case marking’ or as ‘extended intransitives’ (Dixon 1994: 121ff.). This inconsistent treatment is a direct consequence of mixing up semantic and syntactic features in classifying verbs into intransitive and transitive ones.\(^6\) Thus, Dixon discusses examples of languages possessing classes of semantically transitive verbs with the P argument marked in a different way from the P arguments of ‘canonical’ transitive verbs (e.g. by the dative or locative case instead of the accusative case). In such cases, various syntactic tests (e.g. coordination constraints) are applied to ‘prove’ that some verbs involving two core arguments actually have only an S argument (in Dixon’s sense). Thus, they are not transitive at all but rather represent ‘a rather special type of intransitive’ – a category with an undefined status. For some other languages, Dixon allows for ‘a variant on the normal transitive case marking’ without respective verbs being classified as intransitive. It remains unclear, however, what is the range of syntactic tests applied to determine transitivity

\(^5\)Only a subset of the phenomena commonly referred to by these terms falls under the scope of the discussion in this section. On the one hand, some of these terms also refer to argument selectors other than dependent marking (e.g. split intransitivity can surface in head marking, in the formation of impersonal passives, etc.). On the other hand, certain terms do not exclusively refer to predicate classes as co-determining argument selection, but might comprise other variables as well (for instance, differential or non-canonical subject marking also refers to situations when dependent marking is conditioned by the referential properties of arguments (cf. Section 6.3) or by some clausal conditions, such as tense and aspect properties (cf. Chapter 8).

\(^6\)In a later work, Dixon (2009a) determines transitivity exclusively on the basis of syntactic criteria (cf. Section 2.4).
and how to proceed if these tests provide conflicting results or if a language is not amenable to such tests at all (for a comprehensive discussion, see Section 4.2). To summarize, Dixon’s approach does not provide a uniform way of treating splits conditioned by the lexical-semantic nature of the predicate.

What is a possible alternative then? The way I treat predicate-conditioned splits like the ones illustrated in (42)–(44) and the integration of predicate class into the present approach as another variable co-determining argument selection is to a certain extent motivated by the lexical typology approach as outlined in Nichols et al. (2004) and Nichols (2008). In what follows, I first briefly summarize this approach and then proceed to the analysis of lexical predicate classes.

Nichols (2008) contrasts the lexical typology approach to the more common morphosyntactic typology which underlies most current typological work on grammatical relations. In morphosyntactic typology, clauses are built of predicates and their arguments of relatively discrete types. Besides, every language can be characterized as having one particular alignment type that regulates the coding of its arguments and their syntactic behavior (in a top-down fashion). The prevailing majority of the predicates of a language exhibit uniform morphosyntactic behavior that correlates with the overall alignment profile of a language, though there might be some minor idiosyncratic exceptions. Nichols’ lexical typology approach is different from morphosyntactic typology in that it recognizes single predicates (and not predicate types) as constituting the fundamental units of clauses. Each individual predicate has its own specific argument structure, whereas argument types and alignment types are merely bottom-up generalizations about the morphosyntactic behavior of these individual predicates. In other words, one can make a generalized statement that a language shows, for instance, ergative alignment, only if a significant majority of predicates treat their S and P arguments in an identical fashion. However, it is possible (and actually common) for a language to have more than one predicate type with different morphosyntactic behavior. Nichols’s conclusion is that, in the face of these facts, the mission of lexical typology is to work out the types of predicates of a language on the basis of their morphosyntactic properties and to estimate their frequency or relative amount in a language (for details, see Nichols et al. 2004: 151; Nichols 2008: 122f.).
Now, if every predicate of a language has an individual argument structure, does it imply that individual predicates should figure as values of the respective variable in a proper account of grammatical relations? This possibility is illustrated in Table 7.1 for some predicates of Chechen.

Table 7.1: A sample of grammatical relations of Chechen dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Role</th>
<th>Predicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø</td>
<td>NOM</td>
<td>{S} ohwa-d.ouzha ‘fall down’</td>
</tr>
<tr>
<td>-Ø</td>
<td>NOM</td>
<td>{A} d.a’a ‘D.eat’</td>
</tr>
<tr>
<td>-(a)s</td>
<td>ERG</td>
<td>{P}</td>
</tr>
<tr>
<td>-x</td>
<td>LAT</td>
<td>{A} qieta ‘meet’</td>
</tr>
<tr>
<td>-Ø</td>
<td>NOM</td>
<td>{P} d.ieza ‘D.love’</td>
</tr>
<tr>
<td>-na</td>
<td>DAT</td>
<td>{A}</td>
</tr>
<tr>
<td>-Ø</td>
<td>NOM</td>
<td>{P} d.alu ‘D.give’</td>
</tr>
<tr>
<td>-(a)s</td>
<td>ERG</td>
<td>{A}</td>
</tr>
<tr>
<td>-Ø</td>
<td>NOM</td>
<td>{T}</td>
</tr>
<tr>
<td>-na</td>
<td>DAT</td>
<td>{G}</td>
</tr>
<tr>
<td>-(a)s</td>
<td>ERG</td>
<td>{A}</td>
</tr>
<tr>
<td>-ca</td>
<td>INS</td>
<td>{T} d.uotta ‘D.load’</td>
</tr>
<tr>
<td>-Ø</td>
<td>NOM</td>
<td>{G}</td>
</tr>
</tbody>
</table>

Though, indeed, some predicates of a language may have unique case frames, in the majority of instances more than one predicate behaves identically with respect to dependent marking (or any other argument selector for that matter). In Chechen, for instance, in addition to d.ieza ‘love’, a number of other verbs take the A argument in the dative case and the P argument in the nominative case (e.g. d.aa ‘see’, xeza ‘hear’). In such case, it is efficient and imperative for cross-linguistic investigations of argument coding and behavior patterns to catch this generalization and to operate with classes of predicates instead of individual predicates.

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7See Gross (1984) for an example of the implementation of this approach going beyond grammatical relations.

8For the sake of simplicity, Table 7.1 does not represent the split in the A marking of some predicates conditioned by morphological form of the predicate (cf. Footnote 2 of this chapter).
Classifying individual predicates on the basis of their morphosyntactic behavior is not the only possibility though. It has been recognized for a while that semantically coherent classes of verbs often show a uniform morphosyntactic behavior, and verbal meaning often figured as a primary criterion for partitioning the lexicon and explaining the peculiarities of the morphosyntactic configurations in which verbs are found (see Wasow [1977]; Perlmutter [1978]). For instance, with respect to the Chintang $A_{NOM/ERG} T_{NOM} G_{LOC}$ verbs in (45) it is possible to generalize over the semantics of individual predicates and identify this class as the class of verbs of physical transfer:

(45) Chintang (Bickel et al. 2010+)

$A_{NOM/ERG} T_{NOM} G_{LOC}$

- **a.** huĩsa-ŋa cuwa gagri-be
  DEMs-ERG water.NOM large.container-LOC
  phatt-e.
  [3sA-]fill-PST[-3sP]
  ‘S/he filled the container with water.’

- **b.** kaŋge hokke a-os-o-ko ei?
  comb.NOM where.LOC 2sA-throw-3sP-NPST INTERJ
  ‘Oh, where do you throw the comb?’

- **c.** i-hulak patti cha-ce paŋ-ma poreu!
  2sPOSS-post.office SIDE.LOC child-ns send-INF OBLIG
  ‘You should send the children to your post office!’

- **d.** huĩsa-ŋa ṇaklasi dalo-be sumd-e.
  DEMs-ERG banana.NOM basket-LOC [3sA-]pack-PST[-3sP]
  ‘S/he packed the bananas into a basket.’

However, not all verbs of physical transfer have the $A_{NOM/ERG} T_{NOM} G_{LOC}$ case frame, for instance, hakt- ‘send’ has the $A_{NOM/ERG} T_{NOM} G_{NOM}$ case frame:

(46) Chintang (Sino-Tibetan, Kiranti; Nepal; Bickel et al. 2010+)

huĩsa-ŋa pheʔwa u-kam
DEM-ERG money.NOM 3sPOSS-friend.NOM
hakt-e.
[3sA-]send-PST[-3sP]
‘He sent his friend money.’
A lot of work in the field of argument realization is devoted to the identification of those semantic aspects of the verb that condition the morphosyntactic behavior of its arguments (for discussion and some references, see Section 7.3). As the major goal of the present investigation lies in putting together all the variables and their possible values that interact with argument set building, argument subset formation itself is the most appropriate criterion for discriminating predicate classes no matter whether their members share any semantic features or not. Thus, every argument selector has the potential of partitioning the verbal lexicon of a language into disjoint subsets. Moreover, equivalence classes of predicates established by one argument selector (e.g. case marking) do not necessarily correspond to those classes established by another argument selector (e.g. agreement).

To summarize, though genuine factors determining morphosyntactic properties of arguments are ultimately individual predicates (among other factors), for comparative purposes it is efficient to group together language-specific predicates with identical coding or behavior and to operate with such generalized classes as possible values of the condition on argument selection.

Languages vary a lot with respect to the number and size of single predicate classes established by various argument selectors. Table 7.2 provides an overview of some generalized predicate classes of Chechen established by case marking (cf. examples in (42) and Table 7.1).

Facing such a diversity of case marking patterns the question arises whether it is possible to classify whole languages as belonging to a certain alignment type. The reduction of the variety of case (or agreement, etc.) patterns of a language to a single alignment type is less than straightforward. To illustrate the issue consider again the range of Chechen predicate classes presented Table 7.2. By asking the question of which arguments are treated identically and differently, one can, in principle, compare the coding of arguments of any one-argument predicate class with arguments of any two-argument and three-argument predicate classes. Depending on which pairs of predicate classes one compares the observed alignment patterns might be different.

The following examples from Chechen illustrate predicates as a condition of argument selection by dependent marking (cf. Section 7.2). The sentence
Table 7.2: Some generalized predicate classes of Chechen established by case marking (Nichols and Vagapov 2004; Zarina Molochieva p.c.)

<table>
<thead>
<tr>
<th>Number of arguments</th>
<th>Predicate class</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>one-argument</td>
<td>S\text{NOM}</td>
<td>\text{ohwa-d.ouzha} ‘fall down’, \text{d.iela} ‘laugh’</td>
</tr>
<tr>
<td></td>
<td>S\text{DAT}</td>
<td>\text{xuorch j.a} ‘feel feverish’, \text{j.ovxa xila} ‘be hot’</td>
</tr>
<tr>
<td>two-argument</td>
<td>A\text{ERG} P\text{NOM}</td>
<td>\text{d.a’a} ‘eat’, \text{mala} ‘drink’</td>
</tr>
<tr>
<td></td>
<td>A\text{NOM} P\text{LAT}</td>
<td>\text{qieta} ‘meet’, \text{qiiera} ‘fear’</td>
</tr>
<tr>
<td></td>
<td>A\text{DAT} P\text{NOM}</td>
<td>\text{d.ieza} ‘love’, \text{d.aa} ‘see’</td>
</tr>
<tr>
<td>three-argument</td>
<td>A\text{ERG} T\text{NOM} G\text{DAT}</td>
<td>\text{d.ala} ‘give’, \text{xaatta} ‘ask’</td>
</tr>
<tr>
<td></td>
<td>A\text{ERG} T\text{INS} G\text{NOM}</td>
<td>\text{d.otta} ‘load’</td>
</tr>
</tbody>
</table>

In (148a) contains a one-argument predicate \text{ohwa-d.ouzha} ‘fall down’ taking the S argument in the unmarked nominative case. The one-argument predicate \text{jovxa xila} ‘be hot’ illustrated in (148b) take its only argument in the dative case. The two-argument predicate \text{d.a’a} ‘eat’ has the A\text{ERG} P\text{NOM} case frame, as in (148c). Finally, \text{d.ieza} ‘love’ has the A\text{DAT} P\text{NOM} case frame, as in (148d):

For instance, by comparing the arguments of the two one-argument predicate classes with the arguments of the three two-argument predicate classes of Chechen one obtains three different alignment patterns, viz. ergative, accusative, and tripartite (cf. Table 7.3).

Table 7.3: A sample of S, A, and P alignment patterns of Chechen dependent marking

<table>
<thead>
<tr>
<th>one-arg. predicates</th>
<th>two-argument predicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>S\text{NOM}</td>
<td>A\text{ERG} P\text{NOM}</td>
</tr>
<tr>
<td>(ergative)</td>
<td>(accusative)</td>
</tr>
<tr>
<td>S\text{DAT}</td>
<td>{S} vs {A} vs {P}</td>
</tr>
<tr>
<td>(tripartite)</td>
<td>(tripartite)</td>
</tr>
</tbody>
</table>
7.2 Generalized predicate classes and the default class

A similar picture emerges when comparing P, T, and G arguments of the two- and three-argument predicate classes, Table 7.4 gives an overview of the emerging ‘object’ alignment patterns.

Table 7.4: A sample of P, T, and G alignment patterns of Chechen dependent marking

<table>
<thead>
<tr>
<th></th>
<th>three-argument predicate classes</th>
<th>T&lt;sub&gt;NOM&lt;/sub&gt; G&lt;sub&gt;DAT&lt;/sub&gt;</th>
<th>T&lt;sub&gt;INS&lt;/sub&gt; G&lt;sub&gt;NOM&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>two-argument pred. classes</td>
<td>A&lt;sub&gt;ERG&lt;/sub&gt; P&lt;sub&gt;NOM&lt;/sub&gt;</td>
<td>{P, T} vs {G}</td>
<td>{P, G} vs {T}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(indirective)</td>
<td>(secundative)</td>
</tr>
<tr>
<td>two-argument pred. classes</td>
<td>A&lt;sub&gt;NOM&lt;/sub&gt; P&lt;sub&gt;LAT&lt;/sub&gt;</td>
<td>{P} vs {T} vs {G}</td>
<td>{P} vs {T} vs {G}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(tripartite)</td>
<td>(tripartite)</td>
</tr>
<tr>
<td>two-argument pred. classes</td>
<td>A&lt;sub&gt;DAT&lt;/sub&gt; P&lt;sub&gt;NOM&lt;/sub&gt;</td>
<td>{P, T} vs {G}</td>
<td>{P, G} vs {T}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(indirective)</td>
<td>(secundative)</td>
</tr>
</tbody>
</table>

Though this way of representing alignment is probably the least reductionist one, for many research questions it is still of considerable interest to be able to reduce the diversity of alignment patterns in such a way that would allow one to classify whole languages as representing one alignment type with respect to dependent or head marking or any other argument selector. For this purpose, it has been common in traditional alignment typology to select one generalized predicate class per transitivity type as the most representative or typical one (as, for instance, in Comrie 2005). The comparison of coding and behavior properties of the arguments of these representative classes yields an alignment pattern regarded as being characteristic of a language. Also in the linguistic descriptive work, it is often the case that the majority of reference grammars are compiled around these most representative classes, with other classes being treated only marginally (as, for instance, in Genetti 2007: 294ff.).

Though in many typological and descriptive studies there is no explicit discussion of why a particular class of verbs is chosen as the most repre-

---

9 Another possibility is to select one representative predicate (and not a predicate class) per transitivity type. For instance, Haspelmath (2005b) compares ditransitive predicates with the meaning ‘give’ with typical transitive predicates (‘catch’ and ‘kill’).
sentative one of a language, this is a legitimate question to ask. What are, then, possible criteria to determine the most representative one-, two-, and three-argument predicate classes (I will refer to them as ‘the default predicate classes’ in the following) and the corresponding alignment patterns? There are several options. On the one hand, a predicate class can be considered as most representative of a language due to some qualitative criteria, for instance, due to containing most prototypical or basic verbs. On the other hand, there is a range of quantitative criteria, such as syntactic productivity, token frequency and type frequency. I will consider and evaluate each of these criteria in turn.

Qualitative criteria play an important role in the discussion of prototypical or canonical transitivity. For the purposes of this thesis the application of these criteria is problematic due to the following reasons. First, there is no commonly accepted list of parameters to determine prototypical transitivity (for examples and discussion, see Hopper and Thompson 1980; Lazard 2009; Næss 2007). Second, the research in this field mostly concentrates on two-argument events, whereas prototypical one-argument and three-argument events are hardly ever discussed.

Another possible criterion for determining the most representative predicate class is syntactic productivity. It is a complex concept, and there is little consensus in the literature on how to define it (for discussion, see Baayen and Lieber 1991; Bauer 2001: 1; Barðdal 2008: 10ff.). In a nutshell, syntactic productivity of a lexical predicate class refers to its ability to attract new or existing lexical items, in other words, it corresponds to its extensibility (cf. Barðdal 2008: 1). For instance, the Chintang predicate class $A_{\text{NOM/ERG}}T_{\text{NOM}}G_{\text{NOM}}$ illustrated in (43a) would be considered productive if some verbs previously taking a different case frame begin to be used with this case frame or if neologisms and loanwords are used with this case frame. Besides, syntactic productivity is a gradient phenomenon and varies from very productive syntactic patterns to various intermediate degrees of productivity to least productive analogical extensions. Though productivity is not a new topic in linguistics, the majority of investigations concentrate on morphological productivity (see, for instance, Bauer 2001 and the references therein). In the field of syntactic productivity, however, there has not been much investigation. As Barðdal (2008) points out, with her recent
pioneering monograph she aims to ‘stake out a new field of syntactic research’ which has been emerging only in the last decade. Thus, apart from her profound account of productivity in Icelandic, there is not much reliable work to assess the productivity of single lexical predicate classes in the prevailing number of other languages. In the face of this state of affairs, I recognize the significance of syntactic productivity to classifying lexical predicate classes; however, I do not consider its application practicable at the present moment.

Token frequency (or text frequency) is another possible criterion to establish the most representative predicate class. It refers to the number of times a unit appears in a text or corpus. Token frequency probably yields the most accurate measurement of a language’s general preferences (Nichols 2008; Bickel and Nichols 2008a). However, counting tokens is a very labour-intensive method. Besides, a number of complications related to corpus comparability (control of register, genre, etc.) must be taken into account. Finally, finding appropriately annotated corpora for a large-scale typological investigation on predicate classes and grammatical relations is virtually impossible at the moment (for discussion and an alternative method, see Nichols 2008). Thus, though token frequency potentially is a very reliable measurement to determine the default predicate class, it is impracticable at present.

Type frequency refers to the number of distinct items belonging to a pattern. For a predicate class like, for instance, the Chechen predicate class $A_{ERG}P_{NOM}$ illustrated in (42a), the number of all three-argument predicates which have this particular case pattern make up its type frequency. This criterion is either explicitly (as in Comrie 2005 on case marking) or, frequently, implicitly applied when whole languages are typologized either for the purposes of cross-linguistic comparison or in language descriptions. Of the discussed criteria, it is the most practicable one, as lists of ‘exceptional’ case frames and verbs they encompass are frequently provided by reference grammars.

The application of type frequency criteria to the languages illustrated in (42)–(44) provides clear results. In Chechen, the $A_{ERG}P_{NOM}$ lexical predicate class (42a) encompasses the majority of two-argument predicates and can thus be classified as the default transitive predicate class.
quency of other lexical predicate classes ranges from a few dozens for verbs in the $A_{DAT} P_{NOM}$ class, illustrated in (42d), to a couple of verbs for $A_{NOM} P_{LAT}$ and $A_{GEN} P_{NOM}$ classes illustrated in (42b) and (42c) respectively. In case of one-argument predicates, the $S_{NOM}$ exhibits the highest type frequency (Zarina Molochieva, p.c.). Thus, considering the range of possible alignment patterns for Chechen S, A, and P arguments summarized in Table 7.3, the ergative pattern of case marking established by comparing the S argument of the $S_{NOM}$ predicate class and the A and P arguments of the $A_{ERG} P_{NOM}$ predicate class represents the most characteristic alignment pattern of the language. Table 7.5 summarizes the grammatical relations established by case marking in Chechen where the possible values of the variable Predicate are language-specific classes of predicates.

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Role</th>
<th>Predicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\varnothing$</td>
<td>NOM</td>
<td>${S, P}$</td>
</tr>
<tr>
<td>-(a)s</td>
<td>ERG</td>
<td>${A}$</td>
</tr>
<tr>
<td>-na</td>
<td>DAT</td>
<td>${S}$</td>
</tr>
<tr>
<td>$\varnothing$</td>
<td>NOM</td>
<td>${A}$</td>
</tr>
<tr>
<td>-(a)x</td>
<td>LAT</td>
<td>${P}$</td>
</tr>
<tr>
<td>-na</td>
<td>DAT</td>
<td>${A}$</td>
</tr>
<tr>
<td>$\varnothing$</td>
<td>NOM</td>
<td>${P}$</td>
</tr>
</tbody>
</table>

In a similar fashion, it is possible to establish a default three-argument predicate class in Chintang (illustrated in (43a)). The proportion of the $A_{NOM/ERG} T_{NOM} G_{NOM}$ (‘double object’) verbs such as $bopt$ ‘cover’ in (43a) amounts to 10%. Interestingly, this minor class contains the verbs $pid$ ‘give’ and $chokt$ ‘hand, pass, give’, which are often considered as prototypical or particularly representative ditransitive verbs (for instance, in Haspelmath 2005b). The $A_{NOM/ERG} T_{INS} G_{NOM}$ (‘primary object’) lexical predicate class, which contains verbs such as $bhukt$ ‘cover’ illustrated in (43b), comprises 20% of Chintang ditransitive verbs. Finally, the $A_{NOM/ERG} T_{NOM} G_{LOC}$ (‘direct object’) lexical class illustrated by the verb $phatt$ ‘fill’ in (43c) amounts to 70%. Thus, the $T_{NOM} G_{LOC}$ class is the default ditransitive predicate class in Chintang in terms of type frequency and indirective is the most represen-
Finally, in Malayalam, there is only a small class of verbs (viʃakku ‘feel hungry’, daahikkuka ‘feel thirsty’, and a few more) which subcategorize for the dative-marked S argument, whereas the overwhelming majority of one-argument predicates have their S argument in the nominative case. Thus, $S_{NOM}$ is the default one-argument predicate class.

To summarize, the information on the number of predicates belonging to a particular lexical predicate class is relatively readily available (at least, as long as the distribution of dependent marking is concerned) and this makes type frequency assessment a practicable criterion for determining the default predicate class of a language. Thus, for the purposes of the present thesis I adopt type frequency as a proxy for other measures to distinguish the default from non-default lexical predicate classes. The decision on which predicate class is the default one in a language is made separately for verbs with different numbers of semantic arguments. In other words, the default one-argument, two-argument, and three-argument lexical predicate classes are independently determined on the basis of their type frequency. When the arguments of these three default predicate classes are considered jointly, it is possible to make generalizations about the most representative alignment pattern of a language, i.e. it is on the basis of the default one-, two-, and three-argument predicate classes (and not classes with restricted patterns) that whole languages are classified as, for instance, having nominative-accusative or ergative-absolutive alignment. One might wonder, however, whether it is always possible to determine the default predicate class for a language, and in Section 7.4 I consider one type of...

\footnote{Though, admittedly, the correlation between the three variables of productivity, type and token frequency is not necessarily straightforward, the application of type frequency as proxy is supported by available studies. For instance, Barðdal (2008) found a correlation between syntactic productivity and type frequency, as well as between type and token frequency in Icelandic (Barðdal 2008: 60, 172f.). For Chintang, the token frequency of the three classes presented in (43) was tested using the Chintang corpus of the Chintang and Puma Documentation Project and the results were consonant with the ones based on the type frequency, i.e. the $T_{NOM} G_{LOC}$ class is the default ditransitive predicate class both in terms of type and token frequency (Balthasar Bickel, p.c.).}
languages (often referred to as split-S languages) that potentially lacks the default one-argument predicate class.

7.3 A note on argument realization

As presented in the previous section, single predicates grouped into predicate classes are regarded as another variable conditioning argument selection in the present approach. Predicate classes are established exclusively on the basis of morphosyntactic behavior of their arguments and, metaphorically speaking, every argument selector can slice the pie of predicates into different predicate classes in a different way. However, building classes of predicates exclusively on the basis of the morphosyntactic properties of their arguments is not the only possibility. There is a long tradition of accounting for the differences in morphological coding and syntactic behavior of the arguments of particular verbs in terms of the semantics of these verbs. This section presents an overview of approaches — or, actually, a whole research area — that attempts to integrate predicate semantics as one of the criteria of predicate classification.

Traditionally, the interaction of lexical predicates and morphosyntactic realization of their arguments has been considered under the umbrella notion of argument realization (also referred to as ‘mapping’ or ‘linking (problem)’). In general, argument realization refers to the area of linguistic investigation that attempts to work out regularities in the syntactic expression of the semantic arguments of verbs and to answer the question of why arguments of specific verb are syntactically realized as they are. One frequent line of reasoning is the following:

The fact that classes of verbs with similar meanings show characteristic argument realization patterns suggests that these patterns can be attributed to the semantic properties of each class. [...] One goal of the theory of argument realization is the isolation of the relevant components of meaning and the explication of their connection to the range of argument realization options. (Levin and Rappaport Hovav 2005: 2)
Starting with Fillmore (1970), the idea that verbs form semantically identifiable classes which serve as the basis for generalizations concerning argument realization gained increasing recognition. Over the years, many mapping regularities have been discovered and a number of theories of argument realization have been put forward to account for these regularities (Jackendoff 1987, 1990; Dowty 1991; Hale and Keyser 1993, 2002; Croft 1991, 1998; Van Valin and Wilkins 1993; Van Valin and LaPolla 1997; Wunderlich 1997; Ackerman and Moore 2001 among others).

The majority of modern linguistic theories had to take a standpoint on whether there are any generalizations governing the linking between semantic roles and grammatical relations or not. Positions on this issue range from the claim that essentially no reliable generalizations can be made (Rosen 1984: 73) to the claim that a semantic role determines the syntactic realization of the argument (Baker 1988, 1997).

Another essential dichotomy between theories of argument realization results from defining the determinants of argument realization. According to the mainstream view, the verb’s lexical-semantic structure determines the syntactic structure (cf., among others, Dowty 1991; Levin and Rappaport Hovav 1995, 2005; Primus 1999; Ackerman and Moore 2001). However, some researchers support the view that the determinants of argument realization are not exclusively lexical; rather, certain syntactic configurations (termed ‘constructions’ or ‘(syntactico-semantic) frames’ in some approaches) determine certain meaning components. When a verb occurs in such a construction, this construction determines the argument structure this verb becomes associated with (Borer 1994; Goldberg 1995; Kay 2000; Åfaråili 2007 among others).

If one accepts the idea that syntactic realization of arguments is largely predictable from the meaning of predicates, the follow-up question is what these aspects of meaning are. Given the complexity of word meaning (for discussion, see Aitchison 1994), it is a laborious job to provide a consistent lexical semantic representation of verbs. For the purposes of argument linking, it has been proposed to restrict the lexical semantic representation to those semantic distinctions that affect argument realization and to ignore
all others\textsuperscript{11} (cf. Dowty\textsuperscript{1991} 560ff.). These aspects of verb meaning can be isolated by examining the common semantic denominator of verbs exhibiting an identical range of argument realization options (Pinker\textsuperscript{1989} Levin\textsuperscript{1993}; Levin and Rappaport Hovav\textsuperscript{2005}: 10). Eventually, one ends up with classes of verbs sharing certain semantic characterizations and morphosyntactic behavior. However, determining the relevant facets of meaning is not always straightforward. Thus, for instance, the discussion of the relevant semantic feature defining the syntactic realization of certain verbs of bodily processes in Italian (e.g. arrossire ‘blush’, russare ‘to snore’, tossire ‘cough’, etc.) resulted in a whole range of suggestions (cf., among others, Perlmutter\textsuperscript{1978} Rosen\textsuperscript{1984} McClure\textsuperscript{1990}). Meanwhile, it is generally accepted that these subtle syntactically relevant semantic components are elements of a rich representation of event structure based on either causal structure or the internal temporal structure of events (for discussion, see Dowty\textsuperscript{1979} Croft\textsuperscript{1991, 1998} Tenny\textsuperscript{1992, 1994}; Van Valin and LaPolla\textsuperscript{1997}; Primus\textsuperscript{1999}; Erteschik-Shir and Rapoport\textsuperscript{2005}). In the end, the intuitively postulated and superficially coherent semantic verb classes (for instance, verbs of bodily processes, psych-verbs, verbs of cognition, etc.) might become nothing more than just an epiphenomenon, with real determinants of syntactic behavior being more subtle semantic components. To summarize, as Levin and Rappaport Hovav\textsuperscript{2005} point out, the isolation of the meaning components relevant to the classification of verbs into semantic classes can present a real challenge, even more so as the superficial components of meaning may not be the true determinants of syntactic behavior.

Furthermore, once a grammatically relevant semantic component has been identified, it can often account only for one construction (i.e. an individual argument selector, for instance, the auxiliary selection). However, it is not guaranteed that the same semantic component can account for the behavior of the same range of predicates with respect to a different con-

\textsuperscript{11}That this is indeed possible is often taken for granted. However, the whole undertaking of separating the meaning of predicates into syntactically relevant semantic information and syntactically irrelevant one is itself questionable (cf. Taylor\textsuperscript{1996}).
7.3 A note on argument realization

struction (say, a particular case assignment), as these predicates might either form a larger class with some other predicates or split into smaller classes showing different argument realization, so that a different semantic concept has to be postulated to account for the behavior of these larger or smaller classes. Therefore, in an appropriate account, every construction with different argument realization has to be paired with a semantic aspect eventually resulting in an ‘intricate system of verb cross-classification’ (Levin and Rappaport Hovav 2005: 17).

Finally, the entire enterprise of determining the effects of predicate semantics on morphosyntactic realization of arguments often ignores the fact that sometimes the etymology of particular predicates is a better predictor of its morphosyntactic behavior. The following examples from Hindi illustrate the issue. In the perfective aspect, the A argument of most transitive verbs is in the ergative case, as in (47a). With a couple of verbs, the A argument never takes the ergative case suffix, as in (47b):

(47) Hindi (Indo-Aryan; India; Mohanan 1994: 72)

a. \(A_{\text{ERG}} P_{\text{NOM}/\text{ACC}}\)

\[
\text{Rām-ne/*Rām ſīšā toḍā.}
\]

Ram-ERG/*Ram.NOM mirror.NOM break.PFV

‘Ram broke the mirror.’

b. \(A_{\text{NOM}} P_{\text{NOM}/\text{ACC}}\)

\[
\text{Rām/*Rām-ne ſīšā lāyā.}
\]

Ram.NOM/*Ram-ERG mirror.NOM bring.PFV

‘Ram brought the mirror.’

These verbs — lāna ‘bring’ and a few other — are believed to be etymologically based on the verbs ānā ‘come’ and jānā ‘go’, whose arguments are never in the ergative case (Montaut 2004: 180; see also Davison 1999: 187, 204 for a discussion of this class of verbs and skepticism towards the possibility to find any semantic explanation for the existing classes). Thus, objectively, there is no necessity for the Hindi \(A_{\text{NOM}} P_{\text{NOM}/\text{ACC}}\) predicate class to have any semantic component in common. However, if the etymology of a particular class of verbs is unknown (which is indeed the case for a

\[\text{See Section 8.3 for the discussion of the so-called tense/aspect based split of case marking in Indo-Aryan languages.}\]
huge majority of languages without written tradition), it might be tempting to look for a putative common semantic component.

To summarize, though establishing syntactically relevant aspects of verb meaning might provide interesting explanatory insights into the issue of argument realization, it is an extremely challenging task. Even though it is often assumed that the inventory of syntactically relevant semantic components should be both universal and small in size (Levin and Rappaport Hovav 2005: 18), there is little consensus regarding the character of these meaning facets and no such commonly-recognized list yet. Moreover, there are also no large-scale investigations of argument realization that would allow one to assess the cross-linguistic applicability of the suggested inventories of semantic components. Finally, it is unclear how genuine idiosyncrasies of the Hindi type mentioned above are to be accounted for.

As I pointed out in the previous section, individual predicates are integrated into the present framework as another condition on argument subset formation. Then, for practical reasons and to allow cross-linguistic comparison, predicates are grouped together into language- and construction-specific predicate classes exclusively on the basis of their morphosyntactic behavior. Besides, if possible, most representative (default) predicate classes are determined on the basis of token frequency. These empirically established predicate classes (default and non-default ones) can potentially serve as an input for research aiming at the elimination of relevant semantic facets. For the present approach to grammatical relations, however, resolving the linking problem is not of priority.

7.4 Split and fluid intransitivity

In Section 7.2, I discussed a range of possible criteria to determine default one-, two-, and three-argument predicate classes, which are essential to reduce alignment patterns of a language to the most representative ones. I came to the conclusion that type frequency of a predicate class is the most practicable criteria and I apply it as a proxy for other possible measures to distinguish default from non-default lexical predicate classes. The question arises whether it is always possible to establish a default predicate class. This section discusses two special cases — the so-called split-intransitive
(or split-S) and fluid-intransitive (or fluid-S) systems — that might present problematic cases.

Split- and fluid-intransitive systems are two special types of splits in the morphosyntactic realization of arguments conditioned by the nature of one-argument predicates. In typological studies these systems have been considered either as a combination of two basic alignment types, namely, of nominative-accusative and absolutive-ergative (Dixon 1994), or as distinct types of alignment of the same status as nominative-accusative and absolutive-ergative alignment types (Donohue 2008: 70ff.). As the two systems have very different properties and are treated differently in the present approach, I will consider them separately: split-intransitive systems in Section 7.4.1 and fluid-intransitive systems in Section 7.4.2. Though in the following two sections split-intransitive and fluid-intransitive systems are treated separately, it should be noted that these two patterns can co-occur within the same language and in what follows some languages exhibiting both patterns will be considered.

### 7.4.1 Split intransitivity

Split intransitivity can be illustrated with the following examples from Klon. (48a) and (48b) are examples of clauses with two-argument predicates. Pronominal A arguments are encoded by free pronouns, as a ‘2sNOM’ in (48a) and na ‘1sNOM’ in (48b), whereas pronominal P arguments are encoded by special bound pronouns,13 as ne- ‘1sACC’ and in- ‘2sACC’ in the same examples. Non-pronominal arguments code A and P identically.

(48) Klon (Timor-Alor-Pantar; Indonesia; Baird 2008: 36, 38)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>na</td>
<td>ne-uuur.</td>
</tr>
<tr>
<td>2sNOM</td>
<td>1sACC-see</td>
<td>‘You saw me.’</td>
</tr>
</tbody>
</table>

---

13In Klon, pronominal P arguments are realized as prefixes on the verb. Though morphophonologically bound to the verb, they are arguments and their marking is considered under the heading of dependent marking (or case). See Section 9.2.4 for criteria applied in this thesis to distinguish between head marking and dependent marking on the clause level.
7.4.1 Split intransitivity

b. na in-kob.
   1sNOM 2sACC-hit
   ‘I hit you.’

(49a) contains the one-argument verb lam ‘walk’, its pronominal S argument is marked in the same way as the A argument in (48b). Finally, (49b) is another example of a clause with a one-argument verb. In this case, however, the pronominal S argument of the verb ete ‘be scared’ is marked in the same way as the P argument of uur ‘see’ in (48a), and not as the A argument:

(49) Klon (Baird 2008: 31, 40)
   a. na lam.
      1sNOM walk
      ‘I’m walking.’
   b. uruut béq ma, n-edan.
      deer pig come 1sgACC-be.scared
      ‘Deer and pig came, I was scared.’

Thus, both (49a) and (49b) have one-argument predicates. However, the two S arguments are coded differently in the two clauses.

Such discrepancy in the treatment of S arguments is neither unique to Klon, nor is it restricted to dependent marking. Tsova-Tush is another language frequently characterized as exhibiting split-intransitivity (cf. Van Valin 1990: 248; Siewierska 2004: 54). For example, the S argument of the verb japx- ‘undress’ in (50b) is in the ergative case, which is otherwise used to mark the A argument of two-argument predicates, cf. (50a). The S argument of the verb qae- ‘hang’ in (50c) is in the nominative case:

(50) Tsova-Tush (Nakh-Daghestanian; Georgia; Holisky 1987: 105, 1994: 194)
   a. (as) žagnO xait’:n-as.
      1sERG book.NOM read-AOR-1sERG
      ‘I read the book.’

---

14 Tsova-Tush also figures prominently in the discussion of fluid-S systems. I come back to this issue in Section 7.4.2.

15 In Tsova-Tush, the split-S pattern of case marking is exhibited only by 1st and 2nd person pronouns, 3rd person arguments have {S, P} vs. {A} dependent marking with any one-argument verb.
7.4.1 Split intransitivity

b. (as)  *daħ*  *japx-jailn-as*.
   1sERG  PVB  undress-AOR-1sERG
   'I got undressed.'

c. (so)  *xe-n-mak qae’-u-sO*.
   1sNOM  tree-DAT-on  hang-PRS-1sNOM
   'I’m hanging in a tree.'

Similar grammatical systems in which the S argument does not exhibit a uniform behavior have been referred to by a variety of labels, among them ‘unergative’ and ‘unaccusative’ verbs (Perlmutter 1978; Levin and Rappaport 1986; Levin and Rappaport Hovav 1995), ‘active alignment’ and related compounds (active-neutral, active-inactive) (Sapir 1917), active-static (Hass 1941), or ‘static-active’ (Matthews 1965; Klimov 1973; Nichols 2008), ‘agentive’ or ‘agent-patient’ (Dahlstrom 1983; Mithun 2008b), ‘semantic alignment’ (Donohue and Wichmann 2008), ‘split-S’ (Dixon 1994), and ‘split intransitivity’ (Merlan 1985; Van Valin and LaPolla 1997; Croft 1998; Van Valin 1990; Donohue 2001; Creissels 2008b). This abundance of labels is not accidental. It clearly reflects the non-homogeneity of the phenomena in question and linguists’ understanding of the alleged semantic motivations of the splits to be discussed below. I adopt the term ‘split intransitivity’ here, which I regard to be the most neutral and precise. This term reflects in a transparent way the fact that one-argument predicates of a language build at least two disjoint predicate classes characterized by a contrast in the way their single argument S is aligned with the two arguments of transitive predicates or with arguments of ditransitive predicates for that matter. As Creissels (2008b) points out, terms such as ‘agentive alignment’ or ‘active-stative alignment’ are less convenient as they presuppose a semantic correlate of split intransitivity which remains a controversial issue in the study of split intransitivity and related phenomena. The recently introduced term ‘semantic alignment’ (Wichmann 2008) has the same flaw, since it excludes the possibility of purely lexical (i.e., semantically arbitrary) split intransitivity.

Languages traditionally referred to as split intransitive languages — or ‘classic stative-active’ to take up Nichols’s (2008) term — were first attested in the Americas (starting with Sapir 1917). The languages claimed to exhibit split intransitivity belong to a number of families (Yuki-Wappo, Po-
moan, Na-Dene, Iroquoian, Siouan, and Muskogean languages) and include some isolates (Karuk, Chimariko, Atakapa, Haida) (see Mithun 2008b). Besides, in the last few years an increasing number of split intransitive languages has been reported for the Pacific. They include some Papuan (Donohue 2001) and a range of Austronesian and Timor-Alor-Pantar languages (Klamer 2006, 2008). Apart from these two large areas, a number of other languages have been described as split intransitive. Among them are Kartvelian languages (Harris 1982, 1990), Basque (Hualde and Ortiz de Urbina 2003), some Indo-Aryan languages (for instance, Nepali (Li 2007)), and some Saharan languages (Creissels 2008b; König 2008).

The lengthy list of split-intransitive languages including representatives from different geographical areas and language families suggests that split intransitivity is a frequent phenomenon and that any language has chances of being characterized as split intransitive if one looks hard enough. Besides, as Creissels (2008b) points out, linguists with different theoretical backgrounds share the following bias in treating languages with split intransitivity. It is often the case that linguists are prone to analyze a language with obvious ergative alignment traits (mostly in head- or dependent-marking) as exhibiting split intransitivity if it possesses a minor class of verbs showing a behavior deviating from the rest of the verbal lexicon as, for instance, in Basque. However, when considering predominantly accusative languages (e.g. Dolakha Newari, Russian or German) researchers are generally reluctant to analyze behavior of minor classes of one-argument predicates in terms of split intransitivity.

At this point, it is appropriate to ask whether split intransitivity indeed represents a discrete alignment type as has sometimes been claimed (e.g. in Donohue 2008), and, if this is indeed the case, what the defining features are. The criteria traditionally used to classify a language as exhibiting split intransitivity include a range of phenomena: morphosyntactic properties, predicate semantics, and the type frequency of the individual one-argument predicate classes. In what follows, I briefly present and evaluate each of these criteria in turn.

Certain morphosyntactic phenomena (that is, argument selectors) figure prominently in Donohue’s (2008) definition of ‘semantic alignment’ (see also Croft 1998). Donohue analyzes a language as exhibiting split intran-
Split intransitivity only if verbal lexical semantics affects word order, head-marking, or dependent-marking. On the basis of this criterion, such ‘classical’ unergative-unaccusative splits as, for instance, in Dutch are excluded, as the only indicator of the partition of the Dutch one-argument predicates into the unaccusative and unergative classes is the auxiliary choice. This perspective obviously goes against the framework adopted here, as the ability to partition the lexicon of one-argument verbs is not limited to coding properties, and any type of argument selection is of relevance (including both coding and behavioral properties) without prioritizing them. Apart from head- and dependent-marking, a number of other argument selectors (e.g. passivization, resultative construction, etc.) have been reported to show split intransitivity. These selectors constitute the core around which the long-lasting discussion of unergativity and unaccusativity revolves (for details and examples, see [Perlmutter 1978; Levin and Rappaport Hovav 1995]). Finally, Creissels’ (2008b) discussion of ‘covert’ split intransitivity provides examples of some rare and less evident cases of splits (e.g. impersonalization in Nahuatl or nominalization in Northern Mande), and there is no obvious reason to treat these phenomena in a different way from splits as determined by case marking or agreement. To summarize, due to the egalitarian treatment of argument selectors adopted in the present approach, the selector involved is not an appropriate criterion to identify cases of genuine split intransitivity.

Another frequently mentioned criterion of distinguishing split intransitivity as a separate alignment type is the semantic motivation involved. As some of the terms used to designate the phenomenon in question suggest (e.g. ‘active alignment’ and related compounds, such as ‘active-inactive’, ‘active-static’, ‘stative-active’, ‘agentive’ or ‘agent-patient’), the discussion of the semantic motivation of split intransitivity has been primarily centered around two semantic categories: agentivity and lexical aspect (Aktionsart) (for details, see [Merlan 1985; Van Valin 1990; Mithun 1991]). As Mithun (1991) notes, the split of one-argument predicates into classes with common morphosyntactic properties is not totally arbitrary from the semantic point...
of view and predicates of each class tend to have some common semantic features recurrent in language after language. On the other hand, however, the membership in a morphosyntactic class can neither be predicted nor exhaustively accounted for in terms of semantic features (see also the discussion in Harris 1981, Harris 1982, Rosen 1984, Pustet 2002). In the majority of cases the semantics is lexicalized. Thus, for instance, commenting on the distribution of pronominal forms in Yuki, Mithun concludes:

A basic pronoun set is lexicalized with each verb. Connected speech shows little evidence of on-line judgments about degrees of control or affectedness. (Mithun 2008b: 301)

The lexicalization of the morphosyntactic behavior of individual predicates is also supported by the fact that, at first sight, the occurrence of some predicates with particular morphosyntactic patterns might seem surprising. When the etymologically original or literal meaning of such predicates is uncovered, however, their assignment to particular predicate classes becomes more plausible from the semantic point of view (Mithun 2008b). For instance, the S argument of yahda ‘believe’ in Haida is unexpectedly coded like the A argument of the default two-argument predicate class, whereas the S argument of gadas ‘go somewhere else’ is coded like the P argument despite the volitionality of the S argument. gadas, however, also has a different, putatively original meaning ‘come off, ricochet off’ with a non-volitional S argument (Enrico 2003: 95), and yahda literally means ‘make true for oneself’ (Levine 1977: 135). Thus, though originally the assignment of a partic-

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17 Van Valin (1990) criticizes approaches rejecting consistent semantic motivation of split-intransitivity for adopting an inappropriately simplistic thematic-relation based account. However, he apparently does allow for exceptions. For instance, commenting on Harris’ (1981) account of Georgian one-argument verbs with Class 1 morphology but Class 2 semantics, he admits:

With respect to inversion they follow their morphology rather than their semantics, and hence are exceptions to this analysis. They are also exceptions to Harris’ RelG account. (Van Valin 1990: 247, footnote 23)
ular verb to a predicate class might have been consistent from the semantic point of view, synchronically these lexicalized idiosyncrasies mix up the picture considerably. (Cf. also the examples from Hindi discussed in Section 7.3 which illustrate the same point with application to two-argument predicates.)

Moreover, even within dialects of the same language cognate verbs can be assigned to different classes. Thus, for instance, in the Masset dialect of Haida, the S argument of the verb sk’al.aaw ‘have diarrhea’ is marked with the same marker as the A argument, whereas in the Skidegate dialect the \( \{S, P\} \) marking is possible. On the other hand, the S argument of q’anda ‘belch’ receives the \( \{S, P\} \) dependent marking in the Masset dialect and \( \{S, A\} \) marking in the Skidegate dialect of Haida (Enrico 2003: 93f.). Facts such as these challenge the perspective that insist on the strict semantic motivation of the split even further.

Finally, differential S treatment in the languages which are hardly ever classified as split intransitive (e.g. Dolakha Newari, Russian or German) is also motivated semantically. For instance, German dative-subject predicates include only predicates with experiential semantics.

To conclude, though semantic factors often indeed play a role in partitioning the one-argument verbal lexicon of split-intransitive languages (as well as in languages generally not classified as such), it is impossible to either predict or exhaustively account for the membership of individual predicates in a morphosyntactic class in terms of semantic features. Thus, semantic motivation is not a reliable criterion to distinguish split-intransitive systems as a distinct type of alignment.

The third potential criterion to distinguish split-intransitive systems from systems with accusative, ergative and other alignment types is the type frequency of individual one-argument predicate classes. Already Sapir (1917) noticed that in languages classified as split intransitive on the basis of some other traits the size of the subclasses of one-argument verbs varies significantly (cf. also Dixon (1979: 83) and Merlan (1985)). For instance, Dixon (1979: 83) contrasts Guarani (Tupi-Guarani; Paraguay) with Arikara (Caddoan; USA). Whereas Guarani has a large class of stative one-argument predicates, consisting of several hundred lexical items, Arikara possesses only about two dozen stative one-argument predicates. This variation of
type frequency is not restricted to unrelated or distantly related languages. As Pustet’s (2002) quantitative comparison of Lakhota and Osage (Siouan) shows, even in closely related languages there is a considerable degree of variance: whereas the full sample of Lakhota one-argument predicates assigning A marking amounts to 34.4% (with 65.6% of one-argument predicates with P marking), in Osage one-argument predicates with A marking constitute 72.0% (with 28.0% of predicates with P marking).

Type frequency figures as a diagnostic criterion, for instance, in Comrie (2005). Comrie adopts the following strategy for the purposes of his typological investigation:

[F]or a language to be considered of the active type, there must indeed be two substantial sets of intransitive verbs differing in the case marking of their S. A small number of exceptional intransitive verbs, as in Hindi [...] will not be taken into account.

(Comrie 2005: 399)

Transforming this criterion into the terms introduced in Section 7.2 suggests that a split determined by lexical predicates can be classified as a split-intransitive pattern only if it is impossible to establish a default one-argument predicate class in terms of type frequency. Obviously, such formulations as ‘substantial sets of intransitive verbs’ are difficult to quantify, and as has been mentioned above there is a significant degree of variance in the size of individual one-argument predicate classes. Ideally, precise information about the size of each class would be included as another factor when considering the degree of ergativity or accusativity of a language. For the purposes of the present thesis, I adopt a strict (arbitrary) value to determine whether there is a default (for instance, one-argument) predicate class: if the difference in type frequency between the two largest predicate classes of a language lies under 10%, a language is considered as having no default predicate class.

Now, adopting this criterion of determining split intransitivity implies that some languages traditionally classified as exhibiting split intransitivity would be accounted for in the same terms as languages not classified as such, that is, as languages which distinguish a default and non-default predicate classes (like, for instance, Udihe, Russian, German, or Malay-
7.4.1 Split intransitivity

alam). Moreover, this criterion implies that the number of languages with split intransitivity as understood in this thesis is considerably smaller than traditionally recognized.\footnote{Though the methodology applied in \cite{nichols2008} is not directly compatible with the one used in this thesis, her survey provides interesting results consonant with the conclusions of the present account of split intransitivity. Nichols’s investigation is based on a survey of 20 verb glosses in 41 languages (including ‘classical’ split intransitive languages and languages usually not characterized as such). When different types of subject coding were plotted against each other, it came out that languages traditionally classified as split-S do not make up a very clear type but rather represent a continuum from near-ergative to near-accusative types. On the basis of this survey, Nichols concludes the following: Thus, from a lexical-typological perspective, ‘split subject’ covers a diffuse and fairly diverse range of languages, without a very clear distinction from ergative at one end of the range to accusative at the other. \cite{nichols2008} 132}

What about the languages used to illustrate the phenomenon at the beginning of this section? Would they still be characterized as having split intransitivity applying the suggested test? Klon, illustrated in (48–49), is classified as a language exhibiting split-intransitivity by \cite{baird2008} and \cite{klamer2008}. However, Baird herself recognizes one class of one-argument verbs as ‘default’:

\[
S_A \text{ marking is lexicalised for many intransitive verbs, resulting in the majority of intransitive verbs always taking } S_A \text{ marking. These intransitive verbs can be regarded as the default group because the perceived features of the argument are often irrelevant, playing no role in determining the marking of } S. \text{ (Baird 2008: 52)}
\]

A similar situation is observed in Tsova-Tush, illustrated in (50) above. \cite{holisky1987} conducted a survey of a large sample of Tsova-Tush one-argument verbs and obtained the following results: the S argument of 78 verbs is in the ergative case, as in (50b), whereas only 31 verbs have their S arguments in the nominative case as in (50c) (a more complete account of Holisky’s investigation is presented in Section 7.4.2). Thus, with respect
to type frequency, the $S_{ERG}$ predicate class is the default one-argument class. Moreover, Holisky emphasizes that also from the semantic perspective ergative-marked S arguments are rather unspecified with respect to agentivity, parallel to what has been observed for Klon:¹⁹

For a large number of verbs, the ergative is unmarked and can convey agentivity or non-agentivity. The form with nominative, as the marked member of the opposition, is always interpreted non-agentively. (Holisky 1987: 116)

If the languages used in the beginning of this section to illustrate the phenomenon do not fill the criteria of genuine split intransitivity (i.e. do not possess two (or more) equal predicate classes in terms of type frequency), what are the languages then that can be classified as such with respect to case marking? It has been known for a while that split intransitive systems are extremely rare in the domain of case marking (cf. Siewierska 2004: 54f.; Comrie 2005: 399; Nichols 2008: 122). For instance, Comrie (2005: 399) registers only four such languages in his survey, whereas Siewierska (2004: 54f.) mentions six languages. To summarize, if the type frequency criterion is applied to differentiate split-intransitive systems as a special type of alignment (i.e. of the same status as accusative, nominative, and neutral alignment types), it turns out that there are probably very few, if any, such systems in the domain of case marking.²⁰

At this point it is appropriate to ask whether any known language would ever be classified as having a split-intransitive pattern if the criterion suggested above (maximum difference of 10% in type frequency between some two predicate classes of a language) is applied. As has been mentioned

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¹⁹The fact that the default predicate class encompasses predicates with different semantics whereas the non-default classes are semantically ‘restricted’ seems to be recurrent.

²⁰For the few languages claimed to exhibit split-intransitivity in the domain of dependent marking (Imonda, Drehu, Central Pomo), there is no explicit data on the type frequency of the two one-argument predicate classes. Georgian is a good candidate for a true split intransitivity of case marking, as it seems to have two very large and productive classes of one-argument predicates (see Holisky 1981, Harris 1981), exact data on type frequency, however, is missing.)
above, split intransitivity has been known to be more common in the domain of head marking.\textsuperscript{21} Choctaw is one of the languages frequently classified as such (\textsuperscript{Heath}1977; \textsuperscript{Foley and Van Valin}1984).

In Choctaw, the majority of two-argument verbs agree with their A and P arguments, as, for instance, \textit{ahpalih} ‘kiss’ in \textsuperscript{(51a)}. The marker of the A argument belongs to the so-called Set I agreement markers,\textsuperscript{22} as, for instance, the suffix -\textit{li} ‘1sI’ in \textsuperscript{(51a)}. The marker of the P argument is from Set II of agreement markers, for instance, the prefix \textit{chi-} ‘2sII’ in \textsuperscript{(51b)}. Finally, the marker of the G argument of a three-argument predicate is from Set III, as the prefix \textit{im-} ‘3III’ in \textsuperscript{(51b)} illustrates:

\begin{enumerate}
\item \textbf{Choctaw} (Muskogean; Southeastern USA; \textsuperscript{Broadwell}2006a: 143; \textsuperscript{Davies}1986: 40)
\item \textit{a. chi-ahpali-li-tok}
\begin{enumerate}
\item 2sII-kiss-1sI-PST
'I kissed you.'
\end{enumerate}
\item \textit{b. alla iskali im-a-:li-tok}
\begin{enumerate}
\item child money 3III-give-1sI-PST
'I gave money to the child.'
\end{enumerate}
\end{enumerate}

The agreement marking of one-argument predicates can be either from Set I of agreement markers, as in \textsuperscript{(52a)}, or from Set II, as in \textsuperscript{(52b)}, or even from Set III with a few predicates, as in \textsuperscript{(52c)}:

\begin{enumerate}
\item \textbf{Choctaw} (\textsuperscript{Broadwell}2006a: 140)
\item \textit{a. baliili-li-tok}
\begin{enumerate}
\item run-1sI-PST
'I ran.'
\end{enumerate}
\end{enumerate}

\textsuperscript{21}The paragraphs to follow thematically belongs to the discussion of head marking (Chapter \textsuperscript{9}). For the sake of comparison, however, I treat languages with split-intransitive patterns of head marking in this chapter, which otherwise deals exclusively with dependent marking.

\textsuperscript{22}Other common labels used to refer to the three sets of Choctaw agreement markers include ‘nominative’ for Set I, ‘accusative’ for Set II, and ‘dative’ for Set III (\textsuperscript{Davies}1986) or ‘agentive’, ‘patientive’, and ‘dative’ respectively (e.g. \textsuperscript{Heath}1977). I adopt Broadwell’s (2006a) terminology because his labels do not imply parallels with languages that employ ergative, accusative, and dative cases in familiar ways.
b. *akoshchonnoli-li-ttook*
   nod-1sl-DIST.PST
   ‘I nodded.’

c. *sa-niya-h*
   1sII-fat-TNS
   ‘I am fat.’

d. *am-achockma-h*
   1sIII-be.well-TNS
   ‘I feel well.’

The lexicon survey of Choctaw one-argument predicates reveals that the language has apparently no default one-argument predicate class in terms of type frequency. Instead, it has two numerically equal predicate classes and one minor class: Broadwell (2006a: 140ff.) lists some 50 predicates for each of the $S_I$ and $S_{II}$ predicate classes and over a dozen $S_{III}$ predicates. The grammatical relations established by head marking in Choctaw are summarized in Table 7.6.

Table 7.6: Grammatical relations of Choctaw head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Conditions: predicate class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set I agreement</td>
<td>{A}</td>
<td>default</td>
</tr>
<tr>
<td>Set II agreement</td>
<td>{P, T}</td>
<td></td>
</tr>
<tr>
<td>Set III agreement</td>
<td>{G}</td>
<td></td>
</tr>
<tr>
<td>Set I agreement</td>
<td>{S}</td>
<td>$S_I$</td>
</tr>
<tr>
<td>Set II agreement</td>
<td>{S}</td>
<td>$S_{II}$</td>
</tr>
<tr>
<td>Set III agreement</td>
<td>{S}</td>
<td>$S_{III}$</td>
</tr>
</tbody>
</table>

To sum up, in contrast to the languages discussed at the beginning of this section (Klon illustrated in (48) and (49) and Tsova-Tush illustrated in (50)), it is impossible to establish a default one-argument predicate class in Choctaw when considering predicate classes establish by the Choctaw agreement marking. Thus, with respect to agreement marking, it can be classified as a split-intransitive language.

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23 This is a simplified representation of Choctaw head marking, since apart from the default two-argument predicate class, there are a number of non-default two-argument predicate classes (for details, see Broadwell 2006a: 143ff.).
7.4.2 Fluid intransitivity

To conclude, this section considers the phenomenon of split intransitivity and some common criteria applied to differentiate this phenomenon from other alignment patterns. I came to the conclusion that the type frequency criterion introduced in Section 7.2 allows for a consistent treatment of any predicate-conditioned split, including splits in languages traditionally characterized as exhibiting split-intransitive patterns. The distinctive feature of genuine split-intransitive systems is the absence of a default one-argument predicate class. If the type-frequency criterion is applied, split intransitivity appears to be extremely rare (or even non-existent) in the domain of dependent marking; with respect to head marking split intransitivity is attested more frequently.

7.4.2 Fluid intransitivity

Another pattern commonly discussed under the heading of splits conditioned by the lexico-semantic nature of verbs is fluid-intransitive or fluid-S systems (Dixon 1994: 78ff.). Dixon characterizes these systems (and even whole languages) in the following way:

The typical situation in such a language — which I call ‘fluid-S’ — is for each intransitive verb to have the possibility of two kinds of marking for its core NPs — one (Sa, the same as on a transitive A) to be used when the referent of the S NP controls the activity, and the other (So, the same as on a transitive O) when control is lacking. (Dixon 1994: 78)

Thus, in contrast to split-intransitive patterns considered in Section 7.4.1, where each predicate was assigned to a certain lexical predicate class and had fixed morphosyntactic properties, in a fluid-intransitive language argument subset formation reflects constructional or conceptual properties.

Tsowa-Tush, presented in the previous section, is a classical example in the discussion of fluid intransitivity. Some Tsowa-Tush one-argument predicates allow for a choice of dependent marking:24 for example, the only argument of the verb dožar ‘fall’ can be either in the ergative case, as in (53b),

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24 In Tsowa-Tush, only 1st and 2nd person pronouns exhibit the variation in the marking of the S argument; 3rd person S arguments of the most predicates (apart
or in the nominative, as in (53c). The variable marking reflects semantic agentivity such that the ergative case indicates a higher degree of control or volition, whereas the nominative case indicates a lower degree of control or volition.

(53) Tsova-Tush (Nakh-Daghestanian; Georgia; Holisky 1987: 105, 1994: 194)

a. (as) žagnO xait’:-n-as.
   1sERG book.NOM read-AOR-1sERG
   ‘I read the book.’

b. (as) vuiž-n-as.
   1sERG fall-AOR-1sERG
   ‘I fell. (It was my own fault that I fell down.’)

c. (so) vož-en-sO.
   1sNOM fall-AOR-1sNOM
   ‘I fell down, by accident.’

The status of fluid intransitivity in present-day Tsova-Tush remained unclear until Holisky (1987) investigated the behavior of circa 300 one-argument verbs and came to the following conclusion:

We cannot conclude, as some have done, that all intransitive subjects which are agents receive ergative marking and all those which are not, are nominative. For many verbs, regardless of the agentivity of the subject, there is a clearly preferred subject marking pattern. (Holisky 1987: 115)

On the basis of case marking Holisky (1987) divided all one-argument verbs of Tsova-Tush into seven classes, as summarized in Table 7.7.

This classification suggests that in terms of type frequency Tsova-Tush possesses a default one-argument predicate class. This is the class taking

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25 Holisky (1987) includes two-argument predicates with an oblique argument into her list of intransitives. Exclusion of two-argument predicates would reduce the type frequency of each one-argument predicate class, but would not appreciably affect the proportion of each class.
Table 7.7: Type frequency of Tsova-Tush intransitive predicate classes (Holisky [1987]: 122ff.)

<table>
<thead>
<tr>
<th>Label</th>
<th>Predicate class</th>
<th>Type frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_{NOM}$</td>
<td>Intransitives with only NOM</td>
<td>31</td>
</tr>
<tr>
<td>$S_{NOM(ERG)}$</td>
<td>NOM is the norm, ERG is unusual or rare</td>
<td>27</td>
</tr>
<tr>
<td>$S_{NOM/ERG}$</td>
<td>both NOM and ERG are possible, with no clear preference for either</td>
<td>61</td>
</tr>
<tr>
<td>$S_{ERG(NOM)}$</td>
<td>ERG is the norm, NOM is unusual or rare</td>
<td>36</td>
</tr>
<tr>
<td>$S_{ERG}$</td>
<td>Intransitives with only ERG</td>
<td>78</td>
</tr>
<tr>
<td>$S_{allERG}$</td>
<td>Intransitives with ERG in all three persons</td>
<td>6</td>
</tr>
<tr>
<td>$S_{DAT}$</td>
<td>Intransitives with DAT subjects</td>
<td>33</td>
</tr>
</tbody>
</table>

the S argument in the ergative case ($S_{ERG}$). Besides, the language has a range of non-default predicate classes. To account for the distribution of case marking in some of them, another variable of condition of argument set-building, which I call ‘intended semantics’, is required. This variable can take such values as, for instance, $+$control and $-$control, or $+$agentive and $-$agentive. However, as has been pointed out above, the choice — or fluidity — of argument marking is not available for every predicate class of Tsova-Tush. Moreover, some predicate classes allowing for variation do have a preferred, semantically underspecified marking pattern. Table 7.8 summarizes the grammatical relations established by Tsova-Tush dependent marking.\footnote{This is still an incomplete representation of the grammatical relations established by Tsova-Tush dependent marking. First, it is limited to the 1\textsuperscript{st} and 2\textsuperscript{nd} person pronouns. Second, only default two- and three-argument predicate classes are considered.}

Summarizing her investigations of the dependent-marking of Tsova-Tush one-argument predicates, Holisky observes:

[...] the facts of subject marking in Tsova-Tush are considerably more complex than indicated by previous reports. One problem with earlier accounts is that a complex linguistic situation...
was first simplified in descriptive works, then overgeneralized in theoretically-oriented ones. (Holisky 1987: 122)

The account of Tsova-Tush case marking as presented in Table 7.8 is a way to represent this complex linguistic situation in a non-reductionist way and, if desired, measure its complexity and compare it to other languages.

Apart from Tsova-Tush — the most cited example of a fluid-S language — a number of other languages usually not classified as fluid-intransitive are reported to have classes of predicates exhibiting fluidity of marking (for a survey, see Dixon 1994: 80ff.). For instance, a small number of Hindi/Urdu one-argument predicates exhaustively listed in (54) allows for a variation in the marking of the S argument in correlation with volitionality.

(54) Hindi/Urdu fluid-intransitive predicates:


(54) Davison 1999: 186f.

The clause (55a) is an example with the S argument of the verb khãs ‘cough’ in the nominative case, the intended semantics is that of non-volitionality. In (55b), the S argument is in the ergative case and this marking renders volitionality:
7.4.2 Fluid intransitivity

(55) Hindi/Urdu (Indo-Aryan; India, Pakistan; \cite{butt2001}: 122)

a. Ram\_NOM \_kh\_s-a.
   Ram.NOM cough-PRF.MASC
   ‘Ram coughed.’

b. Ram=ne \_kh\_s-a.
   Ram=ERG cough-PRF.MASC
   ‘Ram coughed (purposefully)’

Furthermore, fluidity is not restricted to dependent marking. For instance, Acehnese (Malayo-Polynesian) is described by \cite{durie1985} as having three classes of one-argument predicates. These classes condition the distribution of head-marking pronominal clitics, one of the classes allows for fluidity in marking. As in Tsova-Tush, the predicate class exhibiting fluidity is not the default one in terms of type frequency.

In the above discussion, I considered separately the integration of split-intransitive and fluid-intransitive patterns into the overall typology of grammatical relations. However, the two systems can be simultaneously present within one language. \cite{dixon1994} makes a strong claim as to the co-occurrence of fluid and split patterns conditioned by lexical predicate classes:

[M]ost languages with a split conditioned by the semantic nature of the verb are either clearly fluid-S or clearly split-S. It is not uncommon for a split-S language to have a handful of verbs that can either take S\_n or S\_o marking, but this is often a case of lexicalization. \cite{dixon1994:83}

However, as has been pointed out above, languages referred to as fluid-intransitive or as having fluid-intransitive characteristics seem to limit fluidity only to a subset of predicates. Moreover, this class of fluid-intransitive predicates is apparently never the default one in terms of type frequency (I know of no counterexamples).\footnote{One could, of course, gloss over the differences between the three classes of Tsova-Tush predicates showing fluidity (i.e. the classes abbreviated as S\_ERG(NOM), S\_NOM(ERG), and S\_NOM/ERG in Table 7.8) and regard them as a single class of fluid-intransitive predicates. Then, at this level of generalization, this class would be...} On the other hand, it is common for a language to have a range of predicate classes established by individual
morphosyntactic properties, whereas some of the classes embody what has been referred to as features of split-intransitive systems, and some other predicates show fluidity of S marking conditioned by semantic criteria. As the Tsova-Tush example makes clear, a language can have a whole range of predicate classes resulting in a combination of what has traditionally been referred to as split-intransitive and fluid-intransitive systems. Finally, the size of fluid-intransitive predicate classes vary across languages from a handful of items (like in Hindi/Urdu) to a few dozens (like in Acehnese). It is often an arbitrary decision of grammar writers of where to draw the line between genuine fluidity and lexicalization.

7.5 Conclusion

In this section I introduced two more variables necessary to account for the existing cross-linguistic and within-language variation in argument selection. On the one hand, I presented lexical predicates as a common variable conditioning argument selection in a large number of languages. For cross-linguistic comparison, however, instead of referring to single predicates, it is more convenient to operate with predicate classes sharing the same behavior with respect to argument selectors (e.g. dependent marking discussed in this chapter). The variety of patterns of argument selection emerging in a language due to this variable is frequently reduced in the literature to one most prominent or representative pattern. I surveyed possible criteria used for determining this most representative pattern and the corresponding ‘default’ predicate classes — semantic prototypicality, productivity, type and token frequency — and came to the conclusion that, for the present state of language description, the criterion of type frequency is the only practicable one. In Section 7.4.1 on split-intransitive systems, I suggested a way to incorporate this type of patterns into the framework developed in this thesis. By applying the same range of criteria as the ones applied to more common splits conditioned by lexical predicate classes some cases of ‘classical’ split intransitivity can be reanalyzed as exhibiting a de-
fault predicate class, whereas in other cases (extremely rare in the domain of dependent marking) two equal non-default one-argument predicate classes have to be postulated. Finally, to accommodate the phenomenon known as fluid intransitivity (presented in Section 7.4.2) I introduced one more variable called ‘intended semantics’. Here, again, I critically evaluated the existing evidence and came to the conclusion that, though fluidity of S marking is an attested phenomenon, it is not a whole-language type as has sometimes been claimed (apart from, maybe, Tsova-Tush, see Footnote 27). Rather, it is a property of particular non-default predicate classes which is best represented as another variable co-determining grammatical relations.
Chapter 8

Dependent marking and clausal conditions

8.1 Introduction

In the previous chapter I discussed how lexical predicates and predicate classes co-determine subset formation of arguments by dependent marking. However, whether a particular argument selector includes or excludes a particular argument with its role and referential properties might also be conditioned by properties of the larger syntactic environment, namely, by the properties of the whole clause. In this chapter I discuss a whole range of variables of the clause level that co-determine grammatical relations or, in traditional terms, generate split alignment patterns. As in the previous two chapters, I limit the discussion to the possible effects of clausal conditions on dependent marking. Section 8.2 deals with tense, aspect, and mood properties of the clause. In Section 8.3 I introduce the formal lexical class of predicates as another variable co-determining argument selection that should not be confused with tense and aspect properties of the clause. Section 8.4 discusses the effects of clause types (main versus dependent) on argument subset formation. The influence of polarity is discussed in Section 8.5. Finally, Section 8.6 deals with the so-called ‘scenarios’, i.e. the interaction of arguments with different referential properties, as a condition on argument selection.
8.2 Tense, aspect and mood

Tense, aspect and mood values of the clause present an often-discussed condition on splits of grammatical relations in general and of dependent marking in particular (Comrie 1978b; Dixon 1979, 1994: 97ff.; de Hoop and Malchukov 2007).

Georgian is frequently cited to illustrate this issue. To account for the distribution of case markers in Georgian, it is necessary to make reference to the inflectional categories of tense, aspect, and mood. There are ten or eleven\(^1\) such categories, traditionally called ‘screeves’ (from the Georgian mc’k’rivi ‘row’). These screeves are customarily grouped into 3 series based on commonalities in the morphological formation of the forms themselves and the associated case marking and agreement patterns, as all screeves in a given series share case marking and agreement patterns. Series I (also called ‘Present(-future)’ or ‘Imperfect’ series) consists of Present, Imperfect, Present subjunctive, Future, Conditional, and Future subjunctive. Series II (or ‘Aorist’ series) includes Aorist and Optative. Finally, Series III (or ‘Perfect’ series) covers Perfect, Pluperfect and the obsolete Perfect subjunctive.

The distribution of case markers in Georgian is illustrated for the first two series with verbs of conjugation Class 1.\(^2\) In Series I (Present) the A argument is in the nominative case, such as deda ‘mother.NOM’ in (56a) and Nino ‘Nino.NOM’ in (56b), whereas the P, T, and G arguments are marked with the dative case, such as tavis švil-s ‘self.GEN child-DAT’ in (56a) and (56b) and tavis deda-s ‘self.GEN mother-DAT’ in (56b):

(56) Georgian (Kartvelian; Georgia; Harris 1981: 27)
Series I (Present)
a. deda bans tavis švil-s.
   mother.NOM she.bathes.him.I self.GEN child-DAT
   ‘The mother is bathing her child.’

\(^1\)The eleventh screeve, the Perfect Subjunctive, is no longer used in modern Georgian except in poetry or archaic expressions (cf. Hewitt 1995).

\(^2\)Georgian case marking also exhibits a split conditioned by referential properties of arguments — the 1\(^{st}\) and 2\(^{nd}\) person pronouns do not differentiate between the narrative, nominative, and dative cases — and a split conditioned by lexical predicate classes, for details, see Cherchi (1999).
Tense, aspect and mood

In Series II (Aorist) the A argument is in the narrative case (sometimes also called ergative), such as deda-m ‘mother-NARR’ in (57a) and nino-m ‘Nino-NARR’ in (57b), the P and T arguments are in the nominative, such as tavis-i švil-i ‘self.GEN-NOM child-NOM’ in (57a) and bavšv-i ‘child-NOM’ in (57b), finally, the G argument is marked with the dative, as tavis deda-s ‘self.GEN mother-DAT’ in (57b):

(57) Georgian \((\text{Harris} 1981): 42f.\)

Series II (Aorist)

\begin{itemize}
  \item a. deda-m dabana tavis-i švil-i.
    \begin{align*}
      \text{mother-NARR} & \quad \text{she.bathed.him.II} \\
      \text{tavis-i} & \quad \text{self.GEN-NOM} \quad \text{child-NOM}
    \end{align*}
    \begin{align*}
      \text{The mother bathed her child.'}
    \end{align*}
  \item b. nino-m misca bavšv-i tavis
    \begin{align*}
      \text{Nino-NARR} & \quad \text{she.gave.her.it.II} \\
      \text{bavšv-i} & \quad \text{child-NOM} \quad \text{self.GEN} \\
      \text{tavis} & \quad \text{child-DAT}
    \end{align*}
    \begin{align*}
      \text{Nino gave the child to its mother.'}
    \end{align*}
\end{itemize}

Tense, aspect and mood properties of the clause are integrated into the present approach as another condition on argument selection. The grammatical relations of the Georgian nominal case marking for the default predicate class (traditional Class 1) (Georgian Series I) are represented in Table 8.1.

---

3S arguments are missing altogether from the subsets in Table 8.1 as the default class (Class 1) includes only transitive predicates. Some authors treat the conjugation Class 2 as default one-argument predicate class (see [Hewitt 1987, 1995]) and thus analyze Georgian as showing ergativity in Series II. However, Harris (1981, 1985, 1990) argues that there is significant evidence that the synchronic case-marking system follows a split-intransitive pattern. This point of view is also supported by the investigation of Class 3 predicates carried out by Holisky (1981) (cf. Footnote 20 in Chapter 7).
Table 8.1: Some grammatical relations of Georgian dependent marking

<table>
<thead>
<tr>
<th>Selector</th>
<th>Arguments:</th>
<th>Conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>role</td>
<td>predicate class</td>
</tr>
<tr>
<td>NOM DAT</td>
<td>{A}</td>
<td>noun</td>
</tr>
<tr>
<td>NOM NARR</td>
<td>{A}</td>
<td>noun</td>
</tr>
<tr>
<td>DAT</td>
<td>{G}</td>
<td></td>
</tr>
<tr>
<td>NOM DAT</td>
<td>{A}</td>
<td>noun</td>
</tr>
<tr>
<td>PP (-tvis)</td>
<td>{G}</td>
<td></td>
</tr>
</tbody>
</table>

A number of functional explanations and related predictions have been proposed with respect to the effects of tense and aspect properties of the clause on alignment (see Dixon [1979]: 93ff., 1994: 97ff.; DeLancey 1981, 1982). Thus, for instance, Dixon (1994) suggests that a TAM-based split can be explained by the difference in mechanisms of regarding events and event series. One way is to simply document events linked to a certain participant (agent or patient) without any causal connection between them. This view is characteristic of past events and could be related to either the \{S, A\} or the \{S, P\} pivot. The second way is to regard events as causal sequences where an agent initiates or controls single interconnected actions, in this case series of events must involve the \{S, A\} pivot. This viewpoint is compatible with any tense. On the basis of this model, Dixon (1994: 99) predicts that if a language shows a split conditioned by tense or aspect, the ergative marking is always found either in the past tense or in the perfective aspect.

A similar suggestion is made by DeLancey (1981, 1982). DeLancey’s explanation is based on such key notions as attention flow and viewpoint. Attention flow refers to the flow of attention in witnessing events through their spatial and temporal phases (e.g. from source to goal in case of a motion event). Linguistically, attention flow is reflected in the ordering of noun phrases in a sentence. In a transitive sentence, for instance, the unmarked linguistic attention flow is from the agent to the patient. By contrast, viewpoint denotes the perspective from which an event is reported and can be
either external to an event or internal (i.e. from either the agent or the patient). Finally, aspect is interpreted as the temporal counterpart of the transitive viewpoint, such that in the perfective aspect the viewpoint has to be with the noun phrase associated with the transitive terminal viewpoint, i.e. the patient, and the imperfective aspect is associated with the non-terminal viewpoint, i.e. with the agent. The starting point of attention flow and the viewpoint noun phrase do not necessarily coincide and languages vary in how they cope with such a mismatch. [DeLancey 1981: 646ff.] claims that languages exhibiting aspect-based split ergativity do not allow a conflict between aspect and viewpoint assignment: in the perfective aspect the viewpoint has to be with the noun phrase associated with the patient, and the ergative case marking is applied to indicate that the onset of the attention flow does not correspond to the viewpoint noun phrase.

Functional explanations of alleged tendencies of the type illustrated above are often presented as textbook knowledge (cf. Song 2001: 174). However, they are not unproblematic. On the one hand, such functional explanations rely heavily on the traditional dichotomy between accusative and ergative alignment types. However, tense-aspect-based splits (or what looks like tense-aspect-based splits, cf. Section 8.3) do not necessarily result in an accusative and an ergative alignment patterns. In Vafsi, for instance, the alignment of dependent marking in present tenses is accusative: the S and A arguments are in the direct case, such as in ‘3pDIR’ in (58a) and tae ‘2sDIR’ in (58b), the P argument is in the oblique, such as xër ‘donkey-OBL’ in (58b):

(58) Vafsi (Indo-European, Northwest Iranian; Iran; Stilo 2004: 231, 243)

a. *in aet-á-nде yey man ráxd-e-xáb-i-dæ*
   3pDIR DUR-come-3p one middle bed.clothes-OBL-in
   *dd-oss-énd.*
   DUR-sleep-3pI
   ‘They come (in) and lie down in a bed.’

---

4 This is a simplified account of grammatical relations established by Vafsi dependent marking, as referential properties of both the A and the P arguments also play a role (for details, see Stilo 2004: 242ff.).
b. țæ in xder-I næ-ruš-i?
   2sDIR this donkey-OBL NEG-sell-2s
   ‘Won’t you sell this donkey?’

In past tenses, however, dependent marking establishes horizontal (or
double-oblique) alignment, and not an ergative one: the S argument is in
the direct case, such as zení-e ‘woman-pDIR’ in (59a), and the A and P ar-
arguments are both in the oblique case, such as luás-i ‘fox-OBL’ and kærg-é
‘chicken-OBL.F’ in (59b):

(59) Vafsi (Stilo 2004: 241, 244)
   a.  zení-e há-nešes-end.
      woman-pDIR PVB-sat-3p
      ‘The women sat down.’
   b.  luás-i kærg-é-s Ḟá-vaɛrdæ.
      fox-OBL chicken-OBL.F-3s PUNCT-took
      ‘The fox took the chicken.’

Finally, as Creissels (2008a) points out, it is not always reasonable to
postulate a direct functional explanation for splits in dependent marking
conditioned by tense and aspect values, since they might have emerged as
a mere side effect of the development in other areas of grammar. This aspect
is discussed in the following section.

8.3 Morphological form of the predicate

Languages frequently used to illustrate effects of tense-aspect properties of
the clause on argument set building by dependent marking and other argu-
ment selectors include a number of Indo-Aryan (e.g. Gujarati, Hindi, Nepali,
Kashmiri) and Iranian languages (e.g. Rushan and other Pamir languages)
(e.g. Dixon 1994: 100, DeLancey 1981). However, it has often been noted
that though tense-aspect values of the clause might superficially seem to
condition the subset formation of arguments in these languages, the dis-
tribution of dependent markers is actually determined by certain morpho-
logical verb forms (for instance, a special participle or a converb) and this
distribution has an etymological motivation.
8.3 Morphological form of the predicate

The issue can be illustrated with Kurmanji Kurdish. In this language the S argument is invariably in the direct case, such as *ez ‘1sDIR* in (60a) and (61a). In some transitive clauses, the A argument is in the direct, as *ez ‘1sDIR* in (60b), and the P argument is in the obliques, such as *te ‘2sOBL* in the same example:

(60) Kurmanji Kurdish (Indo-European, Northwest Iranian; Turkey; [Dorleijn 1996: 88f.])
   a. *ez dikin-im*
      1sDIR laugh.PRS-1s
      ‘I am laughing.’
   b. *ez te dibîn-im*
      1sDIR 2sOBL see.PRS-1s
      ‘I am seeing you.’

In some other transitive clauses, however, the distribution of the case markers is reversed: the A argument is in the oblique, as *min ‘1sOBL* in (61c), and the P argument is in the direct, as *ez ‘1sDIR* in (61b)

(61) Kurmanji Kurdish ([Dorleijn 1996: 85, 89])
   a. *ez kenîm*
      1sDIR laugh.PST1s
      ‘I laughed.’
   b. *we ez dit-im*
      2pOBL 1sDIR see.PST-1s
      You(pl.) saw me.’
   c. *min hûn dit-in*
      1sOBL 2pDIR see.PST-2p
      ‘I saw you(pl.).’

This distribution of the direct and oblique case markers results in two different alignment patterns of dependent marking: {S, A} vs. {P} in (60) and {S, P} vs. {A} in (61). On the first sight, the dividing line between the two patterns seems to run along the past vs. non-past tense value of the clause. Like other Iranian languages, Kurmanji Kurdish has a dual verbal root system such that certain verbal forms are built with the past root, whereas others are formed with the present root. The distribution of the {S, P} alignment pattern of dependent marking is limited to the forms build with the past root. Table 8.2 summarizes this distribution:
Kurmanji Kurdish verbal forms based on the past root and the related phenomenon of ergativity emerged in the Middle Iranian period. They developed from the Old Iranian external possessor construction with a resultative -ta participle (Haig 2008). This -ta formative is still recognizable in Kurmanji Kurdish past roots, which often end in -t, as does dit- in (61b). This construction became to be used for the expression of past or perfective events in Middle and Modern Iranian along the following line: ‘to them the battle was done’ > ‘they did the battle’, where the obliquely marked external possessor becomes reinterpreted as the A argument. Besides, due to the decay of the finite past tense verb forms of Old Iranian (Aorist and Perfect), the usage of ergatively-aligned participle-based forms was extended and became the default way to express past and perfective situations. A similar development is reported for Indo-Aryan languages (see Peterson 1998; Bynon 2001; for an alternative account based on the reanalysis of passive, see Verbeke and De Cuypere 2009 and the references therein).

Now, it is undeniable that past stems are generally associated with the semantic notions of pastness and perfectivity, while present stems are generally associated with present and future meanings. However, the genuine factor conditioning variation in argument subset formation of the type illustrated with Kurmanji Kurdish is not a type of temporal semantics and related tense and aspect properties of the clause, but rather the morphological type of the verbal form involved (see also the discussion in Creissels 2008a). The fact that these two aspects do not necessarily overlap is supported by “mismatches” in a number of Iranian languages. Thus, for instance, in the Awroman dialect of Gurani (Northwest Iranian; Iran) all verb
forms are based on either the present or the past stem of the verb as in other Iranian languages. However, Awroman has also developed a tense referred to by \textbf{MacKenzie} (1966: 38) as Imperfect, which is based on the present stem. Even though the Awroman Imperfect has past-tense reference, it exhibits accusative alignment of dependent marking rather than a non-accusative alignment associated with past stems of the verb (\textbf{Haig} 2008: 10). Similar examples are provided by the Badîn dialect of Northern Kurdish (\textbf{Haig} 2008: 10), Talysh (Northwest Iranian; \textbf{Haig} 2008: 10), and Munji (Southeast Iranian; \textbf{Rastorgueva} 1975).

Finally, for the languages with known etymological motivation of alignment splits (Indo-Aryan, Iranian and Carib languages) no cases have been reported of the spread of such splits bound to a certain morphological form to semantically similar contexts with verb forms with a different morphological composition.

To summarize, to appropriately code the set-building of arguments conditioned by what superficially looks like tense or aspect properties of the clause, it is necessary in every single case to differentiate between truly tense or aspect based splits, and those splits which are conditioned by a special morphological forms of the verb. Consequently, two variables for coding conditions of argument selection are needed: the tense-aspect-mood properties of the clause and the formal (morphological) build-up of predicates.

\section{Clause type (main vs. subordinate clause)}

Another type of split in dependent marking is conditioned by such clausal properties as the difference between main (or independent) versus various types of subordinate clauses (\textbf{Dixon} 1979: 101ff.). This type of effects on argument subset formation can be illustrated by the comparison of independent clauses with different types of dependent clauses in Maithili. In the main clause, the S and A arguments are in the nominative, as in (62a) and (62b), and the P argument is either in the nominative or in the dative, as in (62b), depending on its referential properties:
(62) Maithili (Indo-European; India, Nepal; Bickel and Yādava 2000: 346ff.)

Main clause

a. o 3hREM.NOM hās-l-aith.
   ‘He(hREM) laughed.’

b. o 3hREM okrā cāh-ait 3hNOM ch-aith.
   ‘S/he(hREM) likes him/her(nh.rem).’

However, in different types of dependent clauses, for instance, in conver- 
viable clauses, as in (63a), and infinitival clauses as in (63b–c), the S and A 
arguments are in the dative case.

(63) Maithili (Indo-European; Bickel and Yādava 2000: 351, 353)

Dependent clause

a. [hamrā (*ham) ghar áib-kē] pitā-jī khusī
   1DAT 1NOM home come-CVB father-hNOM happy
   he-t-āh.
   ‘When I come home, father will be happy.’

b. [Rām-kē (*Rām) sut-b-āk] lel] ham yahī
   Ram-DAT Ram.NOM sleep-INF:OBL-GEN for 1NOM here
   ṭham-sā uthī-ge-l-aũh.
   place-ABL rise-TEL-PST-1NOM
   ‘I got up from this place in order for Ram to (be able to) sleep.’

c. [Rām-kē / *Rām ehan kitāb paḍh-ab] thīk nahi
   R.-DAT / R.NOM such book:NOM read-INF right not
   ai-ch.
   ‘It is not good for Ram to read such a book.’

The resulting grammatical relations conditioned by clause type are summa- 
rized in Table 8.3, where the column named ‘clause type’ represents another 
variable on argument selection. For the sake of illustration, the representa-
tion in Table 8.3 is limited to nominal arguments with the referential prop-
erty ‘lower discourse rank’ (abbreviated as ‘N-low’) (cf. Section 6.5):

Eventually, once the existing data set is extended, the range of values for 
this condition must extended with more fine-grained types than just ‘main’
Table 8.3: Grammatical relations of Maithili dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role reference</th>
<th>Conditions: predicate clause type</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø NOM</td>
<td>{S, A, P, T} {G}</td>
<td>N-low default main</td>
</tr>
<tr>
<td>-kẽ DAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Ø NOM</td>
<td>{P, T}</td>
<td>N-low default subordinate</td>
</tr>
<tr>
<td>-kẽ DAT</td>
<td>{S, A, G}</td>
<td></td>
</tr>
</tbody>
</table>

vs. ‘subordinate’, as to account for argument selection a precise identification of the subordinate clause type might be needed in line with the typology discussed in 11.5.

### 8.5 Polarity

Polarity is another clausal category that is long known to interact with dependent marking (Dixon 1994:101). This type of condition on argument selection can be illustrated with Finnish examples in (64). Whereas in affirmative clauses the P argument can be either in the accusative or partitive case,\(^5\) as in (64a), in clauses with negative polarity only the partitive case marking of the P argument is grammatical, as in (64b):

(64) Finnish (Uralic; Finland, Sulkala and Karjalainen 1992:115)

a. söin omena-n / omena-a.
   eat.1sIPFV apple-ACC / apple-PART
   ‘I ate/was eating an apple.’

b. en syönyt omena-a.
   NEG-1s eat-2PTCP apple-PART
   ‘I didn’t eat/was not eating an apple.’

\(^5\)Pinning down the exact semantic category which determines the marking of the P argument in Finnish is notoriously difficult, for some proposals, see Sulkala and Karjalainen (1992) and Kiparsky (2001).
### 8.6 Scenario

In Chapter 6 I discussed how role and various referential properties of individual arguments (e.g. animacy, person, definiteness, etc.) affect argument subset formation and thus co-define grammatical relations. However, not only the properties of arguments chosen by an argument selector might be relevant. In some languages, argument selection is sensitive to the referential properties of other arguments of the same predicates, i.e. to the nature of co-arguments. In other words, not only the argument’s properties as such but the whole configuration of who is acting on whom can condition argument selection. Following Bickel (1995, 2010+b) and Zúñiga (2006), such argument configurations will be referred to as ‘scenarios’.

Effects of scenarios on dependent marking on the clause level can be illustrated with Aguaruna. In this language, the S and A arguments are invariably in the unmarked nominative case, as illustrated with wi ‘1sNOM’ in (65a) and ukumpi ‘blackfly.NOM’ in (65b):

\[(65)\] Aguaruna (Jivaroan; Peru; [Overall 2007: 310, 325])

\[\begin{align*}
a. \quad & \text{wi-} \text{ka} \quad \text{buuta-tsu-}ha-i. \\
& \text{1sNOM-FOC cry.IPFV-NEG-1s-DECL} \\
& \text{‘I am not crying.’} \\

b. \quad & \text{ukumpi} \quad \text{buku-}tu-\text{ina-wa-i.} \\
& \text{blackfly.NOM suck-1sP-PL:IPFV-3-DECL} \\
& \text{‘Blackflies (mantablanca) are sucking me! (i.e. biting me)’} \\
\end{align*}\]

The P argument is marked in one of two ways. First, it can be in the unmarked nominative, such as the nominal argument yawaä ‘dog.NOM’ in (66a), 2\textsuperscript{nd} and 3\textsuperscript{rd} person pronominal arguments ni ‘3sNOM’ in (66b), and yawaä ‘1pNOM’ in (66c):

\[(66)\] Aguaruna (Overall 2007: 336, 443f.)

\[\begin{align*}
a. \quad & \text{yawaä} \quad ii-nau \quad maa-tʃa-ma-ka-umɨ? \\
& \text{dog.NOM 1p-POSS kill.HIAF-NEG-RECPST-POLINT-2s:PST} \\
& \text{‘Have you killed our dog?’} \\
\end{align*}\]

\[\text{\footnotesize \textsuperscript{6}For the discussion of dependent marking with three-argument verbs, see Overall (2007: 444ff.).}\]
b.  nĩ̃ iima-ta.
   3sNOM carry.PFV-IMP
   ‘You (sg.) carry him!’

c.  hutii ainau-ti atumi wai-hatu-ina-humɨ-i.
   1pNOM p-SAP 2pNOM see-1p-p:IPFV-2p-DECL
   ‘You (pl.) see us.’

Second, the P argument can be marked with the accusative case suffix -na,
such as biika-na ‘beans-ACC’ in (67a), ii-na ‘1p-ACC’ in (67b), and ami-na
‘2s-ACC’ in (67c):

(67)  Aguaruna (Overall 2007: 146, 326, 444)
   a.  ima biika-na-kI yu-a-ma-ha-i.
       INTENS bean-ACC-RESTR eat-HIAF-RECPST-1s-DECL
       ‘I only ate beans.’
   b.  nĩ̃ ii-na antu-hu-tama-ka-aha-tata-wa-ı.
       3sNOM 1p-ACC listen-APPL-1pP-INTS-p-FUT-3-DECL
       ‘He will listen to us.’
   c.  hutii a-ina-u-tı
daka-sa-tata-hami-ı ami-na.
       wait.for-ATT-FUT-1s>2sP-DECL 2s-ACC
       ‘We will wait for you.’

As (66c) and (67b) clearly demonstrate, the P argument with identical referential
properties (1st person plural pronoun) can be either in the nominative
or in the accusative case. Thus, the referential features of arguments cannot
be the trigger of differential P marking. Instead, the distribution of the two
P argument markers is conditioned by the configuration of the referential
properties of both the A and the P arguments and is summarized by Overall
as follows:7

Object NPs are marked with the accusative suffix -na, with
some exceptions that are conditioned by the relative positions of
subject and object on the following person hierarchy:

7There appears to be some variation among speakers as to the details of the
treatment of scenarios involving exclusively 1st person plural and 2nd person argu-
ments (Simon Overall, p.c.). The analysis to follow is based on the generalizations
presented in Overall (2007).
1sg > 2sg > 1pl/2pl > 3

First person singular and third person subjects trigger accusative case marking on any object NP, but second person singular, second person plural, and first person plural only trigger marking on higher-ranked object NPs. First and second person plural rank equally, so do not trigger accusative marking when they co-occur as subject and object in any configuration. (Overall 2009: 168f.)

This generalization can be represented as a set of all possible two-argument scenarios that form two proper subsets: in some of the scenarios the P argument is in the accusative case, whereas in the others it is in the nominative case, as summarized in Table 8.4.

Table 8.4: Case marking of the transitive arguments in Aguaruna

<table>
<thead>
<tr>
<th>A argument</th>
<th>1s</th>
<th>1p</th>
<th>2s</th>
<th>2p</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s A NOM P ACC</td>
<td>NOM P ACC</td>
<td>NOM P ACC</td>
<td>NOM P ACC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1p A NOM P ACC</td>
<td>NOM P ACC</td>
<td>NOM P NOM</td>
<td>NOM P NOM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 A NOM P ACC</td>
<td>NOM P ACC</td>
<td>NOM P NOM</td>
<td>NOM P NOM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 A NOM P ACC</td>
<td>NOM P ACC</td>
<td>NOM P ACC</td>
<td>NOM P ACC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The integration of scenario as another condition co-determining grammatical relations is, in principle, parallel to the integration of other conditions on argument selection discussed in Sections 8.2–8.5: scenarios are represented by another variable of conditions of the same status as tense-aspect properties of the clause, clause type (main vs. dependent) or polarity. As the role and reference properties of the selected argument are already

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8The shaded cells of Table 8.4 either cover the scenarios that do not participate in this system, as such combinations as 1s>1s or 2s>2s take the reflexive marking on the verb and are incompatible with overt P arguments, or the scenarios for which any explicit discussion is lacking (e.g. 1p>1s) and it is not clear whether they are possible to begin with (cf. Overall 2007: 443). The number of cells in the paradigm has been reduced to the minimally necessary one to account for the observed variation in dependent marking.
accounted for by the variables of arguments, to represent scenarios it is sufficient to refer not to the whole configuration of the two arguments (e.g. $A_{1s}$, condition: in the 1s>3s scenario) but rather to the properties of the respective co-argument(s) (e.g. $A_{1s}$, condition: with the $P_{3s}$ co-argument).

Grammatical relations established by Aguaruna dependent marking of arguments of one- and two-argument predicates can then be summarized as in Table 8.5.

Table 8.5: Grammatical relations of Aguaruna dependent marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Condition: co-argument</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>role reference</td>
<td>role reference</td>
</tr>
<tr>
<td>-Ø NOM</td>
<td>S any</td>
<td>n.a. n.a.</td>
</tr>
<tr>
<td></td>
<td>A any</td>
<td>any any</td>
</tr>
<tr>
<td></td>
<td>P 2p</td>
<td>A 1p</td>
</tr>
<tr>
<td></td>
<td>P 3</td>
<td>A 1p</td>
</tr>
<tr>
<td></td>
<td>P 1p</td>
<td>A 2</td>
</tr>
<tr>
<td></td>
<td>P 3</td>
<td>A 2</td>
</tr>
<tr>
<td>-na ACC</td>
<td>P 2s</td>
<td>A 1s</td>
</tr>
<tr>
<td></td>
<td>P 2p</td>
<td>A 1s</td>
</tr>
<tr>
<td></td>
<td>P 3</td>
<td>A 1s</td>
</tr>
<tr>
<td></td>
<td>P 2s</td>
<td>A 1p</td>
</tr>
<tr>
<td></td>
<td>P 1s</td>
<td>A 2</td>
</tr>
<tr>
<td></td>
<td>P 1s</td>
<td>A 3</td>
</tr>
<tr>
<td></td>
<td>P 1p</td>
<td>A 3</td>
</tr>
<tr>
<td></td>
<td>P 2s</td>
<td>A 3</td>
</tr>
<tr>
<td></td>
<td>P 2p</td>
<td>A 3</td>
</tr>
<tr>
<td></td>
<td>P 3</td>
<td>A 3</td>
</tr>
</tbody>
</table>

For a co-arguments of transitive predicates it is sufficient to refer only to its referential properties, as the role property is derivable from the role property of the selected argument (i.e. if the selected argument is an A, the relevant co-argument can only be an P). However, the reference to the role properties of co-arguments is required once three-argument predicates are considered, as in principle, for any argument one of the two co-arguments or even both simultaneously might condition argument selection (for an example, see Mosel 2010+ on ditransitives in Teop). For the sake of consistency, the representations in this thesis will (redundantly) include the role properties of the co-argument also for the arguments of two-argument predicates.
Now, transforming grammatical relations conditioned by scenarios as in Aguaruna into more familiar alignment patterns is, however, problematic. The notion of alignment in the traditional sense presupposes the direct comparability of the S, A, P, and other arguments (cf. Section 5.3). To provide for such a comparability of morphosyntactic properties of S, A, and P arguments, their referential properties and all relevant conditions must have the same value. That is, if a language shows a split conditioned by the referential properties of arguments or a condition, such a system is split into two or more subsystems such that in every subsystem all the values of the split-inducing variables are kept identical. For instance, if a language shows a split in case marking conditioned by the aspect of the clause, for example, continuous vs. non-continuous, as in Chechen (Zarina Molochieva, p.c.), to derive the traditional alignment patterns one compares the S argument of clauses in the continuous aspects with the A and P arguments of the clauses in the continuous aspects and the S argument of the non-continuous aspects with the A and P arguments of the non-continuous aspects (summarized in Table 8.6), but never the S argument of clauses in the non-continuous aspects with the A and P arguments of clauses in the continuous aspects, etc. (for further examples cf. Sections 6.3, 7.2, and 8.2–8.4).

Table 8.6: Deriving alignment of Chechen dependent marking

<table>
<thead>
<tr>
<th>two-argument predicates</th>
<th>CONT</th>
<th>NCONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>one-argument predicates</td>
<td>CONT</td>
<td>incomparable {S, A, P}</td>
</tr>
<tr>
<td></td>
<td>NCONT</td>
<td>incomparable {S, P} vs. {A}</td>
</tr>
</tbody>
</table>

In the case of languages with argument selection conditioned by co-arguments, it is virtually impossible to ensure such a comparability of the arguments: the S argument occurs only in the intransitive configuration and thus has no co-arguments whatsoever, whereas the A and P arguments can occur only in various transitive scenarios. Thus, for instance, in case of Aguaruna there is no direct way to compare the 3rd person S argument with the 3rd person A and P arguments, as one would have to make an arbitrary decision of whether to compare the S argument to the A and P arguments in 1p>3, 2s>3, or 2p>3 scenario (this would produce an {S, A, P} alignment
pattern) or to the A and P argument in 1s>3, or 3>3 scenario (this would yield an \{S, A\} vs. \{P\} alignment pattern).

In the face of this incomparability, it has been common in cross-linguistic investigations to broaden the inventory of possible alignment types to include an additional type called hierarchical alignment of the same status as accusative, ergative, tripartite or split-intransitive alignment types. I postpone the detailed discussion of this alignment type and its compatibility with the present approach to the discussion of head marking, as hierarchical alignment is more commonly recognized there than in accounts of dependent marking.\(^{10}\)

A common way to account for alignment patterns in scenario-conditioned grammatical relations has been to disregard the incomparability of the unconditioned morphosyntactic properties of the S argument with the scenario-conditioned properties of the A and P argument and describe the alignment patterns that emerge under the condition of comparing the properties of the S argument with the properties of the A and P arguments in particular configurations. The emerging patterns then were either described as equally representative, as, for instance, by Haude (2006: 280) on Movima, or one of the patterns was claimed to be a more general one, whereas the other one to be limited to a specific scenario, as, for instance, by Bickel on Puma (Bickel 2008: 197f.).

Getting back to the Aguaruna example presented above, what are the possibilities of comparing the marking of the A argument with the marking of the P arguments?\(^{11}\) For illustration I consider only 1\(^{st}\) person plural argument. The 1\(^{st}\) person plural A argument occurs in three different scenarios (assuming the paradigm given in Table 8.4 and repeated in Table 8.7 for convenience): with the 2\(^{nd}\) singular and plural P argument and with the 3\(^{rd}\)

\(^{10}\)For instance, in The World Atlas of Language Structures (Haspelmath et al. 2005) there is no such type as hierarchical alignment in the survey of case marking of nouns and pronouns (Comrie 2005), whereas 11 languages are typologized as showing hierarchical alignment with respect to agreement (Siewierska 2005).

\(^{11}\)The following method of determining alignment for scenario-conditioned argument selection is being elaborated jointly with Balthasar Bickel, Lennart Bierkannt, and Taras Zakhariko in the course of the ongoing research of the EuroBABEL project Referential Hierarchies in Morphosyntax (http://www.rhim.uni-koeln.de/).
person argument. The 1st person plural P argument occurs in two scenarios: with the 2nd person A argument and with the 3rd person A argument.

Table 8.7: Case marking of the transitive arguments in Aguaruna

<table>
<thead>
<tr>
<th>A argument</th>
<th>1s</th>
<th>1p</th>
<th>2s</th>
<th>2p</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s</td>
<td>A NOM</td>
<td>P ACC</td>
<td>A NOM</td>
<td>P NOM</td>
<td>A NOM</td>
</tr>
<tr>
<td>1p</td>
<td>A NOM</td>
<td>P NOM</td>
<td>A NOM</td>
<td>P NOM</td>
<td>A NOM</td>
</tr>
<tr>
<td>2</td>
<td>A NOM</td>
<td>P ACC</td>
<td>A NOM</td>
<td>P NOM</td>
<td>A NOM</td>
</tr>
<tr>
<td>3</td>
<td>A NOM</td>
<td>P ACC</td>
<td>A NOM</td>
<td>P ACC</td>
<td>A NOM</td>
</tr>
</tbody>
</table>

Comparing these two scenario conditioned arguments with the uncon- didioned S argument results in six combinations of arguments and co- arguments, summarized in Table 8.8.

Table 8.8: Alignment of the 1st person plural argument in Aguaruna

<table>
<thead>
<tr>
<th>Arg: A1p</th>
<th>Co-arg: P2s</th>
<th>Arg: {S, A, P}</th>
<th>Co-arg: {S, A} vs. {P}</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1p</td>
<td>P2s</td>
<td>{S, A, P}</td>
<td>{S, A} vs. {P}</td>
</tr>
<tr>
<td>A1p</td>
<td>P2p</td>
<td>{S, A, P}</td>
<td>{S, A} vs. {P}</td>
</tr>
<tr>
<td>A1p</td>
<td>P3</td>
<td>{S, A, P}</td>
<td>{S, A} vs. {P}</td>
</tr>
</tbody>
</table>

This way of comparison results in the equal distribution of the {S, A} vs. {P} and {S, A, P} alignment patterns for the 1st person plural of Aguaruna; for the 1st person in general the percentage is 0.75 to 0.25, for the 2nd person it constitutes 0.83 to 0.17, and for the 3rd person it is 0.5 to 0.5. The overall alignment trend for Aguaruna dependent marking is 0.68 ({S, A} vs. {P}) to 0.32 ({S, A, P}).

To summarize, scenarios present another condition on argument selection of the same type as, for instance, tense or aspect values of the clause. However, in contrast to grammatical relations involving other condition types, whether grammatical relations sensitive to scenarios can be split into more basic alignment patterns is questionable and remains an issue for further investigations.12

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12This issue is at the forefront of the currently ongoing research of the EuroBABEL project Referential Hierarchies in Morphosyntax.
8.7 Conclusion

This chapter surveyed those properties of a clause that condition argument subset formation. The range of variables required to integrate conditions include tense-aspect-mood properties, formal (or morphological) classes of predicates (not to be confused with tense and aspect properties), clause type, polarity, and scenario. This is not an exhaustive list of conditions: in Chapter 10 I examine how some diatheses (active vs. passive or antipassive) can be analyzed as another condition on argument selection.

Chapter 6, Chapter 7, and the present chapter almost exclusively dealt with argument subset formation executed by dependent marking on the clause level. The same types of argument properties and conditions are required to account for grammatical relations established by other argument selectors. In the next chapter I turn to head marking and consider whether the presented range of variables is sufficient to account for grammatical relations established by this argument selector.
8.7 Conclusion
Chapter 9

Head marking

9.1 Introduction

This chapter examines the phenomenon traditionally referred to as agreement,\(^1\) other commonly used terms include indexing (Haspelmath 2005a), indexation (Croft 2003), cross-referencing, and head marking on the clause level.\(^2\) After surveying some popular definitions of the phenomenon and discussing the related issue of feature unification (Section 9.2.2), I look at the variables which set apart head marking from other argument selectors, in particular from dependent marking (Section 9.2.3). Section 9.2.4 on grammatical and pronominal agreement addresses some borderline cases between head and dependent marking. Section 9.3 raises the question of what being treated identically actually stands for with respect to head marking. Finally, Sections 9.4 to 9.6 demonstrates how various properties of arguments, predicates, and clauses co-determine argument subset formation by head marking. Section 9.4 investigates the effects of argument referential properties, Section 9.5 considers the role of predicate classes, and Section 9.6 looks at such conditions on argument selection as tense and aspect

\(^1\)As this thesis only deals with those aspects of agreement which are relevant to grammatical relations, agreement within a noun phrase is naturally excluded from the discussion here.

\(^2\)Though in this thesis, I adopt the term ‘head marking (on the clause level)’ (for discussion, see Section 9.2.3), for the sake of brevity, I frequently use the term ‘agreement’ as a convenient synonym.
of the clause. Finally, Section 9.7 examines the effects of scenarios on head marking. To incorporate scenario-conditioned grammatical relations into the typology of alignments an additional alignment type — called ‘hierarchical alignment’ has been introduced. The extension of the notion alignment to include this fundamentally different type has recently been questioned (Creissels 2009a). In addition, it has often been noticed that hierarchical alignment systems always exhibit traces of other alignments (accusative, ergative, and neutral; cf. Bickel 1995; Nichols 1992; Bickel and Nichols 2008a; Zúñiga 2006; 2007). In Section 9.7 I propose a method of isolating the components of other alignments which allows to do away with the problematic notion of hierarchical alignment and, at the same time, assures comparability of scenario-conditioned grammatical relations both between languages with such systems and with languages in which scenarios do not affect argument selection.

9.2 On the nature of agreement

9.2.1 Introduction

This section explores the question of the nature of agreement. The issue is relevant for the present discussion as eventually I hope to come up with a cross-linguistically applicable feature that would allow one to distinguish agreement from other argument selectors (e.g. from case marking). A number of definitions of agreement have been suggested in the literature, and though there is still no generally accepted definition, there is a certain consensus as to what is the essence of the phenomenon. For instance, in a frequently cited definition, Moravcsik (1978b) broadly characterizes agreement as a ‘covariance relationship’, whereas Corbett (2000) calls it a ‘covariance or matching’ relation:

\[ A \text{ grammatical constituent } A \text{ will be said to agree with a grammatical constituent } B \text{ in properties } C \text{ in language } L \text{ if } C \text{ is } \]

\footnote{As the term ‘head marking (on the clause level)’ is not used in the traditional literature, I restrain myself from using it until Section 9.2.3 in which it is introduced and motivated.}
a set of meaning-related properties of A and there is a covari-
ance relationship between C and some phonological properties of
a constituent B₁ across some subset of the sentences of language
L, where constituent B₁ is adjacent to constituent B and the only
meaning-related non-categorial properties of constituent B₁ are
the properties C. (Moravcsik 1978b: 333)

The first notion that we need is ‘agreement’, which is the co-
variance or matching of feature specifications between two sep-
arate elements, […]. (Corbett 2000: 178)

Though the exact wording differs from author to author, similar definitions
are provided by Steele (1978: 610) and Lehmann (1988: 55).

The phenomenon at hand can be illustrated with the following examples
from German:

(68) German

a. *Ich schlaf-e.*
   1sNOM sleep-1sPRS
   ‘I am sleeping.’

b. *Mein Hund schläft.*
   my dog sNOM sleep-3sPRS
   ‘My dog is sleeping.’

c. *Du sieh-st meinen Hund.*
   2sNOM see-2sPRS my.ACC dog
   ‘You see my dog.’

d. *Ich seh-e dich.*
   1sNOM see-1sPRS 2sACC
   ‘I see you.’

e. *Ich geb-e dir meinen Hund dafür.*
   1sNOM give-1sPRS 2sDAT my.ACC dog in.return
   ‘I give you my dog in return.’

f. *Du gib-st mir deinen Hund dafür.*
   2sNOM give-2sPRS 1sDAT your.ACC dog in.return
   ‘You give me your dog in return.’

As examples given in (68) show, the suffix markers on the verb in German
are sensitive to the S argument of one-argument predicates, as in (68a).
and (68b), and A arguments of two-argument predicates, as in (68c) and (68d), and three-argument predicates, as in (68e) and (68f). Moreover, as the ungrammatical examples in (69) illustrate, any other arguments and non-arguments are excluded from the control of the suffixes on the verb. In other words, the argument selector traditionally called subject agreement in German defines the set of arguments \{S, A\}.

(69) German

a. *Du \textit{sieh-t} meinen Hund.
   2sNOM see-3sPRS my.ACC dog
   ‘You see my dog.’

b. *Ich \textit{gib-st/-t} dir meinen Hund.
   1sNOM give-2sPRS/-3sPRS you.DAT my.ACC dog
   ‘I give you my dog.’

c. *Mein Hund \textit{schlaf-e} bei mir.
   my.NOM dog sleep-1sPRS at 1sDAT
   ‘My dog sleeps with me.’

To facilitate the discussion of agreement-related phenomena I adopt the terminology suggested by Corbett (2006). The element which determines the agreement (e.g. \textit{mein Hund} ‘dog.sNOM’ in (68c)) is referred to as ‘controller’, the element whose form is determined by agreement (\textit{sieht} ‘see.3sPRS’) is called ‘target’, ‘agreement features (or categories)’ refers to those features in respect to which there is agreement (3\textsuperscript{rd} person singular), finally, any other factors (e.g. word order) which have an effect on agreement but are not directly reflected like features are dubbed ‘agreement conditions’.

9.2.2 Feature matching vs. feature unification

As the definitions of agreement provided in the previous section suggest, grammatical agreement systems are based on relating features of the agreement controller and features expressed by the agreement morphology. How this mechanism actually operates is a matter of controversy. For instance, in certain approaches (TG, GB, Minimalism) agreement is regarded as directional in nature and the relation between the features of the controller and the ones coded on the target is the relation of copying (or matching or
checking) from the controller to the target. This can be schematically illustrated as in Table 9.1. The number and person features are copied from the controller (ich ‘1sNOM’) to the target (schlaf-e ‘sleep-1sPRS’):

<table>
<thead>
<tr>
<th>German:</th>
<th>Ich 1sNOM</th>
<th>schlaf-e. sleep-1sPRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number</td>
<td>singular &gt; singular</td>
<td></td>
</tr>
<tr>
<td>person</td>
<td>1st &gt; 1st</td>
<td></td>
</tr>
</tbody>
</table>

However, the copy-based approach to agreement faces a number of problems. On the one hand, the controller of the agreement may be absent, as in (70):

(70) Russian (Indo-European; Russia)

```
Uže spiš’?
already sleep.2sPRS
‘Are you already asleep?’
```

On the other hand, the controller may be present but underspecified for certain agreement features. In (71), for instance, ty ‘2sNOM’ is underspecified with respect to gender. Nevertheless, the verb shows gender agreement with the referent of ty. In this case, in the spirit of the feature copying approach one would have to postulate two different pronouns ‘2sFEM’ and ‘2sMASC’ with an identical phonological form ty:

(71) Russian

a. Ty spa-l.
   2sNOM sleep-PST.sMASC
   ‘You (masc.) were sleeping.’

b. Ty spa-l-a.
   2sNOM sleep-PST-sFEM
   ‘You (fem.) were sleeping.’

Finally, the features coded on the controller and the ones on the target may show a mismatch (for examples and discussion, see [Corbett 2006]).
The alternative unification-based approach successfully overcomes these problems. In this approach, the relation between the controller of agreement and its target is one of feature unification (or merging). As a result of feature unification a single referential expression emerges. This mechanism is schematically illustrated in Table 9.2.

Table 9.2: Unification of features

<table>
<thead>
<tr>
<th>Russian:</th>
<th>Ty</th>
<th>spa-l.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2sNOM</td>
<td>sleep-PST.sMASC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Features:</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
</tr>
<tr>
<td>person</td>
</tr>
<tr>
<td>gender</td>
</tr>
</tbody>
</table>

| Unified feature values: | singular, 2nd, masculine |

However, not all instances of agreement can be accounted for in terms of feature unification. Bickel (2000) and Bickel and Nichols (2007) distinguish two types of agreement systems depending on the relation between the features of the controller and features coded on the target. Table 9.2 demonstrates the unification (or merging) of features so as to create one singular referential value. This type of agreement is called ‘integrative agreement system’. Another type is represented by ‘associative agreement systems’ common in many Tibeto-Burman and Australian languages. In these languages, the relevant features combine in a fashion different from straightforward feature unification. Lai Chin examples in (72) illustrate the difference. Whereas (72a) shows identificational agreement familiar from German and Russian examples above, (72b) and (72c) illustrate a different kind of agreement. In (72b), the noun phrase tsóːnpiaktuː: ‘teacher’ that has the same argument role as the agreement marker ka- ‘1[s]A’ functions semantically as an apposition to this marker. The nominal features expressed by the noun phrase (3rd person singular) do not merge with features coded by the agreement marker on the verb (1st person singular); instead, they predicate extra information about the referent. Another kind of relation holds in the

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For an overview of frameworks adopting this approach, see Corbett (2006: 115f.).
case of partitional agreement in (72c). In this example, the noun phrase with the features 3rd person singular indicates a subset of the referent indicated by the agreement marker (2nd person plural):

(72) Lai Chin (Tibeto-Burman; Burma; Bickel 2000: 587)

a. Identificational relations
   \[3[s]-DEM 3[s]S-laugh:Σ1\]
   ‘S/he laughs.’

b. Appositional relations (‘as NP’)
   \[tsóːnpiaktuː niʔ lāw ka-thloʔ vé:].
   teacher ERG field 1[s]A[-3sP]-work:Σ2 even
   ‘Even as a teacher I can work the field.’

c. Partitional relation (‘NP of’)
   \[a-háw da? nà-n-raː?:\]
   ‘Who of you came?’

Other types of relations between the features of the controller and the target are discussed in detail in Bickel (2000), see also Corbett (2006: 209f.) on associative agreement.

As the discussion above shows, neither feature matching nor feature unification allows for a comprehensive account of agreement, as there might be further operating principles behind the phenomenon at issue. The many ways of what happens with the features of the controller and features of the target make it difficult to reduce this diversity to a single variable that would provide a basis for distinguishing agreement from other argument selectors. In the next section I introduce a variable that provides a simple way of discriminating between agreement and all other argument selectors.

9.2.3 On marking and its locus

Since Keenan (1976), it has been a common practice to differentiate between coding and behavioral properties of grammatical relations (Haspelmath 2005a; Bickel 2010+b). The term ‘coding’ traditionally includes case marking, agreement and constituent order; ‘behavior’ refers to control of
coreferential arguments in various types of clause linking and other non-coding properties (see Section 11.2). Coding properties of grammatical relations (i.e. argument selectors involving coding) can be further subdivided into two types: constituent order belongs to covert marking, whereas both case and agreement marking represent overt marking (cf. Haspelmath 2005a and Section 11.2).

Overt marking corresponds to Nichols’s (1986, 1992) morphological marking. It is defined as ‘any form of inflection, affixation, cliticization, or other overt morphological variation that signals some relevant relation, function, or meaning’ (Nichols 1992: 48).

Intuitively, the distinction between case and agreement marking seem to correspond to the position of morphological markers: case is marked on noun phrases, whereas agreement markers appear on the verb (or ‘on or near the verb’, as Haspelmath (2005a) puts it). This intuition is formalized in the present approach by means of the variable of locus of marking. Locus is a convenient cover term introduced by Nichols and Bickel (2005, 2007: 193ff.) to refer to what is otherwise known as head-and dependent-marking (Nichols 1986, 1992: 46ff.). In turn, head- and dependent-marking form an integral part of Nichols’s approach to the syntax of the clause which is seen in the following way:

[T]he syntax of a sentence is an abstract network of relations which are not configurationally defined, but are best viewed as labeled. They are binary, directed relations between a head and a dependent. (Nichols 1986: 57)

The terms ‘head’ and ‘dependent’ are used as theory independent notions here, though as Nichols (1986: 56f.) points out, they figure as primitives in the majority of theories and there is hardly any disagreement between linguists of different theoretical background on what is the head and what is the dependent in a given construction. Head is then defined in the following way:

[T]he head is the word which governs, or is subcategorized for—or otherwise determines the possibility of occurrence of—the other word. It determines the category of its phrase. (Nichols 1986: 57)
On the clause level, the verb is the head and constituents (arguments and adjuncts) are dependents. Now, any type of morphological marking can be defined by whether it occurs on the head, on the dependent, or somewhere else in the clause (for instance, in fixed clause-second position). As Bickel and Nichols (2007) point out, the traditional terminology of grammatical categories involves implicit reference to the locus of marking:

Case, for instance, is always marked on dependents, and in fact case can be defined as dependent-marked affixal indication of clause and phrasal relations. The same information can perfectly well be marked on heads, but then it is not called case. (Bickel and Nichols 2007: 197)

The variable of locus of marking provides for a cross-linguistically applicable unified way to distinguish between the two types of marking: what is traditionally referred to as case or adposition marking will be defined as dependent marking in the present approach, whereas what is commonly called agreement, indexing or coreference corresponds to head marking in the majority of cases. In what follows, I survey a number of less clear cases.

One range of problematic cases is presented by languages in which some dependents lose their phonological word status. In Klon, for instance, pronouns expressing the P and G arguments immediately precede the verb and form part of its stress pattern, as o-'2sACC' in (73a) and eg-'2nsACC' in (73b):

(73) Klon (Timor-Alor-Pantar; Indonesia; Baird 2008: 126, 128)
   a. *abe o-kar? who.NOM 2sACC-call
      ‘Who called you?’
   b. ini ngan hok eg-en=e nang? 3nsNOM thing some 2nsACC-give=DIS NEG
      ‘Did they give you things or not?’

Superficially, this situation is reminiscent of agreement and looks like head marking with the pronominal index of the object marked on the verb. However, in this case it is not just the marker indexing an argument that appears on the head; instead, the whole dependent is prefixed to the verb and the
locus of marking is still on the dependent (see Section 9.2.4 discussing the criteria which distinguish between grammatical agreement and pronominal agreement).

Similar instances of the phonology-syntax mismatch may be even more intricate. In Araki, for instance, some of the pronominal P arguments have lost their word status and are obligatorily suffixed to the verb, as in (74a), whereas some other pronominal P arguments still retain the independent forms, as in (74b). Here, again, the pronominal forms are arguments, no matter whether they are phonologically free or bound, hence, the accusative formative is still a dependent marking device.

(74) Araki (Austronesian, Oceanic; Vanuatu; François 2002: 42)

a. mo=sovi-da ro.
   3S/A.REAL=wait-3pACC PROG
   ‘He is waiting for them.’

b. mo=sovi kañim ro.
   3S/A.REAL=wait 1pEXCL.ACC PROG
   ‘He is waiting for you (pl.).’

Another range of borderline cases is presented by the so-called free (or floating) markers (see Nichols and Bickel 2005: 98). In some languages, a morphological marker may be placed neither on the head, nor on the dependent, but rather on some other word defined relatively to the head or phrase boundaries (for instance, in the so-called Wackernagel position). In Ishkashimi, for instance, the marker of the S and A person and number is suffixed to the verb in present and future tenses, as in (75a). In the past tenses, the S and A person and number marker primarily cliticizes to the first constituent of the clause, as in (75b) and (75c). Moreover, it may attach to any preverbal constituent even more than once per clause, as in (75d):

(75) Ishkashimi (Indo-European, South East Iranian; Tajikistan; Paxalina 1959: 43, 53f., 65)

a. wa pómi iv-im.
   that.OBL wool-ACC spin-1sS/A
   ‘I will spin that wool.’

b. azî=m porîzd fak wen-d.
   1sABS=1sS/A yesterday 2sOBL see-PST
   ‘I saw you yesterday.’
9.2.4 Grammatical versus pronominal agreement

Thus, though =m ‘=1sS/A’ in (75b) superficially might look like a dependent marker, this position is a mere by-product of the fact that the A argument occupies the first position of the clause and the person and number marker can cliticize to this position. The traditional usage of agreement includes these instances, whereas case in the traditional sense remains an exclusively dependent marking argument selector.

To summarize, the major criterion adopted here to distinguish between the two types of overt marking of grammatical relations (i.e. what is traditionally called case marking and agreement) is the locus of markers. The two values of this variable are dependent marking and non-dependent marking (most frequently head marking, but also floating marking, as in Ishkashimi). Dependent marking corresponds to what is traditionally referred to as case and adposition marking, whereas non-dependent marking is equivalent to agreement, indexing and cross-referencing.

9.2.4 Grammatical versus pronominal agreement

In Section 9.2.3 above I introduced the variable of locus as the major criterion to distinguish between what is traditionally referred to as case marking and agreement. Besides, a few less clear cases of dependent marking were discussed. In the case of Klon (for convenience, the relevant examples are repeated in (76) below), I claimed that the prefixes o- in (76a) and eg- in (76b) are not agreement markers but rather genuine arguments phonologically bound to the verbs, therefore, they present an instance of dependent marking:

---

As has been pointed in Section 6.1 dependent marking is considered in the broad sense. It includes both morphological cases (these can be marked by affixes, clitics, stem ablaut, tone changes) and adpositions (for an overview of the morphological forms of case, see Bickel and Nichols 2008b).
(76) Klon (Timor-Alor-Pantar; Indonesia; Baird 2008: 126, 128)

a. *abe o-kar?*
   who.NOM 2sACC-call
   ‘Who called you?’

b. *ini ngan hok eg-en=e nang?*
   3nsNOM thing some 2sACC-give=DIS NEG
   ‘Did they give you things or not?’

But what is the motivation to consider *o-* in (76a) and *eg-* in (76b) arguments and not agreement markers with the triggering noun phrase just left unexpressed? The issue is less than straightforward and there is a long tradition of distinguishing two types of person/number/gender markers on the verb. I will refer to these two types as ‘grammatical agreement’ and ‘pronominal agreement’ (following Bickel and Nichols 2007); other common terms include ‘grammatical’ vs. ‘anaphoric agreement’ (Bresnan and Mchombo 1987), ‘pronoun incorporation’ vs. ‘agreement’ (Bresnan 2001), ‘person agreement marker’ vs. ‘anaphoric pronouns’ (Siewierska 2004).

The suggestions on where to draw the line between the two phenomena are at least as numerous as the applied terms (for a comprehensive survey, see, for instance, Siewierska 2004: 121ff.). In this thesis, I adopt Bickel and Nichols’s (2007) position according to which grammatical agreement indicates a relationship between a predicate and an argument noun phrase, whereas in pronominal agreement the respective marker absorbs the argument position and is thus in complementary distribution with overt noun phrases in the same position. In short, ‘grammatical agreement points to an argument while pronominal agreement is the argument’ (Bickel and Nichols 2007: 232, emphasis in the original). What makes these pronouns look different from the more clear cases, e.g. German pronouns in (68), is their bound morpho-phonological form, which, however, must not be identified with their syntactic status (cf. the discussion in Section 9.2.3).

Getting back to Klon, the situation is rather straightforward as the pronominal prefixes, as in (76), are the only way to express P arguments of the 1st and 2nd person.6 Therefore, I regard the markers *o-* in (76a) and

---

6The exact pattern is more complicated with the 3rd person markers and there is some evidence in favor of grammatical agreement in this case (at least for certain
eg- in (76b) as arguments and the type of marking on them as dependent marking.

Chichewa presents a more intricate case. Verbs in Chichewa have a sequence of prefixes indicating the noun class of the A argument, as the ‘subject’ prefix zi- of Class 10 and the ‘object’ prefix wá- of Class 2 in (77a). One might hypothesize that these suffixes are subject and object agreement markers respectively. As (77b) shows, this is indeed the case for the marker of the S and A argument, as this marker must be present despite the occurrence of an overt noun phrase, such as njûchi ‘10.bee’ in (77b):

(77) Chichewa (Benue-Congo; Malawi; Bresnan 2001: 150)

a. zi-ná-wá-lúm-a.
   10S/A-PST-2-bite-FV
   ‘They bit them.’

b. njûchi zi-ná-wá-lúm-a.
   10.bee 10S/A-PST-2-bite-FV
   ‘The bees bit them.’

In the case of the object marker, it is obligatorily omitted when the overt nominal P argument is present, as in (78a). Moreover, if there is no object prefix, the presence of the overt noun phrase in this position is obligatory, the P argument cannot occur in other clause positions instead, as the ungrammaticality of (78b) and (78c) shows:

(78) Chichewa (Bresnan 2001: 150f.)

a. njûchi zi-ná-lúm-a a-lenje.
   10.bee 10S/A-PST-bite-FV 2-hunter
   ‘The bees bit the hunters.’

   10.bee 2-hunter 10S/A-PST-bite-FV

c. *a-lenje zi-ná-lúm-a njûchi.
   2-hunter 10S/A-PST-bite-FV 10.bee

classes of predicates) which might reflect the progressing process of grammaticalization, for details, see Baird (2008). For discussion of grammaticalization of pronominal markers, see Givón (1976, 2001).
Finally, the ban on overt P argument in the presence of the object suffix is only valid for a particular phrase-structure position reserved for the P argument. Thus, the noun phrase *a-lenje* ‘2-hunter’ can occur in an afterthought position, as in (79a), or as a fronted topic, as in (79a) without making the sentence ungrammatical (for discussion, see *Bresnan and Mchombo 1987, Bresnan 2001: 148ff.; Mchombo 2004*):

(79) Chichewa (*Bresnan 2001: 151*)

a. *njuchi zi-ná-wá-lúm-a a-lenje.*
   10.bee 10S/A-PST-2-bite-FV 2-hunter
   ‘The bees bit them, the hunters.’

b. *a-lenje njuchi zi-ná-wá-lum-a.*
   2-hunter 10.bee 10S/A-PST-2-bite-FV
   ‘The hunters, the bees bit them.’

To summarize, the major criterion applied in this thesis to differentiate between dependent and head marking in problematic cases is the possibility of co-occurrence with an overt argument. If there is such a possibility, the respective marker represents an instance of head marking. If, however, a marker is in a complementary distribution with an overt noun phrase in the same position, then it is a dependent marker.

### 9.3 Argument selection and head marking

In the previous sections, grammatical relations established by head marking were presented as if the formal morphological devices (i.e. affixes or clitics) always uniquely identify which arguments are treated identically and which are treated differently and thus allow one to reduce the marking patterns to common alignment types (e.g. accusative, ergative, etc.). This issue might be more complex, however, as in some languages formal criteria produce conflicting categorizations.

*Siewierska (2003: 342)* suggest that the diagnosis of alignment may be based on four factors: which arguments do and which do not display agreement marking, the phonological form of the markers, their location or order

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*Siewierska (2003: 342)* only considers the alignment of person agreement, but the factors she considers can as well be applied to other agreement features.
relative to the verbal stem or each other, and the conditions under which agreement takes place. Thus, according to Siewierska a language may be classified as exhibiting, for instance, accusative agreement on the basis of the fact that it exhibits agreement with the S and A arguments but not with the P argument. In case there is agreement with multiple arguments, the alignment type can be determined on the basis of the similarity or difference of the morphological markers, whereas both the phonological form, the position and their order can play a role. Finally, the conditions of using the markers can also serve as a basis of determining the alignment type.

Typically, these four factors converge and define a common single alignment pattern of head marking (as in the examples discussed in the previous sections). However, in some languages these criteria result in multiple alignment patterns involving head marking. Siewierska (2003) provides the following examples from Chorti to illustrate this issue.

Chorti exhibits person and number agreement with S, A and P arguments. In the perfective aspect, the alignment of the agreement is ergative both in terms of the phonological form and location of the person markers: the S and P markers are phonologically identical and are suffixed to the verbal stem, such as -et for the 2nd person singular in (80a) and (80b), while the A markers are phonologically distinct and are prefixes, such as a- in (80c):

\[(80) \text{ Chorti (Mayan; Guatemala; Quizar 1994: 121f.)} \]

**Perfective aspect**

a. wayan-et.  
   sleep-2sS  
   'You slept.'

b. in-ira-et.  
   1sA-saw-2sP  
   'I saw you.'

c. a-ira-en.  
   2sA-saw-1sP  
   'You saw me.'

The alignment pattern established by the agreement markers in the perfective aspect is thus \{S, P\} vs. \{A\} both in terms of the phonological form and

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8Quizar (1994) does not discuss head marking of ditransitive predicates.
position of the marker. In the imperfective aspect, however, the phonological form and positional criteria for determining alignment do not converge in defining a unique alignment. The phonological forms are distinct for all three roles: the S argument of the 2nd person singular is marked with the prefix *i-*, as in (81a), the A argument with the prefix *a-*, as in (81b), and the P argument receives the suffix *-et*, as in (81c). Therefore, the established alignment pattern is {S} vs. {A} vs. {P}. With respect to the position, however, the {S, A} argument set is represented by prefixes and is thus treated differently from the {P} argument set, which is marked by suffixes:

(81) Chorti (Quizar 1994: 134)

**Imperfective aspect**

a. *i-wayan.*
   2sS-sleep
   ‘You sleep.’

b. *a-ira-en.*
   2sA-see-1sP
   ‘You see me.’

c. *in-ira-et.*
   1sA-see-2sP
   ‘I see you.’

As Siewierska (2003) observes, mismatches between various criteria of the kind illustrated with Chorti are rare and there has never been any discussion of how they should be resolved. She argues for adopting the phonological form of a morpheme as the most preferable criterion as it allows to avoid some complications related to other criteria.

Transforming these criteria onto the terminology applied in this thesis, implies that, in principle, there might be at least four different argument selectors hidden under the notion of agreement (i.e. argument selection established by the virtue of triggering agreement, argument selection based on the phonological form of the markers, argument selection based on their location or on the order of the markers relative to the verbal stem or each other, and, finally, argument selection established by the conditions under which agreement takes place). It remains open for further investigation to integrate various facets of agreement into the present approach or to motivate one of the criteria (e.g. the phonological form) as the most preferential
one (cf. the note in Section 6.7 on a related problem in the domain of dependent marking).

9.4 Head marking and argument referential properties

Section 6.3 discussed how referential properties of arguments co-determine argument selection in case of dependent marking and presented the range of possible values of this variable. This section illustrates how referential properties interact with head marking.

Teiwa demonstrates this type of effect. As (82a) and (82b) show, the verb obligatorily agrees with the P argument if its referent is animate:

(82) Teiwa (Alor-Pantar; Indonesia; Klamer 2010)
   a. A i man ga-regan.
      3s 3p   3P-ask
      ‘S/he asks them.’
   b. *A i man re gan.
      3s 3p   ask
      ‘S/he asks them.’

If the P argument is inanimate, there is no overt head marking, as (83a) demonstrates. Agreement with inanimate P arguments, as in (83b), renders the sentence ungrammatical:

(83) Teiwa (Klamer 2010)
   a. Uy ga’an qar’ na.
      person DEM rice eat
      ‘That person eats rice.’
   b. *Uy ga’an qar’ ga-na.
      person DEM rice 3P-eat
      ‘That person eats rice.’

The grammatical relations established by head marking in Teiwa are summarized in Table 9.3.

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9In Teiwa three-participant events (like give, put, etc.) are expressed by a serial verb construction, in which each the semantic theme and goal occurs as the P argument with its own predicate (for details, see Klamer 2010).
A different category of referential properties affecting head marking can be illustrated with the following examples from Imbabura Quechua. In this language any S or A argument triggers agreement on the verb, as examples in (84) illustrate. The P argument optionally triggers agreement only if it is 1st person singular, as the comparison of (84a)–(84c) and (84d) shows. (84e) demonstrates that this type of agreement is optional:

(84) Imbabura Quechua (Quechuan; Ecuador; Cole 1982: 6, 26, 64, 104, 168)

a. ſuca wa wa puña-ju-n-raj.
   my child sleep-PROG-3S/A-still
   ‘My child is still sleeping.’

b. pay-ka kan-ta maka-ni.
   he-TOP you-ACC hit-3S/A
   ‘He hits you’

c. riku-rka-ni Juzi-ta Marya-ta-wan.
   see-PST-1S/A José-ACC Maria-ACC-with
   ‘I saw José and/with María.’

d. ſuca wawki ashtaka kulki-ta japi-shka-manda
   my brother much money-ACC get-NMLZ-because
   mi ſuca-ta visita-wa-rka.
   VALID I-ACC visit-1sP-3S/A
   ‘Because my brother made a lot of money, he visited me.’

e. Marya-ka ſuca-ta riku-rka.
   Maria-TOP 1s-ACC see-PST.3S/A
   ‘María saw me.’

The grammatical relations established by Imbabura Quechua head marking are summarized in Table 9.4.

To summarize, referential properties of arguments of the types discussed in Section 6.3 with respect to dependent marking play a similarly important role in the domain of head marking.

Table 9.3: Grammatical relations of Teiwa head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>head marking</td>
<td>{P} animate</td>
</tr>
</tbody>
</table>
Table 9.4: Grammatical relations of Imbabura Quechua head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>role</td>
<td>reference</td>
</tr>
<tr>
<td>S/A agreement</td>
<td>{S, A}</td>
<td>any</td>
</tr>
<tr>
<td>P agreement</td>
<td>{P}</td>
<td>1st singular</td>
</tr>
</tbody>
</table>

9.5 Head marking and predicate class

Chapter 7 presented a way to integrate the effects of single predicates and predicate classes on argument subset formation in case of dependent marking into the present approach to grammatical relations. Some cases of predicate effects on head marking were presented and discussed for comparative purposes already in Section 7.4.1 on split intransitivity. In this section, some further examples are provided, but the principles of dealing with effects of predicates on head marking are identical to the ones introduced for dependent marking.

Osage provides an example of head marking conditioned by predicates. The prevailing majority of two-argument predicates in this language agrees with both the A and the P argument, as in (85a) and (85b). These predicates form the default two-argument predicate class in Osage (cf. Section 7.2).

(85) Osage (Siouan; USA, Oklahoma; Quintero 2004: 113, 230)

**Predicate class: default**

a. a̢-Ya-pạgo δašé.
   1sP-2sS/A-push 2sCONT
   ‘You’re pushing me.’

b. a̢k-o-ði-hka̢.
   1pS/A-PREV-2sP-help
   ‘We help you.’

Besides, there is a tiny (non-default) class of two-argument predicates (óxta ‘like, love, cherish’ and íbra̢ ‘be sated with, have enough of’) which agree with both arguments by means of prefixes otherwise used for the P argument of default predicates, as (86a)–(86c) show:
(86) Osage (Quintero 2004; 126, 128)

**Predicate class:** \( A_{\text{P-\text{agr}}} P_{\text{P-\text{agr}}} \)

a. \( \delta i-\emptyset-\acute{o}xta-api. \)
   \( 2sP-3sP\text{-love-PL-DECL} \)
   'He loves you.'

b. \( q-\delta i-\acute{o}xta. \)
   \( 1sP-2sP\text{-love} \)
   'You love me.'

c. \( i-n-q-\delta i-brq \)
   \( n\acute{j}k\acute{s}e. \)
   \( \text{PREVERB-EPEN-1sP-2sS/A-have.enough} \)
   \( 2s\text{CONT} \)
   'Have you had enough of me.'

One-argument predicates show two types of head marking. Whereas some predicates exhibit agreement with the S argument by means of prefixes otherwise used for agreement with the A argument of two-argument predicates, as in (87):

(87) Osage (Quintero 2004; 135)

**Predicate class:** \( S_{A-\text{agr}} \)

\( \text{waa-Ya-chi.} \)
\( \text{PREVERB-2sS/A-dance} \)
'You dance.'

The other group of two-argument predicates shows agreement with the S argument utilizing prefixes otherwise used for the P argument agreement of two-argument predicates, as in (88):

(88) Osage (Quintero 2004; 124)

**Predicate class:** \( S_{P-\text{agr}} \)

\( n\acute{i}-\delta i-hce. \)
\( \text{PREVERB-2sP-cold} \)
'You are really cold.'

The situation in Osage is reminiscent of what is traditionally referred to as a split-S system, where the coding of the S argument is not uniform and to a certain extent reflects the semantics of the verbs, for instance, active/stative and volitionality dimensions in case of Osage. As in other languages discussed in Section 7 the semantics of the respective Osage verbs is neither a sufficient nor a necessary condition to determine a particular
head-marking pattern (for details, see Quintero 2004: 120ff.; Pustet 2002). As a good deal of cross-linguistic comparison is based only on one most representative one-argument pattern in a language, it is legitimate to ask whether it is possible to determine such a pattern and the respective default lexical predicate class in Osage. Section 7.2 evaluated a number of possibilities to establish a default predicate class and came to the conclusion that type frequency is the most practicable criterion. In a comparative study of Lakhota and Osage, Pustet (2002) surveyed the lexicon of one-argument predicates of each language. In case of Osage, the type frequency of the $S_{A-agr}$ predicates comes up to 139 items, whereas for the $S_{P-agr}$ predicates it constitutes 54 items. Thus, on the basis of type frequency criterion, the $S_{A-agr}$ predicate class can be considered as the default one, as the difference in the number of predicates between the two classes exceeds 10%. This fact implies that, in traditional terms, Osage is rather a nominative-accusative language with respect to head marking. Table 9.5 summarizes the grammatical relations established by Osage head marking.

Table 9.5: Grammatical relations of Osage head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Role</th>
<th>Predicate class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A agreement</td>
<td>{S, A}</td>
<td>default</td>
</tr>
<tr>
<td>P agreement</td>
<td>{P}</td>
<td>$S_{P-agr}$</td>
</tr>
<tr>
<td>P agreement</td>
<td>{S}</td>
<td>$S_{P-agr}$</td>
</tr>
<tr>
<td>P agreement</td>
<td>{A, P}</td>
<td>$A_{P-agr}$ $P_{P-agr}$</td>
</tr>
</tbody>
</table>

9.6 Head marking and conditions

Chapter 8 provides a survey of the effects of clausal properties (e.g. tense and aspect properties, clause type, scenario, polarity, etc.) which condition grammatical relations established by dependent marking. Head marking is also susceptible to these types of conditions. Below, I provide an example of aspect conditioning argument selection, examples of other conditions are discussed in Dixon (1994), among others.

Itzaj Maya illustrates how the aspect of the clause conditions argument subset formation by head marking. A two-argument predicate agrees with
the A argument by means of the so-called ‘Set A’ prefixes, for instance, *inw-‘1sA’* in (89a) and (89b), and with the P argument by means of the ‘Set B’ suffixes, such as *-ech ‘2sP’* in the same example:

(89) Itzaj Maya (Mayan; Guatemala; Hofling and Tesucún 2000: 357)

a. **Aspect: incompletive**
   
   \[ k-inw-il-ik-ech. \]
   
   INCOMPL-1sA-see-INCOMPL.TR-2sP
   
   ‘I see you.’

b. **Aspect: completive**

   \[ t-inw-il-ik-ech. \]
   
   COMPL-1sA-see-COMPL.TR-2sP
   
   ‘I saw you.’

With one-argument predicates both Set A and Set B affixes can occur. In this case the distribution is conditioned by the aspect of the clause (called ‘status’ in Mayan linguistics). The set A person markers are used in the non-completive aspect, such as *inw-‘1sA’* in (90a), whereas the the B markers are used in the completive aspect, such as *-ech ‘2sP’* in (90b):

(90) Itzaj Maya (Hofling and Tesucún 2000: 357)

a. **Aspect: incompletive**

   \[ k-inw-em-el. \]
   
   INCOMPL-1sA-descend-INCOMPL.INTR
   
   ‘I descend.’

b. **Aspect: completive**

   \[ em-Ø-ech. \]
   
   descend-COMPL.INTR-2sP
   
   ‘You descended.’

Table 9.6 summarizes the effects of aspect on grammatical relations established by head marking in Itzaj Maya.

The effects of polarity on head marking can be illustrated with Tariana. In this language, two-argument verbs and a large class of one-argument verbs (the so-called ‘prefixed verbs’) take an S/A agreement prefix in affirmative clauses, as in (91a). Prefixed verbs have just one prefix position and in negative clauses the prefixed negator *ma*-replaces the personal agreement prefixes, as in (91b): cross-referencing prefixes are omitted, and person, gender and number distinctions are neutralized.
Table 9.6: Grammatical relations of Itzaj Maya head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role</th>
<th>Conditions: aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>A agreement</td>
<td>{S, A}</td>
<td>COMPL</td>
</tr>
<tr>
<td>B agreement</td>
<td>{P}</td>
<td>INCOMPL</td>
</tr>
<tr>
<td>A agreement</td>
<td>{A}</td>
<td></td>
</tr>
<tr>
<td>B agreement</td>
<td>{S, P}</td>
<td></td>
</tr>
</tbody>
</table>

(91) Tariana (Aikhenvald 2003: 400f.)

a. **Polarity: affirmative**

yanaki nu-ira-ka nuha.
whisky 1sA-drink-REC.PST.VIS 1s
'I have drunk whiskey.'

b. **Polarity: negative**

yanaki ma-ira-kade-mha nuha.
whisky NEG-drink-NEG-PRS.NVIS 1s
'I didn’t drink whiskey.'

To summarize, this section illustrated how conditions familiar from the discussion of dependent marking are also relevant for specifying argument selection as established by head marking. For grammatical relations conditioned by tense, aspect, or polarity, it is possible to transform such a system into two or more subsystems (e.g. the incomplete and complete aspect subsystems in the case of Itzaj Maya) exhibiting familiar alignment patterns (neutral, accusative, ergative, and tripartite). The next sections consider a type of grammatical relations conditioned by scenarios where such a transformation into traditional alignment patterns remains questionable and has resulted in a recognition of a separate alignment type known as hierarchical alignment.

9.7 Head marking and hierarchical alignment

Section 8.6 investigated how scenarios (i.e. the interaction of arguments with different referential properties) affect the dependent marking of arguments and which kind of alignment statements one can make when con-
considering this type of grammatical relations. The nature of co-arguments also plays an important role in argument selection by head marking and resulted in the introduction of an additional alignment type frequently referred to as hierarchical alignment. In this section, I first illustrate the scenario-conditioned head marking and then proceed to the discussion of the problems related to the introduction of the additional alignment type. As it was often noticed that hierarchical alignment systems have identifiable ergative, accusative or neutral components (cf. Bickel (1995); Nichols 1992; Bickel and Nichols 2008a; Zúñiga 2006, 2007), the major open question was how to isolate these components. In this section, I propose a method for identifying these components and with this representing the so-called hierarchical alignment systems in a way that allows one to compare them to non-hierarchical alignment systems.

The effects of scenarios on argument selection by dependent marking can be illustrated with the following examples from Reyesano. In Reyesano, the head-marking pronominal prefixes on one-argument predicates are triggered by the S argument, as illustrated with the 2\textsuperscript{nd} person covert S argument in \((92)\), which triggers the prefix \textit{mi-} ‘2s’ on the verb.\(^{10}\) The respective phonological forms of the prefixes are given in Table \textit{9.7}.

\((92)\) Reyesano (Tacanan; Bolivia; Guillaume 2009: 34)

\begin{verbatim}
Ai! Jiawe mi-(e-)manu jedu.
INTERJ now 2s-FUT-die UNCERT
‘O dear, you(sg) might die.’
\end{verbatim}

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1\textsuperscript{st} person</td>
<td>\textit{m-}</td>
<td>\textit{k-}</td>
</tr>
<tr>
<td>2\textsuperscript{nd} person</td>
<td>\textit{mi-}</td>
<td>\textit{mik-}</td>
</tr>
</tbody>
</table>

The head marking of two-argument predicates employes the same pre-

\(^{10}\)The suffix slot shows agreement with the 3\textsuperscript{rd} person A argument only and is not considered here (for details and examples, see Guillaume 2009).
9.7 Head marking and hierarchical alignment

fixes as used with one-argument predicates.\(^\text{11}\) However, as Reyesano verbs have only one prefix slot, which of the two arguments triggers agreement depends on their configuration as summarized in Table 9.8 (the argument triggering agreement is given in each cell below the respective agreement marker).

Table 9.8: Head marking of Reyesano two-argument predicates (prefix slot)

<table>
<thead>
<tr>
<th>A argument</th>
<th>P argument</th>
<th>1s</th>
<th>1p</th>
<th>2s</th>
<th>2p</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2s</td>
<td>mi-’2s’</td>
<td>mi-’2s’</td>
<td>A</td>
<td>A</td>
<td>mi-’2s’</td>
<td>A</td>
</tr>
<tr>
<td>2p</td>
<td>mik-’2p’</td>
<td>mik-’2p’</td>
<td>A</td>
<td>A</td>
<td>mik-’2p’</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>m-’1s’</td>
<td>k-’1p’</td>
<td>mi-’2s’</td>
<td>P</td>
<td>mi-’2s’</td>
<td>P</td>
</tr>
<tr>
<td>1s</td>
<td>mi-’2s’</td>
<td>P</td>
<td>P</td>
<td>m-’1s’</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>1p</td>
<td>mi-’2s’</td>
<td>P</td>
<td>P</td>
<td>k-’1p’</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

As only the 1\(^{st}\) and 2\(^{nd}\) person markers can occupy the single prefixal agreement slot, in 1>2 and 2>1 scenarios the two arguments compete for the same position and it is always the 2\(^{nd}\) person argument that triggers agreement on the verb no matter whether it is the A or P argument, as the ambiguous readings of (93a) and (93b) illustrate:

(93) Reyesano (Guillaume 2009: 39f.)

a. \textit{mi-a-b-a te miwe.}  
2s-PST-see-PST BM 2s  
‘I saw you. / You saw me.’

b. \textit{ma te mi-(e-)deta te ekama.}  
NEG BM 2s-FUT-forget BM 1p  
‘You (sg) won’t forget us. / We won’t forget you.’

\(^{11}\)As the head marking of three-argument predicates is not considered in Guillaume (2009), I limit the discussion of Reyesano head marking to one- and two-argument predicates.
It is only in the context of the 3rd person argument (A or P) that the verb shows agreement with the 1st person argument, as in (94a) and (94b):

(94) Reyesano (Guillaume [2009]: 36)

a. \textipa{m-a-ba\text{-}(-a) chenu te berashi.}
   1s-PST-see-PST empathy BM sloth
   ‘I saw a sloth. (*A sloth saw me.)’

b. \textipa{m-a-ba-ta\text{-}(-a) te ki patrón.}
   1s-PST-see-3A-PST BM 1sGEN boss
   ‘My boss saw me. (*I saw my boss.)’

The specification of grammatical relations in Reyesano is reminiscent of the grammatical relations established by Aguaruna dependent marking also conditioned by scenarios (cf. Section 8.6). In Aguaruna, the P argument is either in the nominative or in the accusative case depending on the referential properties of the A argument; thus, the overall situation is a scenario-conditioned differential P marking. In Reyesano, however, scenarios condition not only the head marking of the P argument but also of the A argument. The resulting grammatical relations can be represented as in Table 9.9, in which every instance of argument selection of a transitive predicate is conditioned by the referential properties of its possible co-arguments.

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Condition: co-argument</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>role</td>
<td>reference</td>
</tr>
<tr>
<td>prefixal head marking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>any</td>
<td>n.a.</td>
</tr>
<tr>
<td>A</td>
<td>1</td>
<td>P</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>P</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>P</td>
</tr>
<tr>
<td>P</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>P</td>
<td>2</td>
<td>A</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>A</td>
</tr>
</tbody>
</table>

Being confronted with grammatical relations of the type represented in Table 9.9, the question arises as to what kind of alignment patterns are
established by Reyesano head marking? There are a number of possible answers. On the one hand, in Section 9.3, I discussed four criteria suggested by Siewierska (2003: 342) that can serve as the diagnosis of alignment in case of head marking. They are: which arguments do and which do not trigger agreement marking, the phonological form of the markers, their location or order relative to the verbal stem or each other, and the conditions under which agreement takes place. With respect to the ability to trigger agreement and the position of the agreement markers, Reyesano can be classified as exhibiting the neutral alignment pattern, as S, A, and P arguments can trigger agreement and with all three argument roles it is a prefix slot. With respect to conditions under which agreement takes place, one might argue for the {S} vs. {A, P} alignment patterns, as scenarios condition only the agreement of two-argument predicates, whereas the head marking of one-argument predicates is unaffected by this condition.

Finally, with respect to the last criteria (phonological form of the markers), which Siewierska (2003) argues is the most preferable one, the situation is, however, not clear at all. As in the case of Aguaruna dependent marking discussed in Section 8.6, it is less than straightforward how grammatical relations conditioned by scenarios, such as the ones in Reyesano summarized in Tables 9.8 and 9.9, can be transformed into such common alignment patterns, as neutral, accusative, or ergative if only the phonological form of the markers is considered. For instance, to derive the alignment pattern for the 2nd person arguments a range of arguments and conditions listed in Table 9.10 come into question. Such a pattern, however, cannot be reduced to a number of subsystems with all conditions but the argument role being identical in each subsystem, which is a necessary precondition of deriving the traditional alignment patterns, as discussed in Chapter 5. That is, the condition Co-argument role: P, Co-argument reference: 1 applies only to the A argument, but not to the S and P arguments (i.e. there is no S or P argument in the scenario with the 2nd person P argument). Thus, the 2nd person A argument cannot be directly compared to the 2nd person S and P arguments as they never occur under the identical conditions. The same applies to any other A argument of Reyesano.

Similar problems are faced when dealing with even more intricate agreement systems, such as the ones found in Algonquian (Zúñiga 2006) and Ki-
ranti languages (Bickel 2008; Michailovsky 1988; Opgenort 2004, 2005). The following examples from Puma illustrate this point.\textsuperscript{12}

With the 2\textsuperscript{nd} person arguments Puma intransitive predicates receive the agreement prefix $t\alpha$- ‘2’, as in (95a). With transitive predicates, two distribution patterns are observed. In the scenarios with the 3\textsuperscript{rd} person arguments and 1\textsuperscript{st} person non-singular arguments, the prefix $t\alpha$- ‘2’ is used to indicate agreement with both A and P arguments, as in (95b) and (95c) respectively. In the scenarios with the 1\textsuperscript{st} person singular arguments, $t\alpha$- ‘2’ is only used to indicate agreement with the A argument, as in (95d). The agreement marker in the 1s>2-scenarios is the portemanteau morpheme -$na$ ‘1s>2’, as in (95e):

(95) Puma (Sino-Tibetan, Kiranti, Nepal; \textsuperscript{Bickel} 2008)

a. \textit{t$\alpha$-phind-a}.
   2-jump-PST
   ‘You jumped.’

b. \textit{t$\alpha$-pukd-i}.
   2-go-3sP
   ‘You took him/her.’

c. \textit{\$t$\alpha$-pukd-a}.
   3sS/A-2-take-PST
   ‘S/he took you.’

\textsuperscript{12}For the sake of simplicity, I consider only the head marking of one- and two-argument predicates controlled by the 2\textsuperscript{nd} person singular arguments, for a full survey, see \textsuperscript{Bickel} (2008).
d. *tʌ-pukɖ-oŋ.*
   2-take-1sS/P.PST
   ‘You took me.’

e. *puk-na-a.*
   take-1>2-PST
   ‘I took you.’

The grammatical relations established by the phonological form of the two 2\(^{nd}\) personsingular agreement markers in Puma are summarized in Table 9.11.

### Table 9.11: Puma 2\(^{nd}\) person singular head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Condition: co-argument</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>role</td>
<td>reference</td>
</tr>
<tr>
<td>(tʌ)-</td>
<td>S</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>2s</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>2s</td>
</tr>
<tr>
<td>(-na)</td>
<td>P</td>
<td>2s</td>
</tr>
</tbody>
</table>

Similar to Reyesano examples discussed above, grammatical relations established by the head marking in Puma are not directly compatible with the traditionally recognized alignment patterns, such as neutral, accusative, or ergative, as these alignment types presuppose the identity of all conditions (cf. the discussion in Section 8.6).

The difficulties arising when trying to classify the systems of head marking illustrated with Reyesano and Puma resulted in the introduction of the additional alignment type to account for scenario-conditioned grammatical relations. For instance, **Mallinson and Blake (1981)** extend the list of possible alignment types with ‘relative hierarchical marking’ and describe it in the following terms:
In some languages the use of accusative and/or ergative marking is determined by the relative positions of A and P on an internal hierarchy of the general form \([1 > 2 > 3 > \text{proper} > \text{human} > \text{animate} > \text{inanimate}, \text{AWM}]\). (Mallinson and Blake 1981: 65)

Another common term is ‘hierarchical alignment’. What exactly counts as relative hierarchical marking or hierarchical alignment is a long-standing open question both from the theoretical perspective (Klaiman 1992; Nichols 1992; Zúñiga 2006 and references therein) and determining the alignment type of a particular language or language’s subsystem (an illustrative case is the discussion of the ‘at-construction in Nuuchahnulth, cf. Rose and Carlson 1984; Whistler 1985; Emanatian 1988; Nakayama 1997a,b, 2001; Davidson 2002). The definitions of hierarchical alignment range from rather narrow ones (see below) to broad ones, as for instance the one in (Mallinson and Blake 1981) provided above or the following one given by Siewierska:

In hierarchical alignment the treatment of the A and P is dependent on their relative ranking on the referential and/or ontological hierarchies. Whichever is the higher ranking receives special treatment, the details of which vary from language to language. (Siewierska 1998: 10)

The ‘special treatment’ in this definition corresponds directly to the notion of argument selection by particular constructions adopted here. A rather narrow definition of the hierarchical type is given by Nichols:

Access to inflectional slots for subject and/or object is based on person, number, and/or animacy rather than (or no less than) on syntactic relations. The clearest example of the hierarchical type in my sample is Cree. The verb agrees in person and number with subject and object, but the person-number affixes do not distinguish subject and object; that is done only by what is known as direct vs. inverse marking in the verb. There is a hierarchical ranking of person categories: second person > first person > third person. (Nichols 1992: 66)
In this definition, the ‘special treatment’ is restricted to the access to a particular inflectional slot and the most typical example is the one where the same marker could be used for either the A or P argument. In Nichols’s sample hierarchical alignment occurs only in the domain of head marking (Nichols 1992: 90, 294ff.), also in The World Atlas of Language Structures (Haspelmath et al. 2005) there is no such type as hierarchical alignment in the survey of case marking of nouns and pronouns (Comrie 2005), whereas 11 languages are classified as showing hierarchical alignment with respect to agreement (Siewierska 2005). The scenario-based differential P marking of the Aguaruna type discussed in Section 8.6 would not probably count as an instance of hierarchical alignment in this narrow sense.

What all instances of hierarchical alignment — both in the broad and narrow sense — share is the fact that argument selection is co-determined by a relative ranking of the arguments on a language-specific referential hierarchy (i.e. by scenarios). Now, such an extension of the traditional notion of alignment to include the hierarchical types has been criticized for impeding comprehension of the phenomenon of alignment (Creissels 2009a, Zúñiga 2007; cf. also Zúñiga 2006: 20). Zúñiga summarizes this point in the following way:

In a simple sense, labels such as “accusative” and “ergative” tell us what sort of marking or behavior system we might expect in a particular realm of a given language, and so does “hierarchical”. Nevertheless, the accusative, ergative and tripartite types — when understood as basic — habitually imply an additional condition imposed on how the system works, viz. the absence of conditioning factors like a semantic, pragmatic and/or grammatical ranking of arguments. (Zúñiga 2007: 213)

An alternative to postulating an additional alignment type is to attempt to derive the basic alignment type(s) despite the surface incomparability of

---

13 Examples of languages exhibiting hierarchical alignment in the narrow sense in the domain of case marking include Tagalog and other so-called Philippine-type languages (Kroeger 1993; for the discussion of this phenomenon compatible with the present framework, see Bickel and Nichols 2008a, Bickel 2010b). A thorough consideration of this phenomenon goes beyond the scope of this thesis.
intransitive, transitive, and ditransitive arguments. For instance, Zúñiga (2007: 20) — without specifying the details — proposes to treat such systems in the way most split systems are treated; thus, in place of hierarchical alignment one would find basic alignment types with ‘hierarchical effects on alignment’. Similarly Nichols (1992), though recognizing hierarchical alignment as a category on a par with neutral, accusative, ergative, three-way, and stative-active alignments for the purposes of her typological survey (Nichols 1992: 65f.), makes the following observation:

To judge from my database, most hierarchical languages also have an identifiable accusative, neutral, or stative-active component. We may speak of hierarchical languages, like stative-active languages, as admitting various base alignments, at least in theory. In reality, to judge from my sample, the hierarchical alignment on an ergative base does not occur. (Nichols 1992: 68)

In a similar vein, Bickel and Nichols (2008a) consider hierarchical alignment not a discrete alignment type but ‘a secondary, referentiality-based and often discourse-related, elaboration of a basic alignment’ (Bickel and Nichols 2008a: 317).

To illustrate the issue, consider the treatment of Puma head marking by Bickel (2008). The alignment of the 2nd person illustrated in (95) is classified as neutral, the 1st person, or at least the 1st person singular, aligns ergatively, and the 3rd person aligns accusatively. This distribution is summarized in Table 9.1, in which dark grey shading indicates ergative alignment, light grey shading shows accusative alignment, and finally no shading shows neutral alignment.

Apart from these general patterns, for every single person there are counterexamples. For instance, though the alignment for the 2nd person is neutral in most cases, the general marker ta- ‘2’ is replace by the more specialized marker na- in the 1s>2 scenario, as illustrated in (95e). The standard way to account for these counterexamples is to classify Puma head marking as exhibiting hierarchical alignment, however, apart from being a logically different kind of system, as discussed above, such a classification would lump together systems which exhibit traces of different alignment patterns to different degree. The establishment of a more general alignment
9.7 Headmarking and hierarchical alignment

Patterns, as in Bickel (2008), is also suboptimal, as with this less prominent alignment components are ignored, moreover, it is not guaranteed that it is possible to determine the most basic or general pattern for every system.

The question arises how individual alignment components can be derived and how the basic alignment type can be determined. As an alternative to extending the range of alignment types with a special hierarchical alignment type, in case of Aguaruna I proposed to attempt retrieving all possible alignment patterns for each referential type in each possible scenario (cf. Section 8.6). The same method can be applied to Reyesano and Puma head marking. That is, to determine the alignment patterns established by head marking, for instance, for the 2nd person arguments in Reyesano, exemplified in (93a), one compares the marking of the 2nd person S argument with the marking of the 2nd person A and P arguments in all scenarios where the 2nd person argument occurs. The four possible combinations for comparison are listed in (96).14

![Figure 9.1: Alignment patterns of Puma head marking (Bickel 2008)](image)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>S</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s</td>
<td>ʔa (&gt;3)</td>
<td>-ŋa / -ŋa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ʔm (&gt;2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1d</td>
<td>ʔi-ŋi-qa (&gt;2)</td>
<td></td>
<td>-ŋa</td>
</tr>
<tr>
<td>1p</td>
<td>ʔi-ŋi(n)-nA (&gt;2)</td>
<td></td>
<td>-ŋi(n)-nA</td>
</tr>
<tr>
<td>2s</td>
<td>tA-</td>
<td>-ŋa (1s&gt;)</td>
<td></td>
</tr>
<tr>
<td>2d</td>
<td>tA- -ŋi-qa</td>
<td></td>
<td>-ŋa</td>
</tr>
<tr>
<td>2p</td>
<td>tA- -m (&gt;3)</td>
<td></td>
<td>-nA-i</td>
</tr>
<tr>
<td>3s</td>
<td>ʔa-</td>
<td></td>
<td>-u-i</td>
</tr>
<tr>
<td>3d</td>
<td>ʔm- -ŋi-qa (&gt;1)</td>
<td></td>
<td>-ŋi</td>
</tr>
<tr>
<td>3p</td>
<td>ʔm- (&gt;3s)</td>
<td></td>
<td>-ŋi</td>
</tr>
</tbody>
</table>

14In (96), as well as in Tables 9.12, 9.13, and 9.14 the person referential property
(96) Combinatorial possibilities for deriving alignment patterns of the 2\textsuperscript{nd} person argument in Reyesano

a. \( S_2 \) with \( A_2 \) in the scenario with \( P_1 \) (i.e. \( A_2 > P_1 \)) and \( P_2 \) in the scenario with \( A_1 \) (i.e. \( A_1 > P_2 \))

b. \( S_2 \) with \( A_2 \) in the scenario with \( P_3 \) (i.e. \( A_2 > P_3 \)) and \( P_2 \) in the scenario with \( A_1 \) (i.e. \( A_1 > P_2 \))

c. \( S_2 \) with \( A_2 \) in the scenario with \( P_1 \) (i.e. \( A_2 > P_1 \)) and \( P_2 \) in the scenario with \( A_3 \) (i.e. \( A_3 > P_2 \))

d. \( S_2 \) with \( A_2 \) in the scenario with \( P_3 \) (i.e. \( A_2 > P_3 \)) and \( P_2 \) in the scenario with \( A_3 \) (i.e. \( A_3 > P_2 \))

As the 2\textsuperscript{nd} person always triggers agreement, this comparison produces four identical patterns summarized in Table 9.12. This situation is different from the four alignment patterns resulting from the comparison of head marking of the 1\textsuperscript{st} person arguments in various scenarios. The derived alignment patterns are summarized in Table 9.13.

Table 9.12: Alignment of the head marking of the 2\textsuperscript{nd} person argument in Reyesano

<table>
<thead>
<tr>
<th>Arg:</th>
<th>Co-arg:</th>
<th>Arg:</th>
<th>Co-arg:</th>
<th>Arg:</th>
<th>Co-arg:</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A_2 )</td>
<td>( P_1 )</td>
<td>{S, A, P}</td>
<td>( A_1 )</td>
<td>( P_2 )</td>
<td>{S, A, P}</td>
</tr>
</tbody>
</table>

Such derivation of alignment patterns allows one to make statements about the proportion of the individual alignment patterns per referential type in the system of head marking. Thus, for the 2\textsuperscript{nd} person head marking Reyesano shows a 100\% \{S, A, P\} alignment pattern, whereas in case of the 1\textsuperscript{st} person the distribution of the four alignment patterns is as follows: .25 for \{S, P\} vs. \{A\}, .25 for \{S, A\} vs. \{P\}, .25 for \{S\} vs. \{A\} vs. \{P\}, and .25 for \{S\} vs. \{A, P\}. Finally, one can calculate the proportion of individual alignment patterns for the whole system of head marking.

of arguments is abbreviated as a subscript number, e.g. \( S_2 \) stands for the 2\textsuperscript{nd} person S argument. The arguments which are compared to derive alignment patterns are in the bold face in contrast to the co-arguments, e.g. \( A_2 \) vs. \( A_2 \).
The application of this method to more complex systems results in a higher number of combinatorial possibilities. For instance, Puma head marking of the 2nd person singular produces 36 combinatorial possibilities summarized in Table 9.14 with the respective alignment patterns.

### Table 9.14: Alignment of the head marking of the 2nd person singular argument in Puma

<table>
<thead>
<tr>
<th>Arg:</th>
<th>Co-arg:</th>
<th>Arg:</th>
<th>Co-arg:</th>
<th>Arg:</th>
<th>Co-arg:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A_{2s})</td>
<td>(P_{1s})</td>
<td>(A_{1s})</td>
<td>(P_{2s})</td>
<td>(A_{1d_{EXCL}})</td>
<td>(P_{2s})</td>
</tr>
<tr>
<td>(A_{2s})</td>
<td>(P_{1d_{EXCL}})</td>
<td>({S, A}) vs. {P}</td>
<td>({S, A, P})</td>
<td>({S, A, P})</td>
<td></td>
</tr>
<tr>
<td>(A_{2s})</td>
<td>(P_{3d})</td>
<td>({S, A}) vs. {P}</td>
<td>({S, A, P})</td>
<td>({S, A, P})</td>
<td></td>
</tr>
<tr>
<td>(A_{2s})</td>
<td>(P_{3p})</td>
<td>({S, A}) vs. {P}</td>
<td>({S, A, P})</td>
<td>({S, A, P})</td>
<td></td>
</tr>
</tbody>
</table>

In this case again, the method of deriving alignment patterns as suggested above makes it possible to make statements about the proportion of the individual alignment patterns per referential type. Thus, for the 2nd person singular in Puma the proportion of alignment patterns are .83 for \{S, A, P\} and .17 for \{S, A\} vs. \{P\}, which, in principle, supports Bickel’s 2008 claim that the basic alignment pattern for the 2nd person is neutral. However, the
suggested method allows to quantify this preference and to represent other non-basic alignment patterns.\textsuperscript{15}

To summarize, scenario-conditioned head marking exemplified with Reyesano and Puma in the present section presents a problem when attempting to typologize such systems in terms of traditional alignment patterns. A common solution is to extend the range of alignment patterns with a further type (i.e. hierarchical alignment), which however is problematic. On the one hand, this alignment type is fundamentally different from other alignment types. On the other hand, hierarchical alignment systems are known to exhibit traces of other alignment types and by lumping all hierarchical systems together these finer distinctions between them would be ignored. As an alternative, I suggest to consider all possible alignment pattern per referential type and calculate the proportion of traditional alignment patterns per referential type and in the overall systems of head marking. This method allows to do away with the problematic concept of hierarchical alignment and to represent individual alignment preferences in scenario-conditioned grammatical relations.

\section{Conclusion}

This section illustrated how the variables of arguments and conditions introduced in the previous chapters to account for dependent marking are also applicable for head marking. In the next section, I turn to the third argument selector to be discussed in detail in this thesis and examine how this type of argument selector fits into the by-now developed typology of grammatical relations.

\textsuperscript{15}This alternative approach is being developed at the moment by Bickel, Bierkandt, Zakharko, and the author.
Chapter 10

Diathesis alternations

10.1 Introduction

This chapter deals with a range of phenomena sometimes grouped under the umbrella term of voice or diathesis. These phenomena include active-passive or active-antipassive alternations. After a brief terminological survey and a few basic assumptions concerning diathesis alternation (Section 10.2), I consider the effects of passivization and antipassivization on grammatical relations. Section 10.3 presents these two diathesis alternation devices as argument selection. Section 10.4 shows that passivization and antipassivization also figure as a condition on argument subset formation by other argument selectors (e.g. by head and dependent marking, switch reference and control constructions, etc.). Section 10.5 discusses the related issue of transitivity in passive and antipassive clauses.

10.2 Voice and diathesis

Though the two terms of voice and diathesis are sometimes used synonymously, there is a long tradition to distinguish these two concepts, which originated in the Leningrad school of typology (cf. Mel’čuk and Xolodovic 1970; Xolodovic 1974; Khrakovskiy 1979; Mel’čuk 1994, 2006a, 2006b; Comrie 2007). In this tradition, diathesis is regarded as an attribute of a lexical unit and can be defined in the following way:
The *diathesis* of a lexical unit $L$ is the correspondence between its semantic and its deep-syntactic\(^1\) actants. (Mel’čuk 1994: 9)

Every predicate might have a number of diatheses, whereas only one of them is considered basic. This is the diathesis stored in the lexical entry. It is generally assumed that the basic diathesis of every lexical unit can be doubtlessly established (Mel’čuk 1994: 10). Table 10.1 provides a schematic illustration of basic diathesis of the English verb *like* and French *plaire* ‘like’ with reference to traditional grammatical relations.

Table 10.1: Basic diathesis of English *like* and *please* (after Mel’čuk 1994)

<table>
<thead>
<tr>
<th></th>
<th><strong>LIKE</strong></th>
<th></th>
<th><strong>PLEASE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>semantic actant</td>
<td>A (exper.)</td>
<td>P (stimulus)</td>
<td>A (exper.)</td>
</tr>
<tr>
<td>syntactic actant</td>
<td>subject</td>
<td>direct object</td>
<td>direct object</td>
</tr>
</tbody>
</table>

The basic diathesis can be modified in a number of ways. For instance, apart from the basic active diathesis, as in (97a), the English verb *like* can also occur in the passive diathesis, as in (97b):

(97)  
\[\text{a. All our customers like this romantic gift.} \]
\[\text{b. This romantic gift is liked (by all our customers).} \]

A schematic representation of this diathesis alternation is given in Table 10.2. The various ways in which semantic actants are mapped onto syntactic actants (or grammatical relations in the traditional sense) are referred to as a diathetic paradigm of a verb.

Another type of diathesis alternation is the antipassive. It can be illustrated with the following examples from Yidin. Table 10.3 schematically illustrates this diathesis alternation.

---

\(^1\)The difference between deep-syntactic and surface-syntactic level is not relevant for the present discussion; for details, see Mel’čuk 1994.
10.2 Voice and diathesis

Table 10.2: Active and passive diatheses

<table>
<thead>
<tr>
<th></th>
<th>Active diathesis</th>
<th>Passive diathesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>semantic actant</td>
<td>like</td>
<td>is liked</td>
</tr>
<tr>
<td>syntactic actant</td>
<td>A O</td>
<td>A O</td>
</tr>
<tr>
<td>subject</td>
<td>direct object</td>
<td>oblique/— subject</td>
</tr>
</tbody>
</table>

(98) Yidiny (Pama-Nyungan; Australia; Dixon 1979: 277)

a. wagudja-ngu guda:ga wawa:l.
   man-ERG   dog.ABS   see-PST
   ‘The man saw the dog.’

b. wagudja wawa:dju gudaga-la.
   man.ABS see-ANTIP.PST dog-LOC
   ‘The man saw the dog.’

Table 10.3: Active and antipassive diatheses

<table>
<thead>
<tr>
<th></th>
<th>Active diathesis</th>
<th>Antipassive diathesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>semantic actant</td>
<td>like</td>
<td>is like</td>
</tr>
<tr>
<td>syntactic actant</td>
<td>A O</td>
<td>A O</td>
</tr>
<tr>
<td>ergative</td>
<td>absolutive</td>
<td>absolutive oblique/—</td>
</tr>
</tbody>
</table>

In contrast to diathesis, voice is a narrower concept referring exclusively to an inflectional category of the verb, that is, voice is a diathesis formally marked on the verb (Mel’čuk and Xolodovič 1970; Mel’čuk 1994, 2006b). That is, whereas like and please from Table 10.1 differ only in diathesis, like and is like from Table 10.2 differ in both diathesis and voice. This view of voice implies that a verb’s various voices represent a subset of the full diathetic paradigm of a verb. This distinction between voice phenomenon and diathesis alternation is relevant for the present work because the present approach aims to account for any instance of diathesis alternations, no matter whether it is accompanied by a morphological modification of a verb or not. Thus, diathesis alternations not marked morphologically (e.g. passive in Lango (Noonan 1978, 1992) or antipassive in Puma (Bickel et al. 2007)) are considered as directly comparable to overtly marked passives or antipassives for the purposes of argument selection. This is different from a number of traditional approaches, in which passives and antipassives have
to be morphologically marked per definition (Havelmáth 1990; Dixon 1994; Dixon and Aikhenvald 2000).

Another assumption I make in this thesis is that diathesis alternations do not affect the semantic valence of predicates (Mel’čuk 1994; see also Keenan 1976; Kozinsky p.c. in Shibatani 1985). This view is different from many approaches to diathesis alternation which assume that passive or antipassive predicates have a reduced valence compared to their active counterparts (e.g. Klaiman 1991: 183).

In the following section, I will consider such common diathesis alternations as passivization and antipassivization and discuss various aspects of these two phenomena relevant for grammatical relations.

### 10.3 Passive and antipassive as argument selectors

Traditionally, passives and antipassives are analyzed with reference to the grammatical relations of subject and objects. For instance, Havelmáth gives the following characterization of passive constructions:

(i) the active subject corresponds either to a non-obligatory oblique phrase or to nothing; and

(ii) the active direct object (if any) corresponds to the subject of the passive; and

(iii) the construction is somehow restricted vis-à-vis another unrestricted construction (the active), e.g. less frequent, functionally specialized, not fully productive. (Havelmáth 1990: 27)

Comparable definitions are provided for the passive in Shibatani (2004) and Keenan and Dryer (2007) and for the antipassive in Polinsky (2005). In Dixon’s approach, which operates with the primitive syntactic notions of S, A, and O (see Section 2.4), the passive is defined as a syntactic process

---

2In this vein, adding or subtracting semantic arguments, as in case of causatives and applicatives, is not considered to be an instance of diathesis alternation (Mel’čuk 1994).
whereby O becomes S and the antipassive as a syntactic process whereby A becomes S (Dixon 1994; Dixon and Aikhenvald 2000).

The passive is illustrated with the following examples from English. In traditional terms, the subject of the active clause *they* in (99a) corresponds to the adjunct *by them* in the passive clause (99b). At the same time, the direct object *me* of the active clause in (99a) corresponds to the subject *I* in the passive clause in (99b):

(99)  a. They intrigue me.
     b. I am intrigued (by them).

What is the evidence that the object of the active becomes the subject of the passive and the original subject loses its syntactic status? First, the noun phrase corresponding to the direct object in the active clause is in the nominative case (*I* instead of *me*) and triggers agreement on the verb in the passive clause (99b). Besides, this argument also acquires a number of other properties characteristic of the English subject. For instance, it can be a controlllee or a controller in conjunction reduction constructions, as in (100a) and (100b). It can be a controlllee in control and raising constructions, as in (100c) and (100d), respectively (for a comprehensive survey of properties of the English passive, see Wanner 2009):

(100)  a. *I was bitten by a scorpion and Ø* almost died.
        b. *I walked barefoot and Ø was bitten by a scorpion.
        c. Catilina *tried Ø to be elected consul while Pompeius was away.
        d. The Tunguska Mystery *seems Ø to have been solved.

At the same time the noun phrase corresponding to the subject in the active clause loses all its subject properties in the passive clause. For instance, it can no longer function as a controller in the conjunction reduction construction, as in (101a), or as a controlllee of the control construction, as in (101b), etc.:

(101)  a. *I was bitten by a scorpion, and Ø, almost died.*
        b. *I, want him to be examined Ø. (Intended reading: I want him to be examined by me.)*
Apart from the transformations in the syntactic status of subjects or objects discussed above, another feature commonly attributed to passives and antipassives is the reduction of transitivity. The exact specifications, however, vary. According to one position, passive and antipassive clauses are intransitive (Perlmutter and Postal 1983; Dixon 1994; Dixon and Aikhenvald 2000). For instance, Dixon makes the following observation:

For all languages (with which I am acquainted) that have strict marking of transitivity, passives and antipassives are clearly intransitive; [...]. (Dixon 1994: 146, footnote 3)

This view is problematic if one considers the passivization of ditransitive clauses, as, for instance, in (102). If the clause is syntactically intransitive, what is the status of an award in it (cf. Shibatani 1985: 842; Woolford 1993)?

(102) He was given an award for journalism by Rolling Stone magazine.

A similar problem arises if one examines the passivization of syntactically intransitive clauses, as in (103) from Polish. It is highly questionable whether one can consider the resulting impersonal passive clauses as syntactically intransitive, as it cannot contain any overt argument in the nominative case and the verb is in the default 3rd person singular neutral form:

(103) Polish (Slavic; Poland; Kibort 2001)

a. Tutaj bylo tańczone.
   here was.3sNEUT dance.PART.3sNEUT
   ‘There was dancing here./The dancing was done here.’

According to an alternative view, the syntactic transitivity of passive and antipassive clauses depends on the transitivity of corresponding actives, namely, it is reduced by one. Thus, a passive of an intransitive clause results in an atransitive clause, a passive of a transitive clause results in an intransitive clause, and a passive of a ditransitive clause results in a transitive clause.

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3 This problem is avoided in some approaches by treating three-argument verbs as a subtype of transitive verbs (e.g. Dixon 1994).

4 In Polish, the passive is formed periphrastically using the auxiliary byc ‘be’ and a participle form of the lexical verb.
10.3.1 Argument promotion and argument demotion

The preceding section presented a brief overview of how passives and antipassives are regarded traditionally. As the present approach does not operate with such gross notions as subject and object, the question arises what effects passivization and antipassivization may have on building sets of arguments. Consider active-passive pairs in (104) from German. The P argument in (104a) and the T argument in (104c) are in the accusative case and do not trigger any agreement on the verb. After passivization, however, these noun phrases start to behave and be marked the way S and A arguments of actives do. For instance, they are in the nominative case and trigger agreement on the auxiliary, as in (104b) and (104d). At the same time, the semantic S and A arguments in passive sentences (104b) and (104d) are no longer in the nominative and do not trigger agreement on the verb:

(104) German

   INDEF.NOM dog PRF.AUX.3s 1sMASC.ACC bite.PST.PTCP
   ‘A dog has bitten me.’

b. *Ich wurde von einem Hund gebissen.*
   1sMASC.NOM PASS.AUX.3s by INDEF.DAT dog bite.PST.PTCP
   ‘I was bitten by a dog.’

   my.pNOM parents PRF.AUX.3p 1sDAT my.sACC first nickname give.PST.PTCP
   ‘My parents gave me my first nickname.’
d. Mein erster Spitzname wurde mir von meinen Eltern gegeben.

‘My first nickname was given to me by my parents.’

Other argument selectors (e.g. conjunction reduction, control constructions, etc.) show identical selectional restrictions in passive clauses, for instance, conjunction reduction, control, and raising constructions select P and T arguments after passivization (see examples (101) from English).

By allowing only some arguments to acquire properties which are otherwise attributed to some other arguments, passivization and antipassivization select sets of arguments (i.e. {P, T} in the German examples above) and thus establish grammatical relations. Moreover, not only a {P, T} relation is established in the examples from German: by depriving the A arguments of transitive and ditransitive verbs of certain properties (viz. nominative case, agreement controller, controller and controlllee of conjunction reduction, etc.) also an {A_{tr}, A_{ditr}} relation is established by passivization, or to be precise, an {S, A_{tr}, A_{ditr}} relation when the impersonal passive is included (cf. examples in (103)). Thus, the phenomenon traditionally called passivization in German is regarded as two argument selectors in the present approach, viz. one defining a {P, T} relation and another one defining an {S, A_{tr}, A_{ditr}} relation.

The two argument selectors illustrated above are distinguished by a variable I call *Argument treatment* (see Section 11.8). The respective values of this variable relevant to passivization and antipassivization are referred to as ‘promotion’ and ‘demotion’ following an established tradition (Comrie 1977a; Van Valin 1980; Mel’čuk 1994). I adopt the following definitions:5

‘Promotion’ will here be used to refer to a change in the syntactic status of an NP such that it becomes accessible to one or more

5Apart from morphosyntactic effects relevant for the present discussion, passives and antipassives have semantic effects, such as topicalization of object and detopicicalization of subject. These effects are sometimes also referred to as promotion and demotion or, more frequently, foregrounding and backgrounding (Van Valin 1980). Promotion and demotion in the semantic sense is not the topic of present investigation.
grammatical processes which it could not otherwise undergo, for example, relativization. [...] [T]his change in syntactic status with concomitant loss of accessibility to and control of certain grammatical processes is what is meant by ‘demotion’. (Van Valin 1980: 316f.)

Though promotion and demotion often go hand in hand, they are by no means complementary processes and can occur independently of each other (cf. Keenan 1976). The Udihe examples below illustrate the issue at hand. Further examples are provided in Foley and Van Valin (1984: 159ff.).

In Udihe, the A argument of the default predicates is in the nominative case and triggers agreement on the verb. The P argument is in the accusative case and does not trigger agreement, as in (105a). In passive clauses, the A argument is demoted: it is marked by the dative suffix -du, cannot trigger agreement, as in (105b). Besides, it lacks any other syntactic properties otherwise characteristic of S and A arguments (‘subjects’), for instance, it does not figure as a controller or controllee in switch reference or conjunction reduction constructions, etc.

(105) Udihe (Tungusic, Russia; Nikolaeva and Tolskaya 2001: 512, 574)

a. bi aziga-wa ceze:-mi.
   1sNOM girl-ACC believe.PST-1sS/A
   ‘I believed the girl.’

b. b’ata-wa abuga-du danči-wo:-ni.
   boy-ACC father-DAT curse-PASS.PST-DEFAULT.AGR
   ‘The boy was cursed by his father.’

---

6 There is a continuing discussion in the literature about the primary function or nature of passivization and antipassivization, for instance, Perlmutter (1977) claims that it is promotion, whereas Comrie (1977b) and Mel’čuk (1994) provide arguments for the primacy of demotion. For the purposes of the present thesis, this issue is not of primary importance, as any morphosyntactic operation restricted to a subset of arguments is considered as establishing grammatical relations no matter whether it is conditioned by some other argument selector or not.

7 For the sake of brevity I do not consider three-argument predicates of Udihe.
In contrast to English or German, the P argument of passive clauses remains in the accusative case and does not trigger agreement on the verb. Moreover, the P argument in passive clauses acquires no subject properties whatsoever. For instance, it cannot serve as a controller of conjunction reduction the way S and A arguments of active clauses can, as the comparison of (106a) and (106b) demonstrates (for details and examples of other constructions, see Nikolaeva and Tolskaya 2001: 573f.):

(106) Udihe (Nikolaeva and Tolskaya 2001: 545, 553)

a. yegdige ba: xo:n-dule-ni ule:ni agdu, Ø
   hero.NOM pace top-LOC-3s dig.PST-3sS/A hole.NOM Ø
   uta-la ŋwa-wan-ki-ni.
   that-LOC sleep-CAUS-PST-3sS/A
   ‘The hero dug a hole in the forest and then put them to sleep.’

b. *Petro-wa Iwana-du konko-wo:-ni Ø
   Peter-ACC Ivan-DAT beat-PASS.PST-DEFAULT.AGR Ø
   ŋene:-ni.
   go.PST-3sS/A
   ‘Peter, was beaten by Ivan and Ø, left.’

Thus, only demotion by passivization presents an argument selector establishing an \{A\text{tr}, A\text{ditr}\} relation. Contrary to German, there is no promotion by passivization in the Udihe examples discussed above. Tables 10.4 and 10.5 provide a summary of grammatical relations established by passivization in the two languages discussed in this section.

To summarize, the phenomena traditionally referred to as passivization (as well as antipassivization) present two distinct types of argument selectors (argument promotion and argument demotion). These two types of argument selectors can, but need not occur simultaneously.

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\(^8\)Example (105b) does not provide unambiguous evidence for the lack of agreement with the non-promoted P argument, as the default agreement marker -ni has the form of the 3rd person singular agreement marker. I have not been able to find a straightforward example of a passive clause with a plural P argument in the reference grammar; however multiple statements in the source as to the nature of agreement leave no room to doubt (see Nikolaeva and Tolskaya 2001: 553, 573).

\(^9\)In Section 10.3.2 I return to Udihe passivization and present some further data.
10.3.2 Splits of argument promotion and demotion

Table 10.4: Grammatical relations of German passivization

<table>
<thead>
<tr>
<th>Argument selector:</th>
<th>Selected arguments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>argument promotion</td>
<td>{P, T}</td>
</tr>
<tr>
<td>argument demotion</td>
<td>{S, A_{itr}, A_{ditr}}</td>
</tr>
</tbody>
</table>

Table 10.5: Grammatical relations of Udihe passivization (preliminary)

<table>
<thead>
<tr>
<th>Argument selector:</th>
<th>Selected arguments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>argument demotion</td>
<td>{A_{itr}, A_{ditr}}</td>
</tr>
</tbody>
</table>

10.3.2 Splits of argument promotion and demotion

Variables co-determining grammatical relations established by argument selectors discussed in Chapters 6 to 9 (e.g. referential properties of arguments and conditions, such as predicate class, main vs. dependent clause, etc.) are also relevant for diathesis alternation constructions and can condition splits in argument promotion and demotion. Further data from Udihe already discussed in the previous section illustrate the issue at hand.

In Udihe, the situation outlined in the previous section only holds for nominal P and T arguments. In case of pronominal arguments, a different behavior is observed. As (107b) illustrates, the semantic P argument of the passive clause (si ‘2sNOM’) is in the nominative case and triggers agreement on the verb the way S and A arguments of the active clause do, as in (107a)–(107b). This is in contrast to non-promoted nominal P and T arguments discussed in the previous section and illustrated in (108).

(107) Udihe (Tungusic, Russia; Nikolaeva and Tolskaya 2001: 512, 572)

a. ono-do ja:sine-we uisigi-zené-i bi.
   how-IND.PROV 2s-ACC rescue-FUT-1sS/A 1sNOM
   ‘Whatever happens, I will rescue you.’

b. j’eu dieze-tige gaisi:-ni nime-wo?
   what depth-LAT call-3sS/A me-ACC
   ‘Why is he calling me in the depth?’
b. si min-du gida-si-u-zenge-i.
   2sNOM 1s-DAT spear-V-PASS-FUT-2sS/A
   ‘You will be killed by me.’

(108) Udihe (Nikolaeva and Tolskaya 2001: 574)
   b’ata-wa abuga-du danči-wo:-ni.
   boy-ACC father-DAT curse-PASS.PST-DEFAULT.AGR
   ‘The boy was cursed by his father.’

Moreover, the promoted pronominal argument also shows other properties characteristic of the subjects in Udihe. For instance, it can control conjunction reduction and switch reference, etc. (see Nikolaeva and Tolskaya 2001: 572). Table 10.6 summarizes the grammatical relation established by passivization in Udihe.

Table 10.6: Grammatical relations of Udihe passivization

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Role</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>argument demotion</td>
<td>{Attr, Adist}</td>
<td>any</td>
</tr>
<tr>
<td>argument promotion</td>
<td>{P, T}</td>
<td>pronoun</td>
</tr>
</tbody>
</table>

10.4 Diathesis as a condition on argument selection

In the examples of passivization from German, English and Udihe discussed in Section 10.3 the promoted arguments acquire all the morphosyntactic properties otherwise characteristic of a subset of arguments of active clauses, whereas the demoted arguments lose all the properties typical to the corresponding arguments of active clauses. For instance, the promoted P and T arguments in German behave as S and A arguments of active clauses, whereas the demoted S and A arguments lose all morphosyntactic properties typical for S and A arguments of active clauses. This uniformity of behavior is captured in the traditional view of passivization as a derivation transforming the object of the active into the subject of the passive. However, already Keenan (1976) noticed that derived subjects (i.e. promoted arguments) do not necessarily acquire all properties of non-derived
10.4 Diathesis as a condition on argument selection

(or 'basic') subjects. Such restricted promotion can be illustrated with the following examples from Seri and Imbabura Quechua.

In Seri, the S and A arguments (i.e. subject in traditional terms) are treated identically and differently from the P argument for the purposes of head marking. For instance, the 1st person singular S and A arguments are marked with the prefix $i^p-$, as in (109a) and (109b), whereas the P argument is marked with the prefix $i^m-$, as in (109c):

(109) Seri (Hockan, Mexico; Marlett 1981: 32f.)
   a. $i^p$-im-$i^-$ak.
      1sS/A-MOOD-blind
      'I am blind.'
   b. $i^m$-m-$pi$.
      1sS/A-MOOD-taste
      'I tasted it.'
   c. $i^m$-im-$ka$ni.
      1sP-MOOD-bite
      'It bit me.'

Seri also has a control construction with the verbs -am$\ddot{a}$o ‘want’ and -aa ‘know how, be able’. The S and A arguments of the complement infinitive clause must be deleted if they are coreferential with the controller argument of the matrix clause, as in (110a):

(110) Seri (Marlett 1984a: 219)
   a. [Ø ika-ta$\ddot{a}$] $i^m$-mi-$m$šo.
      Ø INF-go 1sS/A-MOOD-want
      'I want to go.'
   b. [Ø $i^a$sax kap $i^a$-ata$\ddot{a}$$\ddot{a}$:] $i^m$-mi-$m$šo.
      Ø basket the INF-buy 1sS/A-MOOD-want
      'I want to buy a basket.'

Finally, in a special type of clause linkage (for details, see Moser 1978), a different-subject marker (ma in realis, ta in irrealis) appears on the dependent clause if two clauses have different S or A arguments, as in (111a). No marker is present if the S or A arguments of two clauses are coreferential, as in (111b):

(111) Seri
   a. [ma $i^m$-m$\ddot{a}$o $i^a$-ats€$\ddot{a}$ $i^a$-i$z$mi-$m$šo.
      ma INF-want INF-live INF-talk 1sS/A-MOOD-want
      'I want to talk with him.'
Diathesis as a condition on argument selection

(111) Seri (Marlett 1984a: 227)

a. \( \text{mi-nl} \ \text{ki} \ \text{po-šat} \ \text{ta-χ} \)
   \( \text{2POSS-finger} \ \text{the MOOD-have.thorn} \ \text{DS-UT} \)
   \( \text{im-s-o:部长} \ \text{a-部长} \)
   \( \text{2sS/A-MOOD-cry} \ \text{AUX-DECL} \)
   ‘If your finger gets thorn in them, you will cry.’

b. \( \text{mi-naiɬ} \ \text{kom im-po-k-exk-χ} \ \text{ata:p} \)
   \( \text{2POSS-skin} \ \text{the} \ \text{2sS/A-IRR-AUG-wet-UT} \ \text{mucus} \)
   \( \text{kʷ=m-si-a:部长} \ \text{a-部长} \)
   \( \text{3OBL-2sS/A-IRR-be} \ \text{AUX-DECL} \)
   ‘If you wet your skin, you will be with mucus (i.e. get a cold).’

In passive clauses, the P argument acquires a number of properties characteristic of S and A arguments of the active clause. For instance, it triggers S/A agreement on the verb, as in (112a)–(112b). It must be deleted under coreference in the control construction, as in (112c):

(112) Seri (Marlett 1984a: 217f.)

a. \( \text{im-yo-m-p-eši} \)
   \( \text{2sS/A-MOOD-NEG-PASS-defeat} \)
   ‘You weren’t defeated.’

b. \( \text{i'ip-t-a:部长-kašni} \)
   \( \text{1sS/A-MOOD-PASS-bite} \)
   ‘Was I bitten?’

c. \( \text{[Ø ikə-p-ašt]} \ \text{im-t-amšo}. \)
   \( \text{[Ø INF-PASS-tattoo]} \ \text{2sSBJ-MOOD-want} \)
   ‘Do you want to be tattooed?’

The switch-reference marking, however, behaves unexpectedly. In (113a)–(113b), the promoted P argument of the passive clause (now the subject) is referentially identical to the S or A argument (subjects) of the active clauses. However, the dependent clauses are marked by the different-subject marking. In (113c), on the contrary, the different subject marker would have been appropriate, but it is missing.

(113) Seri (Marlett 1984a: 227)

a. \( \text{'ap ki' t-oχi ma yo-p-a'il} \)
   \( \text{deer the MOOD-die DS MOOD-PASS-eat} \)
   ‘Whenever a deer died, it was eaten.’
b. m-yo-a:ˀ-kašni, kokašni şo m-t-ˀo ma.  
2sSBJ-DIST-PASS-bite snake a 2sSBJ-REAL-see DS  
‘You were bitten, after you had seen a snake.’

c. ˀaːt kiˀ p-a:ˀ-ka:-χ ˀe:poł kiˀ mos  
torote the IRR-PASS-seek-AUX ratany the also  
s-a:ˀ-ka: ˀa-ˀa.  
IRR-PASS-seek AUX-DECL  
‘If torote is looked for, white ratany should be looked for also.’

In traditional terms, situations like the one in Seri are difficult to account for.\textsuperscript{10} If the underlying object becomes the subject, why is it unable to control the switch-reference marking in (113a) and (113b)? And if the underlying subject goes into a peripheral function, why does it sill control the switch-reference marking in (113c)?

Imbabura Quechua provides a similar example. The S and A arguments are in the unmarked nominative case and trigger the S/A-type agreement on the verb, as in (116a)-(116b). The P argument receives the accusative case marking -ta and does not trigger any agreement on the verb,\textsuperscript{11} as in (116b):

\begin{equation}
\text{(114) Imbabura Quechua (Quechuan, Ecuador; Cole 1982: 34, 168)}
\end{equation}

\begin{itemize}
\item a. ſuka wawa puñu-ju-n-raj  
1s child.NOM sleep-PROG-3S/A-still  
‘My child is still sleeping.’
\item b. ſuka María-ta juya-ni  
1s.NOM María-ACC love-1sS/A  
‘I love María.’
\end{itemize}

Another argument selector of Imbabura Quechua is a type of nonfinite adverbal clauses marked by switch-reference markers: the verbal suffix -shpa -ADV.SS’ is used to indicate the coreference of the S or A argument of the adverbial and main clauses, as in (115a). In case of disjoint reference of S or A arguments of the two clauses the suffix -jpi -ADV.DS’ is used, as in (115b):

\begin{footnotesize}
\begin{itemize}
\item\textsuperscript{10}See Marlett (1984b) and Farrell et al. (1991) for the discussion of possible analyses of this construction in Relational Grammar and UG.
\item\textsuperscript{11}There is an optional object agreement for the 1\textsuperscript{st} person singular exclusively (for details, see Cole 1982: 103f.), but this aspect is irrelevant to the present discussion.
\end{itemize}
\end{footnotesize}
Diathesis as a condition on argument selection

Imbabura Quechua (Cole 1982: 59, 61)

   Quito-to arrive-SS-EVID friend-ACC see-PST-1sS/A
   ‘When I arrived in Quito, I saw a friend.’

b. wawa shamu-jpi-ca alcu pai-lla-tai
   child.NOM come-DS-TOP dog.NOM he-EMPH-ACC
   cani-ca-Ø-mi
   bite-PST-3S/A-EVID.
   ‘When the child came, the dog bit him.’

In passive clauses, the underlying direct object seemingly becomes the subject as it is in the unmarked nominative case and triggers agreement, as in (116a). It also controls the coreference in the switch reference adverbial clauses, as in (116b) and (116c). However, there is one more argument in (116a)–(116b). This argument neither triggers agreement, nor controls coreference; however, it retains the nominative case present in the corresponding active clause:

Imbabura Quechua (Cole 1982: 59, 133)

a. ŋuka-ka Juzi riku-shka ka-rka-ni.
   1sNOM-TOPIC Jose.NOM see-PST.PTCP be-PST-1sS/A
   ‘I was seen by José.’

b. wawa shamu-shpa-ka pai-lla aiku
   child.NOM come-ADV.SS-TOP he.NOM-EMPH dog.NOM
   kani-shka-ai ka-rka-Ø.
   bite-PST-EVID be-PST-3S/A
   ‘When the child came, he was bitten by the dog.’

c. *wawa shamu-jpi-ka pai-lla aiku
   child.NOM come-ADV.DS-TOP he.NOM-EMPH dog.NOM
   kani-shka-mi ka-rka-Ø.
   bite-PASS-EVID be-PST-3SBJ
   ‘When the child came, he was bitten by the dog.’

Imbabura Quechua has two types of passive clauses, viz. the ka- ‘be’ and tuku- ‘become’ passives. They differ as to whether a change of state is implied (it is implied in case of the tuku- ‘become’ passive) and whether the promoted argument can have inanimate reference (possible only with with the ka- ‘be’ passive), for details, see Cole (1982: 133f.). For the purposes of the present discussion the behavior of the two passive constructions is identical, but for the sake of consistency, I stick to the ka- ‘be’ passive.
10.4 Diathesis as a condition on argument selection

An account of the situation in Imbabura Quechua in traditional terms is also problematic: if one of the nominative arguments in (116a) is the derived subject, what is the syntactic status of the other element then? If it is not a subject, its marking with the nominative case (and not, for instance, with the instrumental or any other oblique case) cannot be explained. Also problematic is the determination of syntactic transitivity of such clauses. If it is an intransitive clause, why are there still two nominative arguments? And if it is transitive, what is what?

The examples from Seri and Imbabura Quechua given above are not unique or exceptions. Other languages with unexpected marking or behavior of arguments after passivization or antipassivization include Yucatec (Mayan, Guatemala and Belize; Verhoeven 2007), Udihe (Tungusic, Russia; Nikolaeva and Tolskaya 2001), and a number of languages considered in Van Valin (1980). Similar controversial examples for determining the status of arguments of passive clauses were noticed already in Keenan (1976) and motivated him to propose The Promotion to Subject Hierarchy.

The examples presented above show that promotion and demotion of arguments by passivization (or antipassivization) are problematic to account for in terms of subjects and objects, as promoted arguments do not necessarily acquire all properties of subjects (as in Seri) and demoted arguments do not automatically lose all subject properties (as in Imbabura Quechua). There are a number of possibilities to integrate these and similar problematic cases into the traditional analysis of diathesis alternations. For instance, one could consider such ‘deviating’ passives and antipassives to be non-basic or not prototypical (these possibilities seem to be available in Shibatani 1985 and Keenan and Dryer 2007), or even not to consider them under the label of passives or antipassives at all (Dixon 1994). Another range of possibilities is to either consider the derived subjects to be ‘non-basic’ or less ‘subject-like’ (Keenan 1976) or to claim that the ‘misbehaving’ processes (e.g. control of switch-reference marking in Seri, nominative case marking in Imbabura Quechua) are not genuine subject properties (cf. Moore and Perlmutter 2000). None of these solutions is satisfactory if one strives for a unified account of the phenomena at hand.

In terms of argument selection, the promotion and demotion take place with respect to argument selectors. Whereas in some languages promotion
and demotion apply to all relevant argument selectors (e.g. in English and German), in some other languages, promotion and demotion are limited to a subset of them. In other words, in these languages, only some argument selectors treat the P argument of passive clauses as S and A arguments of active clauses, whereas other argument selectors are not susceptible to argument promotion, that is, with respect to them the P argument of passive clauses still behaves as the P argument of active clauses. The same applies to antipassivization and arguments of ditransitive predicates. Thus, in the case of Seri, there is a promotion of the P argument and demotion of the A argument with respect to such argument selectors as agreement and controllee of control construction; however, there is no promotion nor demotion with respect to switch-reference marking. Metaphorically speaking, switch-reference in Seri is ‘blind’ or ‘immune’ to passivization. In the case of Imbabura Quechua passivization, there is a syntactic promotion of the P argument with respect to case marking, agreement, and control of switch-reference, among other argument selectors; the A argument is demoted with respect to agreement and control of switch-reference, but not with respect to case marking.

To capture this selective promotion and demotion, varying behavior of arguments in passive clauses can be accounted for by treating diathesis as another condition on argument selection (similar to tense-aspect properties of the clause or main vs. dependent clause types, cf. Chapter 8). The discussed grammatical relations are summarized in Table 10.7 for Seri and in Table 10.8 for Imbabura Quechua.

To summarize, the construction traditionally referred to as passivization (or antipassivization) figures both as an argument selector (viz. argument demotion and argument promotion) and as a condition on argument selection in the case of other constructions (viz. as passive vs. active clause, or antipassive vs. active clause).

---

13I count as an instance of promotion or demotion any changes in argument subsets defined by at least one argument selector of a language.
### 10.4 Diathesis as a condition on argument selection

Table 10.7: Some grammatical relations of Seri

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Conditions: diathesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘subject’-agreement</td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{P}</td>
<td>passive</td>
</tr>
<tr>
<td>‘object’-agreement</td>
<td>{P}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>passive</td>
</tr>
<tr>
<td>controllee in infinitive control constructions</td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{P}</td>
<td>passive</td>
</tr>
<tr>
<td>controllee and controller in switch reference constructions</td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{S, A}</td>
<td>passive</td>
</tr>
<tr>
<td>argument promotion in ka- ‘be’ passivization</td>
<td>{P}</td>
<td>—</td>
</tr>
<tr>
<td>argument demotion in ka- ‘be’ passivization</td>
<td>{A}</td>
<td>—</td>
</tr>
</tbody>
</table>

Table 10.8: Some grammatical relations of Imbabura Quechua

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Conditions: diathesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘subject’-agreement</td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{P}</td>
<td>passive</td>
</tr>
<tr>
<td>nominative case (-Ø)</td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{A, P}</td>
<td>passive</td>
</tr>
<tr>
<td>accusative case (-ta)</td>
<td>{P}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{−}</td>
<td>passive</td>
</tr>
<tr>
<td>controllee and controller in switch reference constructions</td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{P}</td>
<td>passive</td>
</tr>
<tr>
<td>argument promotion by passivization</td>
<td>{P}</td>
<td>—</td>
</tr>
<tr>
<td>argument demotion by passivization</td>
<td>{A}</td>
<td>—</td>
</tr>
</tbody>
</table>
10.5 On syntactic transitivity of derived clauses

As has been pointed out in Section 10.3, passive and antipassive clauses are frequently characterized as having a reduced syntactic transitivity. According to one position, passive and antipassive clauses are intransitive (Perl-mutter and Postal 1983; Dixon 1994; Dixon and Aikhenvald 2000, 1997). According to an alternative proposal, the syntactic transitivity of derived clauses depends on the transitivity of corresponding actives, namely, it is reduced by one (Shibatani 1985, 2004; Keenan and Dryer 2007), so that passivization or antipassivization of ditransitives results in transitive clauses, etc.

Both these views are problematic, as is the whole concept of syntactic transitivity (for a discussion, cf. Section 4.2). First, the fact that some languages allow passivization within transitive predicates speaks against the position that all derived clauses are intransitive (see examples in (103)). Second, passivization and antipassivization of ditransitive clauses might be problematic for both positions. Puma provides an example of this issue.

In Puma, the A argument of the transitive clause is obligatorily assigned the ergative case, and the P argument is assigned the dative case when it is animate or definite, as in (117a). With ditransitive predicates, the dative case is used on the G argument, the T argument is in the absolutive case, as in (117b):

(117) Puma (Sino-Tibetan, Kiranti, Nepal; Bickel et al. 2007: 7, 9)

a. ɳa-a kho-lai enn-u-ŋ.
   1s-ERG 3s-DAT hear:NPST-3P-1sA
   ‘I hear him.’

b. ɳa-yaŋni-lai chetkuma(*-lai) itd-u-ŋ.
   1s-ERG friend-DAT clan.sister.ABS(*-DAT) give-3sP-1sA
   ‘I gave a/my sister to a/my friend (in marriage).’

In the case of antipassivization, the P argument is obligatorily deleted, the semantic A argument is in the absolutive case and triggers the agreement characteristic of semantic S arguments, as in (119). Thus, the antipassive clause shows the characteristics typical of an intransitive clause, which is consonant with both views on syntactic transitivity of derived clauses.
When a ditransitive clause is antipassivized, the A argument is in the absolutive case and triggers the intransitive-type agreement, as in (119). This fact supports the view that the derived clause is syntactically intransitive. However, the derived clause retains the semantic T argument in the absolutive case (chetkuma ‘clan.sister.ABS’). This fact is hard to reconcile with the intransitive view of derived clauses and, at first sight, seems to support the alternative view. However, in contrast to non-derived transitive clauses, this argument cannot receive the dative case marking and in this respect behaves the same way it does in the ditransitive underived clause.

Thus, as examples above show, antipassivized clauses share syntactic properties with underived clauses of various syntactic transitivity depending on which morphosyntactic feature one considers.

The examples from Seri and Imbabura Quechua discussed in the previous section present the same type of problems for any attempt to determine the syntactic transitivity of derive clauses, as the decision depends on the morphosyntactic feature one considers. Even if it might be possible to maintain the view that Seri passive clauses are intransitive with respect to agreement and properties of control constructions, the control of switch-reference diagnoses the passive clause as a transitive one. In Imbabura Quechua, the passive clause is intransitive with respect to agreement and control of switch-reference, however its case pattern is different from both intransitive and transitive clauses.

To summarize, the morphosyntactic properties of arguments in derived clauses provides additional evidence for the inapplicability of the concept of syntactic transitivity for comparative purposes (cf. Section 10.3).
10.6 Conclusion

This chapter investigated the roles of some diathesis alternations (passive and antipassive) in defining and co-determining grammatical relations. Essentially, such syntactic processes as passivization and antipassivization play a dual role in defining grammatical relations. On the one hand, they figure as argument selectors by the virtue of demoting or promoting subsets of arguments. On the other hand, they figure as conditions co-determining argument selection by other arguments. Moreover, the analysis of passivization and antipassivization given here has provided additional evidence for inapplicability of the concept of syntactic transitivity in the discussion of grammatical relations. It was shown that derived clauses can simultaneously exhibit alignment patterns common to underived clauses of different transitivity depending on what argument selector one considers.

This chapter is the last one devoted to a particular construction. In the next chapter, I provide a brief overview of other argument selectors and introduce a multivariate typology of argument selectors.
Chapter 11

Variables of argument selectors

11.1 Introduction

As grammatical relations are construction specific and, in turn, constructions are language-specific (Croft 2001), the question arises how individual constructions can be compared within and across languages. Chapters 6 to 10 discuss some common argument selectors defining grammatical relations such as case marking, agreement, passivization, and antipassivization. To explore the distribution of the grammatical relations established by these and other argument selectors in the world’s languages as well as their interaction with geographic and genealogical patterns or other aspects of grammar one has to be sure that only identical or similar enough argument selectors are directly compared. The distinction between individual argument selectors is not always straightforward and the traditional designation of various argument selectors in single languages might be confusing. For instance, the discussion in Sections 9.2.3 and 9.2.4 presented a number of borderline cases between case marking and agreement and in such less prototypical cases the usage of these two terms might vary a lot depending on the theoretical framework or the author. The same applies to diathesis alternation. For example, there is an ongoing discussion of whether passives have to be morphologically marked to count as passives or not (cf. Noonan 1978; Haspelmath and Müller-Bardey 2004; Shibatani 2004; Lüpke 2007) or
whether they have to be promotional or demotional (Shibatani 1985). The issue of establishing a reliable basis of comparison becomes even more crucial once the dataset is extended to include other so-called behavioral constructions (i.e. other than case marking, agreement and constituent order constructions, cf. Section 11.2) as their nomenclature is even more inconsistent and framework-dependent. The multivariate approach to comparison of argument selectors to be introduced in this chapter provides an efficient alternative to such terminological debates.

The multivariate approach to comparison of linguistic structures was presented in detail in Section 3.3. In a nutshell, if a linguistic structure is a complex one and exhibits a certain amount of heterogeneity (e.g. a grammatical relation or an argument selector), the multivariate approach attempts to split this structure into as many variables as necessary to account for the relevant variation and ensure comparability instead of applying a single criterion to determine instances of a structure from non-instances (e.g. ‘true passives’ from other ‘passive-like constructions’) (cf. Bickel 2010+a).

Variables required to compare selected arguments and conditions on argument selection were discussed in Chapters 6 to 8. In this chapter, I introduce variables and their values which make it possible to compare argument selectors themselves. As previous chapters were devoted to the analysis of head and dependent marking and diathesis alternation (Chapters 6 to 10), in this chapter I first discuss the variables required to differentiate these argument selectors (Sections 11.2 and 11.3). In further sections, I discuss a number of other argument selectors and propose a possible range of variables that make it possible to compare these argument selectors across and within languages. It goes beyond the scope of this thesis to consider all known argument selectors and in what follows only a brief overview of some common constructions and the variables needed to distinguish them are presented.

11.2 Coding vs. behavior

The three types of argument selectors discussed in Chapters 6 to 10 are traditionally referred to as case marking, illustrated in (120), agreement, illustrated in (121), and some types of diathesis alternation, for instance
antipassive, illustrated in (122b):

(120) Kham (Sino-Tibetan; Nepal; Watters 2002: 248)

\begin{verbatim}
no-e \eta-la\ i o-b\&\end{verbatim} ek-O loi-na-ke-o.
\begin{verbatim}
he-ERG 1s-DAT 3s-gun-ABS loan-me-PFV-3s
\end{verbatim}
\begin{verbatim}
oi-na-ke-o.
\end{verbatim}
\begin{verbatim}
He loaned me his gun.’
\end{verbatim}

(121) Russian (Indo-European; Russia)

\begin{verbatim}
Ty spa-l-a.
\end{verbatim}
\begin{verbatim}
2sNOM sleep-PST-sFEM
\end{verbatim}
\begin{verbatim}
‘You (fem.) were sleeping.’
\end{verbatim}

(122) Yidinʸ (Pama-Nyungan; Australia; Dixon 1979: 277)

\begin{verbatim}
a. wag\&\end{verbatim} u\&\end{verbatim} d-
\begin{verbatim}
a-guda:ga wawa:l.
\end{verbatim}
\begin{verbatim}
man-ERG dog.ABS see-PST
\end{verbatim}
\begin{verbatim}
‘The man saw the dog.’
\end{verbatim}

\begin{verbatim}
b. wag\&\end{verbatim} u\&\end{verbatim} d-
\begin{verbatim}
 wawa: dj\&\end{verbatim} nu gudaga-la.
\begin{verbatim}
man.ABS see-ANTIP.PST dog-LOC
\end{verbatim}
\begin{verbatim}
‘The man saw the dog.’
\end{verbatim}

What do these three argument selectors have in common and in which respect are they different? And what are the possible variables that can provide a reliable basis for their comparison? One of the obvious differences is that the argument selectors illustrated in (120) and (121) exhibit some overt morphological marking restricted to certain arguments, whereas in (122) the argument selection manifests itself in changing properties of the arguments of the antipassive sentence compared to the arguments in the active sentence. This intuitive difference is captured in a long-standing tradition started by Keenan (1976) of classifying properties of grammatical relations (i.e. argument selectors) into coding properties and behavior properties.¹ Coding argument selectors include dependent marking, head marking, and phrase structure position (constituent order). All these argument selectors are characterized by overtly coding selected arguments either by assigning them a specific case, such as the ergative, dative, and absolutive in (120), selecting a specific agreement paradigm, such as the one illustrated in (121),

¹In Keenan’s (1976) original formulation they are called ‘behavior and control properties’.
or defining a specific position in the phrase structure. All other constructions represent behavioral argument selectors. What all these argument selectors share is the absence of overt indication of the grammatical relations in terms of morphology or position. Instead, the argument selection is realized by constraints or rules on syntactic behavior of arguments (e.g. on which arguments can be promoted or demoted, on which arguments can or must be deleted, on which arguments can be relativized on, etc.).

Furthermore, coding devices are frequently subdivided into overt morphological marking, which includes case and agreement marking, and coding by constituent order (e.g. in Haspelmath 2005a).

Thus, the first two variables needed to distinguish the argument selectors in (120), (121), and (122) are \textit{Coding vs. behavior} and \textit{Type of coding}.\footnote{The complete list of proposed variable of argument selectors and some of their possible values is given in Section 11.9.}

\section*{11.3 Locus of marking}

The two variables of coding vs. behavior and type of coding presented in the previous section isolate the argument selectors traditionally termed case (also sometimes called argument flagging, e.g. in Haspelmath 2005a) and agreement (also called indexing or cross-referencing) from all other argument selectors. In turn, these two argument selectors can be differentiated by the variable of \textit{Locus of marking}.\footnote{Nichols (1986) differentiates three levels of locus of marking, viz. phrase, clause, and sentence level. Only the clause level is relevant for the discussion of grammatical relations.} Locus is a convenient cover term introduced by Nichols and Bickel (2005) and Bickel and Nichols (2007) to refer to what is otherwise known as head marking and dependent marking (Nichols 1986, 1992: 46ff.). Case in the broad sense (cf. Section 6) is then a dependent-marking argument selector, whereas agreement is a head-marking one.\footnote{Croft (2001: 197ff.) criticizes Nichols's (1986) typology of head and dependent marking and proposes to differentiate case and agreement by the type of coded dependencies (relational vs. indexical); this suggestion, however, might result in inconsistent treatment of the borderline cases discussed in Section 9.2.} This variable and its values as well as the treatment of some
less clear cases (viz. pronominal or anaphoric agreement) is discussed in detail in Sections 9.2.3 and 9.2.4.

### 11.4 Mono-clausal vs. cross-clausal

Among behavioral argument selectors only two types of diathesis alternation (viz. passivization and antipassivization) have been considered and illustrated so far. A number of other constructions, restrictions, or rules frequently discussed under the heading of behavioral subject and object properties is known to select a subset of arguments and to grant them preferential treatment. Some common constructions include conjunction reduction, control and raising constructions, various types of non-finite clauses, and switch-reference constructions (cf. Dixon 1994). In this section, I will first present a few other behavioral argument selectors and then go on with the discussion of variables required to distinguish them.

Conjunction reduction is often mentioned in the discussion of subject properties. It can be illustrated with the English examples in (123). What does this construction have in common with head and dependent marking or passivization and antipassivization? In all four sentences, the second coordinate clause lacks an overt argument. The interpretation of the silent argument is restricted in such a way that in all four cases the silent argument is interpreted as being obligatorily coreferential with either the S argument, as in (123a) and (123b), or with the A argument, as in (123c) and (123d) of the first clause. Moreover, these silent arguments are obligatorily interpreted as being coreferential with either the S or A argument of the first clause even if the resulting interpretation is semantically highly implausible, as in (123d):

(123)  

| a. | Bob$_i$ stumbled and Ø$_i$ fell. |
| b. | Bob$_i$ stumbled and Ø$_i$ dropped the vase. |
| c. | Bob$_i$ dropped the vase and Ø$_i$ got flustered. |
| d. | Bob$_i$ dropped the vase$_j$ and Ø$_{i,*j}$ fell on the floor. |

Thus, by being the arguments which control the reference of the silent argument, the S and A arguments are selected by the coordinate construction as they are treated in a different way than other arguments and non
arguments in this construction. By assigning these two arguments some properties other arguments and non-arguments do not possess, coordinate constructions establish grammatical relations and in this respect are similar to head or dependent marking.

Other common constructions establishing grammatical relations involve various nonfinite forms (participles, converbs, infinitives, etc.). For instance, Dyirbal has a construction referred to as ‘purposive-type coordination’ (Dixon 1972). It is formally characterized by the purposive inflection -ygu/-li ‘in order to, as a result of’, which replaces the tense and other inflection on the verb of the second clause. As the examples in (124) illustrate, this argument selector establishes an {S, P} relation:

(124) Dyirbal (Pama-Nyungan; Northern Australia; Dixon 1994: 168f.)
   a. ŋuma, 
       banaga-n'yu yabu-ŋgu Øi bura-li.
       father.ABS return-NFUT mother-ERG see-PURP
       ‘Father returned in order for mother to see him’
       or: ‘Father returned and as a result mother saw him.’

   b. yabu, ŋuma-ŋu giga-n Øi gubi-ŋgu
       mother.ABS father-ERG tell.to-do-NFUT doctor-ERG
       mawa-li.
       examine-PURP
       ‘Father told mother to be examined by the doctor.’

Two more subtypes of non-finite constructions occupy a particularly prominent place in the discussion of grammatical relations, viz. control and raising constructions. As in the case of other conjunction reduction and non-finite purposive clauses, the referential properties of the overt argument in the matrix clause (often called controller, cf. Section 11.6) determine the referential properties of the silent argument (called controllee), as in English control and raising constructions given in (138a)–(125b) and (138c)–(138d) respectively:

(125)   a. Lisa persuaded me, [Ø, to join Alcoholics Anonymous].
   b. Lisa, plans [Ø, to join Alcoholics Anonymous].
   c. I expect her, [Ø, to join Alcoholics Anonymous].
   d. Lisa, seems [Ø, to be suffering from some Post-Traumatic Stress Disorder].
What differentiates these behavioral argument selectors from the ones discussed in the previous sections is the fact that they necessarily operate across clause boundaries. To capture this property I introduce the variable of *Clausality*. This variable distinguishes argument selectors which operate within a clause (mono-clausal argument selectors) from those which necessarily operate across clause boundaries (cross-clausal argument selectors). All coding argument selectors (dependent and head marking and fixed phrase structure position) are mono-clausal, whereas behavioral selectors can be either mono-clausal (e.g. passivization or antipassivization), or cross-clausal (e.g. conjunction reduction, control and raising constructions, etc.).

### 11.5 Clause-linkage type

In the previous section (Section 11.4), I introduced the variable of clausality which distinguishes mono-clausal argument selectors from cross-clausal ones. Not every combination of two clauses of a language results in argument selection. For instance, in English sentences in (126), there are no co-reference restrictions on the overt arguments of the two clauses and it is impossible to omit any arguments in the *after*-clause no matter whether they are coreferential with some other arguments of the other clause or not. Thus, there are no coreference restrictions in this type of clause linkage and, with this, no argument selection takes place and no grammatical relations are established.

\[(126)\]
\[
a. \text{Bob, lost his mind, after he, met Mary.}\]
\[
b. \text{Bob, lost his mind, after his mother, met Mary.}\]
\[
c. \text{*Bob, lost his mind, after Ø, met Mary.}\]

The English sentences in (127) illustrates a different type of clause linkage. In contrast to the examples in (126), these structures select the \{S, A\_tr, A\_distr\} argument set and thus establish grammatical relations.

\[(127)\]
\[
a. \text{Ø, Having almost drowned in the pond, Bob, lost his mind.}\]
\[
b. \text{*He, him, Lisa, having almost drowned in the pond, Bob, lost his mind.}\]
c. Ø, Having met Mary, Bob, lost his mind.

d. *He/him/Lisa, having met Mary, Bob, lost his mind.

The constructions illustrated in (126) and (127) do not exhaust the arsenal of English bi-clausal constructions (for a detailed account, see, for instance, Dixon 2005). As these examples readily illustrate, some of the constructions are restricted to a subset of arguments and thus specify grammatical relations, whereas others do not. Besides, similar constructions in other languages might have a different behavior with respect to argument selection. In the face of the considerable diversity of cross-clausal argument selectors both within and between languages, the question arises how they can be compared. The two types of clause linkage are traditionally analyzed as subordination. For the purposes of argument selection, however, these two types of subordination behave differently. In line with the multivariate approach introduced in Section 3.3 to provide a sound basis for comparability of various cross-clausal argument selectors they must be further broken down into more primitive notions. First, the clause linkage type has to be specified more precisely. In what follows, I discuss a number of variables that allow such a finer distinction of clause linkage types.

Traditionally, two major types of clause linkage (or nexus types in the terminology of Role and Reference Grammar (Foley and Van Valin 1984)) are distinguished: coordination, which is a combination of two independent clauses, and subordination, which is a combination of an independent and a dependent clause. Subordinate dependent clauses are further subdivided according to their function into nominal, adjectival, and adverbial clauses (Lyons 1968). This traditional typology, however, faced serious problems when trying to accommodate a number of clause-chaining constructions common in some languages of Papua New Guinea, which exhibit characteristics of both subordination and coordination (e.g. Chuave (Thurman 1975), Fore (Scott 1978)), as these constructions exhibit features of both coordination and subordination. Following Olson (1981), Foley and Van Valin (1984) introduced a third type of clause linkage termed cosubordination.

For the purposes of distinguishing cross-clausal constructions behaving heterogeneously with respect to argument selection this three-way typology is still too broad and a finer differentiation is required to precisely isolate
single construction types. Bickel (2010a) suggests a number of analytical variables which allow for a more precise identification of single cross-clausal argument selectors. An incomplete list of these variables is provided (128); for details and examples exemplifying individual variables, see Bickel (2010a):

(128)  

(a) *Illocutionary scope* refers to the scope of various illocutionary operators (e.g. interrogative or imperative markers) that occur in the main clause; their scope can be unconstrained, or it can be constrained in the following ways: an illocutionary operator can have its scope over both clauses (i.e. be conjunct), or its scope can be only over one clause (i.e. disjunct).

(b) Scope of other main clause operators including negation and tense operators (same values as above).

c. *Finiteness* as determined by the ability to express operator categories (tense, negation, etc.) and referential categories (person, number, etc.); it is determined by comparing the number of categories expressed in the main and in the dependent clause.

d. *Illocutionary force marking* refers to the ability of a (dependent) clause to have an illocutionary force operator. The possible values of this variable are allowed, banned, or harmonic (i.e. the illocutionary force marking on the dependent clause must match the illocutionary force marking on the main clause).

e. *Tense and Status* (reals vs. irreals) marking specifies whether a clause can mark tense and status. As in the case of illocutionary force marking, tense and status marking can be either banned or allowed, or it can be constrained in some way.

f. *Categorical symmetry* reflects the possibility of the two clauses to express the same range of categories. The possible values of this variable are symmetrical, if the categories must match, asymmetrical, if they can be different, and free, if they can be different and include elements of different types.

g. *Constituent focus or question* refers to the possibility of a constituent in a dependent clause to be focused or questioned. It can be either banned or allowed.
h. *Extraction possibility* refers to the possibility to extract question words and focused constituents from the dependent clause; it can be either banned or allowed.

i. *Focus marking* on dependent clause indicates whether or not focus markers are allowed on dependent clauses.

j. *Clause position* refers to the position of main and dependent clauses with respect to each other. It can be either fixed as final or initial, or it can be flexible (sometimes limited to being obligatorily adjacent).

The application of this variables to examples (126) and (127) allows to differentiate between the two types of clause linkage. The values of the individual variables of the two clause-linkage types are summarized in Table 11.1. The values which differentiate the two types are in the bold face.

Table 11.1: Clause linkage typology of English *after-* and *-ing*-subordination (Bickel 2010+a)

<table>
<thead>
<tr>
<th>Variable</th>
<th><em>after</em>-subordination</th>
<th><em>-ing</em>-subordination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Illocutionary scope</strong></td>
<td>disjunct</td>
<td>local</td>
</tr>
<tr>
<td>Tense scope</td>
<td>conjunct</td>
<td>conjunct</td>
</tr>
<tr>
<td><strong>Finiteness</strong></td>
<td>finite</td>
<td><strong>nonfinite</strong></td>
</tr>
<tr>
<td>Illocutionary force marking</td>
<td>banned</td>
<td>banned</td>
</tr>
<tr>
<td><strong>Tense/status marking</strong></td>
<td>harmonic</td>
<td><strong>banned</strong></td>
</tr>
<tr>
<td>Categorical symmetry</td>
<td>symmetrical</td>
<td>asymmetrical</td>
</tr>
<tr>
<td>Constituent focus or question</td>
<td>banned</td>
<td>banned</td>
</tr>
<tr>
<td>Extraction</td>
<td>blocked</td>
<td>blocked</td>
</tr>
<tr>
<td>Focus marking</td>
<td>ok</td>
<td>ok</td>
</tr>
</tbody>
</table>

This list of variables comes from a pilot study and was not meant to be exhaustive. Besides, as Bickel (2010+a) focuses on adjoined clauses, clauses that are subcategorized by main clauses (i.e. that are arguments of main clause predicates) and relative clauses are not considered. To extend the suggested typology to include any type of cross-clausal argument selectors a few more variables are required.

First, to extend the typology to relative clauses a variable specifying the syntactic level at which a clause is linked to another one is needed. This variable is sometimes called juncture (Foley and Van Valin 1984; Van Valin and
LaPolla (1997) or level of attachment (Bickel 2010+a). The relevant values of this variable in the Role and Reference Grammar terms (cf. Section 2.5) include clause, core (i.e. predicate and arguments without adjuncts), and noun phrase level. Thus, constructions involving relative clauses differ from other cross-clausal constructions by being linked to a noun phrase instead of core or clause.

Another variable that seems to be necessary to distinguish between clause-linkage types that exhibit heterogeneous behavior in terms of argument selection is the type of semantic relations between the propositions in the two linked clauses. Imbabura Quechua illustrates how the semantics of clause linkage interact with argument selection. In the familiar examples of general adverbial clauses of manner, time, and condition repeated in (129) for convenience, the verb is marked by the suffix -shpa ‘ADV.{S,A}={S,A}’ if the S or A argument of the adverbial clause is coreferential with the S or A argument of the main clause, otherwise the suffix -jpi ‘ADV.{S,A}≠{S,A}’ is used:

(129) Imbabura Quechua (Cole 1982: 61)

   a. Kitu-man chaya-shpa-mi ripsi-ta
      Quito-DAT arrive-ADV.{S,A}={S,A}-EVID friend-ACC
      riku-rka-ri.
      see-PST-1S/A
      ‘When I arrived in Quito, I saw a friend.’

   b. ñuka Kitu-man chaya-jpi-mi
      1sNOM Quito-DAT arrive-ADV.{S,A}≠{S,A}-EVID
      ripsi
      riku-wa-rka-Ø.
      friend.NOM see-1P-PST-3S/A
      ‘When I arrived in Quito, a friend saw me.’

Imbabura Quechua has two other constructions (viz. -ngakaman ‘until’ clause and -manda ‘because’ clause) shown in (130) and (131). With respect to the variables in (128), the clause-linkage type of these constructions seems to be identical to the general adverbial clauses of manner, time, and condition illustrated in (129). However, in contrast to clauses of the general adverbial type, -ngakaman ‘until’ and -manda ‘because’ clauses can be

---

5 The existing literature on Imbabura Quechua (Cole 1982; Jake 1983; Hermon 1985) does not explicitly discuss every variable of clause linkage discussed in the
used with the same subject, as in (130a) and (131a), or with the different subject, as in (130b) and (131b), without any explicit switch-reference marking and, thus, do not establish grammatical relations in the way argument selectors illustrated in (129) do:

(130) Imbabura Quechua (Cole 1982: 62)

a. ñuka ali tuku-ngakaman puñu-sha.
   I well become-UNTIL sleep-FUT.1S/A
   ‘I will sleep until I become well.’

b. mama shamu-ngakaman kay-pi kawsy-sha.
   mother come-UNTIL this-in live-FUT.1S/A
   ‘I will live here until mother comes.’

(131) Imbabura Quechua (Cole 1982: 64)

a. ñuka wawki ashtaka kulki-ta japi-shka-manda-mi
   my brother much money-ACC get-NMLZ-because-EVID
   ñuka-ta visita-wa-rka.
   1s-ACC visit-1sP-3S/A
   ‘Because my brother made a lot of money, he visited me.’

b. ñuka wawki shamu-shka-manda-mi jatun fishta-ta
   my brother come-NMLZ-because-EVID big party-ACC
   rura-rka-ni.
   make-PST-1S/A
   ‘Because my brother came, I gave a big party.’

As the variables in (128) do not suffice to account for this difference in clause linkage, an additional variable is required to pin down the dissimilarity between these cross-clausal argument selectors. The introduction of the semantics of the clause linkage seems to be a promising solution. What are then the typological semantic types of clause linkage? (132) provides the list of types suggested in Van Valin and LaPolla (1997):

(132) Semantic types of clause linkage (Van Valin and LaPolla 1997: 479f.)
a. Causative: the bringing about of one state of affairs directly by another state of affairs, usually an event or action, e.g. Velma let the bird go.

b. Phase: a separate verb describes a facet of the temporal envelope of a state of affairs, specifically its onset, its termination, or its continuation, e.g. Chris started crying.

c. Psych-action: a mental disposition regarding a possible action on the part of a participant in the state of affairs, e.g. Max decided to leave.

d. Purposive: one action is done with the intent of realizing another state of affairs, e.g. Juan went to the store to buy milk.

e. Jussive: the expression of a command, request or demand, e.g. Pat asked the student to leave.

f. Direct perception: an unmediated apprehension of some act, event, or situation through the senses, e.g. Rex saw the child open the door.

g. Propositional attitude: the expression of a participant’s attitude, judgment or opinion regarding a state of affairs, e.g. Paul considers Carl to be a fool.

h. Cognition: an expression of knowledge or mental activity, e.g. Aaron knows that the earth is round.

i. Indirect discourse: an expression of reported speech, e.g. Frank said that his friends were corrupt.

j. Conditional: an expression of what consequence would hold, given the conditions in a particular state of affairs, e.g. If it rains, we won’t be able to have a picnic.

k. Simultaneous states of affairs: one state of affairs is temporally coterminous with another, e.g. Max danced while Susan played the piano.

l. Sequential states of affairs:
   • Overlapping: one state of affairs partially overlaps temporally with another, e.g. Before Juan had finished talking, Carlos entered the room.
• Non-overlapping: one state of affairs begins immediately after another one ends, e.g. *As soon as Vidhu sat down, the band began to play.*

• Non-overlapping, with an interval: there is a temporal interval between the end of one state of affairs and the beginning of the next, e.g. *Five minutes after Sally settled into her hot bath, the phone rang.*

m. Temporally unordered states of affairs: the temporal relation between states of affairs is unexpressed, e.g. *Tyrone talked to Tanisha, and Yolanda chatted with Kareem.*

This list was meant to be preliminary and individual languages might make finer distinctions, for instance, to account for the distinctions relevant for argument selection in the Imbabura Quechua examples in (129), (130), and (131) these types are not sufficient. Another well-developed typology of semantic relations between clauses and a framework for establishing semantic types of clause linkage is presented in Dixon (2009b). Dixon distinguishes six major semantic types of clause linkage listed in (133) with respective English markers:

(133) Semantic types of clause linkage (Dixon 2009b: 2)

a. Temporal
   • temporal succession: *and, then, and then*
   • relative time: *after, before, until*
   • conditional: *if (... then)*

b. Consequence
   • cause: *because, therefore*
   • result: *and (so)*
   • purpose: *in order that*

c. Possible consequence: *in case, least*

d. Addition: *and, but, moreover*

e. Alternatives: *or, instead of, rather than*

f. Manner: *like, as if, in the way that*
Each of the six major types has a number of subtypes. Moreover, individual languages may make even finer distinctions, as the collection of papers in Dixon and Aikhenvald (2009) illustrates. These types allow to differentiate the individual clause linkage types of the Imbabura Quechua examples, the values of this variable are summarized in Table 11.2

**Table 11.2: Semantics of the Imbabura Quechua clause linkage**

<table>
<thead>
<tr>
<th>Clause linkage marker</th>
<th>Example</th>
<th>Semantics of the clause linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>-shpa ‘-ADV.{S,A}={S,A}’</td>
<td>(129)</td>
<td>temporal: succession,</td>
</tr>
<tr>
<td>-jpi ‘-ADV.{S,A}≠{S,A}’</td>
<td></td>
<td>conditional, manner</td>
</tr>
<tr>
<td>-ngakaman ‘until’</td>
<td>(130)</td>
<td>temporal: relative time</td>
</tr>
<tr>
<td>-manda ‘because’</td>
<td>(131)</td>
<td>consequence: cause</td>
</tr>
</tbody>
</table>

In contrast to the typology of Van Valin and LaPolla (1997), Dixon’s typology does not integrate embedded clauses. Ideally, the range of typological types would present a combination of the two lists in (132) and (133). At the present stage of the investigation of the typology of cross-clausal argument selectors it is still too early to make any predictions as to which types and what level of granularity would be eventually required to account for the typological variation in the establishing of grammatical relations by cross-clausal argument selectors.

## 11.6 Controller vs. controllee

The examples of what is known as conjunction reduction in English illustrated in (134) were discussed on different occasions earlier. These sentences illustrate a type of a cross-clausal argument selector that requires the interpretation of the deleted S or A argument in the second coordinated clause as being obligatorily coreferential with the S or A argument of the first coordinated clause:

(134) a. Bob, stumbled and Ø, fell.

---

<sup>6</sup>For the present discussion it is not relevant to precisely define the clause linkage type of English coordination constructions in accordance with the variables presented in Section 11.5
b. *Bob, stumbled and Ø, dropped the vase.*
c. *Bob, dropped the vase and Ø, got flustered.*
d. *Bob, dropped the vase i, and Ø, broke it.*

Thus, the argument of the first clause determining the reference of the silent argument in the second clause has to be in an {S, A} relation (this argument is often called the controller). The argument of the second clause whose reference depends on the argument of the first clause is also in an {S, A} relation (the common name for this argument is controllee). The question arises whether this and similar constructions (e.g. the ones in Section 11.4) indeed present two instances of argument selection the way it was described above and thus establish two identical grammatical relations (i.e. controller and controllee of conjunction reduction both establishing an {S, A} relation)? What is the motivation to differentiate these two argument selectors instead of recognizing only one (i.e. an argument selector one can conveniently call conjunction reduction establishing an {S, A} relation)? First, it is not always the case that both the controller and the controllee select the same subset of arguments and thus define an identical grammatical relation. The following example from Warlpiri illustrates this point. Whereas the controllee of both *-karra* and *-kurra* non-finite clauses is the {S, A} argument set, the controller is {S, A} in one case, as in (135a), and {P, G} in the other, as in (135b) (cf. Simpson 1991):

(135)  
Warlpiri (Pama-Nyungan; Australia Hale 1983 21)  
\[ a. \text{ngarrka } ka \text{ wirnpirli-mi karli} \]
\[ \text{man.ABS PRS whistle-NPST boomerang.ABS} \]
\[ \text{jarnti-rinja-karra}. \]
\[ \text{trim-INF-SIM.} \{\text{S,A}\} = \{\text{S,A}\}. \]
\[ \text{‘The man is whistling, while trimming a boomerang.’} \]

\[ b. \text{kurdu-ngku } ka \text{ karnta nya-nyi, ngurlu} \]
\[ \text{child-ERG PRS woman.ABS see-NPST, seed.ABS} \]
\[ \text{yurrpa-rinja-kurra}. \]
\[ \text{grind-INF-} \{\text{S,A}\} = \{\text{P,G}\} \]
\[ \text{‘The child sees the woman grind mulga seed.’} \]

Second, in constructions traditionally called control and raising constructions the controller is lexically defined for every control and raising verb
and only the controllee represents a genuine argument selector (cf. Section 11.7). For instance, the English verbs try and promise are so-called subject control verbs, that is, the set of arguments in the non-finite clause (\{S, A\}) is obligatorily coreferential with the A argument (‘subject’) of the matrix clause and with this represents a grammatical relation, as (136a) and (136b) illustrate. By the same token, persuade and convince are the so-called object control verbs, in this case, the \{S, A\} argument of the non-finite clause is obligatorily coreferential with the P argument (‘object’) of the matrix clause, as in (136c) and (136d):

\[
\begin{align*}
\text{(136)} & \quad \begin{align*}
\text{a. } & I, \text{ promised her } \emptyset, \text{ to go to Cuba for a holiday.} \\
\text{b. } & *I \text{ promised her, } \emptyset, \text{ to go to Cuba for a holiday.} \\
\text{c. } & I \text{ convinced her, } \emptyset, \text{ to go to Cuba for a holiday.} \\
\text{d. } & *I, \text{ convinced her, } \emptyset, \text{ to go to Cuba for a holiday.}
\end{align*}
\end{align*}
\]

Besides, some verbs (e.g. to ask) are not restricted in this respect and more than one argument potentially can be the controller, as the two possible readings of the example in (137b) illustrate (cf. Comrie 1985):

\[
\begin{align*}
\text{(137)} & \quad \begin{align*}
\text{a. } & \text{Little Colin, asked the kindergarten teacher } \emptyset, \text{ to leave the room.} \\
\text{b. } & \text{Little Colin asked the kindergarten teacher; } \emptyset, \text{ to leave the room.}
\end{align*}
\end{align*}
\]

To summarize, though in some cross-clausal coreference constructions the controller and controllee select identical subsets of arguments, they are to be considered as two different argument selectors differentiated by the variable of Controller vs. controllee.

### 11.7 Matrix predicate

Two subtypes of cross-clausal constructions occupy a particularly prominent place in the discussion of grammatical relations and are often treated separately from other constructions (cf. Dixon 1994: 134ff., Van Valin and LaPolla 1997: 340ff.). These are control and raising constructions. These two traditionally recognized subject tests are similar to many other argument selectors presented in the previous sections. As in other cross-clausal coreference constructions, the referential properties of the overt controller
determine the referential properties of the silent controllee, as in the English and Kinyarwanda examples in (138) and (139) respectively:

(138)  a. Lisa persuaded me, [Ø, to join Alcoholics Anonymous].

b. Lisa, plans [Ø, to join Alcoholics Anonymous].

c. I expect her, [Ø, to join Alcoholics Anonymous].

d. Lisa, seems [Ø, to be suffering from mercury poisoning].

(139) Kinyarwanda (Niger-Congo, Bantoid; Rwanda; Kimenyi 1980:149)

abá-nyéshuuri, ba-kwii-ye [Ø, gu-some ibitabo].

2-student 2-essential-ASP INF-read 8.books

‘Students must read the books.’

If, in principle, control and raising constructions are similar to other cross-clausal coreference constructions presented in the previous sections, in what respect, if any, do they differ from other constructions and which variables can capture this distinction? First, control and raising constructions are possible only with a limited class of language-specific predicates in the matrix clause (called ‘control predicates’ and ‘raising predicates’), whereas other cross-clausal coreference constructions are not restricted in this respect. For instance, the major predicates which allow the raising construction in English, illustrated in (138d), are seem, appear, be certain and be likely. The Kinyarwanda raising construction illustrated in (139) is possible only with a limited class of matrix predicates which Kimenyi calls ‘modal impersonal verbs’ (e.g. birákwiyiye ‘it is essential’, birashoboka ‘it is possible’, birátegetswe ‘it is a rule’, etc.) and ‘factive (implicative) verbs’ (e.g. birashiiimiishije ‘it is a pleasure’, birábabaje ‘it is sad’, etc.) (Kimenyi 1980:149). To capture this distinction I introduce a variable Constrained by matrix predicate which registers whether argument selection is restricted to a class of matrix predicates or not. Moreover, as languages differ in the size and semantic specifications of the control and raising predicates they possess and individual predicates might show different behavior with respect to argument selection, the specification of matrix predicates must be done on a language-specific basis (similar to the specification of individual predicate classes as discussed in Section 7.2).

The second major difference of control and raising constructions from other cross-clausal coreference constructions lies in the fact that only the
Matrix predicate establishes a grammatical relation, whereas the controller is defined lexically (cf. Section 11.6). In traditional terms, the reference of the silent argument of the embedded clause in (140a) is controlled by the subject of the matrix clause (i.e. by the argument that has the same morphosyntactic properties as other S and A arguments of a language); the reference of the silent argument in (140b) is controlled by the object of the matrix clause (i.e. the argument which exhibits the same properties as other P arguments of a language). This difference is determined by individual matrix verbs: try belongs to the class of the so-called ‘subject control verbs’, whereas persuade is an ‘object control verb’. In a similar fashion seem — a ‘subject raising’ or ‘subject-to-subject raising’ verb — allows an argument of the dependent clause to be raised to the subject of the main clause, as in (140c), while believe — being an ‘object raising’ verb — raises an argument to the object of the main clause, as in (140d):

(140)  
   a. I tried [Ø, to do handstands].
   b. I persuaded him, [Ø, to do handstands].
   c. Lisa, seems [Ø, to like the idea].
   d. I believe her, [Ø, to like the idea].

Though this difference between subject and object control verbs is not directly relevant to grammatical relations due to its lexical character (see the discussion below), for certain research questions it might be of interest to have this information. For this reason the AUTOTYP database on grammatical relations keeps track of this distinction (cf. Section 12.5).

In the discussion above, I examined two types of constructions traditionally called raising and control constructions. What is the difference between the two and is it relevant for the purposes of argument selection? The difference between raising and control constructions lies in whether the controller is a semantic argument of the matrix clause. If it is, the construction is called a ‘control construction’ (or ‘equi-NP-deletion’). If the argument of the matrix clause plays no semantic role in the predication of its clause, it is called a ‘raising construction’ (or ‘matrix coding’ or ‘exceptional case marking’) (cf. Bresnan 1982). In this case, the construction with a raised argument can alternate with a construction with a so-called ‘expletive subject’ under appropriate conditions. For instance, the English sentence with
a raising construction in (141a) has an alternative form with the expletive subject *it* and a finite *that*-clause complement, as in (141b) (cf. Radford 2004: 211f):

(141)  

a. *Lisa, seems [Ø it to be suffering from mercury poisoning].*

b. *It seems that Lisa is suffering from mercury poisoning.*

The raising construction of Kinyarwanda, illustrated in (139), has an alternative form without raising provided in (142): the verb carries the agreement prefix of class 8 *bi-*, which Kimenyi discusses under the heading of impersonal pronouns, and the two finite clauses are linked with the clause-linkage marker *ko* (Kimenyi 1980: 186ff):

(142) Kinyarwanda (Kimenyi 1980: 149)

\[ bi-rá-kwii-ye \quad ko \quad abá-nyeeshuûri \quad ba-sóm-a \quad ibitabo. \]
8-PRS-essential-ASP CLM 2-student 2-read-ASP 8.book

‘It is essential that students read the books.’

Though theoretically the difference between control and raising constructions is clear, in practice, however, the distinction is sometimes less than straightforward. A typical example is the discussion of the status of the English aspectual verbs, such as *begin*, started by Perlmutter (1968, 1970) and continuing till present (for an overview, see Fukuda 2007). For the purposes of argument selection description, however, the difference between the so-called control and raising verbs seems to be irrelevant, as I am not aware of any cases where all control predicates of a language select one set of arguments, whereas all raising predicates select a different set of arguments. For this reason, the traditional distinction between these two types of predicates finds no correspondence in the suggested set of variables defining argument selectors. Instead, similar to the treatment of ‘subject control verbs’ and ‘object control verbs’, raising and control predicates resulting in non-identical argument selection are coded in the database as different groups of language-specific matrix predicates specifying argument selectors (cf. Section 12.5).

To summarize, the major distinction between control and raising argument selectors and other cross-clausal coreference constructions is captured by the variable *Constrained by matrix predicate* which codes whether
argument selection in a cross-clausal construction is restricted by language specific predicates or not. Further distinctions are expressed by means of language-specific lists of control and matrix predicates.

11.8 Argument treatment

Chapter 10 on diathesis alternations introduced one more variable specifying argument selectors. This variable was referred to as *Argument treatment* and is meant to code the covert properties of selected arguments. Two values of this variable (viz. promotion and demotion) were discussed in Section 10.3.1; they refer to the treatment of arguments related to various diathesis alternation argument selectors. These two values do not exhaust the list of types specifying the covert properties of selected arguments; a range of other values specifying the behavior of the silent argument in coreference constructions is discussed in Bickel and Yādava (2000).

The following examples from English illustrate some common typological types. The adverbial clauses with the -ing form of the verb have an obligatorily silent S or A argument if it is coreferential with the S or A argument of the main clause, as in (143a). If, however, the S or A argument in the two clauses of this clause linkage type have disjoint reference, they are overtly expressed in both clauses, as in (143b) (cf. Dixon 2005: 68). The same type of argument treatment is observed in some control constructions, for instance with the matrix verb want illustrated in (143c) and (143d). Following Bickel and Yādava (2000), this type of argument treatment will be referred to as gapped.

\[(143)\quad\begin{align*}
\text{a.} & \quad *I/*me/\varnothing, \text{not recognizing him, I, asked my mother where he was.} \\
\text{b.} & \quad His \text{ mother, having died, his father, returned to Ireland.} \\
\text{c.} & \quad I, \text{ want } *I/*me/\varnothing, \text{ to meet him.} \\
\text{d.} & \quad I, \text{ want him, } \varnothing, \text{ to meet my dog.}
\end{align*}\]

Another type of argument treatment can be illustrated with the following examples of English temporal adverbial clauses with the conjunction while and -ing form of the verb. This clause linkage type is only allowed if the S or A arguments of the two clauses are coreferential, in addition the S or
A arguments of the -ing clause is obligatorily silent, as in (144a). Though it is possible in English to have a clause with while and S or A arguments with disjoint reference illustrated in (144b) this construction is of a different clause linkage type:

(144)  

a. While Øi looking through a stack of possible pictures for Facebook, Ii found one I really liked.

b. While Lisa, was looking through a stack of possible pictures for Facebook, Ij found one I really liked.

The type of argument treatment illustrated in (144a) will be called shared and denotes the situation where a specific set of arguments is obligatorily covert and coreferential with an argument of a linked clause. A shared argument cannot be replaced by an overt lexical noun phrase even if this noun phrase has a different reference from any matrix-clause argument. Apart from the clause linkage illustrated in (144a), it also occurs in constructions with some control predicates illustrate in (145):

(145)  

a. Ii hope *I/*me/Øi to meet him tomorrow.

b. *Ii hope Lisa, to meet him tomorrow.

Finally, in certain clause linkage types covert arguments can be replaced with overt arguments even under argument coreference. In this case, there is no longer any constraint on argument selection, as in the case of covert arguments. This type of argument treatment is referred to as deleted and can be illustrated with the following examples from English coordination. The S or A silent argument of the coordinated clause is obligatorily interpreted as being coreferential with the S or A argument of the linked clause, as in (146a). However, it can also be expressed overtly both with disjoint reference and by argument coreference, as in (146b) and (146c) respectively. In this case, there are no restrictions on argument selection whatsoever:

(146)  

a. Ii met him and Øi fell in love with him.

b. Ii met him and my dog, fell in love with him.

c. Ii met him and Ii fell in love with him.

To summarize, possible values of the variable Argument treatment and their descriptions are given in Table (11.3).
Table 11.3: Types of argument treatment (Bickel and Nichols 2010b)

<table>
<thead>
<tr>
<th>Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>promoted</td>
<td>a change in the syntactic status of a noun phrase such that it becomes accessible to one or more grammatical processes, rules, or restrictions in which it could not otherwise participate</td>
</tr>
<tr>
<td>demoted</td>
<td>a change in the syntactic status of a noun phrase such that it loses the access to one or more grammatical processes, rules, or restrictions in which it could otherwise participate</td>
</tr>
<tr>
<td>shared</td>
<td>obligatorily covert and coreferential argument, cannot be replaced by an overt lexical noun phrase even if this noun phrase has a different reference from any matrix-clause argument</td>
</tr>
<tr>
<td>gapped</td>
<td>overt argument is impossible if it is coreferential with an argument in a linked clause (specified by a grammatical relation); arguments with disjoint reference are permitted</td>
</tr>
<tr>
<td>deleted</td>
<td>an overt argument is possible but its insertion breaks up the constraint on argument selection under discussion</td>
</tr>
</tbody>
</table>

11.9 Conclusion

In this chapter, I have suggested a range of variables which are meant to provide a sound basis for establishing similarities and difference between argument selectors both within and between languages. These variables are summarized in Table 11.4 below.

This list of variables is a preliminary one and further investigations may introduce some additional variables or may show that some variables are redundant or dependent on other variables. At the present stage of investigation, however, it is too early to make any predictions.

Though I have not provided any examples or discussion, it should be kept in mind that the grammatical relations established by the argument selectors presented in this section are susceptible to the same types of conditions on argument selection presented in the discussion of head and dependent marking.
### Table 11.4: Variables defining argument selectors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>coding vs. behavior</td>
<td>coding, behavior</td>
</tr>
<tr>
<td>coding type</td>
<td>overt marking, constituent order</td>
</tr>
<tr>
<td>locus of marking</td>
<td>head, dependent</td>
</tr>
<tr>
<td>clausality</td>
<td>mono-clausal, cross-clausal</td>
</tr>
<tr>
<td>argument treatment</td>
<td>promoted, demoted, shared, deleted, etc.</td>
</tr>
<tr>
<td>control</td>
<td>controller, controllee</td>
</tr>
<tr>
<td>constrained by matrix predicates</td>
<td>constrained, unconstrained</td>
</tr>
<tr>
<td>matrix predicates</td>
<td>language-specific classes of matrix predicates, unrestricted</td>
</tr>
<tr>
<td><strong>variables specifying clause linkage type</strong></td>
<td></td>
</tr>
<tr>
<td>illocutionary scope</td>
<td>conjunct, disjunct</td>
</tr>
<tr>
<td>illocutionary force marking</td>
<td>allowed, banned, harmonic</td>
</tr>
<tr>
<td>finiteness</td>
<td>finite, various degrees of non-finiteness</td>
</tr>
<tr>
<td>clause position</td>
<td>fixed initial, fixed final, adjacent, free</td>
</tr>
<tr>
<td>semantics of clause linkage</td>
<td>causative, purposive, conditional, etc. (listed in (132) and (133))</td>
</tr>
</tbody>
</table>
Chapter 12

Discussion and conclusion

12.1 Introduction

In Chapter 1, I argued that traditional grammatical relations, such as subject and object, are inadequate notions in describing the languages of the world, as grammatical relations are both construction-specific and language-specific. The construction-specific and language-specific nature of grammatical relations poses a serious challenge to any attempt to carry out a non-reductionist cross-linguistic research on grammatical relations. The standard response to this problem has been to either concentrate on individual constructions or to disregard the language-internal variation and typologize whole languages as exhibiting a particular alignment pattern. One of the major goals of this thesis was to develop a framework which systematically integrates most grammatical categories known to interact with grammatical relations and makes it possible to explore their typological diversity in their full ranges. Section 3.3 presented a methodological framework, the multivariate approach, that allows a cross-linguistic comparison of complex linguistic structures, such as construction-specific grammatical relations. It was suggested that to carry out a cross-linguistic research on a complex phenomenon this phenomenon must be decomposed into a set of fine-grained cross-linguistically applicable variables that would allow one to measure the variance of the phenomenon between and within languages (cf. Bickel 2010+). Chapters 4 to 11 presented a range of variables specifying the exact nature of various aspects of grammatical relations. In this sec-
12.2 Overview of the system of variables and their values

Section 2.7 discusses the definition of grammatical relations as adopted here. According to this definition, grammatical relations are understood as equivalence sets of arguments established by an argument selector under certain conditions. As this definition suggests, there are three distinct aspects of grammatical relations, viz. selected arguments, conditions under which argument selection takes place, and argument selectors themselves (i.e. construction, restriction, or rule). Accordingly, there are three types of variables needed to represent grammatical relations in a multivariate approach. A systematic examination of these three groups of variables and exploration of their possible values was the major aim of the preceding chapters and in what follows a brief recapitulation of these variables is given.

Selected arguments are defined by two variables. One variable specifies the semantic role of the selected argument. The range of its values includes the generalized argument roles of one-, two-, and three-place-predicates $S$, $A_{tr}$, $A_{dtr}$, $P$, $T$, and $G$ discussed in Section 4.3.3 (the complete list of values used in the database on grammatical relations is given in Table 12.8). This variable is central for deriving traditional alignment patterns, which, in principle, can be reduced to disjoint subsets of the six argument roles (cf. Section 12.3). The other variable specifies the referential properties of the selected arguments and includes values covering both referential inherent
12.2 Overview of the system of variables and their values

categories, such as animate vs. inanimate or noun vs. pronoun, and discourse based categories, such as topical vs. non-topical, etc.. The complete list of referential types attested so far in the sample of dependent marking in 409 languages was given in Table 6.8 of Section 6.7.

Apart from the nature of arguments, argument selection can be further co-determined by the properties of the predicate or of the whole clause as laid out in Chapters 7 and 8. They include generalized predicate classes, tense, aspect, and mood properties of the clause, the morphological form of the predicate, polarity, clause type, and scenario. Some common values of these conditions on argument selection are summarized in Table 12.1 which also includes the reference to the sections in which individual condition types were treated in detail.

<table>
<thead>
<tr>
<th>Type of condition</th>
<th>Selected possible values</th>
<th>Discussed in sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicate</td>
<td>language-specific generalized predicate classes (e.g. Chechen S\text{DAT} predicate class, Chintang A_{\text{NOM/ERG}} T_{\text{NOM}} G_{\text{LOC}} predicate class, etc.)</td>
<td>7.2, 7.4</td>
</tr>
<tr>
<td>Tense, aspect, mood</td>
<td>past vs. non-past, perfective vs. imperfective, realis vs. irrealis, etc.</td>
<td>8.2, 9.6</td>
</tr>
<tr>
<td>Morphological form of the predicate</td>
<td>language-specific morphological forms (e.g. Kurmanji Kurdish forms based on past and present roots)</td>
<td>8.3</td>
</tr>
<tr>
<td>Polarity</td>
<td>negative polarity vs. positive polarity</td>
<td>8.5</td>
</tr>
<tr>
<td>Clause type</td>
<td>main clause vs. subordinate clause</td>
<td>8.4</td>
</tr>
<tr>
<td>Scenario</td>
<td>various combinations of role and referent properties of arguments and co-arguments</td>
<td>8.6, 9.7</td>
</tr>
<tr>
<td>Diathesis</td>
<td>active, passive, antipassive</td>
<td>10.4</td>
</tr>
</tbody>
</table>

The values needed to code conditions on argument selection as summarized in Table 12.1 are of heterogeneous nature. Though in principle all these categories are language-specific (cf. Comrie 1989: 134f.; Haspelmath
there is a certain degree of semantic overlap across languages for many of them. For instance, this is true for such values as past, perfective, affirmative clause, or the scenario with the 1st person argument acting on the 2nd person argument. Such conditions can be coded with typological types which allow direct cross-linguistic comparison (cf. the discussion in Section 6.3). On the other hand, such a condition type as a certain generalized predicate class or morphological form of a predicate is defined as a language-specific collection of predicates (cf. Section 7.2). What all individual predicates grouped into a predicate class share is their identical language-specific morphosyntactic behavior. There is, however, no semantic motivation for this grouping; at least, semantic properties are neither necessary, nor sufficient to group predicates into a class (cf. the discussion in Section 7.3). In practical terms, this means that, in contrast to the limited number of typological types attested for the other types of conditions, the number of (language-specific) predicate classes in the 160 languages exhaustively coded for predicate classes in the AUTOTYP database exceeds 670. Some languages, for instance Chechen or Udihe (cf. Section 7.2), require over a dozen predicate classes.

The second major distinction between individual condition types is their scope. Conditions of the first type — I will call them ‘global conditions’ — apply to all arguments of a language and with this slices the alignment system of a language into two or more subsystems. Other conditions — they will be referred to as ‘local conditions’ — apply only to a subset of arguments and as such cannot establish separate alignment subsystems. This distinction between the two types of conditions is pivotal for the derivation of traditional alignment types (cf. Section 12.3).

The global conditions include most of the conditions discussed in Chapter 8, namely, tense, aspect, and mood properties of the clause, morphological form of the predicate, clause type, and polarity. Like referential properties of the arguments, these conditions can, in principle, apply to all the arguments of a language and, where relevant, establish two or more subsystems with a varying argument subset formation within each subsystem. To illustrate this point, consider again the head marking in Itzaj Maya discussed in Section 9.6 and repeated in (147) for convinience.
12.2 Overview of the system of variables and their values

(147) Itzaj Maya (Mayan; Guatemala; Hofling and Tesucún 2000: 357)

a. **Aspect: incompletive**
   
   \[
   k\text{-}inw\text{-}il\text{-}ik\text{-}ech.
   \]
   
   INCOMPL-1sA-see-INCOMPL.TR-2sP
   
   ‘I see you.’

b. **Aspect: incompletive**
   
   \[
   k\text{-}inw\text{-}em\text{-}el.
   \]
   
   INCOMPL-1sA-descend-INCOMPL.INTR
   
   ‘I descend.’

c. **Aspect: completive**
   
   \[
   t\text{-}inw\text{-}il\text{-}ik\text{-}ech.
   \]
   
   COMPL-1sA-see-COMPL.TR-2sP
   
   ‘I saw you.’

d. **Aspect: completive**
   
   \[
   em\text{-}Ø\text{-}ech.
   \]
   
   descend-COMPL.INTR-2sP
   
   ‘You descended.’

The head marking in Itzaj Maya is conditioned by the aspectual distinction of the clause in such a way that the head marking in the incompletive aspect shows the \{S, A\} vs. \{P\} alignment, as in (147a) and (147b), whereas in the completive aspect the \{S, P\} vs \{A\} alignment is observed, as (147c) and (147d) illustrate. Though it is only the marking of the S argument that varies in response to the aspect of the clause, the A and P arguments — though invariantly marked — also occur under these conditions, i.e. in clauses with both incompletive and completive aspects. The applicability of these condition types to all argument roles creates two subsystems with two different alignment patterns summarized in Table 12.2.

Table 12.2: Alignment patterns of Itzaj Maya head marking

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role</th>
<th>Conditions: aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>A agreement</td>
<td>{S, A}</td>
<td>INCOMPL</td>
</tr>
<tr>
<td>B agreement</td>
<td>{P}</td>
<td></td>
</tr>
<tr>
<td>A agreement</td>
<td>{A}</td>
<td>COMPL</td>
</tr>
<tr>
<td>B agreement</td>
<td>{S, P}</td>
<td></td>
</tr>
</tbody>
</table>
12.2 Overview of the system of variables and their values

The local conditions — the second major type of conditions — include predicates (Chapters 7) and scenarios (Section 8.6). The following examples from Chechen illustrate predicates as a condition of argument selection by dependent marking (discussed in detail in Section 7.2). The sentence in (148a) contains a one-argument predicate *ohwa-d.ouzha* ‘fall down’ taking the S argument in the unmarked nominative case. The one-argument predicate *j.ovxa xila* ‘be hot’ illustrated in (148b) takes its only argument in the dative case. The two-argument predicate *d.a’a* ‘eat’ has an $A_{ERG} P_{NOM}$ case frame, as in (148c). Finally, *d.ieza* ‘love’ has an $A_{DAT} P_{NOM}$ case frame, as in (148d):

(148) Chechen (Nakh-Daghestanian; Russia; Zarina Molochieva p.c.)

a. $S_{NOM}$
   
   so $ohwa$-$v$-$uzh$-$u$.  
   1sNOM down-V-fall-PRS
   ‘I’m falling down.’

b. $S_{DAT}$
   
   $suuna$ $jovxa$ $j$-$u$.  
   1sDAT hot J-be.PRS
   ‘I’m hot.’

c. $A_{ERG} P_{NOM}$
   
   as $wazh$ $b$-$u$’-$u$.  
   1sERG apple(B).NOM B-eat-PRS
   ‘I eat apples.’

d. $A_{DAT} P_{NOM}$
   
   $suuna$ $Zaara$ $j$-$iez$-$a$.  
   1sDAT Zara(J).NOM J-love-PRS
   ‘I love Zara.’

To account for the argument selection by dependent marking in Chechen it is indispensable to refer to predicates (or generalized predicate classes, cf. Table 7.2). Now, a predicate occurs only with some — one, two, or three — of the six possible generalized argument roles. For instance, *ohwa-d.ouzha* ‘fall down’ occurs exclusively with the S argument and never with the $A_{itr}$, $P$, $A_{ditr}$, $T$, or $G$ arguments, whereas *d.a’a* ‘eat’ occurs only with the $A_{itr}$ and $P$ arguments and never with the S, $A_{ditr}$, $T$, or $G$ arguments. (This follows from the way generalized argument roles are defined, i.e. first by the num-
ber of arguments and then by Dowty-style entailment tests if there is more than one argument, cf. Section [4.3.3] By the same token, a predicate can condition the morphosyntactic properties only of those arguments it occurs with. For the purposes of determining the alignment pattern established by a particular argument selector, for instance, by dependent marking, as in the Chechen examples, I proposed to focus on one most representative predicate class per numerical valence and assign to these three predicate classes a value ‘default’ so that to allow the comparison of arguments’ properties across predicate classes of different numerical valence (see the discussion in Section [12.3]).

The second type of local conditions are scenarios, which were discussed in detail in Sections [8.6] and [9.7]. In the case of scenario-conditioned argument selection, the morphosyntactic behavior of an argument depends on the nature of other arguments in the clause. This can be illustrated with the following examples from Puma head marking discussed in Section [9.7] for the sake of simplicity, I consider only the agreement marking of the 2nd person singular. With the 2nd person arguments Puma intransitive predicates receive the agreement prefix \( t\ell \)- ‘2’, as in (149a). With transitive predicates, two distribution patterns are observed. In the scenarios with the 3rd person arguments and 1st person non-singular arguments, the prefix \( t\ell \)- ‘2’ is used to indicate agreement with both A and P arguments, as in (149b) and (149c) respectively. In the scenarios with the 1st person singular arguments, \( t\ell \)- ‘2’ is only used to indicate agreement with the A argument, as in (149d). The agreement marker in the 1s>2-scenarios is the special portemanteau morpheme -\( na \) ‘1s>2’, as in (149e):

(149) Puma (Sino-Tibetan, Kiranti, Nepal; Bickel 2008)

a. \( t\ell \)-\textit{phind-a}. \\
2-jump-PST \\
‘You took me.’

b. \( t\ell \)-\textit{pukd-x}. \\
2-go-3sP \\
‘You took him/her.’

c. \( \emptyset \)-\textit{t\ell \-pukd-a}. \\
3sS/A-2-take-PST \\
‘S/he took you.’
12.3 Deriving traditional alignment

As has been pointed out in Section 5.3, grammatical relations exhibiting various types of splits can be easily accounted for in set-theoretical terms. Each grammatical relation established by an argument selector can be represented as a subset of the Cartesian product of a number of sets $S \subseteq A \times R \times P \times T \times X_1 \times \ldots \times X_n$, where $A$ is the set of argument roles, $R$ is the set of referential properties of arguments, $P$ is the set of generalized predicate classes, $T$ is the set of tense/aspect/mood features, etc. Appearance of a particular tuple $(a, r, p, t, x_1, \ldots, x_n)$ in this set means that an argument selector (for instance, the accusative case) selects the argument with the role $a$ (for instance, $P$) of the referential type $r$ (for instance, an animate noun) in the context of the tense/aspect/mood $t$ (for instance, perfective), etc. The arity of the relation is determined by all relevant argument properties and conditions on argument selection. At the moment the number of established attributes reaches twelve; they were discussed in Chapters 6 to 8. One equivalence set, i.e. one grammatical relation, can contain a num-
number of tuples with recurrent argument roles, for instance, the S nominal argument and the S pronominal argument, or the P argument of both main and dependent clauses, etc.

As an example of this representation of grammatical relations, consider the coding of case marking in Jingulu (discussion and examples are provided in Section 6.3.3). Jingulu exhibits a split of case marking conditioned by the lexical class of arguments along the line of pronoun vs. noun such that pronominal P arguments receive a dedicated accusative case marking distinct from the absolutive marking of S nominal and pronominal arguments and nominal P arguments; A arguments are invariably in the ergative case (Pensalfini 2003). Table 12.4 summarizes this distribution of case marking. As the coding of the absolutive case marking shows, a selected argument set can contain recurrent argument roles (the two S arguments).

Table 12.3: Grammatical relations of Jingulu dependent marking (an intermediate representation)

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø ABS</td>
<td>{ (S, noun); (S, pronoun); (P, noun) }</td>
</tr>
<tr>
<td>-rni ERG</td>
<td>{ (A, noun); (A, pronoun) }</td>
</tr>
<tr>
<td>-u ACC</td>
<td>{ (P, pronoun) }</td>
</tr>
</tbody>
</table>

The representation of grammatical relations in the form of sets of n-tuples with recurrent argument roles diverges from the traditional representation of alignment in the form of disjoint sets containing either three or six argument roles (depending on whether one considers one- and two-argument predicates only or also includes three-argument predicates) (cf. Section 5.2). Alignment in the traditional sense, however, has been essential for multiple typological investigations, for instance, for investigating whether there is a correlation between case marking alignment and constituent order (Nichols 1992; Siewierska 1996), between case marking and geography (Bickel and Nichols 2008b), or between case marking, constituent order and geography (Dryer 2002). To allow for such typological
investigations it is essential to be able to represent every argument selector type of a language as establishing one or more traditional alignment patterns.

The basic principles of deriving alignment patterns are discussed in Section 5.3. In a nutshell, if referential specifications or global conditions (such as tense-aspect features of the clause or clause type) are involved, the grammatical relations established by one type of argument selector are split into two or more subsystems. Table 12.4 illustrates how this can be done for the Jingulu examples.

Table 12.4: Grammatical relations of Jingulu dependent marking (an intermediate representation)

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments: role reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø ABS</td>
<td>{ (S, noun); (P, noun) }</td>
</tr>
<tr>
<td>-rni ERG</td>
<td>{ (A, noun) }</td>
</tr>
<tr>
<td>-Ø ABS</td>
<td>{ (S, pronoun) }</td>
</tr>
<tr>
<td>-rni ERG</td>
<td>{ (A, pronoun) }</td>
</tr>
<tr>
<td>-u ACC</td>
<td>{ (P, pronoun) }</td>
</tr>
</tbody>
</table>

Within each subsystem all attributes but the argument role have identical values. This makes it possible to compare the morphosyntactic properties of individual argument roles in different subsystems. At this stage it is possible to extract argument sets established by each argument selector \( S \) per referential type \( r_i \) under the conditions of the generalized predicate class \( p_i \), tense-aspect \( t_i \), etc.. This is done via \( \text{Arg}(S, r_i, p_i, t_i, \ldots) := \{ a \in A \mid (a, r_i, p_i, t_i, \ldots) \in S \} \).\(^1\) For Jingulu one obtains \( \{S, P\} \) and \( \{A\} \) sets for nouns and \( \{S\}, \{A\}, \) and \( \{P\} \) sets for pronouns.

Alignment patterns are then defined by set complementation, e.g., accusative alignment defines \( \{S, A\} \) as opposed to \( \{P\} \), ergative alignment defines \( \{S, P\} \) as opposed to \( \{A\} \), direct object alignment defines \( \{P, T\} \) as opposed to \( \{G\} \), etc.. When dependent marking is considered, all sets

\(^1\)This point was developed jointly with Taras Zakharko.
12.3 Deriving traditional alignment

are specified by individual dependent marking argument selectors (i.e. individual case and adposition markers). Other argument selectors (e.g. head marking in most cases, selectors involving cross-clausal coreference, diathesis alternation, etc.) yield a privative opposition and only one subset of arguments is coded explicitly (i.e. the set of arguments triggering agreement or serving as a pivot of a certain construction). In this case, to allow for set complementation the absolute complement $a^c$ is derived via $a^c = U \setminus a$, where $U$ is the universe of all argument roles.

The above algorithm for deriving alignment works fine as long as only referential properties of arguments or global conditions affect grammatical relations. Local conditions, however, present additional complications on deriving traditional alignment patterns and two different strategies of dealing with these complications were suggested (cf. Sections 7.2 and 8.6).

One type of local conditions is the generalized predicate class. As the members of a predicate class occur only with a subset of possible generalized argument roles (either with the S argument, or with $A_{tr}$ and P arguments, or with the $A_{ditr}$, T, and G arguments), they can condition the morphosyntactic properties only of the arguments they occur with. To allow the application of the algorithm deriving traditional alignment patterns presented above all attributes but the generalized argument roles of selected tuples must be identical (i.e. within each subsystem each relevant condition type must have the same value). Thus, predicate-conditioned grammatical relations present an inherent problem for deriving alignment patterns. To overcome this limitation I proposed to pick out the most representative classes per transitivity type and assign these three classes a common transitivity-class independent value ‘default’. These most representative classes are chosen on the basis of their type frequency (for my motivations of this choice and other alternatives, see Section 7.2). For instance, in Chechen the most representative one-argument predicate class has the $S_{NOM}$ case frame, such as $ohwa-d.ouzha$ ‘fall down’ in (148a) of the previous section, the most representative two-argument predicate class has the $A_{ERG} P_{NOM}$ case frame, such as $d.a’a$ ‘eat’ in (148c). On the basis of type frequency these three predicate classes are grouped into a numerical valency-independent super-class I refer to as default. The comparison of the dependent marking of the three arguments of these default predicates yields
the {S, P} vs. {A} alignment pattern of dependent marking. This solution corresponds largely to the traditional way of dealing with lexico-semantic idiosyncrasies of predicates.

Alternatively, when asking the question of which arguments are treated identically and differently, one can, in principle, compare the morphosyntactic properties of arguments of any one-argument predicate class with arguments of any two-argument and three-argument predicate classes no matter whether these are the most representative classes or not. Depending on which pairs of predicate classes one compares the observed alignment patterns might be different. As an example, consider again the four predicate classes of Chechen illustrated in (148a)–(148d) of the previous section. These four predicate classes allow for four combinations with four alignment descriptions summarized in Table 12.5 and yield three different alignment patterns ({S, A} vs. {P}, {S, P} vs. {A}, and {S, P} vs. {A} twice).²

Table 12.5: Alignment patterns of dependent marking established by some Chechen predicate classes

<table>
<thead>
<tr>
<th></th>
<th>( A_{ERG} P_{NOM} ) (default)</th>
<th>( A_{DAT} P_{NOM} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( S_{NOM} ) (default)</td>
<td>{S, P} vs. {A}</td>
<td>{S, P} vs. {A}</td>
</tr>
<tr>
<td>( S_{DAT} )</td>
<td>{S} vs. {A} vs. {P}</td>
<td>{S, A} vs. {P}</td>
</tr>
</tbody>
</table>

Once all predicate classes of Chechen are considered the number of combinations exceeds a hundred. This alternative method of determining alignment contrasts the default predicate class method as it does not result in a single alignment pattern. Instead, it yields a host of patterns, which in turn make it possible to measure the proportion of individual alignment patterns

²For this example I consider dependent marking only in clauses with the non-continuous aspect, clauses in the continuous aspect (based on the -ush-converbs) show different alignment patterns (Zarina Molochieva, p.c.). Besides, for simplicity of the representations, I do not include three-argument predicates. If three-argument predicate are considered, the alignment patterns are derived not by pairwise comparison but by comparison of triples.
in the lexicon. Thus, as a result of applying this method one does not obtain statements of the kind “Chechen dependent marking exhibits \{S, P\} vs. \{A\} alignment“, as is the situation when only the arguments of the default predicate classes are considered. Instead, it is possible to make statements about the proportion of the individual alignment patterns. For the subset of predicates considered in Table 12.5 this yields the following distribution: .5 for \{S, P\} vs. \{A\}, .25 for \{S, A\} vs. \{P\} and \{S\} vs. \{A\} vs. \{P\} each).\(^{3,4}\)

As the previous discussion has shown, when dealing with predicate-conditioned grammatical relations there is an option of choosing the most representative (or ‘default’) predicate classes per transitivity type or considering all of them. This choice is less obvious when attempting to derive alignment patterns from grammatical relations conditioned by another type of local conditions, viz. scenarios (discussed in Sections 8.6 and 9.7). In terms of type frequency individual scenarios rank equally. In principle, one could determine the most representative scenario type in terms of token frequency, but then one would have to deal with the range of problems mentioned in Section 7.2 (corpus comparability (control of register, genre, etc.), finding appropriately annotated corpora for a large-scale typological investigation, etc.). The traditional way of dealing with scenario-conditioned grammatical relations is to introduced a special alignment type, called ‘hierarchical alignment’. However, this alignment type is distinguished on fundamentally different principles than the ones used to differentiate between accusative, ergative, neutral, and tripartite alignments and for these reasons cannot be simply juxtaposed with them (cf. Creissels 2009a, Zúñiga 2007). Moreover, it was noticed that hierarchical alignment systems always have identifiable accusative, ergative, or neutral components (cf. Bickel 1995; Nichols 1992; Bickel and Nichols 2008a, Zúñiga 2006, 2007) and by lumping all hierarchical alignment systems together these individual components are ignored.

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\(^{3}\)These figures are by no means representative of Chechen as only a small subset of arguments in non-continuous aspect is considered; they are meant exclusively as a simple illustration of the application of the alternative method of deriving alignment.

\(^{4}\)This alternative method of deriving alignment is being elaborated at the moment by Balthasar Bickel, Lennart Bierkandt, Taras Zakharko, and the author.
The alternative technique of deriving alignments suggested above for predicate-class conditioned grammatical relations is also applicable to scenario-conditioned grammatical relations and allows to isolate and measure individual alignment patterns. Instead of attempting to determine the most representative (i.e. default) scenario type, I suggest to compare the morphosyntactic properties of intransitive arguments with the morphosyntactic properties of transitive and ditransitive arguments in every two-argument and three-argument scenario (cf. Section 8.6 and 9.7). That is, to determine the alignment patterns established by head marking for the 2nd person argument in Puma, exemplified in (149) above, one compares the marking of the 2nd person singular S argument with the marking of the 2nd person singular A and P arguments in various scenarios. The comparison produces a range of triples of the type illustrated in (150).5

(150) Examples of combinatorial possibilities for deriving alignment patterns of the 2nd person singular argument in Puma

a. \(S_2s\) with \(A_2s\) in the scenario with \(P_{1s}\) (i.e. \(A_2s > P_{1s}\)) and \(P_{2s}\) in the scenario with \(A_{1s}\) (i.e. \(A_{1s} > P_{2s}\)) yields \{S, A\} vs. \{P\} alignment;

b. \(S_2s\) with \(A_2s\) in the scenario with \(P_{1s}\) (i.e. \(A_2 > P_{1s}\)) and \(P_{2s}\) in the scenario with \(A_{1dEXCL}\) (i.e. \(A_{1dEXCL} > P_{2s}\)) yields \{S, A, P\} alignment;

c. \(S_2s\) with \(A_2s\) in the scenario with \(P_{1s}\) (i.e. \(A_2 > P_{1s}\)) and \(P_{2s}\) in the scenario with \(A_{1pEXCL}\) (i.e. \(A_{1pEXCL} > P_{2s}\)) yields \{S, A, P\} alignment;

d. ...

The six scenarios in which the 2nd person singular is the A argument and the six scenarios in which the 2nd person singular is the P argument result in 36 combinations summarized in Table 12.6 with the the respective alignment patterns.6

---

5The three combinatorial possibilities correspond to the first row in Table 12.6.

6The subscripts under role letters indicate the person properties of the arguments compared, that is, \(P_{2s}\) stands for the P argument of the 2nd person singular, etc. The arguments which are compared to derive alignment patterns are in the bold face in contrast to the conditioning co-arguments, e.g. \(A_{2s}\) vs. \(A_{1s}\).
This alternative method of deriving alignment patterns makes it possible to make statements about the proportion of the individual alignment patterns per referential type. Thus, for the 2nd person singular in Puma the proportion of alignment patterns are .83 for \{S, A, P\} and .17 for \{S, A\} vs. \{P\}, which, in principle, can be considered as the basic alignment type for the 2nd person singular argument, as in Bickel’s (2008) account. However, the suggested method allows to quantify this preference and to represent other non-basic alignment patterns and with this reliably compare individual so-called hierarchical alignment systems with each other and with languages without any effects of scenarios on argument selection.  

To summarize, the way grammatical relations are defined in the present approach and were coded in the AUTOTYP database on grammatical relations while working on this thesis diverges in many ways from the traditional way of representing grammatical relations or individual alignment patterns.

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7This alternative approach of deriving alignment patterns is being developed at the moment by Balthasar Bickel, Lennart Bierkandt, Taras Zakharko, and the author.
Nevertheless, this kind of representation allows to derive familiar alignment patterns. In doing so it is, however, essential to differentiate between two types of attributes: those attributes that apply to all argument roles (referential properties of arguments and global conditions, such as clause type or polarity) are dealt with by splitting the system of grammatical relations into a number of subsystems so that all the relevant attributes but the argument role remain constant within each subsystem. Then alignment patterns are determined within each subsystem. When local conditions are involved, one can choose between two alternative methods of deriving traditional alignment patterns. When the first suggested method is applied, one type of local conditions (one predicate class or one scenario) is chosen as the most representative one (for whatever reason) and then only the alignment pattern under the condition of this default type is considered. Alternatively, one compares virtually everything with everything (i.e. the morphosyntactic properties of the arguments of a predicate class with the properties of the arguments of all complementary predicate classes (in terms of the number of arguments) or the properties of the arguments when conditioned by one type of co-arguments with the properties of arguments conditioned by other types of co-arguments). This method allows one to calculate the overall ratio of each traditional alignment pattern in the system.

12.4 On the interaction of argument selectors

Chapters 6 to 11 presented a range of common argument selectors and illustrated how argument selection can be conditioned by various properties of arguments, predicates, and clauses. The way individual argument selectors were considered might have made an impression that they are independent of each other. This is not always the case and within languages there are often dependencies between individual argument selectors. In this section, I consider two very common types of such dependencies.

Chapter 10 discussed two common diathesis alternation mechanisms (passivization and antipassivization) and the way they establish grammatical relations. As an argument selector, these mechanisms select a subset of arguments by either changing their syntactic status so that they acquire certain morphosyntactic properties they do not possess otherwise (in this
case one speaks of argument promotion), or so that they lose certain morphosyntactic properties they had otherwise (this type of argument selector is referred to as argument demotion) (cf. Section 10.3.1). These two types of argument selectors can be illustrated with werden-passivization in German. The comparison of the active clause in (151a) with its passive counterpart in (151b) shows that the P argument comes to be marked like the A argument of the active clause both in terms of case marking and in terms of agreement. At the same time, the A argument of the passive clause ceases to be marked the way A arguments are marked otherwise. Moreover, the scope of promotion and demotion extends over such behavioral argument selectors as, for instance, control of the deleted argument in coordinated clauses, illustrated in (151c), and control of the shared argument in infinitive clauses, illustrated in (151d):

(151) German

a. Ein Hund hat mich gebissen.  
   INDEF.NOM dog PRF.AUX.3s 1sMASC.ACC bite.PST.PTCP  
   'A dog has bitten me.'

b. Ich wurde von einem Hund  
   1sMASC.NOM PASS.AUX.1s by INDEF.DAT dog  
   bite.PST.PTCP  
   'I was bitten by a dog.'

c. Ich wurde von einem Hund  
   1sMASC.NOM PASS.AUX.1s by INDEF.DAT dog  
   gebissen und Øi/vj habe viel Blut  
   bite.PST.PTCP und PRF.AUX.1s much blood  
   lose.PST.PTCP  
   'I was bitten by a dog and lost a lot of blood.'

d. Er hat versucht, Øi vom Mörder  
   3sMASC.NOM PRF.AUX.3s try.PST.PTCP by:sDAT Killer  
   nicht gesehen zu werden.  
   not see.PST.PTCP to PASS.AUX.3s  
   'He tried not to be seen by the killer.'

The change in marking and behavioral properties identifies the A argument as the one that is demoted by passivization and the P argument as
the promoted ones and thus establish two grammatical relations. The importance of diathesis alternation constructions to grammatical relations is, however, not limited to establishing instances of argument selection per se. Consider again the examples in (151b)-(151d). A non-reductionist account of grammatical relations in German must also be able to represent the argument selection in passive clauses which diverges from the argument selection in active clauses. For instance, whereas in an active clause the controllee in infinitive control clauses establishes an {S, A} relation, in passive clauses the established relation is {P, T}. In Chapter 10, it was proposed to treat single types of diathesis alternation as other clausal conditions on argument selection, such as clause type or polarity (cf. Chapter 8). As a type of condition on argument selection, diathesis splits the system of grammatical relations into two (or more subsystems) such that the principles of argument selection within each subsystem vary. The grammatical relations discussed for German and relevant conditions are summarized in Table 12.7.

Another kind of dependencies across argument selectors is presented by the restrictions that dependent marking imposes on other argument selectors. This can be illustrated with the following examples of Chechen auxiliary agreement. In the continuous aspect (based on the -ush-converb) the auxiliary agrees in gender with the S and A arguments, as (152a)-(152c) illustrate:

(152) Chechen (Molochieva p.c.)

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8The complete sets selected by passivization in German are {S, Ar, Asstr} and {P, T} (including impersonal passives and the arguments of three-place predicates).

9otherwise a construction would not be regarded as an instance of argument promotion or demotion in the present approach. Whether one still would call such a construction passive or antipassive depends on the criteria one chooses as defining these categories (e.g. Mithun (2008) discusses a passive-like construction in Central Pomo which has no syntactic effects whatsoever).

10The lexical verb in Chechen agrees invariably with the {S, P, T} arguments of default predicates, which are always in the nominative case.

11Chechen nouns belong to one of the four genders glossed as their respective agreement markers (v-, j-, d-, and b-). The infinitive form is provided with the default agreement marker d- separated by a period, e.g. d.ieza ‘love’.
### Table 12.7: Some grammatical relations of German

<table>
<thead>
<tr>
<th>Argument selector</th>
<th>Selected arguments</th>
<th>Conditions: diathesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOM case</strong></td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{P, T}</td>
<td>passive</td>
</tr>
<tr>
<td><strong>ACC case</strong></td>
<td>{P, T}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{–}</td>
<td>passive</td>
</tr>
<tr>
<td><strong>agreement</strong></td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>{P, T}</td>
<td>passive</td>
</tr>
<tr>
<td><strong>controller in infinitive</strong></td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td>control constructions</td>
<td>{P, T}</td>
<td>passive</td>
</tr>
<tr>
<td><strong>controller and controller in</strong></td>
<td>{S, A}</td>
<td>active</td>
</tr>
<tr>
<td>coordinate constructions</td>
<td>{P, T}</td>
<td>passive</td>
</tr>
<tr>
<td><strong>argument promotion</strong></td>
<td>{P, T}</td>
<td>–</td>
</tr>
<tr>
<td>by werden-passivization</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>argument demotion</strong></td>
<td>{S, A}</td>
<td>–</td>
</tr>
</tbody>
</table>

#### (152a)–(152c)

a. **so** **thovsa-na**  **v-ara.**
   1s(V) NOM  fall.asleep-CVBant  V-be.PST
   ‘I’ve fallen asleep.’

b. **xudar**  **naana-s**  **d-i-na**
   porridge.NOM(D)  mother(J)-ERG  J-make:PFV-CVBant  d-u.
   J-be.PRS
   ‘Mother has cooked porridge.’

c. **as**  **kniiga**  **hwuuna**  **j-ell-a**  **j-u.**
   1s(V) ERG  book(J).NOM  2sDAT  J-give-CVBant  J-be.PRS
   ‘I’ve given you a book.’

In the non-continuous aspect, the head marking establishes a different relation: instead of S and A arguments, the auxiliary agrees with the S, P, and T arguments, as (152a)–(152c) illustrate:

#### (153) Chechen (Nakh-Daghestanian; Russia; Molochieva p.c.)

a. **so**  **vohw-v-uzh-ush**  **v-u.**
   1s(V) NOM  down-V-fall-CVBsim  V-be.PRS
   ‘I’m falling.’
Argument selection by head marking is not the only difference between clauses in the continuous and non-continuous aspects. As the comparison of the examples (152b) and (152c) with (153b) and (153c) shows, the aspect of the clause also conditions the argument selection by dependent marking: dependent marking in clauses with the continuous aspect establishes an \{S, A, P, T\} vs. \{G\} relation, whereas in the non-continuous aspect the A argument receives the ergative case marker and this change yields an \{S, P, T\} vs. \{A\} vs. \{G\} relation.

The question arises whether these two cases of alignment split run independently and by mere chance both of them are conditioned by the aspect of the clause. Alternatively, one can assume that there is a causal relationship between dependent and head marking such that only arguments with a particular case marking — namely, nominative — can trigger agreement. This hypothesis is supported by the marking of non-default predicates with different case frames from the ones illustrated above. (154) is a clause in the non-continuous aspect and the auxiliary agreement with the P argument is expected. This is, however, not the case. As the verb takes an \(A_{NOM} P_{LAT}\) case frame, the P argument is in the lative case (\(hwox \, '2sLAT'\)). The lative case on the argument blocks it from triggering agreement, instead, the auxiliary agrees with the nominative A argument (so \( '1sNOM'\)). (154b) shows agreement of a three-place verb taking an \(A_{ERG} T_{NOM} G_{LAT}\) non-default case frame. The auxiliary agrees with the G argument, which is in the nominative case, and not with the T argument, which is in the lative:

(154) Chechen (Molochieva p.c.)

\(^{12}\) All predicates of Chechen either have at least one argument in the nominative in their case frame or they are complex predicates formed by a nominal element and a light verb, in which case the nominal element figures as a nominative argument for the purposes of agreement triggering.
Such dependency of some argument selector on a particular case marking (nominative and absolutive), as has been illustrated with the Chechen examples above is known to occur in other languages and in other constructions. In principle, it lies in the traditional association of the subject grammatical relation with the nominative case (Sasse 1982; Palmer 1994; Primus 2010+). However, the dependency of agreement marking and behavioral construction on a particular case is not universal and languages are known to differ in whether grammatical relations are restricted or not by the morphological properties of noun phrases. As an illustration, consider the following examples from Belhare. In Belhare the default two-argument predicate takes an $A_{ERG} P_{ABS}$ case frame, illustrated in (155a), whereas some non-default experiencer predicates have an $A_{ABS} P_{ABS}$ case frame, as in (156):

(155) Belhare (Sino-Tibetan, Kiranti; Nepal; Bickel 2000: 600)

| Case   | Word 1   | Word 2   | Word 3   | Word 4   | Word 5   | Question
|--------|---------|---------|---------|---------|---------|-----------
| a.     | han-na  | tombhira| kiiʔ-t-u-ga | iʔ      | 2s-ERG  | lynx.ABS  | fear-NPST-3sP-2sA Q
| 2sABS  | beer.ABS| lim-yu   | [3sS-]be.delicious-NPST Q
|        |         |         |         |         | 2sABS  | beer.ABS | [3sS]be.delicious-NPST Q
|        |         |         |         |         | 2sABS  | beer.ABS | [3sS]be.delicious-NPST Q
|        |         |         |         |         | 2sABS  | beer.ABS | [3sS]be.delicious-NPST Q

This difference in the case marking of the A argument is, however, irrelevant for the argument selection by certain constructions, for instance, by participial relativization. This construction operates on an \{S, A\} relation no matter which case the S and A arguments carry, as the examples in (156) illustrate:

(156) Belhare (Bickel 2000: 601)

| Case   | Word 1   | Word 2   | Word 3   | Word 4   | Word 5   | Question
|--------|---------|---------|---------|---------|---------|-----------
| a.     | tombhira| ka-kit-pa| maʔi.    | lynx.ABS | ACT.PTCP-fear-MASC  | person.ABS
|        |         |         |         |         |         | 'the man who is afraid of the lynx'
In principle, this type of dependency between individual argument selection could be retrieved from the coding of grammatical relations with already available variables as argument sets built by case-conditioned argument selectors would always form a subset of the arguments selected by a particular case marking argument selector of a language (e.g. the set of arguments selected by the head marking in Chechen builds a proper subset of the argument set selected by the nominative dependent marking). To explicitly code this dependency I suggest introducing an additional variable of conditions called ‘cross-selector trigger’ which indicates whether a particular argument selector is dependent on a different argument selector.

A number of suggestions have been made as to the correlation of case-conditioned argument selection and other parameters. For instance, Bickel (1999) has shown that this type of variation is genetically stable to a considerable degree and, for instance, alignment patterns established by various argument selectors in Tibeto-Burman are constant in being unconditioned by the case-marking of relevant noun phrases, whereas in Indo-European languages argument selection is heavily restricted by the case marking of a nominal phrase, though not necessarily limited to the nominative. A different type of correlation as been proposed by Primus (2006:68). She suggests that particular agreement and passive and antipassive formations are prone to be determined by case marking, whereas reflexive pronominalization and basic order less so. These types of correlations can be easily tested with the AUTOTYP database on grammatical relations once the existing dataset is extended.

To summarize, certain traditional subject and object properties, such as the ability to be promoted or demoted by passivization or antipassivization and a particular case marking, have a dual status in the present approach. On the one hand, they figure as genuine argument selectors establishing grammatical relations; on the other hand, they condition the grammatical relations established by other argument selectors. Whereas diathesis alternation results in splits in the alignment systems, argument selection limited to arguments in a particular case marking manifests itself in the relation of
containment, such that the argument sets selected by a conditioned argument selector form a subset of the argument selected by a particular case marker.

12.5 Database realization

For any typological research, a systematic collection of data on languages is essential in order to gain a better understanding of principles governing the distribution of structural features among languages. An ideal tool to collect large amounts of data and systematically evaluate them is a database. Recent decades have witnessed the development of numerous typological databases dedicated to the broad array of research questions. They range from small projects for personal or small-group use dedicated to specific research questions (see the collection of papers in Nerbonne 1998; Everaert et al. 2009 and references and links therein) to large-scale projects like Haspelmath et al. (2005) uniting numerous investigations on various subfields of typology.

Apart from obvious practical benefits of databases (reducing the amount of time spent entering and processing the data, providing the ability to analyse data in a variety of ways, improving the quality and consistency of information, etc.), they offer huge conceptual advantages. Designing a database presupposes a creation of an explicit abstract model of a particular system (for instance, a system of grammatical relations). This high level of explicitness forces the researcher to think about those aspects of the system which might otherwise have remained unnoticed (cf. Musgrave et al. 2009). It is with this idea in mind that the development of the typology of grammatical relations presented in this thesis was carried out simultaneously with the creation of a database on grammatical relations. In what follows the overall design of the database is presented.

The grammatical relations database was developed as part of the research for this dissertation while working on the project Typological Variance in the Processing of Grammatical Relations (http://www.uni-leipzig.de/~typology/neuro/). The development of the grammatical relations database started with a focus on Hindi, Chechen, and Chinese, as these three languages were central for the neurotypological aspect of the project.
Typological Variance in the Processing of Grammatical Relations. Then a number of languages that offered specific challenges (e.g. uncommon splits or conditions on splits) were integrated. In addition, data on case alignment and agreement from some already existing AUTOTYP projects were also integrated so that at the present moment the database covers a total of almost 600 languages.

The database on grammatical relations was not created from scratch, instead, from the very beginning it was developed as an integral part of the AUTOTYP research program (http://www.uni-leipzig.de/~autotyp/). The AUTOTYP program includes a range of thematically specific projects (e.g. the project on phonological and morphological properties of grammatical markers, grammatical and phonological word domains, noun phrase structure, clause linkage, etc.).

Each AUTOTYP project consists of a series of data and definition files linked together relationally. The data files contain records on specific issues per language (e.g. on grammatical relations). The definition files contain records of notions and their definitions that are necessary in the data files. These two file types allow for a dual use of the database. The data files are used for quantitative typological research (e.g. to investigate correlations between structural, genealogical or geographical features). The definition files represent a taxonomy of encountered typological types and thus feed qualitative typology (cf. Bickel and Nichols 2002).

Being a relational database, AUTOTYP can be understood as a collection of relations, which are perceived by the user as related tables or files. Each table is a set of data elements (or values) in the form of rows and columns. Each row (called record or tuple) corresponds to some object (e.g., a selected argument, a grammatical relation, or a language). Each column (also called field or attribute) represents a property of this object. The linking between individual files is realized by means of a common field (an identifier). In order to relate any two files, they simply need to have such a common

\footnote{Some files have a dual status; for instance the \texttt{Predicate} class \texttt{def} serves as a definition file for the purposes of defining grammatical relations; however, due to its language-specific character and the type of information coded (lists of predicates, type and token frequency, semantic domains, etc.) it can also be regarded as a data file.}
field, which makes the relational database model extremely flexible, as individual files can be reused for various projects and the relations between them easily changed without affecting their content.

The overall structure of the grammatical relations database is determined by the perspective on grammatical relations adopted here according to which grammatical relations are defined as subsets of arguments that show uniform behavior with respect to a syntactic process or morphological marking (i.e. argument selectors) under specific conditions (cf. Section 2.7). It can be represented graphically as an entity-relationship diagram in Figure 12.1.

![Entity-Relationship Diagram](image)

**Figure 12.1: The AUTOTYP database on grammatical relations (a simplified representation)**

The major entity of the grammatical relations database is a single grammatical relation coded in the `Grammatical_relation` file. Each grammatical...
cal relation of a language forms one record. For every language there are as many records as there are grammatical relations established by various argument selectors. This aspect differentiates the grammatical relations database from those typological databases which have an individual language as the central entity.

Each entity in the database (i.e. each language, grammatical relation, argument role, etc.) has an entity identifier (called ‘primary key’) that distinguishes it from any other entities in the database and enables the linking between individual files. In the AUTOTYP databases every entity is given a unique meaningless numerical identifier (ID). Thus, every language has a language ID, every argument selector has a selector ID, every selected argument has a selected argument ID, etc.

The general information about individual languages (2,754 in total) is stored in the Backbone file. This file contains the information related to the genealogy (e.g. branch and stock names) and geographic distribution (e.g. areas and coordinates) of languages. The primary key is a numerical ID (LanguageID) used to link the general information about languages to files on various aspects of grammar, among them to the Grammatical_relation file. In turn, language IDs are associated with other codes, for instance, with Ethnologue and WALS ID codes. This allows for a straightforward compatibility of the AUTOTYP databases with other databases following one of these standards.

Apart from indicating the language in question, every record in the Grammatical_relation file contains information about the subset forming argument selector (for instance, verb agreement) and the selected items. The number of languages coded for at least one argument selector amounts to 600, the number of coded grammatical relations in these languages exceeds 1,000 (on 02 April 2010). In turn, the file Selected_item contains the information on role and reference of selected arguments and all relevant conditions on argument selection (for this reason the file is called Selected_item and not Selected_argument). Every record of this file is a tuple with as many as twelve attributes of the form \((a, r, p, t, x_1,..., x_n)\) where \(a\) stands for the argument role of the selected argument, \(r\) for its referential type, \(t\) for the tense-aspect-mood condition on argument selection, etc.

The representation of grammatical relations in the form of \(n\)-tuples dif-
fers from the traditional way of representing alignment patterns, as in contrast to the traditional way, one and the same grammatical relation can contain numerous instances of the same argument role. The derivations resulting in traditional alignment patterns are implemented not in the database but as an algorithm in R (R Development Core Team 2008). This procedure is extremely flexible as alignments for any type of argument selector conditioned by numerous factors simultaneously can be easily computed (cf. Sections 5.3). Moreover, for the global conditions, where a number of methods to derive alignment are applicable (cf. Section 12.3), this type of coding leaves all the possibilities open and does not require committing oneself to a particular method of deriving alignment in advance.

The file Selected_item is linked to a range of definition files that provide the exact characterization of relevant values. This facet of the database is schematically represented in greater detail in Figure 12.2.

![Diagram](image)

Figure 12.2: Selected arguments in the AUTOTYP database on grammatical relations

The definition files linked to the Selected_item file include two files spec-
ifying the nature of selected arguments, i.e. their argument roles and reference properties. The Argument_role_def file contains the six roles discussed in Section 4.3.3. Besides, as for certain research questions it is of interest to compare the morphosyntactic properties of arguments with those of adjuncts, adnominal modifiers, predicate form, and citation forms of nouns, these non-argument values are also added to the list of possible values in the Argument_role_def file. The exhaustive list of types in the Argument_role_def definition file is provided in Table 12.8.

Table 12.8: List of argument and non-argument types (Bickel and Nichols 2010a)

<table>
<thead>
<tr>
<th>Argument type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>the only argument of a one-argument predicate</td>
</tr>
<tr>
<td>A_r</td>
<td>the more agent-like argument of a two-argument predicate</td>
</tr>
<tr>
<td>P</td>
<td>the more patient-like argument of a two-argument predicate</td>
</tr>
<tr>
<td>A_dstr</td>
<td>the more agent-like argument of a three-argument predicate</td>
</tr>
<tr>
<td>G</td>
<td>the more patient-like argument of a three-argument predicate</td>
</tr>
<tr>
<td>T</td>
<td>neither more agent-like, nor more patient-like argument of a three-argument predicate</td>
</tr>
<tr>
<td>ADJ</td>
<td>adjunct</td>
</tr>
<tr>
<td>CITAT</td>
<td>citation form</td>
</tr>
<tr>
<td>POSS</td>
<td>adnominal modifier</td>
</tr>
<tr>
<td>PRED</td>
<td>predicate form (for nominal predicates)</td>
</tr>
</tbody>
</table>

The range of possible referential properties of arguments was discussed in detail and exemplified in Section 6.3. Table 6.8 provides the complete list of the 56 referential types attested so far in the sample of dependent marking in 409 languages (cf. Bickel and Witzlack-Makarevich 2008).

The definition files Argument_role_def and Argument_reference_def are not only used to provide the types of the role and reference of arguments. As the same typological types are relevant for determining the nature of co-arguments in the case of scenario-conditioned grammatical relations (cf. Section 8.6), the two definition files are also used to provide the possible types for this class of condition on argument selection. The double link to the Argument_role_def and Argument_reference_def (cf. Figure 12.2) illustrates the reusability of individual definition files.

The file Predicate_class_def contains language-specific information on
Predicate classes interact with argument selection in two ways. On the one hand, they are used to code non-default predicate classes as conditioning argument selection by such selectors as head and dependent marking, etc. (cf. Section 7.2). In this case, apart from providing the information on argument selector establishing a particular predicate class (for instance, a case frame or a specific agreement pattern), the file Predicate_class_def gives the complete list of predicates (if available). Moreover, it also contains the specifics of the type and token frequency of individual predicate classes. This information might be required in case one decides to weight some alignments more than others if alignments are derived using the alternative technique of comparing the morphosyntactic properties of the argument of each one-argument predicate with the properties of the arguments of each two- and three-argument predicate (cf. Section 12.3). Finally, it also contains a classification of predicate classes in terms of semantic types with such values as predicates of cognition, sensation, transfer, possession, etc. This information might be exploited to test if there is a correlation between a particular alignment pattern and predicate semantics (for instance, whether the A argument of experiencer predicates is indeed frequently coded as an adjunct; cf. Section 12.3). The second type of predicate classes coded in the file Predicate_class_def are language specific matrix predicates defining various cross-clausal coreference argument selectors (cf. Section 11.7). In this case, individual entries contain lists of control and raising predicates with the information on whether they represent the so-called subject control, object control, raising-to-subject, or raising-to-object predicates.

The definition files TAM_def, Morphological_form_def, Polarity_def, Clause_type_def, Intended_semantics_def, and Diathesis_def contain the typological types discussed in Chapter 8. Though at the moment the range of values in the majority of condition-specifying definition files is small, some of the definition files may be extended in the future. For instance, the Clause_type_def file contains only two major values (main clause vs. dependent clause); however, it is not excluded that, for instance, case marking in a language might be conditioned not only by this two-way opposition and the exact specification of the dependent clause might be required. In this case, instead of using the two values of the Clause_type_def file, one might con-
sider linking the Selected item with the Clause_type_def file, which allows to exactly specify the clause-linkage type.

The file Selector describes the exact nature of argument selectors, as discussed in Section 11. It is linked to a number of definition files (e.g. Clause_linkage_type, Locus_def, etc.) which specify individual aspects of argument selectors. This range of files is schematically presented in Figure 12.3. The major values of individual definition files were discussed in detail in Section 11.

The AUTOTYP database on grammatical relations as presented here represents a working tool that allows for a non-reductionist coding of grammatical relations in the languages of the world and investigation of their typological distributions. The inventory of data and definition files presented above makes it possible to code any type of split in grammatical relations encountered in almost 600 languages. Moreover, the type of coding of grammatical relations presented here allows for a flexible evaluation of the coded data such that various methods of deriving alignment patterns can be applied.
Though still in the process of being developed, first examples of the practical application of the database on grammatical relations for large-scale typological investigations are given in Bickel and Witzlack-Makarevich (2008).

12.6 Conclusions and prospects for further research

The major goals of the present thesis were to provide a comprehensive and systematic account of all variables known to specify grammatical relations and to develop a framework that would make it possible to carry out typological investigations on grammatical relations against the background of their construction-specific and language-specific nature. The developed framework was successfully implemented in the AUTOTYP database on grammatical relations which by now codes constructions from almost 600 languages.

A number of issues went beyond the scope of this thesis and were either ignored or considered only in passing. In what follows, I outline a few areas for further investigations. Some of the issues will be elaborated upon within the extension period of the DFG research project “Typological variation in the processing of grammatical relations” (part of the research group “Grammar and processing of verbal arguments”).

As the majority of argument selectors coded by now in the database are dependent- and head-marking argument selectors, one of the main foci of further investigation is to extend the sample of behavioral argument selectors. The extension of the corpus will inevitably bring about further elaboration of the set of variables suggested in Chapter 11 to distinguish individual argument selectors. Once the range of coded behavioral argument selectors is extended another important issue will come to the foreground, namely, how specific one wants to be while distinguishing individual argument selectors and which level of generalization is suitable for cross-linguistic comparison.

In Section 6.7 I mentioned that treating various referential properties of arguments I followed the tradition of regarding case as a word-level phenomenon. Primarily, this decision is motivated by the fact that suggested referential scales like the ones given in (37) make sense only with refer-
ence to the word-level case and the way case is considered in the present approach allows for a consistent testing of such hypotheses (cf. Bickel and Witzlack-Makarevich 2008). However, case can be also regarded as a phrase level phenomenon. For instance, Spencer (2006, 2008) distinguishes between two notions of case, viz. syntactic case (‘a property of the phrasal node’) and morphological case (‘a property of word forms’) (Spencer 2006).

A similar problem was encountered when dealing with head marking (Section 9.7). The formal morphological devices (i.e. affixes or clitics) do not always uniquely identify which arguments are treated identically and which are treated differently and thus allow one to reduce the marking patterns to common alignment types (e.g. accusative, ergative, etc.). Siewierska (2003) suggests that the diagnosis of alignment may be based on four factors: which arguments do and which do not display agreement marking, the phonological form of the markers, their location or order relative to the verbal stem or each other, and the conditions under which agreement takes place. Typically, these four factors converge and define a common single alignment pattern of head marking (as in the examples discussed in the previous sections). However, in some languages these criteria result in multiple alignment patterns of head marking. Following, Siewierska’s (2003) suggestion, in this thesis I largely concentrated on the criterion of the phonological form, though, in principle, other criteria should be integrated as equally important. It remains open for further investigation to integrate various facets of agreement into the present approach or to motivate one of the criteria as the most preferential one.

The extension of the dataset of coded grammatical relations (particularly of the behavioral argument selectors) in the framework suggested in this thesis will allow a cross-linguistic investigation on a range of research questions and testing of some existing hypotheses, which was not possible until today. Among the hypotheses which can be tested are the ones concerning the preferences of alignment patterns across argument selectors within the same language, for instance, the Subject Construction Hierarchy (Croft 2001, 2003) or the Noun Phrase Accessibility Hierarchy concerning the relativization site in relative clause formation (Keenan and Comrie 1977, 1979; see also Cinque 1981; Lehmann 1984, 1986). Another type of now testable correlations concerns the interaction of various argument selectors. For
instance, **Primus (2006)** suggests that certain argument selectors, namely head marking and passive and antipassive formations, are prone to be determined by dependent marking, whereas reflexive pronominalization and basic constituent order less so.
12.6 Conclusions and prospects for further research
Appendix A

Language sample

The list below provides a list of languages which served as the basis for the development of the typology of grammatical relations presented in this thesis. These languages were exhaustively or nearly exhaustively coded for grammatical relations established by various argument selectors in the AUTOTYP database on grammatical relations. The list below provides the specification of their genetic affiliation and area (according to Nichols and Bickel 2009) and references. As many of the 600 languages coded in the database are so far coded only for a small number of argument selectors (mostly dependent and head marking), the list below is considerably smaller and includes 64 languages.

- Acehnese (Austronesian, Malayo-Polynesian; Southeast Asia; Durie 1985, 1987, 1988, Lawler 1988)
- Aguaruna (Jivaroan; Andean; Overall 2007, 2009)
- Awa Pit (Barbacoan; Andean; Curnow 1997)
- Bandjalang (Pama-Nyungan, Bandjalangic; Southern Australia; Crowley 1978)
- Chechen (Nakh-Daghestanian, Nakh; Greater Mesopotamia; Zarina Molochieva p.c.)
- Belhare (Sino-Tibetan, Kiranti; Indic; Bickel 2004, Bickel et al. 2010+)
• Chamorro (Austronesian, Malayo-Polynesian; Oceania; Topping 1973, Gibson 1990, Chung 1998)
• Chantyal (Sino-Tibetan, Bodic; Indic; Noonan 1999, Noonan 2003, Noonan 2008)
• Chicasaw (Muskogean; Eastern North America; Munro and Gordon 1982, Munro 1999, 2005)
• Chintang (Sino-Tibetan, Kiranti; Indic; Bickel et al. 2010+)
• Choctaw (Muskogean; Eastern North America; Heath 1977, Broadwell 2006a, Davies 1986)
• Chukchi (Chukchi-Kamchatkan, Chukotkan; Coastal Northern Asia; Comrie 1979a, c, Dunn 1999, Kozinsky et al. 1988)
• Djapu (Pama-Nyungan, Yolngu; Northern Australia; Morphy 1983)
• Dolakha Newari (Sino-Tibetan, Newaric; Indic; Genetti 1997, 2007)
• Dyirbal (Pama-Nyungan, Dyirbalic; Northern Australia; Dixon 1972, 1994)
• English (Indo-European, Germanic; Europe; personal knowledge, Dixon 2005)
• Finnish (Uralic, Finno-Ugric; Inner Asia; Karlsson 1999, Nelson 1998)
• German (Indo-European, Germanic; Europe; Helbig and Schenkel 1991 personal knowledge)
• Imbabura Quechua (Quechuan; Andean; Cole 1982, Jake 1983, Hermann 1985)
• Ingush (Nakh-Daghestanian, Nakh; Greater Mesopotamia; Nichols 1984, 1994, 2001, Nichols and Sprouse 2004)

• Itzaj Maya (Mayan, Yucatecan; Mesoamerica; Hofling and Tesucún 2000)

• Jingulu (Mirndi, Barkly; Northern Australia; Pensalfini 2003)

• Kala Lagaw La (Pama-Nyungan, Kala Lagaw La; Northern Australia; Comrie 1981a)

• Kâte (Huon, Estaren Huon; Northern coastal New Guinea; Pilhofer 1933, Suter 2010+)

• Kewa (Engan; Interior New Guinea; Franklin 1971)

• Kham (Sino-Tibetan, Remnant Himalayish; Indic; Bickel 1992, Watters 2002)

• Kinyarwanda (Benue-Congo, Bantoid; Southern Africa; Kimenyi 1980)

• Klon (Timor-Alor-Pantar, Kui-Kolana; Oceania; Baird 2008)

• Kobon (Kalam; Interior New Guinea; Davies 1981)

• Koari (Koarian; Southern New Guinea; Dutton 1996)

• Korean (Korean; Coastal Northern Asia; Gerdts 1987, Lee 1997, Sohn 1999)

• Korowai (Awyu-Dumut; Southern New Guinea; van Enk and de Vries 1997)

• Kurmanji (Indo-European, Indo-Iranian; Greater Mesopotamia; Dorleijn 1996)

• Lakhota (Siouan; Basin and Plains; Rood and Taylor 1996, Van Valin 1977, 1985, Williamson 1984)

• Lezgi (Nakh-Daghestanian, Daghestanian; Greater Mesopotamia; Haspelmath 1991, 1993)
• Maithili (Indo-European, Indo-Iranian; Indic; Bickel and Yadava 2000; Yadav 1996, Yadava 1999a,b, 2004)
• Mandarin (Sino-Tibetan, Sinitic; Southeast Asia; Li and Thompson 1981, LaPolla 1993)
• Mian (Ok; Interior New Guinea; Fedden 2007)
• Movima (Movima; Northeastern South America; Haude 2006, 2009)
• Mparntwe Arrernte (Pama-Nyungan, Arandic; Southern Australia; Wilkins 1989)
• Nias (Austronesian, Malayo-Polynesian; Southeast Asia; Brown 2001)
• Osage (Siouan; Eastern North America; Quintero 2004)
• Pipil (Uto-Aztecan, Southern Uto-Aztecan; Mesoamerica; Campbell 1985)
• Puma (Sino-Tibetan, Kiranti; Indic; Bickel et al. 2007, Bickel et al. 2010+)
• Reyesano (Pano-Tacanan, Tacanan; Northeastern South America; Guilaume 2009, 2010+)
• Seri (Seri; Mesoamerica; Farrell et al. 1991, Marlett 1981, 1984a,b)
• Savosavo (Central Solomons; Oceania; Wegener 2008)
• Tagalog (Austronesian, Malayo-Polynesian; Oceania; Schachter and Otanes 1972, Kroeger 1993)
• Tariana (Arawakan, North Amazonian; Northeastern South America; Aikhenvald 2003)
• Teiwa (Timor-Alor-Pantar, Alor-Pantar; Oceania; Klamer 2010)

• Tsez (Nakh-Daghestanian, Daghestanian; Greater Mesopotamia; Comrie 2000, Polinsky and Potsdam 2002, Polinsky and Comrie 1999, Polinsky 1999)

• Tsova-Tush (Nakh-Daghestanian, Nakh; Greater Mesopotamia; Holisky 1987, Holisky and Gagua 1994)

• Tukang Besi (Austronesian, Malayo-Polynesian; Oceania; Donohue 1996b, a, 1997, 1999a)

• Tümpisa Shoshone (Uto-Aztecan, Northern Uto-Aztecan; Basin and Plains; Dayley 1989)

• Udihe (Tungusic, Central Tungusic; Coastal Northern Asia; Nikolaeva and Tolskaya 2001)

• Vafsi (Indo-European, Iranian; Greater Mesopotamia; Stilo 2004)

• Wappo (Yuki-Wappo; California; Thompson et al. 2006)

• Warembori (Lower Mamberamo; Northern coastal New Guinea; Donohue 1999b)

• Yidiny (Pama-Nyungan, Yidinyic; Northern Australia; Dixon 1977)

• Yucatec (Mayan, Yucatecan; Mesoamerica; Bohnemeyer 2009, Lehmann and Verhoeven 2006, Verhoeven 2007)
Appendix B

Examples of database coding

This appendix illustrates how grammatical relations are coded in the AUTOTYP database on grammatical relations. The database coding closely corresponds to the n-tuple view of grammatical relations presented in Section 5.3. The derivations resulting in traditional alignment patterns are implemented not in the database but as an algorithm in R (R Development Core Team 2008).

For convenience, in this appendix I operate with traditional terms (such as case marking, switch-reference marking, passivization etc.) to refer to individual argument selectors. In the database, however, each argument selector is defined on the basis of variables presented in Section 11, which provide a sound basis for establishing similarities and difference between individual argument selectors both within and between languages, traditional names are used only as convenient labels.

B.1 Ritharngu

Ritharngu (Pama-Nyungan; Australia) is discussed in Section 6.3.1. Tables B.3 to B.4 illustrate the dependent marking coding codetermined by argument referential properties and predicate classes. The major source of the analysis is Heath (1980). The convenient abbreviation of the non-default predicate classes indicates which argument is marked differently than arguments of the default predicate classes (e.g. $A_tr P_{DAT}$ indicates that it is the P argument of the coded predicate class whose marking deviates from
the marking of the P argument of the default predicate class). Such an abbreviation is, however, no more than just a label, as each non-default predicate class of a language is separately coded in the file `Predicate_class_def`, which also includes the information on type frequency, lists of relevant predicates, and, if available, information on the semantics of the predicates.

Table B.1: Rithargu dependent marking (nominative)

<table>
<thead>
<tr>
<th>Role</th>
<th>Reference</th>
<th>Predicate class</th>
<th>Conditions:</th>
<th>Clause type</th>
<th>Tense/Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>any</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>A_{tr}</td>
<td>Pro</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>N-low-anim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>N-inanim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>A_{ditr}</td>
<td>Pro</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>N-low-anim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>N-inanim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>N-low-anim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>N-inanim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>N</td>
<td>A_{tr} P_{DAT}</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>A_{ditr}</td>
<td>Pro</td>
<td>A_{ditr} T G_{DAT}</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>N-low-anim</td>
<td>A_{ditr} T G_{DAT}</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>N-inanim</td>
<td>A_{ditr} T G_{DAT}</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
</tbody>
</table>

Table B.2: Rithargu dependent marking (accusative)

<table>
<thead>
<tr>
<th>Role</th>
<th>Reference</th>
<th>Predicate class</th>
<th>Conditions:</th>
<th>Clause type</th>
<th>Tense/Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Pro</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>N-high-anim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Pro</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>N-high-anim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>Pro</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>N-high-anim</td>
<td>default</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>Pro</td>
<td>A_{ditr} T G_{DAT}</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>N-high-anim</td>
<td>A_{ditr} T G_{DAT}</td>
<td>main</td>
<td>any</td>
<td></td>
</tr>
</tbody>
</table>
Table B.3: Rithargu dependent marking (ergative)

<table>
<thead>
<tr>
<th>Argument selector: ergative case marking (-d ̪ u /-y)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selected arguments:</strong></td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>A_ tr</td>
</tr>
<tr>
<td>A_ditr</td>
</tr>
<tr>
<td>A_ tr</td>
</tr>
<tr>
<td>A_ditr</td>
</tr>
</tbody>
</table>

Table B.4: Rithargu dependent marking (dative)

<table>
<thead>
<tr>
<th>Argument selector: dative case marking (-gu)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selected arguments:</strong></td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>G</td>
</tr>
</tbody>
</table>

B.2 Itzaj Maya

Itzaj Maya (Mayan; Guatemala; Hofling and Tesucún 2000) is discussed in Section 9.6. Tables B.5 and B.6 illustrate the coding of the head marking conditioned by the aspect of the clause. The two sets of person marking, traditionally called Set A and Set B establish two grammatical relations coded as two records. The information on the coding of ditransitive arguments and arguments of non-default predicate classes is unavailable.

Table B.5: Itzaj Maya head marking (Set A Person Markers)

<table>
<thead>
<tr>
<th>Argument selector: Set A person agreement marking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selected arguments:</strong></td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>A_ tr</td>
</tr>
</tbody>
</table>
Table B.6: Itzaj Maya head marking (Set A Person Markers)

<table>
<thead>
<tr>
<th>Argument selector:</th>
<th>Set B person agreement marking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selected arguments:</strong></td>
<td><strong>Conditions:</strong></td>
</tr>
<tr>
<td>Role</td>
<td>Reference</td>
</tr>
<tr>
<td>S</td>
<td>any</td>
</tr>
<tr>
<td>P</td>
<td>any</td>
</tr>
</tbody>
</table>

### B.3 Puma

Puma (Sino-Tibetan, Kiranti, Nepal; Bickel 2008) illustrates how scenario-conditioned head marking is coded. In contrast to the Itzaj Maya coding, where a range of markers is coded in the whole sets, for Puma it is necessary to implement the coding on the basis of individual markers so that to allow the derivation of traditional alignment patterns at a later stage according to the method discussed in Section 9.7. Table B.7 illustrates the coding of only one marker. The complete coding of Puma head marking includes dozens of records of the type illustrated in Table B.7, for instance, for the past tense affirmative paradigm alone there are 15 record, which correspond to 15 phonologically distinct agreement markers.

Table B.8 illustrates another marker from the Puma agreement paradigm, which is analyzed as a portmanteau marker of the 1s>2 scenarios (Bickel 2008). As the Table B.8 shows, portmanteau markers are coded by doubling the relevant tuples so that to indicate that the marker marks both the 1st person singular A argument when acting on the 2nd person arguments and as the 2nd person P arguments when being acted upon by the 1st person singular A argument.

### B.4 Udihe

Udihe (Tungusic, Russia; Nikolaeva and Tolskaya 2001) examples of database coding illustrate a number of phenomena. First, Tables B.9 and B.10 show how referential properties of arguments affect other than dependent marking argument selectors. The principles of coding here are identical to the coding of the Ritharngu dependent marking. (There is no exhaustive information on the promotion and demotion by passivization of
Table B.7: Puma head marking (prefix *tʌ-*)

<table>
<thead>
<tr>
<th>Selected arguments:</th>
<th>Conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>Reference</td>
</tr>
<tr>
<td>S</td>
<td>2sg</td>
</tr>
<tr>
<td>S</td>
<td>2du</td>
</tr>
<tr>
<td>S</td>
<td>2pl</td>
</tr>
<tr>
<td>A</td>
<td>2sg</td>
</tr>
<tr>
<td>A</td>
<td>2sg</td>
</tr>
<tr>
<td>A</td>
<td>2sg</td>
</tr>
<tr>
<td>A</td>
<td>2sg</td>
</tr>
<tr>
<td>A</td>
<td>2sg</td>
</tr>
<tr>
<td>A</td>
<td>2du</td>
</tr>
<tr>
<td>A</td>
<td>2du</td>
</tr>
<tr>
<td>A</td>
<td>2du</td>
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<tr>
<td>A</td>
<td>2du</td>
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<td>2du</td>
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<tr>
<td>A</td>
<td>2du</td>
</tr>
<tr>
<td>A</td>
<td>2pl</td>
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<tr>
<td>A</td>
<td>2pl</td>
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<tr>
<td>A</td>
<td>2pl</td>
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<td>A</td>
<td>2pl</td>
</tr>
<tr>
<td>A</td>
<td>2pl</td>
</tr>
<tr>
<td>P</td>
<td>2sg</td>
</tr>
<tr>
<td>P</td>
<td>2sg</td>
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<tr>
<td>P</td>
<td>2sg</td>
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<td>P</td>
<td>2sg</td>
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<tr>
<td>P</td>
<td>2sg</td>
</tr>
<tr>
<td>P</td>
<td>2du</td>
</tr>
<tr>
<td>P</td>
<td>2du</td>
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<tr>
<td>P</td>
<td>2du</td>
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<td>P</td>
<td>2du</td>
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<tr>
<td>P</td>
<td>2du</td>
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<tr>
<td>P</td>
<td>2pl</td>
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<td>P</td>
<td>2pl</td>
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<td>P</td>
<td>2pl</td>
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<td>P</td>
<td>2pl</td>
</tr>
<tr>
<td>P</td>
<td>2pl</td>
</tr>
<tr>
<td>P</td>
<td>2pl</td>
</tr>
</tbody>
</table>

Table B.8: Puma head marking (prefix *-na*)

<table>
<thead>
<tr>
<th>Selected arguments:</th>
<th>Conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>Reference</td>
</tr>
<tr>
<td>A</td>
<td>1sg</td>
</tr>
<tr>
<td>A</td>
<td>1sg</td>
</tr>
<tr>
<td>A</td>
<td>1sg</td>
</tr>
<tr>
<td>P</td>
<td>2sg</td>
</tr>
<tr>
<td>P</td>
<td>2du</td>
</tr>
<tr>
<td>P</td>
<td>2pl</td>
</tr>
</tbody>
</table>
the argument of non default predicate classes and on the possibility of promotion and demotion in other than main clauses).

Table B.9: Udihe argument demoting passivization

<table>
<thead>
<tr>
<th>Argument selector: argument demoting passivization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected arguments:</td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>A_{tr}</td>
</tr>
<tr>
<td>A_{ditr}</td>
</tr>
</tbody>
</table>

Table B.10: Udihe argument demoting passivization

<table>
<thead>
<tr>
<th>Argument selector: argument promoting passivization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected arguments:</td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>T</td>
</tr>
</tbody>
</table>

Table B.11 shows how diathesis-conditioned grammatical relations are coded, as discussed in Section 10.4.

Table B.11: Udihe dependent marking (nominative)

<table>
<thead>
<tr>
<th>Argument selector: nominative case marking (-Ø)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected arguments:</td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>A_{tr}</td>
</tr>
<tr>
<td>A_{ditr}</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>T</td>
</tr>
</tbody>
</table>

B.5 Imbabura Quechua

Examples of Imbabura Quechua (Quechuan; Andean; Cole 1982, Jake 1983, Hermon 1985) database coding illustrate how conditions on argument selection affect grammatical relations established by argument selectors other
than dependent marking (illustrated with Udihe in Table B.11). Table B.12 shows the coding of the effects on the controller of switch-reference marking, whereas Table B.13 illustrates the coding of the controllee (the construction is further specified for the type of clause linkage on the basis of variables discussed in Section 11.5).

Table B.12: Imbabura Quechua controller of switch-reference marking

<table>
<thead>
<tr>
<th>Argument selector: controller of switch-reference marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected arguments:</td>
</tr>
<tr>
<td>Role</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>A_{tr}</td>
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<tr>
<td>A_{distr}</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>T</td>
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</tbody>
</table>

Table B.13: Imbabura Quechua controllee of switch-reference marking

<table>
<thead>
<tr>
<th>Argument selector: controllee of switch-reference marking</th>
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</thead>
<tbody>
<tr>
<td>Selected arguments:</td>
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<td>Role</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>A_{tr}</td>
</tr>
<tr>
<td>A_{distr}</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>T</td>
</tr>
</tbody>
</table>
Bibliography


LaPolla, Randy J. 2006. On grammatical relations as constraints on referent identification. In *Voice and Grammatical Relations: Festschrift for*
Masayoshi Shibatani, ed. Tasaku Tsunoda and Taro Kageyema, 139-151. Amsterdam: John Benjamins.


