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Phrasal alignment in Functional Discourse Grammar

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Abstract

Although the term alignment is typically associated with morphosyntactic expression of arguments of the Clause, alignment is also relevant to units of the Phrase. In Functional Discourse Grammar a basic distinction is made between two kinds of dependency relations obtaining both within Phrases and within Clauses: head-modifier relations and nucleus-dependent relations. This paper investigates the alignment of nominal units within different types of Phrases and Clauses on the basis of this distinction in a sample of twenty-six languages. It is demonstrated that of the six logically possible main alignment types, five are observed in the data. One alignment pattern is not attested, as there is no language which aligns modifiers within Phrases in the same way as arguments within Clauses, while aligning arguments within Phrases in a different way. In other words, if modifiers within Phrases are aligned in the same way as arguments within Clauses, arguments within Phrases also receive the same treatment. This outcome strongly supports the unique distinction in dependency relations made by Functional Discourse Grammar and the relevance of this distinction in Phrasal alignment across the world's languages.

1. Introduction

In most typological research alignment is studied as the morphosyntactic expression of the arguments of a clause on the basis of their mutual pragmatic, semantic or syntactic behaviour. This study starts from the observation that alignment is also relevant to units of a phrase, since, apart from being licensed by verbs, arguments can be licensed by nouns. Within the framework of Functional Discourse Grammar (henceforth FDG, Hengeveld & Mackenzie 2008), Mackenzie (1983) was the first to note this characteristic of nouns, recognizing that they exhibit similar valency properties as verbs, i.e. whereas some nouns select one argument, others select two.² In addition, the alignment of units within phrases is sensitive to pragmatic, semantic and (morpho)syntactic factors in the same way as units within clauses. On the basis of this analysis, a distinction is made in FDG between two kinds of dependency relations, which are head-modifier relations on the one hand, and nucleus-dependent relations, also called predicate-argument relations, on the other. Both kinds of relations obtain between units within Phrases as well as between units of Clauses. The distinction is unique in the typological literature to date: units organized within phrases are traditionally analyzed as involving a general head-dependent relation (Nichols 1986, 1992).

Languages may vary considerably in terms of the morphosyntactic marking of the head-modifier/nucleus-dependent distinction by means of alignment. The current paper focuses on this variation by dealing with the alignment of three kinds of constituent classes, i.e.

¹ I am grateful to Kees Hengeveld for his help and suggestions while writing this paper.

Abbreviations used in morpheme glosses and tables: 1 = first person, 2 = second person, 3 = third person, AL = alienable, ABL = ablative, ABS = absolutive, ACC = accusative, ADJR = adjectivalizer, ATTR = attributive, ADVR = adverbializer, AOR = aorist, AUX = auxiliary, CL = class, CLF = classifier, DAT = dative, DEF = definite, DEM = demonstrative, DT = ditransitive, ERG = ergative, F = feminine, FIN = finite, GEN = genitive, HAB = habitual, HUM = human, IMP = imperative, IND = indicative, IT = intransitive LOC = locative, M = masculine, NH = non-human, NRAT = non-rational, PFV = perfective, PL = plural, PROH = prohibitive, PRS = present, PST = past, OBJ = object, OBL = oblique, RECPST = recent past, SBJ = subject, SG = singular, TR = transitive, U = undergoer, VIS = visible.

² Note that both verbs and nouns may also be aivalent. However, whereas this is uncommon with verbs, it is the default with nouns.

modifiers within phrases, arguments within phrases, and arguments within clauses. On the basis of the typological differences in the alignment of these three classes, Hengeveld and Mackenzie (2008: 387) present a tentative classification of four types of alignment patterns. The present paper investigates this classification more thoroughly on the basis of a language sample. The aim of this paper is to provide a comprehensive overview of the different types of alignment systems attested in the languages of the sample.

The paper is structured as follows. Section 2 presents the language sample created for this study. Section 3 explains the distinction between head-modifier and nucleus-dependent relations obtaining in Phrases. Section 4 discusses the classification made by Hengeveld and Mackenzie (2008: 387). In Section 5 the ten constituent types investigated in this study are presented. The main hypothesis, following from the classification discussed in Section 4, is formulated in Section 6. Section 7 presents the data collected for each of the constituent types from the sample languages. Section 8 gives an overview of the different alignment types observed in this data and tests the main hypothesis. Conclusions and suggestions for further research are presented in Section 9.

2. The sample

The sample created for this research is composed in such a way that it represents the highest possible degree of genetic and geographical diversity.

Genetic diversity can be achieved by making use of the sampling method developed by Rijkhoff et. al. (1993, Rijkhoff & Bakker 1998). This method provides a fully formalized technique to distribute sample languages proportionally across families and subfamilies, ensuring that languages are genetically unrelated.³ The method has been applied to Ruhlen's (1991) classification of the world's languages⁴, which consists of twenty-nine language families, of which nine are language isolates and a group of pidgin and creole languages.⁵ One of the main advantages of the sampling method used is its ability to create a representative sample of any size. For this research a relatively small sample was drawn: it consists of one language from each language family, and includes the four languages of Hengeveld and Mackenzie's classification (2008: 387), i.e. Tariana, English, Lango and Berbice Dutch.

Within the restrictions of genetic independence, the sample also displays maximal geographical independence, i.e., where possible, the languages selected are from non-contiguous areas.

Table 1 below presents the sample of twenty-nine languages. For three out of the twenty-nine languages selected on the basis of the genetic and geographical criteria given above, data are insufficient or lacking. This concerns the three isolates Etruscan, Meriotic and Nahali, which are placed between brackets in the table.

³ I refer to Rijkhoff et. al. (1993) and Rijkhoff & Bakker (1998) for further details.

⁴ The edition used here is a revision of Ruhlen's first classification of 1986. It differs from it in only two places at the highest taxonomic ranks. The two language families Korean-Japanese-Ainu and Kartvelian, first considered as subbranches of the larger phyla Altaic and Causasian respectively, are separated and included as two individual language families.

⁵ Unclassified and non-natural (invented) languages are not taken into account.

Language family (Ruhlen 1991)	Language
Afro-Asiatic	Hausa
Altaic	Turkish
Amerind	Tariana
Australian	Gooniyandi
Austric	Thai
Basque	Basque
Burushaski	Burushaski
Caucasian	Abkhaz
Chukchi-Kamchatkan	Itelmen
Elamo-Dravidian	Tamil
Eskimo-Aleut	West Greenlandic
Etruscan	(Etruscan)
Hurrian	Hurrian
Indo-Hittite	English
Indo-Pacific	Tidore
Kartvelian	Georgian
Ket	Ket
Khoisan	Nama
Korean-Japanese-Ainu	Japanese
Meroitic	(Meroitic)
Na-Dene	Navaho
Nahali	(Nahali)
Niger-Kordofian	Babungo
Nilo-Saharan	Lango
Nivkh	Nivkh
Pidgins and Creoles	Berbice Dutch
Sino-Tibetan	Mandarin Chinese
Sumerian	Sumerian
Uralic-Yukaghir	Hungarian

Table 1. The language sample

3. The modifier-argument distinction in FDG

Hengeveld and Mackenzie (2008: 316) define alignment as ‘the way in which non-hierarchically related pragmatic and semantic units map onto morphosyntactic ones’. This refers to the way in which equipollent units, i.e. units which are in a configurational (non-hierarchical) relationship, are encoded at each of the three relevant layers of the Morphosyntactic Level (ML), that is Clauses, Phrases and Words. FDG sharply distinguishes between two kinds of equipollency relations, namely the relation between modifier and head, and the relation between a dependent and its nucleus. Both types of dependency relations are motivated by different Subacts at the Interpersonal Level (IL) and different predication frames at the Representation Level (RL) combined with a difference in semantic function. This can be illustrated with the English possessive Noun Phrases (Nps) given in italics below:

(1) Paco is *the boy's dog*.

IL: R T T R T

RL: f_i: [(x_i: [f_j: dog_N (f_j) (x_i)_ϕ] : [(f_k: (1x_j: [(f_i: boy_N (f_i) (x_j)_ϕ])_{Ass} (f_k) (x_i)_ϕ])
R
(x_i: Paco_N (x_i)_ϕ] (f_i)

(2) Frank is *the boy's father*.

IL: R T T R T

RL: f_i: [x_i: [f_j: [f_k: father_N (f_k) (1x_j: [(f_i: boy_N (f_i) (x_j)_ϕ])_{Ref}] (f_j) (x_i)
R
(x_i: Frank_N (x_i)_ϕ] (f_i)

The Phrase in (1) involves a relation between the head *dog* (f_j) of the Referential Subact *the boy's dog* (x_i), and the head *boy* (f_i) of the Referential Subact *the boy's* (x_j), which functions as the modifier (f_k) of *dog* (x_i). Example (2) presents a Phrase with a different structure: the Referential Subact (x_i) is headed by a Configurational Property (f_j) which consists of the predicate *father* (f_k) and the Referential Subact *boy* (x_j), which functions as the argument of *father* (f_k). As a result of their different Representational configuration, the head and the nucleus differ in the number of arguments they select when part of a Clause. Both Referential Subacts (x_i) in (1) and (2) are part of a higher-order predication frame (f_i) used for identificational constructions. In this predication frame the Clausal subjects *Paco* (1) and *Frank* (2) are identified through reference to respectively *the boy's dog* and *the boy's father*. The predicate *the boy's dog* selects only *Paco* as its argument, whereas the nucleus *father* takes *boy* as its inner Phrasal argument, while *Frank* constitutes the outer argument of the predicate *the boy's father* (Hengeveld & Mackenzie 2008: 187).

The distinction between Phrases (1) and (2) is also made in terms of semantic functions.⁶ For the relation between dependent and nucleus, Mackenzie (1983: 38) proposes the function of Reference (Ref), since the entity *Frank* (2) is father with reference to/in relation to the boy. As a result, nuclei such as *father* are analyzed as relational nouns (Hengeveld & Mackenzie 2008: 203). Possessive modifiers receive the semantic function of Associative (Ass), rather than Possession (Poss), since in many languages the semantic relationship between head and modifier is not one of prototypical ownership, but more a matter of general association (Li & Thompson 1981: 113). This is also recognized in most of the typological literature on possessive constructions, in which possession is generally defined as involving an entity which is '*in some way related to the other (...) as having it near or controlling it*' (Baron, Herslund & Sørensen 2001: 2; italics mine). Note however that, while many languages use the same alignment strategy for associative relations between two entities, a number of languages employ special treatments for modifiers of specific semantic categories. This is the case in the sample languages Basque (3), Gooniyandi (4), Hungarian (5), and Turkish (6). These languages have specialized attributive forms to express nominal, adverbial, and even Phrasal modifiers designating a Location or Time (Hualde & de Urbina

⁶ The placement of the semantic function marker on the dependent in the representations in (1) and (2) is merely a matter of convention; it gives no information about the kind of morphosyntactic marking employed by the language.

2003: 144, McGregor 1990: 182, István, Vago & Fenyvesi 1998: 98, Göksel & Kerslake: 2005: 71):

- (3) etxe-ko ate-a
house-ATTR door-DEF
'the door of the house'
- (4) balyoowa-nhingi yoowooloo
behind-ABL man
'today's people'
- (5) Az asztal-i lámpa
DEF table-ATTR lamp
'the table lamp'
- (6) yarIn-ki gazete
tomorrow-ATTR newspaper
'tomorrow's newspaper'

Note that in Basque and Hungarian the status of these elements as modifiers is questionable, since the languages also use the attributive suffix for more inalienable relations of a local or temporal unit, such as the part-whole relations as in (3) and (5).

Apart from the importance of semantic factors in the alignment of different modifiers, semantic factors play a role in distinguishing between modifiers and arguments in possessive Nps on the basis of their alignment properties. While English selects the same alignment strategy for both Phrases, many languages treat these Phrases differently on the basis of an alienable-inalienable distinction.⁷ Inalienable possession is generally defined as concerning two items that are inherently or unchangeably connected (Chapell & McGregor 1996: 4). What counts as inalienable possession varies extensively across languages, but the class is shown to universally include body parts and/or kinship terms (Nichols 1992: 160), such as *father* in (2). This class may further include nouns expressing part-whole relationships, spatial relations and culturally basic possessed items (Heine 1997: 10). The alienability hierarchy formulated by Nichols (1988: 572, 1992: 160) predicts which relations are most likely to be expressed as inalienable, i.e. if a relation or item from one of the positions on the hierarchy is inalienable in a language, all relations or items higher on the hierarchy are also marked as inalienable:

- (7) body-part and/or kinship terms > part-whole > spatial relations >
culturally basic possessed items > others

Note that, apart from an alienable-inalienable distinction, alignment may be governed by a range of other semantic, pragmatic, morphosyntactic and lexical distinctions in languages. Tamil, for example, distinguishes between the possession of rational entities, including (human) beings, gods and demons, and non-rational entities, which is an open class

⁷ Note that English does recognize the modifier-argument distinction in possessive Nps, not on the basis of alignment, but on the basis of, among other things, the possibility for modifiers, but not arguments, to be realized as an adjective. Compare in this respect 'the presidential suite' versus *'the presidential son' (Hengeveld & Mackenzie 2008: 396). Similar observations can be made for other sample languages. This illustrates that the *neutralization* of the modifier-argument distinction by means of alignment does not necessarily involve the *conflation* of this distinction, i.e. its absence in the entire grammar of a language. Since this paper focuses solely on the morphosyntactic encoding of this distinction by means of alignment, a number of sample languages with an alienable-inalienable distinction are not recognized as such in the present study.

containing all other elements.⁸ The ‘inalienability’ of certain items, i.e. their status as predicates rather than heads, plays no role in Tamil, which is supported by the fact that kinship terms are considered rational, while body-parts are non-rational items. An example in which the expression of adnominal possession is lexically conditioned comes from Babungo, a Bantu language, which has a range of different noun classes, each corresponding to a different kind of possessive alignment strategy. Again, the inalienable character of nouns is of no importance in Babungo, since kinship terms and body-parts are part of almost every noun class. For a final example illustrating the interplay of different factors in possessive alignment, we can return to English, in which prominence/topicality (interpersonal factors), animacy (representational factor), and complexity/length (morphosyntactic factors) determine the choice between the Norman (preposition *of*) and Saxon (clitic =s as in (1) and (2)) genitive (Keizer 2007: 307-327).

Head-modifier and nucleus-dependent relations are not reflected in possessive Nps only. They also manifest themselves in other types of Phrases and Clauses. Typical examples of the former are the relations between noun and attributive adjective and verb and manner adverb, while typical examples of the latter involve nominal arguments in combination with adpositional or verbal predicates. In Section 6 each of these Phrase and Clause types will be discussed in detail.

4. A classification of Phrasal and Clausal alignment

As noted in the introduction, languages may vary in the extent to which information about dependency relations, part of the Interpersonal and Representational input, is preserved in the morphosyntactic output by means of alignment. Hengeveld and Mackenzie (2008: 387) present a classification that reduces this variation to four types of alignment systems attested in four different languages:

	Lango	Tariana	English	Berbice Dutch
modifier (Phrase)	A	A	A	A
argument (Phrase)	B	B		
argument (Clause)	C		B	

Table 2. Patterns of alignment within Phrases and Clauses (Hengeveld & Mackenzie 2008: 387)

Lango employs a fully symmetric alignment pattern, since modifiers within Phrases, arguments within Phrases and arguments within Clauses each receive separate treatment. This means that the nature of the dependency relation is fully recognized, i.e. Lango exhibits a one-to-one relation between the *function* of a unit as a Phrasal modifier, Phrasal argument or Clausal argument, and its *morphosyntactic realization* in terms of alignment. Compare the modifiers in (8), (9) and (10), marked with an attributive particle, to the Phrasal arguments in (11) and (12), which do not select a morphological marker⁹, and the Clausal argument in (13), which is marked with an agreement marker on the predicate (Noonan 1992: 154, 157, 171, 120):

⁸ In most languages with a semantic possessive classification there is a default or open possessive class (e.g. alienable or non-rational) and a specified or determinate class with a common semantic property shared by most of the class members (e.g. inalienable or rational) (Nichols & Bickel 2005: ch. 59).

⁹ The arguments in (11) and (12) are actually marked by means of juxtaposition, but since the ordering of units within a Phrase or a Clause is not dealt with in alignment, but at another stage of morphosyntactic encoding, cases of juxtaposition are simply analyzed as involving the absence of morphological marking.

- (8) gwôkk à lócà
dog ATTR man
'the man's dog'
- (9) dyàŋŋ à dwôn
cow ATTR big
'the big cow'
- (10) Àjwâté à têk
1SG.hit.PFV-3SG ATTR hard
'I hit him hard.'
- (11) bàd dàktàl
arm doctor
'the doctor's arm'
- (12) tê yàt
under branch
'under the branch'
- (13) Gwôk òtòò
dog 3SG-die-PFV
'The dog died.'

Berbice Dutch exhibits the opposite pattern, in which all three types of constituents are aligned without any kind of overt marking. Compare the following examples (Kouwenberg 1991: 113, 208, 177):

- (14) di kalì kujar
DEF small canoe
'the small canoe'
- (15) di jërma papa
DEF woman father
'the woman's father'
- (16) Eni brantε
they burn.PFV
'They burnt.'

The alignment pattern of Tariana differs from the pattern of English in the way arguments of Phrases are treated. Consider the following examples from Tariana (Aikenvald 2003: 67, 229, 123) and their corresponding English translations:

- (17) nu-pitana
1SG-name
'my name'
- (18) nu-dalipa
1SG-near
'near me'

- (19) Nu-ñha-ka.
 1SG.A-eat-RECPST.VIS
 ‘I have eaten.’
- (20) waha panisaru
 1PL.AL abandoned.village
 ‘our abandoned village’

These examples show that Tariana uses the same pronominal marker for the possessor in inalienable Nps, for arguments of Adposition Phrases (Adps) and for the subject of a Clause, while English employs a different set of pronouns for each of the three arguments and marks possessive modifiers and possessive arguments with the same set. This indicates a general trade-off between, on the one hand, the marking of the *Representational status* of the embedded Phrase as a modifier or an argument within a higher Phrase, and, on the other hand, the marking of the *Morphosyntactic category* of the higher constituent unit, i.e. a Phrase or a Clause, in which alignment takes place. Whereas Tariana marks the difference between modifiers and arguments (and disregards whether these pertain to a Phrase or a Clause), English aligns units within Clauses differently from units within Phrases (irrespective of their status as modifiers or arguments).

Note that the alignment pattern given for English in Table 2 only holds for its possessive Nps. Arguments of Adps are not marked similarly to other Phrasal modifiers, but to the Object in two-place predications and indirect Object in three-place predications. Compare the pronoun in the translation of (17) to the pronominal form in ‘He kissed *me*’ or ‘He gave *me* the book’. In addition, the alignment pattern of Tariana, as described above, only holds for its pronominal arguments and modifiers. Nominal arguments and modifiers pattern differently. The inverse is true for Lango: its alignment pattern given in Table 2 is only attested in Phrases and Clauses with nominal modifiers and arguments, while pronominal modifiers and arguments pattern differently. Furthermore, Lango uses different alignment strategies for different kinds of arguments within Clauses, which does not become apparent from Table 2.

All of the above observations suggest that the classification by Hengeveld and Mackenzie requires further elaboration, with a focus on the alignment across different types of Phrases and Clauses, and across nominal, pronominal and other lexical modifiers and arguments. This paper, in dealing solely with nominal modifiers and arguments, forms a first step towards a more complete classification of alignment patterns. The specific kinds of units investigated in this study will be discussed below.

5. Constituent types

In total, ten different constituent types were investigated, each representing the typical head-modifier and nucleus-dependent relations mentioned at the end of Section 3. Five concern a Phrase consisting of a nominal modifier or argument, including the two kinds of possessive Nps as given in (1) and (2). In order to make a clear distinction between head-modifier and nucleus-dependent relations in possessive Nps, the alignment of body parts and/or kinship terms, which are semantically prototypical nuclei filling the highest position in the alienability hierarchy in (7), is compared to the alignment of units of the open, or ‘other’, class which is lowest on the inalienability scale. The other five constituents concern alignment at the Clausal level, specified according to the kind of predicate frame selected at RL (one-, two- and three-place predication frames) and the core arguments within these frames. In traditional grammatical terms, these represent the subject of an intransitive verb, the subject versus object of a transitive verb, and the object versus the indirect object of a

ditransitive verb. The Clause itself is represented by a construction in the indicative mood and unmarked voice, containing a basic one-, two- or three-place verb, such as ‘sleep’, ‘hit’ and ‘give’.

Constituent class		Constituent type	Head	Modifier
Modifier within Phrase	1	Np	Noun	Np
		‘the teacher’s dog’ (Hengeveld & Mackenzie 2008: 243)		
		IL: R	T R T	RL: (x _i : [f _i : dog _N (f _i) (x _i) _φ] : [(f _j : (1 x _j : [(f _k teacher _N (f _k) (x _j) _φ]) _{Ass} (f _j))
2	Np	Noun	Adjp	
	‘the old man’ (Hengeveld & Mackenzie 2008: 241)			
		IL: R	T	RL: (1 x _i : [(f _i : man _N (f _i) (x _i) _φ]: [(f _j : old _{Adj} (f _j) (x _i) _φ])
3	Vp	Verb	Advp	
	‘John <i>walked slowly</i> .’ (Hengeveld & Mackenzie 2008: 208)			
		IL: T	T (R)	RL: (f _i : [(f _j : walk _V (f _j) (x _i) _φ]: [(m _i : slow _{Adv} (m _i) (f _j) _φ] (x _i) _A] (f _i))
		Constituent type Nucleus Dependent		
Argument within Phrase	4	Np	Noun	Np
		‘the teacher’s arm’ (Hengeveld & Mackenzie 2008: 243)		
		IL: R T T	R T	RL: (x _i : [(f _i : [f _j : arm _N (f _j) (1 x _j : [(f _k : teacher _N (f _k) (x _j) _φ]) _{Ref}] (x _i) _φ])
5	Adp	Adposition	Np	
	‘inside the box’ (Hengeveld & Mackenzie 2008: 251)			
		IL: R T T	R T	RL: (l _i : [(f _i : [f _j : inside _{Adp} (f _j) (1 x _j : [(f _k : box _N (f _k) (x _j) _φ]) _{Ref}] (f _i) (l _i) _φ])
Argument within Clause	6	Clause	Verb (TR)	Np (S)
		‘The boy is swimming.’ (Hengeveld & Mackenzie 2008: 187)		
		IL: T	R	RL: (e _i : [(f _i : [(f _j : swim _V (f _j) (1 x _j : [(f _k : boy _N (f _k) (x _j) _φ]) _φ] (f _i) (e _i) _φ])
7	Clause	Verb (IT)	Np (S) & Np (O)	
	‘The boy kissed the girl.’			
/	IL: T	R T		
8	RL: (e _i : [(f _i : [(f _j : kiss _V (f _j) (1 x _j : [(f _k : boy _N (f _k) (x _j) _A])			
	IL: R T			
		(x _j : [(f _i : girl _N (f _i) (x _j) _U]) _φ] (f _i) (e _i) _φ])		
9	Clause	Verb (DT)	Np (O) & Np (IO)	
	‘The boy gave the girl a book.’			
/	IL: T	R T		
10	RL: (e _i : [(f _i : [(f _j : give _V (f _j) (1 x _j : [(f _k : boy (f _k) (x _i) _A])			
	IL: R T	R T		
		RL: (1 x _j : [(f _i : girl (f _i) (x _j) _R]) (1 x _k : [(f _m : girl (f _m) (x _k) _U]) _φ] (f _i) (e _i) _φ])		

Table 3. Constituent types and their internal structure

The table above presents an overview of each constituent type, numbered 1 to 10, in terms of its Phrase or Clause type and the kinds of Morphosyntactic unit it consists of, i.e. the kinds of heads/nuclei and modifiers/arguments. The underlying Interpersonal and Representational configuration of each constituent type is also given, on the basis of English examples.

Apart from the Morphosyntactic category the modifier or argument is part of, i.e. a Phrase or a Clause, modifiers and arguments differ with respect to their own Representational structure. Of all constituent types in Table 3, simple Adjectives and (manner) Adverbs are the only units functioning as (Lexical) Properties at RL, while all other modifiers and arguments involve Configurational Properties at this level. Possessive modifiers take in a special position in this respect. They involve an internally headed Individual (x_j), which recursively forms a Property (f_j) of the head (x_i). Hence, this Property (f_j) can be seen as taking an inner Individual (x_j) as its dependent, allowing the specification of a semantic function. This means that, on the one hand, possessive modifiers are different from other Phrasal modifiers in being internally layered at RL, while on the other hand, they are different from arguments in providing a further specification of the head, i.e. they are modifiers. Note that some modifiers or arguments given as Nps in Table 3, can also be represented by Adps in English, e.g. *of the teacher* in the possessive Np *the dog/arm of the teacher* (i.e. the Norman genitive) or the Recipient *to the girl* in *He gave a book to the girl*.

Table 3 shows that, in English, each Word in a Phrase corresponds to a specific Lexeme class, which is indicated as a subscript on each unit in the Representational configuration given in the last row of each constituent type.¹⁰ However, there is no one-to-one correspondence between Lexemes and Words in every language. Some languages make no distinctions between certain Lexeme classes, but do have a variety of different Word classes. Examples are ‘flexible’ languages (Hengeveld 1992), which use a single class of Lexemes, called ‘contentive’ (Hengeveld 1992), for more than one kind of lexical item.¹¹ Yet the morphosyntax of these languages often makes a clear distinction between the Word classes Noun, Verb, Adjective etc. Examples are Hurrian, Turkish and Ket. Other languages distinguish different Lexeme classes, but do not represent these units as Words. This is the case in incorporating languages such as Nivkh (Mattissen 2003), where units within Phrases and Clauses can be morphologically synthesized, i.e. its Phrases involve the concatenation of two Roots into one Word. Nivkh is the only example of such a language in the sample. Finally, there are languages which do not distinguish certain Lexeme classes and Lexical Word classes. Constituent types containing units of such classes have been excluded from this investigation. Examples are ‘rigid’ languages (Hengeveld 1992), which make use of syntactic strategies to form certain types of Phrases or Clauses. Hausa is such a sample language, since it lacks a specialized class of manner Adverbs, and therefore uses a prepositional Phrase consisting of a case marker plus a Noun to express this function (i.e. ‘quickly’ is expressed as *dà saurī* ‘with speed’ (Jaggar 2001: 661)). Many other languages lack Adpositions¹² as a parts

¹⁰ Lexeme classes are defined in FDG in terms of the distribution of Phrasal and Clausal units across slots in their underlying Interpersonal and Representational configurations, i.e. on the basis of different functional specifications (Hengeveld & Mackenzie 2008: 218). Adjectives are lexemes which can be used as modifiers within a Referential Subact, with Nouns being able to function as heads of this Referential Subact. Adverbs can function as modifiers within an independent Ascriptive Subact, with Verbs being able to function as heads of this Ascriptive Subact (see Hengeveld & van Lier 2008). Adpositions are distinguished from Nouns in their ability to function as the head of an Ascriptive Subact modifying elements of complex representational layers, such as the State-of-Affairs *I met her* in ‘I met her inside the building’ (Hengeveld & Mackenzie 2008:224).

¹¹ These items only concern Nouns, Adjectives, Verbs and Adverbs in Independent Subacts.

¹² FDG distinguishes between Grammatical Adpositions (such as ‘at’ or ‘in’ in English or case markers) and Lexical Adpositions. Whereas the former are represented solely by a semantic function, the latter correspond to

of speech, which is particularly frequent in North American and almost all Australian languages (Croft 2003), such as in Gooniyandi. Relational nouns or (oblique) case markers are often used instead.

6. Hypothesis

On the basis of the classification of alignment patterns given in Table 2, a general hypothesis is formulated. This hypothesis follows an observation made by Hengeveld and Mackenzie when creating their classification, i.e. that they have not come across a fifth possible alignment system, which concerns languages in which modifiers within Phrases are treated in the same way as arguments within Clauses, whereas arguments of Phrases are treated differently. On the basis of this observation, it is predicted that if modifiers within Phrases are aligned in the same way as arguments within Clauses, then arguments within Phrases must also receive the same treatment.

7. Data

The data from the sample languages is presented in Table 4 below. The table gives an overview of the alignment strategies selected by each sample language for each of the constituent types given in Table 3. The ten constituent types, ranked 1 to 10 in Table 3, are shown on the corresponding columns 1 to 10 in Table 4, with their alignment per language given on the rows. Alignment by means of overt morphological marking strategies is represented by the letters A to H. Note that these letters do not stand for a particular marking strategy throughout the table, but merely serve to indicate the identical treatment of different constituent types per language. Abkhaz, for example, uses marker A for possessive modifiers, possessive arguments, arguments within Adps, subjects of transitive verbs and indirect objects, and marker B for all other verbal arguments (subjects of intransitive verbs, objects of transitive verbs and ditransitive verbs). However, markers A and B in Abkhaz are different from markers A and B in all other sample languages, i.e. they indicate the general alignment patterns in each language without referring to a specific type of morphological marker present in all sample languages. Constituent types without overt morphological marking are indicated with the letter Z (for zero marking). The incorporation strategy selected by Nivkh is indicated with the letter I. A hyphen indicates that the language in question lacks a certain Lexical Word class, such as Hausa and Gooniyandi dealt with above (cf. also Hengeveld et. al. 2004). For the language Hurrian no information was found on the alignment of Adpositions and Clausal Recipients, which has been indicated with a question mark.

lexical items functioning as predicates. Hence, only Lexical Adpositions were investigated in this study. Note that this distinction is not uncontroversial (e.g. it is questioned by Keizer (2008) who argues for the analysis of all English prepositions as lexical elements of which some allow grammatical use).

Language	Modifier Phrase			Argument Phrase		Argument Clause				
	1 Np: N- Np	2 Np: N- Adj	3 Vp: V- Adv	4 Np: N- Np	5 Adp: Ad- Np	6 Cl: Np(S)- V(IT)	7 Cl: Np(S)- V(TR)	8 Cl: Np(O)- V(TR)	9 Cl: Np(O)- V(DT)	10 Cl: Np(IO)- V(IT)
Abkhaz	A	D / Z	Z	A	A	B	A	B	B	A
Babungo	<u>A</u> / Z	Z	Z	<u>A</u> / Z	Z	Z	Z	Z	Z	B
Basque	A / B	Z	Z	A	A / <u>C</u>	D / E	D	E	E	F
Berbice Dutch	Z	Z	-	Z	Z	Z	Z	Z	Z	Z
Burushaski	A	B / C/ Z	Z	C	A / C/ <u>D</u>	E	F	C	C	G
English	A / B	Z	Z	A / B	Z	C	C	Z	Z	D / Z
Georgian	A	B / Z	Z	A	A / <u>C</u>	D / G	D / H	E / G	E / G	F / K
Gooniyandi	A / B	Z	Z	A	-	D	E	F	G	F
Hausa	A / B	C	-	A / B	D / Z	E	E	Z	Z	F
Hungarian	A / B	Z	Z	A	<u>C</u> / D	E	F	G	G	H
Hurrian	A	Z	Z	A	?	C	D	C	C	?
Itelmen	<u>A</u>	Z	Z	<u>A</u>	C	D	E	F	F	G
Japanese	A	B / Z	Z	A	Z	C	C	D	D	E
Ket	A	B / Z	Z	A	A	C / D	C	D	D	E
Lango	A	A	A	Z	Z	B	B	C	C	C / D
Mandarin Chinese	A	Z	-	A	B / Z	Z	Z	Z	Z	C / Z
Nama	A / Z	Z	Z	A / Z	C / Z	B	B	C	C	C
Navaho	A	-	-	A	A	B	C	A	A	D
Nivkh	I	-	-	I	I / B	C	C	I	E	I
Sumerian	A / B	Z	Z	A / B	-	C	D / E	E / C	E / C	F
Tamil	A / B/ C / Z	Z	-	A / B/ C / Z	A / E/ F / Z	G	G	E	E	F / H
Tariana	A	B	Z	A	A / Z	C	C	Z	Z	Z
Thai	A / Z	<u>B</u> / Z	Z	A / Z	Z	Z	Z	Z	Z	C / Z
Tidore	A	Z	Z	A / B	-	C / Z	C / Z	Z	Z	D / Z
Turkish	A / B	Z	Z	A	<u>C</u> / Z	D	D	E	E	F
West Greenlandic	A	Z	-	B	-	C	B	D	E	D

Table 4. The data

In many of the sample languages a single Phrase or Clause type is encoded by more than one basic alignment strategy. Alignment strategies are separated by a slash in the table in two cases. The first is when two or more of these strategies are of a different morphosyntactic type, e.g. Basque employs both a case marker, A, and an attributive marker, B, for possessive modifiers. Note that the strategies do not have to be in complementary distribution: as shown above, Basque only uses the attributive marker -ko for possessive modifiers of a Locative and Temporal kind. The second case is when a strategy overlaps with the strategy of another constituent type, e.g. case marker A in Basque is also used for possessive arguments and argument in Adps. Another example already mentioned in Section 3 is Tamil, which selects two different strategies for the possession of rational nouns and two different strategies for the possession of non-rational nouns. This means Tamil can use four separate alignment strategies to express adnominal possession, irrespective of whether this involves head-modifier or nucleus-dependent relations. In the alignment of Clausal arguments multiple strategies indicate a split alignment system, as in Georgian and Sumerian, which both show split ergative systems. When strategies are of the same type or do not overlap with another strategy, they are underlined, indicating the existence of multiple, morphologically marked, alignment strategies in the language, which are not further specified. This is the case in

Babungo, for example, which selects a different alignment strategy for each noun class, as discussed above. Again note that the multiple alignment strategies in a language can be equipollent, i.e. all modifiers or arguments of a particular constituent type can be marked with both strategies, and privative, which means that only a subset of constituents select a certain strategy.

The specific strategy selected depends on factors of different kinds, as was already pointed out above. Interpersonal factors are attested in Thai, for example, in which the classifier used to link adjectival modifiers to their heads can be deleted in case of non-specific reference. Representational factors are important in many languages, among which Basque, Gooniyandi, Hungarian and Turkish, as illustrated in (3) to (6) above. Other examples are Abkhaz, in which adjectives expressing nationality select the generic article a^{-13} , and Tidore, which has an additional strategy for arguments within Nps on the basis of an alienable-inalienable distinction, but only uses this strategy when the inalienable character of the dependent is emphasized. A combination of representational and morphosyntactic factors is involved in Japanese, which exhibits a special linking particle *na* for its class of ‘nominal-adjectives’ (Hinds 1986: 83), i.e. elements that are morphosyntactically noun-like, but adjectival in meaning. Phonological factors may also be of importance, as is the case in Georgian, in which consonant-final adjectives take on the case of their head nouns, while adjectives ending in a vowel remain unmarked. The selection of certain alignment strategies may also be lexically conditioned. This is the case for Adps, of which different classes of adpositions govern different alignment strategies, often in the form of different case markers. This often has a historical origin, since adpositions generally originate from either relational nouns or result from serial verb constructions (Croft 2003: 34, Hengeveld & Mackenzie 2008: 251).

8. Results

8.1 Alignment types in sample languages

Table 4 above displays a broad diversity of alignment patterns, mainly because the majority of the sample languages select more than one strategy for a particular constituent type. Within this diversity, a number of general alignment tendencies can be observed, which forms the basis for the classification of the sample languages into five different alignment types. This classification is visible in Table 5 below, in which the sample languages are ordered according to their corresponding type given in the second column. The identical alignment strategies defining each type are given in bold.

¹³ The same generic article can also occur in the head, when the order of head and attributive modifier in the Phrase is inverted. Hence, the generic article always follows the first word in the Phrase (but only when the Phrase consists of an attributive modifier). For this reason, the marker is generally analyzed as a free (or floating) marker, i.e. one which is positioned not with respect to the head or the modifier, but relative to the phrase boundaries (Nichols & Bickel 2005: ch. 24, Bickel p.c.)

Language		Modifier Phrase			Argument Phrase		Argument Clause				
	Type	1 Np: N – Np	2 Np: N – Adj	3 Vp: V – Adv	4 Np: N – Np	5 Adp: Ad – Np	6 1-pl: A/U – V	7 2-pl: A – V	8 2-pl: U – V	9 3-pl: U – V	10 3-pl: R – V
Babungo	1	A / Z	Z	Z	A / Z	Z	Z	Z	Z	Z	B
Berbice Dutch	1	Z	Z	–	Z	Z	Z	Z	Z	Z	Z
English	1	A / B	Z	Z	A / B	Z	C	C	Z	Z	D / Z
Mandarin Chinese	1	A	Z	–	A	B / Z	J	J	J	J	C / J
Thai	1	A / J	B / J	Z	A / Z	Z	Z	Z	Z	Z	C / Z
Tidore	1	A	Z	Z	A / B	–	C / Z	C / Z	Z	Z	D / Z
Tariana	1	A	B	Z	A	A / Z	C	C	Z	Z	Z
Abkhaz	1	A	D / Z	Z	A	A	B	A	B	B	A
Burushaski	1	A	B / C / Z	Z	C	A / C / D	E	F	C	C	G
Navaho	1	A	–	–	A	A	B	C	A	A	D
Nivkh	1	I	–	–	I	I / B	C	C	I	E	I
Basque	2	A / B	Z	Z	A	A / C	D / E	D	E	E	F
Georgian	2	A	B / Z	Z	A	A / C	D / G	D / H	E / G	E / G	F / K
Ket	2	A	B / Z	Z	A	A	C / D	C	D	D	E
Hungarian	2	A / B	Z	Z	A	C / D	E	F	G	G	H
Itelmen	2	A	Z	Z	A	C	D	E	F	F	G
Japanese	2	A	B / Z	Z	A	Z	C	C	D	D	E
Turkish	2	A / B	Z	Z	A	C / Z	D	D	E	E	F
Gooniyandi	2	A / B	Z	Z	A	–	D	E	F	G	F
Hurrian	2	A	Z	Z	A	?	C	D	C	C	?
Sumerian	2	A / B	Z	Z	A / B	–	C	D / E	E / C	E / C	F
Hausa	3	A / B	C	–	A / B	Z	E	E	Z	Z	F
Nama	3	A / Z	Z	Z	A / Z	C / Z	B	B	C	C	C
Tamil	3	A / B / C / Z	Z	–	A / B / C / Z	A / E / F / Z	G	G	E	E	F / H
West Greenlandic	4	A	Z	–	B	–	C	B	D	E	D
Lango	5	A	A	A	Z	Z	B	B	C	C	C / D

Table 5. Alignment types in sample languages

The alignment types in Table 5 are based on the way the sample languages align constituent types within each of the three classes, which is similar to the classes Hengeveld and Mackenzie investigated for their classification. Yet the types identified in this study are different from those given in Table 2, in that they are based solely on the alignment of certain constituent types (the ones given in bold in tabel 5). Apart from Lango and Berbice Dutch, there is no sample language in which all constituent types of a certain class participate in the general alignment pattern defining its type. This means that Lango and Berbice Dutch are the only sample languages classified in Table 5 in the same way as in Table 2. Tariana and English are both of the ‘Berbice Dutch’ type in this study, while they were analyzed as two different types by Hengeveld and Mackenzie. This is due to the fact that only nominal units within specific constituent types are investigated in the current study, which was not the case in the classification by Hengeveld and Mackenzie.

Each alignment type has a specific pattern. The upper part of the table contains languages of alignment type 1, which is characterized by the identical treatment of constituents from all three constituent classes, i.e. Phrasal modifiers, Phrasal arguments and Clausal arguments. Hence, this type corresponds to the Berbice Dutch pattern in Table 2.

Languages of the second type show a more differentiated pattern: a basic distinction is made between the alignment of units within Phrases on the one hand, and units within Clauses on the other. This type thus corresponds to the English pattern in Table 2. The third alignment pattern is a combination of two alignment tendencies: on the one hand, arguments receive a different treatment from modifiers, identical to the Tariana pattern of Table 2, and on the other hand, Phrasal units are aligned differently from Clausal units, which is identical to languages of type 2 (showing the English pattern of Table 2). The Tariana pattern of Table 2 also occurs as a single alignment system, i.e. in alignment type 4. Finally, Lango, as a type 5 language, employs a different treatment for each of the three classes. In the Sections below each of the five alignment types are discussed more extensively.

8.1.1 Type 1: All alike

The largest alignment type, involving eleven languages, is of the ‘all alike’ alignment type. Recall in this respect examples (14) to (16) from Berbice Dutch. Within this general type, a split is visible between languages aligning constituents without any form of morphological marking, visible in the upper part of Table 5, and languages which do employ overt markers, which are the lower four languages in the table. Note that languages of this type are the most opaque of all sample languages in terms of representing information about the specific kind of dependency relation, i.e. head-modifier relations within Phrases or nucleus-dependent relations within Phrases or within Clauses, in morphosyntactic structure on the basis of alignment. For this reason, this alignment type was already classified as being fully asymmetrical in Section 4. Since units within Phrases and units within Clauses both exhibit similar alignment properties, information about their underlying configurations must be represented by another step in morphosyntactic encoding. In languages lacking morphological marking, this step is often the ordering of non-hierarchically related units which codes the non-lexical information, e.g. about functions and dependencies, passed on from the Interpersonal and Representational Level.

An example of the first subtype is the language Thai, in which the linker used in possessive Nps and the classifier used to link adjectival modifiers to their heads optionally occur. The Recipient within a three-place predicate may be marked with or without a preposition (Iwasaki 2005: 13, 66, 65, 107, 113/114):

- (21) náŋsǎ̃ (khǎ̃ŋ) Nók
 book ATTR Nók
 ‘Nók’s book’ (Iwasaki 13)
- (22) Mǎa (tua) yà̃y
 dog (CLF)big
 ‘a big dog’
- (23) phîi-sǎaw (khǎ̃ŋ) Wariirát
 elder-sister ATTR Wariirát
 ‘Wariirát’s elder sister’
- (24) tẫy tó
 under table
 ‘under the table’

- (25) Phíchay hây nàηsǎη (kèε) Sùmaalii
 Pichay give book (to) Sumalee
 ‘Pichay gives Sumalee a book / a book to Sumalee.’

However, not all languages can neutralize all ten constituent types on the basis of zero marking. Modifiers and arguments of possessive Nps are the Phrasal units which most often allow for an alignment strategy different from other constituent types, which can be explained by the functional markedness of adnominal possessive constructions as expressing a specific semantic relation between two nominal units. Not only is this tendency visible in the type 1 languages of the zero marking type, but it holds for the entire sample (cf. the type 2 languages Hungarian to Turkish in Table 5 and the type 3 languages Hausa and Nama). An observation following from this tendency, pertaining to the alignment within Phrases, is that if languages have no overt marker to align units within (both kinds of) possessive Nps, they will also lack an overt marker for all other units within the Phrases in Table 5. Note that Tariana is the only type 1 language in which the alignment of possessive Nps is identical to that of Adps as opposed to other constituent types.

Whereas possessive Nps are the Phrase types most often overtly marked, adjectival and adverbial modifiers exhibit a lack of morphological marking almost universally across the sample languages (except for Tariana and Hausa, which use respectively agreement markers for class and suffixes marking grammatical gender for adjectival modifiers, and Lango, which uses an attributive particle for both kinds of modifiers).

Type 1 languages using a zero marking strategy confirm the general hypothesis. In all cases in which a modifier of the Phrase is aligned similarly to an argument of the Clause, arguments of the Phrase are aligned in the same way. This allows for the following implicational hierarchy:

- (26) adverbial modifier within Vp > argument within Adp > argument within Cl

This hierarchy should be read as follows: if a Clausal argument can be aligned without an overt morphological marker, so can an argument within an Adp, and subsequently, if an argument within an Adp can be aligned without an overt morphological marker, so can an adverbial modifier within a Vp. Hence, none of the sample languages employs one morphological marker for two or more adjacent constituents in the hierarchy. Note that this hierarchy does not claim that constituent types only allow a zero marking strategy, since languages often align constituents by means of more than one strategy. This also holds for the other hierarchy given in this paper. None of the sample languages employs one treatment for all Clausal arguments, except on the basis of an absence in marking, as in Berbice Dutch. In other words, arguments of Clauses are always aligned differently from each other in some way, since their semantic, pragmatic or morphosyntactic function is often indicated morphologically, on the basis of agreement or case markers for example, with the kinds of neutralizations made depending on the Clausal alignment system of the language under consideration.

The hierarchy in (26) has one counterexample, Lango, which uses a zero marking strategy for arguments within Adps, while adverbial modifiers within Vps are marked by means of the attributive particle *à* (cf. (12) to (10)). Lango occupies a special position in the sample, since it is the only language using a morphological marking strategy for adverbial modifiers.

Whereas the top seven type 1 languages in Table 5 select no morphological marking, the bottom four type 1 languages use overt morphological devices. In Abkhaz, Navaho and Nivkh modifiers and arguments within possessive Nps, arguments within Adps, and Undergoer and/or Recipient arguments within Clauses are all provided with the same marker.

In Abkhaz and Navaho this is the set of oblique person markers used both on verbal nuclei as well as on nominal heads/nuclei. Compare the marker *-lə* in (30) and (28) in the following examples from Abkhaz (Hewitt 1979: 116; Chirikba 2003: 57; Hewitt 1979: 55, 36; Chirikba 2003: 49):

- (27) *à-č'k'°ən* *γə-γ°nə*
 DEF-boy 3M.OBL-house
 'the boy's house'
- (28) *a-pħ°əs* *lə-č'k'°ən*
 DEF-woman 3F.OBL-child
 'the woman's child'
- (29) *à-c'la* *a-zàayg°a(ra)*
 DEF-tree 3NH.OBL-near
 'near the tree'
- (30) *A-xac'a* *a-pħ°əs* *a-š°q'°ə* *Ø-lə-γ-te-γt'*
 DEF-man DEF-woman DEF-book 3NH.ABS-3F.OBL-3M.ERG-give-FIN
 'The man gave the woman the book.'
- (31) *Á-mat* *a-lá* *j-á-cha-n*
 DEF-snake DEF-dog 3NH.ABS-3NH.ERG-bite-PST.INDEF
 'The snake bit the dog.'

These Abkhaz examples show that paradigmatic morphological neutralizations, in the form of syncretisms (Baerman 2006: 363), can lead to identical alignment patterns. The Actor argument of a two- or three-place predicate, e.g. *xac'a* (30) and *mat* (31), is expressed by means of an ergative person marker, of which the third person forms are similar to the markers of the oblique paradigm. Compare in this respect *-γ* (30) to *γə-* (27), and *-á* (31) to *a-* (29).¹⁴ Note that this syncretism leaves the opposition between Absolutive and Ergative intact. On the basis of Abkhaz's Absolutive-Ergative alignment system, syncretisms are not expected to occur between these two categories.

As discussed above, Nikvh uses an incorporating strategy to align nominal units, i.e. modifiers and arguments are incorporated into one Word which is then embedded in a Phrase. Presumably, this strategy historically derived from juxtaposition. (Croft 2003: 33). Phrasal modifiers and arguments can only be aligned by means of such a polysynthetic construction (Nichols 2003: 108). However, Clausal arguments are only incorporated when they have 'the same focus value as the verb' (Hengeveld & Mackenzie 2008: 406). Compare the following examples (Mattissen 2003: 225; Gruzdeva 1998: 38; Savel'eva 1966: 125, cited in Mattissen 2003: 107):

- (32) *ətək-rəf*
 father-house
 'father's house'

¹⁴ Syncretisms often concern neutralizations in the morphosyntactic expression of different Clausal arguments. However, only the cases of syncretisms between Phrasal and Clausal arguments were indicated in Tables 4 and 5, since only these fall within the scope of this paper.

- (33) pila-eri-rulku
big-river-across
'across a big river'
- (34) T'a ku-ñivγ-əz-ja.
PROH DEM-person-call-IMP.SG
'Don't call that person.'
- (35) Ku-ñivx t'a j-əz-ja.
DEM-person PROH 3SG.U-call-IMP.SG
'That person, don't call him/her.'

In (35) 'that person' is (re)introduced as a Topic and is therefore placed in Clause initial position, rather than being incorporated in the verb, which now contains an Undergoer prefix. Hence, predicate-argument synthesis does not occur if the argument is 'topicalized, dislocated or focused' (Mattissen 2003: 273), i.e. if argument and predicate have different information values.

Burushaski takes a special position as a type 1 language, since it is the only language in which a group of adjectival modifiers (roughly twenty (Berger 1998: 77)) select person markers also used for Phrasal and Clausal arguments, instead of possessive modifiers selecting these markers as in Abkhaz, Navaho and Nivkh. The examples below show that the same set of person markers, consisting of three phonologically different subsets, is used for adjectival modifiers within Nps, possessive arguments within Nps, arguments within Adps, and Undergoer arguments within Clauses (Berger 1998: 78, 66, 97, 177):

- (36) i-qhúndukış hir
3SG.HUM.M-hump-backed man
'hump-backed man'
- (37) hir í-yas
man.ABS 3SG.HUM.M-sister
'the man's sister'
- (38) hir é-páci
man.ABS 3SG.HUM.M-by
'by the man'
- (39) Hir i-phús-imi
man.ABS 3SG.HUM.M.(OBJ)-bind-3SG.HUM.M.(SBJ)
'He bound the man.'

What makes this alignment pattern interesting is the fact that the same morphological marker is used for constituent units with both a different Representational status (i.e. modifiers versus arguments) and of a different Morphosyntactic category (i.e. Words versus Phrases). Even more striking is the fact that possessive modifiers are aligned similarly to arguments within Adps, by means of a Genitive case suffix, while no other Phrasal modifiers or Phrasal arguments share this pattern. The two examples below show this (Berger 1998: 66, 99):

- (40) Húnzu-e tham
Hunza-GEN lake
'Hunza's lake'

- (41) *čháriṣ-e* *úlo*
 threshold-GEN over
 ‘over the threshold’

This shows that, apart from not marking the dependency relation by means of alignment, which is common to all type 1 languages, the alignment of Burushaski fails to recognize the underlying structure of the items involved in these dependency relations, i.e. as Words or Phrases. Note that this is only the case when similar markers are selected, since both adjectival modifiers and Adps trigger different kinds of alignment strategies.

The languages Abkhaz, Navaho, Nivkh and Burushaski also confirm the general hypothesis. When a modifier within an Np is treated similarly to a Clausal argument, Phrasal arguments are treated in the same way. Note furthermore that in all three languages with this alignment pattern both the argument of a possessive Np and the argument of an Adp receive the same treatment, which was not expected beforehand. On the basis of this observation the following implicational hierarchy can be posited:

- (42) argument within Adp > argument within possessive Np > modifier within Np

This hierarchy should be read as follows: if modifiers within Nps are aligned similarly to one or more Clausal arguments, arguments within possessive Nps can also be aligned similarly to Clausal arguments, and if these arguments within possessive Nps can be aligned similarly to one or more Clausal arguments, arguments within Adps are also able to do so. Interestingly, the Clausal arguments involved in all type 1 languages are Undergoer arguments of two- and/or three-place predicates, optionally accompanied by Recipient arguments as depending on the language’s system of ditransitive alignment. Abkhaz is the only type 1 language in which not the Undergoer, but the Actor in a (di)transitive predicate participates in this alignment pattern, which is a result of syncretism, as discussed above.

8.1.2 Type 2: Phrases versus Clauses

Ten of the sample languages are of type 2. Languages of this type partly recognize different dependency relations in their alignment, since they make a basic distinction between the alignment of (a number of) Phrasal modifiers and arguments, and the alignment of Clausal arguments. However, the kind of dependency relation obtaining within Phrases is not marked by means of alignment. Hence, they mark the Morphosyntactic category in which alignment takes place, i.e. a Phrase or a Clause, but not the Representational status of the units part of these Phrases or Clauses, i.e. modifiers or arguments. On the basis of the specific kinds of Phrases participating in the type 2 pattern, a split is visible between languages in which arguments of Adps participate in this pattern, and languages in which arguments of Adps are not part of this pattern. Three languages cannot be classified according to this split, two, Gooniyandi and Sumerian, because they lack Lexical Adpositions, and one, Hurrian, because the relevant information could not be found.

A language of the first kind is Basque. In this language a subset of arguments within Adps (43) trigger the Genitive case marker also used on modifiers and arguments within possessive Nps, while other cases, in combination with person markers, mark the functions of arguments within Clauses (46) (Hualde & de Urbina 2003: 188; Saltarelli 1988: 77, 168; 149):

- (43) etsai-en kontra
 enemy-GEN.PL against
 ‘against the enemies’
- (44) Chomsky-ren bigarren libura-a
 Chomsky-GEN.SG second book-ABS.SG
 ‘Chomsky’s second book’
- (45) zakurr-aren bura-a
 dog-GEN.SG head-ABS.SG
 ‘the head of the dog’
- (46) Aita-k ama-ri gona gorri-a eros-i
 father-ERG.SG mother-DAT.SG skirt red-ABS.SG buy-PFV
 d-ø-ø-io-ø
 3.ABS-PRS-AUX-3SG.DAT-3SG.ERG
 ‘Father bought a red skirt for mother.’

Adjectival (47) and adverbial modifiers (48) are aligned without any kind of marking (Saltarelli 1988: 76, Hualde & de Urbina 2003: 583)

- (47) alde on-ak
 side good-ABS.PL
 ‘good points’
- (48) Pisia dakarrenean astiro ibiltzen da
 weight brings.when slow.ADVR walk.IMPF AUX
 ‘When he brings a heavy load, he/one walks slowly.’

The Basque pattern is shared by Georgian and Ket, which also use a Genitive case suffix for a group of Adpositions and for units within possessive Nps, and which also lack the morphological means to mark adjectival and adverbial modifiers.

An additional alignment pattern, in which arguments of Adps are aligned similarly to other Phrasal units, is attested in Japanese and Turkish. In this pattern adjectival and/or adverbial modifiers are aligned in the same way as arguments of Adps (none of which are marked), while other constituent types *are* marked on the basis of a morphological procedure. Compare the following Turkish examples (Kornfilt 1997: 105, 91, 423):

- (49) güzel kadın
 beautiful woman
 ‘the beautiful woman’
- (50) Hasan iyi çalış-ır
 Hasan good work-AOR
 ‘Hasan works well.’
- (51) adet-i üzere
 custom-3SG in accordance with
 ‘in accordance with his custom’

Note that this alignment pattern is in accordance with the hierarchy in (26): if arguments of Adps select a zero marking strategy, adverbial modifiers also select this strategy.

The second kind of pattern involves different alignment strategies used for arguments within Adps, units within possessive Nps and arguments within Clauses. It is attested in Hungarian, Itelmen and Turkish. In Itelmen, the nucleus and dependent within Adps are marked with agreeing Locative case markers (52), while an attributive marker is used for modifiers (53) and arguments (54) within possessive Nps, which is inflected for the number of the head/nucleus. (Georg & Volodin 1999: 93, 94, 74):

(52) tamz-ank h-ank
 roof-LOC above-LOC
 'above the roof'

(53) p'e-çe-n ç'it
 son-SG-SG.ATTR weapon
 'the son's weapon'

(54) Sin'añewte-n qthañ
 S.-SG.ATTR leg
 'Singangewt's leg'

Again, both adjectival (55) and adverbial modifiers (56) lack a morphological marker specifying their dependency (Georg & Volodin 1999: 109, 112):

(55) iw-lah sanziñk
 long-ADJR stake
 'the long stake'

(56) A t'salaj inseñ-q salte-s-kinen
 but fox slow-ADVR follow-PRS-3SG.SBJ>3SG.OBJ
 'But the fox followed him slowly.'

In Hungarian and Turkish (cf. examples (49) and (50)) adjectival and adverbial modifiers are also aligned without an overt marking. Both languages use case markers on arguments within Adps, while units within possessive Nps are marked by case markers on the possessor, which are different from the ones used within Adps, and person markers on the possessed. Clausal Actors are marked by means of Nominative case markers and person markers on the verb, while the Clausal Undergoer is marked for Accusative case and Clausal Recipients for Dative case.

Interestingly, the constituent types participating in this alignment type are identical across all type 2 sample languages. Every language marks the units within possessive Nps, as in Itelmen, optionally combined with the units in Adps, as in Basque, in the same way, while adjectival and adverbial modifiers are never part of this pattern. This shows that, although type 2 languages do not mark the head-modifier/nucleus-dependent distinction within Phrases, they do recognize the internal Representational structure of modifiers and arguments in their alignment properties. Possessive modifiers, possessive arguments and arguments within Adps all represent Configurational Properties, consisting of an internal Property functioning as head, whereas adjectival and adverbial modifiers are Properties and thus not further internally layered at RL. On the basis of this distinction both kinds of units receive a different treatment. Note that the importance of this distinction varies between languages though. In Japanese and Turkish adjectival and adverbial modifiers can be aligned similarly to arguments within Adps. There are also languages which select an additional overt

morphological strategy for adjectival modifiers, while adverbial modifiers are marked without a morphological procedure.

8.1.3 Type 3: Mixed

This third alignment type shows two kinds of patterns. On the one hand it contrasts with the former type in allowing Phrasal and Clausal arguments to be aligned in the same way as opposed to Phrasal modifiers. On the other hand, it shows an alignment pattern similar to languages of type 2, in using one strategy for Phrasal items, while another is selected for Clausal items. Hence, type 3 languages mark both the modifier-argument distinction as well as the Phrase-Clause distinction, although never combined, as in the type 5 language Lango.

In all three type 3 languages the modifier-argument distinction involves arguments within Adps treated in the same way to one or more Clausal arguments, while Phrasal modifiers are treated differently. Tamil shows two such patterns: a subset of arguments in Adps select the Accusative case marker also used on Clausal Undergoers, while another subset selects the Dative marker, which is also used for Clausal Recipients. Examples of both are given below (Asher 1982: 126, 107, 122, 107):

(57) viiṭṭe cutti
house.ACC around
'around the house'

(58) maatṭe vaanḱanaan
cow.ACC buy-PST-3SG.HUM
'He bought a cow.'

(59) viiṭṭukku veḱiye
house.DAT outside
'outside the house'

(60) Coomu raamanukku Hinti colliḱḱuṭṭaaru
Somu Raman.DAT Hinti teach-PST-3SG.HUM
'Somu taught Raman Hindi.'¹⁵

Note that all languages of type 3 adhere to the hierarchy in (42), since none of the languages align arguments within possessive Nps in the same way to one or more Clausal arguments, while arguments within Adps are aligned differently. The kinds of Clausal arguments involved in this alignment pattern are Undergoers optionally accompanied by Recipients, which is similar to the type 1 languages Abkhaz, Nivkh, Navaho and Burushaski.

The second alignment pattern languages of type 3 employ involves a similar treatment of units within (a number of) Phrases, while arguments within Clauses receive a different treatment. There is a great deal of variation in the kinds of Phrasal units involved. In Nama all Phrasal units participate in this pattern, since they can all be aligned without morphological marking. In Hausa only possessive Nps are involved in this pattern, which is similar to the type 2 language Basque, i.e. units within possessive Nps receive a different treatment from arguments within Adps.¹⁶ Possessive Nps are marked by means of a suffix on the

¹⁵ Note that the Clausal Undergoer 'Hinti' is not marked for the Accusative in this example, because of the optionality of the accusative case suffix with inanimate nouns and certain verbs.

¹⁶ The main difference is that Hausa also has a specific alignment strategy for a number of arguments, while Basque always aligns Clausal units differently from Phrasal units (i.e. Basque lacks the coding of the modifier-argument distinction, which *is* coded in Hausa).

head/nucleus indicating its grammatical gender, while arguments within Adps are aligned without a morphological marker. Nps with adjectival modifiers are also marked by a suffix indicating grammatical gender of the head, but attached to the modifier. Consider the examples below of a possessive Np consisting of a modifier (61), an Adp (62) and an Nps consisting of an adjectival modifier (63) (Jaggar 2001: 336, 344, 669):

(61) mōtā-ṛ mālāmī
 car-F teacher
 ‘the teacher’s car’

(62) illā Audù
 except Audu
 ‘except Audu’

(63) kàrama-ṛ yāriṇyā
 small-F girl
 ‘the small girl’

In Tamil both units within possessive Nps, as well as arguments within Adps are aligned in the same way, as opposed to arguments within Clauses. This pattern is similar to the type 2 language Itelmen. As noted above, Tamil makes a distinction between the possession of rational and non-rational items. For the latter class of items two possessive strategies are available. Possessed items remain unmarked or occur in their oblique stems. A number of postpositions are also able to select both strategies. Since a zero marking strategy is also used for Nps with adjectival modifiers, there are two sets of constituent types involved in the alignment within Phrases. Examples (64) and (65) illustrate the first strategy, i.e. nouns appear as oblique stems (the non-rational possessed item (64) or the argument of the Adposition (65)) (Asher 1982: 116, 104):

(64) eṭatu kayyi periya veralu
 left hand.NOM big finger.NRAT.GEN
 ‘the thumb of the left hand’

(65) marattu kiṭṭe
 tree.NRAT.GEN near
 ‘near the tree’

8.1.4 Type 4: Modifiers versus arguments

West Greenlandic is the only language of type 4. In this language modifiers are aligned differently from arguments, irrespective of whether they are part of Phrases or Clauses. Hence, West Greenlandic partly recognizes the specific kind of dependency relation on the basis of alignment, i.e. it encodes the Representational status of the units aligned, but not the Morphosyntactic category of the higher-order unit of which it is part.

A basic distinction is made between alienable and inalienable possession the basis of the marker *-uta*, which is used for possessive modifiers only. In addition, both kinds of

possessive Nps are marked with the relative marker *-p* on the modifier/argument, combined with a person marker on the head/nucleus.¹⁷ Compare (66) to (67) (Fortescue 1984: 216):

(66) piniartu-p niqi-uta-a
 hunter-REL meat-AL-3SG.POSS
 ‘the hunter’s meat’

(67) piniartu-p qaja-a
 hunter-REL kayak-3SG.POSS
 ‘the hunter’s kayak’

Relative marker *-p* also functions as the ergative case marker for Actors of two- and three-place predicates, in combination with the same set of person markers used for possessive Nps. This may lead to ambiguity when the relative case nominal is followed by a suitable possessed noun in a Clause. Context should supply the relevant interpretation in this case (Fortescue 1984: 93):

(68) Palasi-p qimmi-a taku-a-a
 priest-REL dog-3SG.POSS see-IND-3SG.OBJ.3SG.SBJ
 ‘The priest saw her dog/She saw the priest’s dog.’

For one-place predicates a different set of person markers are used. Compare (68) to (69) below (Fortescue 1984: 226):

(69) Issiavim-mut ingip-puq
 chair-ALL sit.down-3SG.SBJ.IND
 ‘He sat on the chair.’

Adjectival modifiers¹⁸ are aligned without an overt morphological marker (Fortescue 1984: 108):

(70) illirviusaq qisuk
 box wood
 ‘a wooden box’

Note that West Greenlandic is the only sample language in which the Actor argument of the Clause receives the same treatment as arguments within possessive Nps without being due to syncretism, as is the case in Abkhaz. As seen above, the alignment patterns of all other sample languages involve the Undergoer and/or Recipient argument, but not the Clausal Actor.

8.1.5 Type 5: Differentiated

The fifth and final alignment type is represented by Lango, which selects a different treatment for each of the three constituent classes. Examples were given in (8) to (13). On the basis of

¹⁷ Apart from body parts, kinship terms, part-whole and spatial relations, the inalienable class of nouns in West Greenlandic consists of dogs, kayaks, sleds and other ‘single essential pieces of equipment’ (Fortescue 1984: 172). Note that this is in accordance with the hierarchy formulated by Nichols (1988) given in (7).

¹⁸ The existence of adjectives in West Greenlandic is unclear. Fortescue (1984: 102) notes that ‘no morphological distinction between adjectives and other nominals (or, predicatively, verbs)’ can be made, while Hengeveld et. al. (2004: 539) classify West Greenlandic as a language with a small closed class of adjectives.

this pattern Lango was already analyzed (by Hengeveld & Mackenzie (2008: 387)) as employing an entirely symmetrical alignment pattern (without taking its alignment of different Clausal arguments into consideration). Hence, it exhibits the opposite pattern of the type 1 languages, in fully encoding all dependency relations by means of alignment.

Although this paper does not discuss the specific kinds of morphological markers used for Phrasal alignment, it is striking that in all four sample languages with an alienable/inalienable distinction, which is marked through the alignment of nominal units within possessive Nps, i.e. Tidore, Burushaski, Lango and West Greenlandic, inalienable possession involves less morphological material, or a closer location of the marker to its nucleus, than alienable possession. This cross-linguistic tendency is traditionally explained from a cognitive perspective (Seiler 1983: 68, Haiman 1985: 130), in that it is caused by a closer conceptual link between possessor and possessum in inalienable possession. Haspelmath (2008) gives an economic, rather than an iconic, motivation based on frequency, claiming that inalienable items are possessed relatively more often than alienable ones. Within FDG the difference between alienable and inalienable possession is reflected on the basis of their different semantic properties, i.e. in terms of different underlying Representational configurations for both kinds of possession. Whereas nucleus and dependent are in a close relationship as part of the same Configurational Property, head and modifier are less tightly connected since modifiers are considered optional specifications of the head. The asymmetry in the marking of both kinds of possession can then be explained by the Morphosyntactic Encoder recognizing the close relationship between nucleus and dependent, reflected with a lesser amount of marking or a marker positioned closer to the nucleus, while the less tightly related head and modifier are marked with more morphological material or a marker located further from the head.

9. Conclusion

Hengeveld and Mackenzie (2008: 387) first noticed that languages differ in recognizing the difference between modifiers and arguments on the basis of their alignment. This paper shows that the four alignment types of their classification represent four extreme patterns, which are not commonly attested cross-linguistically in the alignment of nominal units. Rather, the data presented in this study indicates that languages employ a range of different alignment patterns, which can be classified into five main types. These five types are schematically outlined below:

Constituent class	Type 1	Type 2	Type 3	Type 4	Type 5
modifier (Phrase)	A	A	A	A	A
argument (Phrase)			A / B		B
argument (Clause)		B	B	C	

Table 6. Overview of alignment types

Alignment types 1, 2, 4 and 5 have the same structure as the alignment patterns schematized by Hengeveld and Mackenzie (cf. Table 2), but with the important difference that only certain constituent types of the ten investigated in this paper participate in the types presented in Table 6. Alignment type 3 presents a mixed pattern, which consists of two alignment patterns. Interestingly, the split between both alignment strategies is made right in the middle of the three constituent classes, i.e. in a class which shares both the Morphosyntactic category of the higher constituent unit, i.e. a Phrase, as well as the Representational status of the dependent unit, i.e. an argument. Such a split is not expected to occur in any of the two other constituent classes on the basis of the main hypothesis formulated in this paper. This hypothesis states

that if a language will treat modifiers within Phrases similar to arguments within Clauses, arguments within Phrases must be treated in the same way, which is confirmed by the language data. Hence, such a split can only occur in the Phrasal modifier or Clausal argument class if it also occurs in the Phrasal argument class.

Furthermore, it is shown that the constituent types participating in the different alignment types are not motivated solely by the Representational status of the dependent unit as a modifier or argument, or by the Morphosyntactic category of the higher constituent unit, but also by the Morphosyntactic category of the dependent unit, i.e. its Lexical or Phrasal nature. In a large number of sample languages, particularly the ones belonging to alignment type 2, Lexical modifiers are aligned differently from modifiers and arguments with a Phrasal configuration. This is a result of the homogeneous treatment of Phrases with adjectival and adverbial modifiers across the languages of the sample, i.e. they are often aligned without an overt morphological marker. Possessive Nps, on the contrary, are the types of Phrases most often marked on the basis of a morphological procedure when units within other Phrase types are aligned without an overt marker.

On the basis of the language data, two implicational hierarchies were formulated, which focus on the alignment of specific kinds of constituent types from each of the three classes given in Table 6. The first hierarchy, repeated below, states that if a Clausal argument can be aligned without morphological marking, so can an argument within an Adp, and consequently, if an argument within an Adp can be aligned without morphological marking, so can an adverbial modifier within a Vp.

(71) adverbial modifier within Vp > argument within Adp > argument within Cl

The hierarchy has one counterexample, Lango, which is the only sample language using an overt marker to align adverbial modifiers to their verbal heads but a zero marking strategy for arguments within Adps. The second hierarchy, again repeated here, indicates that if modifiers within Nps are aligned in the same way to one or more Clausal arguments, arguments within possessive Nps can also be aligned in the same way as these Clausal arguments, and if these arguments within possessive Nps can be aligned similarly to one or more Clausal arguments, arguments within Adps are also able to do so. No counterexamples have been found in the sample.

(72) argument within Adp > argument within possessive Np > modifier within Np

The current paper only discusses the alignment of nominal modifiers and arguments on the basis of a relatively small language sample. In order to present a full picture of the cross-linguistic variation in Phrasal alignment, further research should investigate additional kinds of modifiers and arguments in a larger sample. Examples are subject and object arguments of nominalizations, and pronominal modifiers and arguments. In this way, a general classification of languages on the basis of their alignment systems can be created. Another interesting topic for further research is the relation between Phrasal alignment and head versus dependent marking, introduced by Nichols (1986). Within FDG, this translates to the location of morphosyntactic marking on either the head or the modifier, or the nucleus or the dependent. For head-modifier relations, FDG predicts that the modifier, rather than the head, will be marked, since morphological marking is considered to reflect the functional markedness of modifiers as optional specifications of the head. With respect to nucleus-dependent relations, FDG predicts that either, or both, of these units may be marked. It would be interesting to see if these predictions hold for the languages around the world, and to investigate if there is a relation between the marking within head-modifier relations and the marking within nucleus-dependent relations at a Phrasal and Clausal level. In this way further

support for the unique distinction FDG makes between head-modifier and nucleus-dependent relations in Phrases, and its importance for Phrasal alignment across the world's languages, can be provided.

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