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## Parts of speech and dependent clauses in Functional Discourse Grammar\*

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In this paper we use the Theory of Functional Discourse Grammar to show that parts of speech (PoS) and dependent clauses (DCs) can both be defined in terms of the functions they may express. On the basis of this parallel treatment, we predict that the functional possibilities of PoS and DCs in languages are comparable. This hypothesis is tested using a sample of 23 languages. The results do show similarities between the functional patterns of the two types of constructions.

### 1. Introduction

In this paper we investigate the relationship between the functional distribution of lexical elements on the one hand and complex constructions in the form of dependent clauses on the other hand, in a sample of 23 languages. We use the theory of Functional Discourse Grammar (FDG) to show that parts of speech (PoS) classes and dependent clause (DC) constructions can be defined in a way that makes them comparable in terms of their functional possibilities. We start, in Section 2, by introducing our language sample. Section 3 provides a general outline of FDG, and specifically introduces those parts of the theory that are directly relevant to our study. In Section 4 we show how PoS classes are defined in FDG (4.1), and we classify the languages in our sample with respect to their PoS systems (4.2). Section 5 does the same for DC constructions: 5.1 shows how they are defined in FDG, while 5.2 gives the DC systems of our sample languages. In Section 6, we address the question whether, in a specific language, the distribution of PoS classes is similar to the distribution of DC constructions. In Section 6.1 we explain why such distributional similarities are expected to occur; in Section 6.2 we formulate specific hypotheses, and in Section 6.3 we test these predictions against the data presented in Sections 4 and 5. Finally, in Section 7 we round off with our conclusions.

## 2. The sample

We make use of a sample of 23 languages, given in Table 1. It must be stressed that the sample is not completely balanced. For the purpose of the present study, we have included languages with a wide range of different PoS systems. This allows for explorative research into the relationship between distributional patterns of PoS classes and DC constructions, which will be followed up on a larger scale (Van Lier, in preparation).

## 3. Functional Discourse Grammar

### 3.1 General lay-out<sup>1</sup>

Functional Discourse Grammar (FDG), as presented in Hengeveld (2005) and Hengeveld & Mackenzie (2006, 2008), is the grammatical component of a wider theory of verbal interaction (see Dik 1997), in which it interacts with non-linguistic components of the process of human communication. In the FDG model four interacting levels of organization are distinguished: the interpersonal level, the representational level, the morphosyntactic level, and the phonological level, in that hierarchical order. The general architecture of the model is represented in Figure 1.<sup>2</sup>

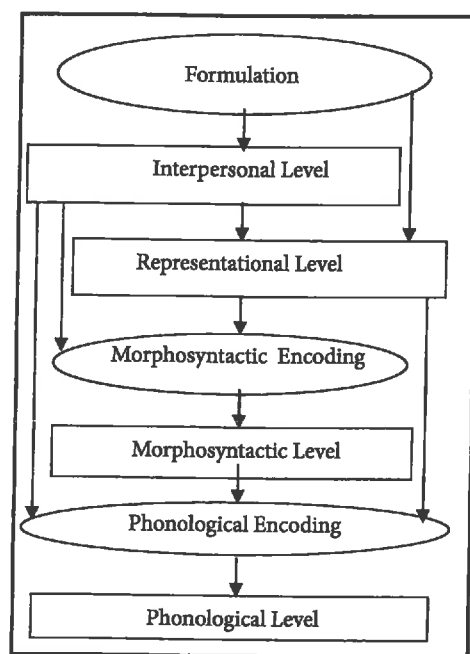


Figure 1. The grammatical component of FDG

Table 1. The language sample

Language	Family (based on Ethnologue*)	Genus (based on WALS**)	Source(s)
Kambera	Austronesian	Central Malayo-Polynesian	Klamer 1998
Samoan	Austronesian	Oceanic	Mosel 1992 Mosel & Hovdhaugen 1992
Santali	Austro-Asiatic	Munda	Neukom 2001
Imbabura Quechua	Quechuan	Quechuan	Cole 1982
Kayardild	Australian	Tangkic	Evans 1995
Turkish	Altaic	Turkic	Göksel & Kerslake 2005, Kornfilt 1997, Lewis 1967, Schroeder 2004
Ma'di	Nilo-Saharan	Maru-Ma'di	Blackings & Fabb 2003
Lango	Nilo-Saharan	Nilotic	Noonan 1992
Abun	West Papuan	North-Central Bird's Head	Berry & Berry 1999
Abkhaz	North Caucasian	North-west Caucasian	Hewitt 1979, 1987
Georgian	Kartvelian	Kartvelian	Hewitt 1987, 1995, Cherchi 1999
Basque	Basque	Basque	Saltarelli 1988 Hualde & Ortiz de Urbina 2003
Pipil	Uto-Aztecan	Aztecan	Campbell 1985
Berbice Dutch	Creoles and Pidgins	Creoles and pidgins	Kouwenberg 1994
Alamblak	Sepik-Ramu	Sepik Hill	Bruce 1984
Hdi	Afro-Asiatic	Biu-Mandara	Frajzyngier with Shay 2002
Tamil	Dravidian	Southern Dravidian	Asher 1982, Lehmann 2005
Mandarin Chinese	Sino-Tibetan	Chinese	Li & Thompson 1981
Garo	Sino-Tibetan	Baric	Burling 2004
Nivkh	Nivkh	Nivkh	Gruzdeva 1998 Matissen & Drossard 1998
Krongo	Nilo-Saharan	Kadugli	Reh 1985
Tuscarora	Iroquoian	Northern Iroquoian	Mithun-Williams 1976, Mithun 2000

\* Ethnologue = Gordon, Raymond G. Jr., ed. 2005. *Ethnologue: Languages of the world*. 15th Edition. Dallas, Tex.: SIL International. Online version: <http://www.ethnologue.com>.

\*\* WALS = Haspelmath, Martin, Matthew S. Dryer, David Gil & Bernard Comrie, eds. 2005. *The world atlas of languages structures*. Oxford: Oxford University Press.

Two of the levels in Figure 1 are relevant to the purpose of our paper: the interpersonal and the representational levels. These will be discussed below in some detail. For a more complete outline of FDG we refer to Hengeveld (2005).

At the interpersonal level all relevant units of communicative behavior are analyzed in terms of their communicative function. For our present purposes, the relevant unit of analysis at the interpersonal level is the so-called 'communicated content' (C) expressed by the speaker, which may consist of a varying number (superscript N) of 'ascriptive subacts' (T) and/or 'referential subacts' (R), represented as a list (between square brackets) in (1).<sup>3</sup> Note that variables at the interpersonal level are given in capitals for ease of recognition. Note furthermore that the FDG formalism (at all levels of analysis) makes use of a colon to represent a restriction operation, and a 'closing variable' between brackets at the end of each of these restriction operations, to mark off its scope. Thus, the formula  $(C_1; \dots (C_1))$  should be read as: 'a communicated content (1), such that ...'

$$(1) (C_1; [(T_1)^N (R_1)^N \dots](C_1))$$

At the representational level of analysis, linguistic units are described in terms of their semantic category. The highest category at this level is the 'propositional content' (p): an idea or unit of knowledge about a real or imaginary world. Being a mental construct, it can be located neither in space nor in time. It can be evaluated in terms of its truth. It may contain one or more descriptions of a 'state-of-affairs' (e): an event or state that can be located in space and time and can be evaluated in terms of its reality. A state-of-affairs is characterized by a 'property', represented by a variable (f)<sup>4</sup> (in the representation in (2) below this is  $f_1$ ). Properties have no independent existence and can only be evaluated in terms of their applicability, either to other types of entity or to the situation they describe in general. The property ( $f_1$ ) is itself a configuration of units that may designate a variety of semantic categories, such as further properties ( $f_2$ , in (2)), individuals (x), spatial regions (l), and temporal regions (t). All of these can occur more than once, which is indicated by the superscript  $n$ . The hierarchical structure of the representational level is given (in a somewhat simplified manner) in (2) (where again colons and closing variables are used for every restriction operation):

$$(2) (p; [(e; (f_1; [(f_2)^n (x)^n (l)^n (t)^n] (f_1)) (e))] (p))$$

Note that the representational level is purely semantic in nature, that is, linguistic units are described in terms of their designation. The communicative use that is made of these units, e.g. reference or ascription, is accounted for at the interpersonal level. We will elaborate on this point below.

### 3.2 Interpersonal functions and representational categories

Layers at the representational level may correspond to different interpersonal functions. Consider the example in (3), where each instantiation of a variable is marked with a unique subscript (capital) I, J, K at the interpersonal level, and (small print) i, j, k, l at the representational level. Notice that the alignment of the interpersonal and

representational analyses is such that every interpersonal variable is positioned right above the corresponding representational variable.

$$(3) \quad \begin{array}{ccccccc} & T_I & & R_I & T_J & & T_K \\ (e_i; (f_i; [(f_j; \text{die } (f_j)) & (x_i; (f_k; \text{man } (f_k)) & (x_j; (f_l; \text{old } (f_l)) & (x_k))]) & (f_i)) & (e_i)) \\ \text{'The old man died.'} & & & & & & \end{array}$$

Thus, this example says that at the *representational* level, there is a state of affairs ( $e_1$ ), characterized by the property ( $f_1$ ), which contains (between square brackets) a description of a property ( $f_j$ ) 'died', and an individual ( $x_1$ ). The latter is characterized by two further properties: ( $f_k$ ) 'man' and ( $f_l$ ) 'old'. At the *interpersonal* level ( $f_1$ ) 'died' corresponds to an ascriptive subact ( $T_I$ ) and ( $x_1$ ) to a referential subact ( $R_I$ ). The referential subact is in turn realized through two further ascriptive subacts  $T_J$  and  $T_K$ , which attribute the properties  $f_k$  ('man') and  $f_l$  ('old') to the referent.

It is important to note that there is no necessary one-to-one relationship between ascriptive subacts (T) and properties (f), and between referential subacts (R) and individuals (x). This is shown in the following examples:

(4) That man is a *carpenter*.

(5) I like *that color*.

In (4) a linguistic unit designating an individual, a *carpenter* (x), is used ascriptively (T), that is, it is being ascribed to *that man*. Thus, the relationship between the interpersonal and the representational levels is (T/x). In (5) the linguistic unit denoting a property, *that color* (f), is used referentially (R). Here the relationship between the interpersonal and the representational levels is (R/f).

### 3.3 Heads and modifiers

Each of the units that we have just introduced (C, T, R; p, e, f, etc.), both at the interpersonal and the representational levels, consists of an obligatory part, its head, and one or more (n) optional parts, the modifiers. This general format is represented in (6), where  $\alpha$  stands for any variable, h for its head, and  $\sigma$  for a modifier, and braces indicate optionality:

$$(6) (\alpha_1; h(\alpha_1); \{\sigma^n\}(\alpha_1))$$

Heads (h) may be lexical or compositional; modifiers ( $\sigma$ ) can only be compositional, because they have their own head. This is captured in the following representations, where *lex* stands for lexical unit:

	head	modifier	
(7)	$(\alpha_1: \text{lex})$	$(\alpha_1): \sigma$	$(\alpha_1)$
(8)	$(\alpha_1: (\alpha_2: \text{lex } (\alpha_2): \sigma (\alpha_2)))$	$(\alpha_1): \sigma$	$(\alpha_1)$
(9)	$(\alpha_1: \text{h})$	$(\alpha_1): (\alpha_2: \text{lex } (\alpha_2): \sigma (\alpha_2))$	$(\alpha_1)$

For the purpose of our argument, it is crucial to note that the *complex* unit  $(\alpha_2: \text{lex } (\alpha_2): \sigma (\alpha_2))$  in first restrictor position in (8) is regarded as the head of  $\alpha_1$ . This is different from many other approaches, which would analyze the *lexical* head of  $\alpha_2$  as the head of  $\alpha_1$ . Consider the following example and its analysis at the representational level:

(10) The man regrets that the boy will marry.

(11)  $(e_j: (f_j: [$   
 $(f_j: \text{regret}_V (f_j))$   
 $(x_i: (f_k: \text{man } (f_k)) (x_i))$   
 $(e_j: (f_l: [(f_m: \text{marry } (f_m)) (x_j: (f_n: \text{boy } (f_n)) (x_j))] (f_l)) (e_j))$   
 $]) (f_j) (e_j))$

In FDG, the head of the state-of-affairs  $e_j$  is the complex construction printed in boldface in (11). This complex head corresponds to *that the boy will marry* in (10), and not to just the verb *marry*, which is represented as the lexical head of the property-description  $f_m$ , not of the state-of-affairs  $e_j$ .

This approach allows us to draw a parallel between a *lexical* and a *complex, clausal* filler of the head slot of a certain unit. Consider the examples in (12) and (13) and their representational analyses in (14) and (15), respectively:

(12) the marriage

(13) that the boy will marry

(14)  $(e_i: (f_i: \text{marriage}_N (f_i)) (e_i))$ <sup>5</sup>

(15)  $(e_i: (f_i: [(f_j: \text{marry } (f_j)) (x_i: (f_k: \text{boy } (f_k)) (x_i))] (f_i)) (e_i))$

In both cases a state-of-affairs ( $e_i$ ) is characterized by a property ( $f_i$ ). In (12)/(14), the head slot of this property is filled lexically by means of the noun *marriage*, while in (13)/(15) it is realized through the complex unit between square brackets, corresponding to the complement clause 'that the boy will marry'. Mackenzie (1990) proposes essentially the same analysis, using the framework of Functional Grammar.

## 4. Parts of speech

### 4.1 Parts of Speech in Functional Discourse Grammar

The distinction between heads and modifiers at the representational level<sup>6</sup>, and between ascriptive and referential subacts at the interpersonal level constitute two parameters, each with two values, which may be combined to yield four possible functional slots, which may in turn be used to define the functions characteristic of lexical items. This is represented in (16)–(19) below.

	T	T	
(16)	$(f_1: \text{lex})$	$(f_1): \sigma$	$(f_1)$
	T	T	
(17)	$(f_1: \text{lex})$	$(f_1): (f_2: \text{lex } (f_2))$	$(f_1)$
	R T	T	
(18)	$(\alpha_1: (f_1: \text{lex } (f_2)))$	$(\alpha_1): \sigma$	$(\alpha_1)$
	R T	T	
(19)	$(\alpha_1: (f_1: \text{lex } (f_2)))$	$(\alpha_1): (f_2: \text{lex } (f_2))$	$(\alpha_1)$

Figure 2 indicates how examples (16)–(19) illustrate the possible combinations of the ascriptive/referential distinction and the head/modifier distinction.

A close look at the representations in (16)–(19) reveals that actually all lexical elements are the lexical heads of representational layers of the  $f$ -type: ( $f_1$ ) in (16) and (18), ( $f_2$ ) in (17) and (19). This is another way of saying that lexical items designate properties or relations. Only when used as the main predicate of a clause does this  $f$ -unit correspond directly to an independent ascriptive subact. In all other cases it corresponds to an ascriptive subact *within* a higher ascriptive subact (as in (17)) or a higher referential subact, within which it ascribes a property to the referent (as in (18) and (19)). Thus, the functions of the items in boldface in (16)–(19) may be defined as in (20) (i)–(iv):

- (20) i. Head of an  $f$ -unit that is used as an independent ascriptive subact (16);  
 ii. Head of an  $f$ -unit that is a modifier of (i) (17)  
 iii. Head of an  $f$ -unit that is the head of a representational unit that is used as a referential subact (18);  
 iv. Head of an  $f$ -unit that is a modifier of (iii) (19).

	Head	Modifier
Ascription	(16)	(17)
Reference	(18)	(19)

Figure 2. Crossclassification of the Ascription/Reference and Head/Modifier distinctions

Functions (i) and (ii) cannot be used directly as unique definitions of word classes. For function (i) this has to do with the fact that in many languages various classes of words can be used as the head of an independent ascriptive subact. Compare the following Dutch examples:<sup>7</sup>

- Dutch*
- (21) Jan **werk-t**.  
J. work-PRS.3.SG  
'Jan works.'
- (22) Jan is **timmerman**.  
J. COP.PRS.3.SG carpenter  
'Jan is carpenter.'  
'Jan is a carpenter.'
- (23) Jan is **ziek**.  
J. COP.PRS.3.SG ill  
'Jan is ill.'
- (24) Jan is **net-jes**.  
J. COP.PRS.3.SG well.organized-ADVR<sup>8</sup>  
'Jan is well-organized.'

Note that (22) illustrates the use of a bare nominal predicate in Dutch, which is different from the phrasal nominal predicate in (25) (as will be further illustrated in examples (38) and (39) below):<sup>9</sup>

- Dutch*
- (25) Jan is **[een timmerman]**.  
J. COP.PRS.3.SG INDF carpenter  
'Jan is a carpenter.'

The predicates (in boldface) in examples (21)–(24) are represented as (26)–(29):

- (26) T: T  
(f<sub>1</sub>: **werk-v** (f<sub>1</sub>): σ (f<sub>1</sub>))
- (27) T: T  
(f<sub>1</sub>: **timmerman-N** (f<sub>1</sub>): σ (f<sub>1</sub>))
- (28) T: T  
(f<sub>1</sub>: **ziek-A** (f<sub>1</sub>): σ (f<sub>1</sub>))
- (29) T: T  
(f<sub>1</sub>: **netjes-MAdv** (f<sub>1</sub>): σ (f<sub>1</sub>))

In sum, Dutch verbs (V), nouns (N), adjectives (A), and some manner adverbs (MA<sub>Adv</sub>) can be used as the head of an independent ascriptive subact; yet they belong to different PoS classes, because in other functional environments they are not interchangeable. This means that the function in (20)(i) is by itself not sufficiently distinctive.

Verbs, nouns, adjectives, and manner adverbs also differ to a considerable extent in the kind of element that can go into the modifier slots in (26)–(29). Consider the following examples:

- Dutch*
- (30) Jan **werkt hard**.  
J. work-PRS.3.SG hard  
'Jan works hard.'
- (31) Jan is **voormalig timmerman**.  
J. COP.PRS.3.SG former carpenter  
'Jan is a former carpenter.'
- (32) Jan is **erg ziek**.  
J. COP.PRS.3.SG very ill  
'Jan is very ill.'
- (33) Jan is **erg net-jes**.  
J. COP.PRS.3.SG very well.organized-ADVR  
'Jan is very well-organized.'

Adjectival and adverbial heads may be modified by the same degree adverbs, but verbal and nominal heads mainly take their own classes of modifiers. This may be represented as in (34)–(37). Here D<sub>Adv</sub> stands for degree adverb; Adj<sub>f</sub> stands for adjective used for 'reference-modification' (operating at the f-level); and Adj<sub>x</sub> stands for adjective used for 'referent modification' (operating at the x-level) (Bolinger 1967):<sup>10</sup>

- (34) T: T  
(f<sub>1</sub>: **werk-v** (f<sub>1</sub>): (f<sub>2</sub>: **hard-MAdv** (f<sub>2</sub>)) (f<sub>1</sub>))
- (35) T: T  
(f<sub>1</sub>: **timmerman-N** (f<sub>1</sub>): (f<sub>2</sub>: **voormalig-Adj<sub>f</sub>** (f<sub>2</sub>)) (f<sub>1</sub>))
- (36) T: T  
(f<sub>1</sub>: **ziek-Adj<sub>x</sub>** (f<sub>1</sub>): (f<sub>2</sub>: **erg-DAdv** (f<sub>2</sub>)) (f<sub>1</sub>))
- (37) T: T  
(f<sub>1</sub>: **netjes-MAdv** (f<sub>1</sub>): (f<sub>2</sub>: **erg-DAdv** (f<sub>2</sub>)) (f<sub>1</sub>))

Notably, (35) shows that the use of the notion 'bare nominal predicate' for the predicate in (21) is not entirely adequate. *Reference* modification, as in (31), is still possible with these 'bare nouns', since this type of modification operates at the f-level. In contrast,

*referent* modification, which operates at the x-level, is not allowed with bare nominal predicates, as illustrated in (38).

- (38) \*Jan is           rijk-e   timmerman.  
       J. COP.PRS.3.SG rich-AGR carpenter  
       'Jan is rich carpenter.'

Since the ungrammaticality of (38) is due to the fact that referent modification applies at the x-level, not at the f-level, this also explains why this type of modification is possible within phrasal nominal predicates, as shown in (39):

- (39) Jan is           een rijk-e   timmerman.  
       J. COP.PRS.3.SG INDF rich-AGR carpenter  
       'Jan is a rich carpenter.'

Finally, note that Dutch shows Adjective-Noun agreement in the case of referent modification (39), whereas agreement may be absent in the case of reference modification (31).

Let us return now to the functional specifications given in (20). The representations in (34)–(37) clearly show that the word class of the modifier of an f-unit depends on the word class of the lexical head of that unit. This means that the definition in (20) (ii), like the one in (20)(i), is not sufficiently distinctive.

In short, we have shown that the functions (i) and (ii) in (20) do not allow for a one-to-one correspondence between function and PoS class. For the first function this was already noted in Hengeveld's (1992) original proposal for the classification of PoS systems, and solved by using a specific 'only'-condition for verbs, indicating that verbs can be used predicatively *only*. For the second function the definitions of modifying PoS have to take into account the word class of the head that they modify. With these provisos, and taking the functions in (20) as the point of departure, Table 2 can be constructed:

The '+' in Table 2 represents the defining uses of the various lexical classes mentioned in the left-hand column; the '-' represents the excluded uses; and the '+/-' potential uses. Verbs have a unique use, while nouns, adjectives, and manner adverbs may have an additional predicative use, next to their basic non-predicative uses.

Hengeveld (1992) and Hengeveld et al. (2004) have shown that, cross-linguistically, the distributional possibilities of PoS classes may differ considerably. A basic

Table 2. The distributional possibilities of parts of speech.

	(i)	(iii)	(iv)	(ii)
Verb	+	-	-	-
Noun	+/-	+	-	-
Adjective	+/-	-	+	-
MannerAdverb	+/-	-	-	+

division can be made between classes of lexemes that are categorized for a single syntactic function, and classes of lexemes that can be used in more than one syntactic function without derivation. The first type of PoS is termed 'rigid', whereas the second type is called 'flexible'.

Cross-linguistically, lexical flexibility and rigidity come in different degrees. Flexible PoS classes may be usable in two, three, or all four possible slots. In the case of rigid PoS systems, not all languages have a lexeme class for each slot. That is to say: some languages can express certain slots(s) only by means of a non-lexical strategy. The specific possibilities with respect to lexical flexibility and rigidity are constrained by the parts of speech-hierarchy given in (40):

- (40) head of           ⊂ head of           ⊂ modifier in       ⊂ modifier in  
       predicate phrase   referential phrase   referential phrase   predicate phrase

In Hengeveld (1992) and Hengeveld et al. (2004), this hierarchy was interpreted unidirectionally. It was claimed to predict that the more to the right a syntactic slot is positioned, the smaller the chance that a language will have a separate, specialized lexical class to express it. With respect to flexibility, this means that languages are most likely to have a PoS class that can be used for the two rightmost functions. Moreover, if a PoS class can be used as the head and the modifier in a referential phrase, the hierarchy predicts that it will also be usable in the function positioned further to the right, namely as a modifier in a predicate phrase. With respect to rigidity, the hierarchy predicts that a language is most likely to lack a PoS class for the rightmost function, i.e. modifier in a predicate phrase (that is, it is most likely to lack manner adverbs). Furthermore, if a language lacks a PoS class for a certain slot on the hierarchy, it is predicted to lack PoS classes for all functions further to the right in the hierarchy.

However, in view of new language data, it seems that the parts of speech hierarchy is better interpreted as the superficial reflection of a two-dimensional implicational map. This map is based on two parameters, given in (41) and (42):

- (41) Ascription > Reference  
 (42) Head > Modifier

The parameter in (41) says that it is more likely for a language to have specialized word classes for the ascriptive than for the referential function; the one in (42) says it is more likely to have specialized word classes for heads than for modifiers.

In principle, the combination of these two parameters would permit many logically possible PoS systems. However, these possibilities are constrained in three ways. First, given the dependence of the lexical class of the modifier on the lexical class of the head illustrated in (34)–(37), we do not expect a language to have adjectives if it does not have nouns, manner adverbs if it does not have verbs, etcetera. Second, in view of this predominance of heads over modifiers, we expect the ascription-reference parameter to show up primarily with respect to heads. Third, in FDG the interpersonal

level governs the choices at the representational level. Therefore, we predict that the ascription-reference distinction is primary, and the head-modifier distinction secondary. These three constraints are given in general terms in (43)–(45):

- (43) If a language does not have a specialized class of heads, it does not have the corresponding class of modifiers. (Heads > Modifiers)
- (44) If a language has a specialized class of nouns, it has a specialized class of verbs. (Ascription > Reference)
- (45) If a language does not have separate classes for ascription and reference, it does not have separate classes for heads and modifiers. ((Ascription > Reference) > (Head > Modifier))

The parameters in (41)–(42) and the constraints in (43)–(45) are accounted for in the implicational map in Figure 3.

The implicational map in Figure 3 leaves us with a limited number of possible PoS systems, which are represented in (46)–(55) below. Notice that for reasons of space we represent the PoS systems (and later on the DC systems as well) in one-dimensional, ‘flattened-out’ versions of the two-dimensional map in Figure 3 below.

The predicted PoS systems are divided into flexible systems and rigid systems. Flexible systems are those that have at least one flexible PoS class, while rigid systems have only rigid PoS classes. The flexible systems are listed in (46)–(50) below. In these tables, the flexible PoS classes are represented by dark grey cells, whereas rigid classes are in light grey. The labels used for a number of flexible PoS classes are taken from Hengeveld et al. (2004): a ‘contentive’ is a completely flexible lexeme that can be used in all four functions; a ‘non-verb’ is a lexeme that can be used in all but the predicative function; and a ‘modifier’ is a lexeme that can be used as a modifier in both ascriptive and referential phrases. Apart from these, we use the names ‘nominal’ for lexemes that can be used in head and modifier function in referential phrases, and ‘predicative’ for lexemes that can be used in head and modifier function in ascriptive phrases, in systems (48) and (50). The latter two PoS classes were not predicted by earlier versions of the theory (Hengeveld 1992, Hengeveld et al. 2004).

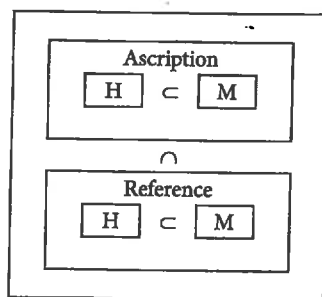


Figure 3. The implicational map for parts of speech

(46)	(i)	(iii)	(iv)	(ii)
	contentive			
(47)	(i)	(iii)	(iv)	(ii)
	verb	non-verb		
(48)	(i)	(iii)	(iv)	(ii)
	verb	nominal		manner adverb
(49)	(i)	(iii)	(iv)	(ii)
	verb	noun	modifier	
(50)	(i)	(iii)	(iv)	(ii)
	predicative		nominal	
			predicative	

The rigid PoS systems that we predict to be logically possible are listed in (51)–(55) below. Here, the rigid classes are also represented in light grey. In systems (52)–(55) one or more of the four functions cannot be filled lexically; the relevant cells remain white and are left unspecified.

(51)	(i)	(iii)	(iv)	(ii)
	verb	noun	adjective	manner adverb
(52)	(i)	(iii)	(iv)	(ii)
	verb	noun	adjective	–
(53)	(i)	(iii)	(iv)	(ii)
	verb	noun	–	manner adverb
(54)	(i)	(iii)	(iv)	(ii)
	verb	noun	–	–
(55)	(i)	(iii)	(iv)	(ii)
	verb	–	–	–

It should be noted that there is not always a perfect match between the logically possible systems displayed above and the PoS systems actually encountered in the sample languages. As the data in the next sub-section will show, languages may display an additional PoS class from a ‘neighboring’ system (i.e. the one represented above or below it), or they may display additional closed or derived classes of rigid lexemes.

## 4.2 Part-of-speech-systems in the sample languages

The PoS systems of the languages in our sample are schematically represented in (56)–(77) below. As in the previous section, rigid PoS classes are represented in light grey, and flexible classes in dark grey. Furthermore, small, closed PoS classes are marked with a C,<sup>11</sup> and PoS classes consisting of only non-basic, lexically derived members are marked with a D. Languages with flexible PoS systems are represented first (in (56)–(64)), and are ordered from more to less flexible. They are followed by languages with rigid PoS systems (in (65)–(77)), which are ordered from those with four PoS classes to those with less than four PoS classes.

(56)	<b>Samoan PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	D Verb	-	-	-
	Flexible	Contentive			
(57)	<b>Kambara PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	D Verb	-	-	C MAdverb
	Flexible	Contentive			
(58)	<b>Santali PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	D. Noun	-	-
	Flexible	Contentive			
(59)	<b>Imb. Quechua PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	-	-	C MAdverb
	Flexible	Non-verb			
(60)	<b>Kayardild PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	-	C? Adjective	C. MAdverb
	Flexible	Non-verb			
(61)	<b>Turkish PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	-	-	-
	Flexible	Non-verb Modifier			
(62)	<b>Ma'di PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	-	Adjective	D. MAdverb
	Flexible	Nominal Modifier			

(63)	<b>Lango PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	-	MAdverb
	Flexible	Modifier			
(64)	<b>Abun PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	Adjective	C MAdverb
	Flexible	C. Modifier			
(65)	<b>Basque PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	Adjective	MAdverb
(66)	<b>Abkhaz PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	Adjective	MAdverb
(67)	<b>Georgian PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	Adjective	MAdverb
(68)	<b>Pipil PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	Adjective	C. MAdverb
(69)	<b>Berbice Dutch</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	Adjective	C. MAdverb?
(70)	<b>Alamblak PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	C. Adjective	C. MAdverb
(71)	<b>Hdi PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	C. Adjective	C. MAdverb
(72)	<b>Tamil PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	C. Adjective	C. MAdverb
(73)	<b>M.Chinese PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	C. Adjective	-
(74)	<b>Garo PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	-	C. MAdverb
(75)	<b>Nivkh PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	-	C. MAdverb



(76)	<b>Krongo PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	-	-
(77)	<b>Tuscarora PoS</b>	(i)	(iii)	(iv)	(ii)
	Rigid	Verb	Noun	-	-

The majority of the languages of our sample have been analyzed for earlier studies (Hengeveld 1992, Hengeveld et al. 2004, Van Lier 2006). This is *not* the case for the following five languages: Kambera, Santali, Mādi, Abun, and Hdi. For reasons of space, it is impossible to extensively document our classification of these languages' PoS systems. We will, however, briefly discuss two cases where our classification is slightly different from the one proposed in the relevant sources, due to the fact that for our definitions of PoS we do not take into account differences in the expression of certain morpho-syntactic categories associated with a specific function (such as TAM for the head of an ascriptive phrase or case for the head of a referential phrase).<sup>12</sup>

According to Klammer (1998: 91–115), in Kambera nouns and verbs can be distinguished on the basis of certain distributional characteristics, such as the possibility to combine with articles or adverbial modifiers. However, this is not relevant for our definition. What is crucial is that in terms of functional possibilities, there is no difference between nouns and verbs. This is illustrated in example (78) a,b, where the same lexeme is used as the head of an ascriptive subact and of a referential subact, respectively.

- (78) a. Na ma-kaloru-nya            na manganga...  
 ART REL.SBJ-arrange-3SG.DAT ART steal  
 'Who is engaged in theft,...' (Klammer 1998: 105)
- b. Jàka manganga-ma-na-yna-i            una,...  
 if steal-EMPH-3SG.GEN-3SG-DAT-ITER EMPH.3SG  
 'If he does steal again,...' (Klammer 1998: 105)

A similar case holds for the distinction between nouns and adjectives in Mādi. According to Blackings and Fabb (2003: 106), they can be distinguished on the basis of their combinability with number inflection and determiners. Again, however, there is no difference between the two in terms of functional possibilities: notional adjectives can occur as the head of a referential phrase (as in (79)), and notional nouns as modifiers in a referential phrase (as in (80)):

- (79) āli            rì    pī            ē-tjá            ádzínā  
 short(PL) DEF PL.PRON (3)-VB-arrive yesterday  
 'The short ones arrived yesterday.' (Blackings & Fabb 2003: 106)
- (80) Mādī    ādrúpī    rì    ɔdā    rō    ɬé-nī    kō  
 person brother DEF act REFL that-like NEG(NON-PST)  
 'A person who is a brother won't behave like that.' (Blackings & Fabb 2003: 304)

Further, Blackings and Fabb do not explicitly mention modifiers as a PoS class, but they state that there is a group of manner adverbs that can also be used as a modifier in a referential phrase. An example is *lōsɔ* 'good/well', as in example (81) a, b:

- (81) a. ópí nī    bārā lōsɔ    rì    ɬī  
 Opi PRON child good DEF FOC  
 'Opi is a good child.' (Blackings & Fabb 2003: 106)
- b. ópí ɔ-sɔ    lōsɔ  
 Opi 3-sew good  
 'Opi sewed it well.' (Blackings & Fabb 2003: 506)

With these clarifications we round off the section on parts of speech, turning to dependent clause constructions in the next section.

## 5. Dependent clauses

### 5.1 Dependent clauses in Functional Discourse Grammar

In terms of their functions, DCs may be defined in the same way as PoS. In this case, *complex, clausal* units substitute the *lexically* headed f-units in the overview below (both given in bold):

- |      |   |   |                   |
|------|---|---|-------------------|
|      | T:  | T   |                   |
| (82) | (f <sub>1</sub> ): lex  | (f <sub>1</sub> ): σ  | (f <sub>1</sub> ) |
|      | T:  | T   |                   |
| (83) | (f <sub>1</sub> ): lex  | (f <sub>1</sub> ): (f <sub>2</sub> : lex (f <sub>2</sub> ))<br>(f/e/p: [...]) (f/e/p) | (f <sub>1</sub> ) |
|      | R: T  | T   |                   |
| (84) | (α <sub>1</sub> ): (f <sub>1</sub> : lex (f <sub>2</sub> ))<br>(f/e/p: [...]) (f/e/p) | (α <sub>1</sub> ): σ  | (α <sub>1</sub> ) |
|      | R: T  | T   |                   |
| (85) | (α <sub>1</sub> ): (f <sub>1</sub> : lex (f <sub>1</sub> ))                           | (α <sub>1</sub> ): (f <sub>2</sub> : lex (f <sub>2</sub> ))<br>(f/e/p: [...]) (f/e/p) | (α <sub>1</sub> ) |

Note that the head of the independent ascriptive subact in (82) cannot be substituted by a more complex, clausal unit, since it is lexical, not phrasal. Only f-units that are used as independent ascriptive subacts as a whole may be replaced by complex units, not their heads. The resultant construction is a predicate clause, as in example (86) and its representation in (87):

- (86) To hesitate is to lose.

- (87) T R  
 ( $e_i$ : ( $f_i$ : [ $(f_j$ : lose ( $f_j$ )) ( $x_j$ )] ( $f_i$ )) ( $e_i$ )) ( $e_k$ : ( $f_k$ : [ $(f_i$ : hesitate ( $f_i$ )) ( $x_i$ )] ( $f_i$ )) ( $e_k$ ))

Here ( $e_i$ ) is used as an independent ascriptive subact, *not* as the head of that subact.

Consider now the lexically headed f-units printed in bold in (83)–(85). These can all be substituted by a complex f-, e- or p-unit, as we already showed in examples (12)–(15) in Section 3.3. In (88) and its representation in (89) an example is given of a complex f-unit replacing a lexically headed f-unit that is the head of a representational unit that is used as a referential subact (cf. (84) above), i.e. a complement clause.<sup>13</sup>

- (88) The man regrets that the boy is ill.

- (89) R T  
 ( $e_i$ : ( $f_i$ : [ $(f_j$ : regret<sub>V</sub> ( $f_j$ )) ( $x_j$ : ( $f_k$ : man ( $f_k$ )) ( $x_i$ )) ( $e_j$ : ( $f_m$ : [ $(f_n$ : ill ( $f_m$ )) ( $x_n$ : ( $f_n$ : boy ( $f_n$ )) ( $x_j$ )))] ( $f_i$ )) ( $e_i$ )))] ( $f_i$ )) ( $e_i$ ))

In example (90) and its representation in (91) a complex e-unit replaces the lexically headed f-unit that is a modifier within a referential subact (cf. (85)). This construction is called a relative clause.

- (90) the man who saw the boy

- R T T  
 (91) ( $x_i$ : ( $f_i$ : man<sub>N</sub> ( $f_i$ )) ( $x_j$ : ( $e_i$ : [ $(f_j$ : see<sub>V</sub> ( $f_j$ )) ( $x_j$ : ( $f_k$ : boy<sub>N</sub> ( $f_k$ )) ( $x_j$ )))] ( $e_i$ )) ( $x_i$ ))

In example (92) and its representation in (93) a complex f-unit substitutes an f-unit that is the modifier of a lexical head of an f-unit that is used as an independent ascriptive subact (cf. (83)). This construction is called an adverbial manner clause.

- (92) The man walked out stamping his feet.

- T T  
 (93) ( $e_i$ : ( $f_i$ : [ $(f_j$ : walk<sub>out,V</sub> ( $f_j$ )) ( $f_k$ : [ $(f_l$ : stamp<sub>V</sub> ( $f_l$ )) ( $x_l$ : ( $f_m$ : feet<sub>N</sub> ( $f_m$ )) ( $x_l$ : ( $x_l$ : Poss ( $x_j$ )))] ( $f_k$ )) ( $f_i$ )) ( $x_i$ : ( $f_n$ : man<sub>N</sub> ( $f_n$ )) ( $x_i$ )))] ( $e_i$ ))

Thus, these FDG analyses make clear how DCs can be compared to PoS, in terms of the functional slots that they are used in. Given this similarity, we may expect that, cross-linguistically, DC systems can also be characterized in terms of various degrees of flexibility or rigidity.

For instance, Turkish DCs with a verb form in *-AcAK*<sup>14</sup> are flexible to the extent that they can be used in functions (iii) and (iv), as shown in example (94) a and b:

- (94) a. Orhan-in bir şey yap-ma-yacağ-ı belliydi.  
 Orhan-GEN anything do-NEG-NMLZ-3SG.POSS it.was.obvious  
 'It was obvious that Orhan wouldn't do/wasn't going to do anything.'  
 (Göksel & Kerslake 2005: 423)

- b. Fatma-'nın yarın gör-eceğ-i film  
 Fatma-GEN tomorrow see-NMLZ-3SG.POSS film  
 'the film that Fatma is going to/will be seeing tomorrow' (Göksel & Kerslake 2005: 442)

By contrast, DCs in Krongo with a verb form nominalized with the prefix *t-* are rigid. They can be used only in function (iii). An example is given in (95):

- (95) nóoni àràŋ t-áfàrà kò-niimò kàtí m-íziŋ  
 know I NMLZ-IPFV:cry POSS-mother my GEN-he  
 'I know that my mother is crying about him.' (Reh 1985: 258)

In what follows, we predict a number of possible rigid and flexible DC constructions, in parallel with the various possible types of PoS classes that we predicted in the previous section. Then we classify the DCs of the languages of our sample (Section 5.2), and see to what extent the patterns of PoS and DCs are alike in each language (Section 6).

The possible flexible DCs are represented in (96)–(98); the rigid DCs follow in (99)–(101). The flexible DCs are named in parallel with flexible PoS, except for the first type, which is called 'multifunctional clause', because 'non-verbal clause' is clearly not a suitable term. Notice once more that we must disregard function (i) when looking at DCs, because the head of an independent ascriptive subact is always lexical. In (96)–(101) this slot is marked with an X.

(96)	(i)	(iii)	(iv)	(ii)
	X	Multifunctional clause		
(97)	(i)	(iii)	(iv)	(ii)
	X	Nominal clause		
(98)	(i)	(iii)	(iv)	(ii)
	X	Modifier clause		
(99)	(i)	(iii)	(iv)	(ii)
	X	Complement clause		
(100)	(i)	(iii)	(iv)	(ii)
	X	Relative clause		
(101)	(i)	(iii)	(iv)	(ii)
	X	Adv. manner clause		

## 5.2 Dependent clauses in the sample languages

In this section we categorize our sample languages with respect to their DC system. Before providing the relevant data, however, we must define explicitly which criteria we use to distinguish between flexible and rigid DCs.

We classify as flexible those DC constructions that can be used in two or more functions, while using the same subordinator (i.e. no formal difference between complementizer/relativizer/adverbial subordinator), or the same special marking on the dependent predicate (i.e. no formal difference between nominalizer/participial marker/converbal marker). Notice that the second strategy includes constructions without a marker. In Santali, for instance, nominal clauses are characterized by the absence of the indicative marker *-a*, which is always present on predicates in main clauses.

As with our classification of PoS classes, we do not consider the expression of certain morpho-syntactic categories that are the consequence of using a certain DC construction in a certain function, rather than being inherent to the DC construction itself. In practice, this means that we will not take into account differences between (uses of) DC constructions in terms of the coding of Tense/Aspect/Mood, the usage of case markers and determiners, and the coding of arguments.

As an example of TAM-marking being irrelevant for flexibility/rigidity in DCs, consider once more Santali. As mentioned, its DCs are characterized by the lack of the indicative marker *-a*. Now, when such a DC functions as a relative clause or as a subject complement clause, TAM markers can be present. However, when functioning as an object complement clause, tense markers are disallowed, except when the main predicate is one of direct perception. In such cases we do not consider DCs with TAM-marking to be different from DCs without TAM-marking.

Second, to illustrate the irrelevance of case marking, consider Imbabura Quechua. In this language, a nominal clause takes an accusative case-marker when used as an object complement clause, but not when used as a relative clause. This difference is regarded as a direct reflection of the function of the construction in the main clause, rather than as a property of the DC itself.

The last type of coding that is irrelevant for the definition of flexible DCs is the manner in which arguments are expressed within the DC. Consider Kambara: this language has a nominal clause marked with *pa*, which can be used as a complement clause with co-referential subject, and as an object relative clause. In the former function the subject remains unexpressed in the DC, while in the latter function there is object-gapping.

In (102)–(123) we show the DC systems attested in the languages of our sample. The order in which the languages are presented is the same as in Section 4.2.<sup>15</sup>

(102)	<b>Kambara DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible		Nominal clause		
(103)	<b>Samoa DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	-
	Flexible		Multifunctional clause		
(104)	<b>Santali DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible		Nominal clause		
(105)	<b>Imb. Quechua DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	-	Adv. Manner Cl.
	Flexible		Nominal clause		
(106)	<b>Kayardild DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid		Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible	X	Multifunctional clause		
			Nominal clause		
(107)	<b>Turkish DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible		Nominal clause		
(108)	<b>Ma'di DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	-
	Flexible		Nominal clause		
(109)	<b>Lango DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
(110)	<b>Abun DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
(111)	<b>Basque DCs</b>	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible		Nominal clause		

(112)	Abkhaz DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
(113)	Georgian DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible		Nominal clause		
(114)	Pipil DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
	Flexible		Nominal clause		
(115)	Berbice Dutch DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
			Nominal clause		
(116)	Alamblak DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	-
(117)	Hdi DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
(118)	Tamil DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
(119)	M. Chinese DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	-	-
	Flexible		Modifier clause		
(120)	Garo DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	Adv. Manner Cl.
(121)	Nivkh DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	Relative Cl.	-
(122)	Krongo DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	Complement Cl.	-	-
	Flexible		Modifier clause		
(123)	Tuscarora DCs	(i)	(iii)	(iv)	(ii)
	Rigid	X	-	-	-

## 6. A distributional parallel between Parts of Speech and Dependent Clauses?

### 6.1. Lexical categorization and functional transparency

Earlier research (Hengeveld et al. 2004) has shown that the flexibility versus rigidity of PoS classes in a language has certain repercussions for the morpho-syntax of that language. More specifically, languages with a flexible PoS system need to 'compensate' for the functional ambiguity of their flexible lexemes on the morpho-syntactic level of their grammar, in order to secure functional transparency. In other words, since the lexical category of a flexible item is not sufficient to determine its function in a specific utterance, these languages have to mark the functional-syntactic slot in which the lexeme is used through other means. This can be done by using a fixed word order and/or specific function-indicating elements.

By contrast, in the case of a rigid PoS system, the lexical category of a lexeme does suffice to identify its function, because there is only one function that it is allowed to express.<sup>16</sup> Therefore, there is no need for morpho-syntactic function-marking, at least not in those slots for which a PoS class is available in the language. This does not mean, however, that such function-marking never occurs in languages with a rigid PoS system. There are actually many languages in the sample used by Hengeveld et al. (2004) that have both a rigid PoS system and syntactic function-marking through word-order restrictions. In short, languages with a flexible PoS system need morpho-syntactic function-marking, while languages with a rigid PoS system do not need morpho-syntactic function-marking, at least not in those functions that can be fulfilled lexically.

### 6.2. Hypotheses

Based on the parallel treatment of PoS and DCs in FDG as outlined in Sections 4.1 and 5.1, and the trade-off process involved in establishing functional transparency discussed above, we may hypothesize that the functional possibilities of a language's PoS system will be mirrored by the functional possibilities of its DC constructions (see also Van Lier 2006). Specifically, we expect that a language will use the same strategies to achieve functional transparency when a function is fulfilled by a *clausal* construction, as when it is expressed by a *lexical* item. This means that in languages with a flexible PoS system (and morpho-syntactic function-marking) we expect to find flexibility in the DC system too. Conversely, languages with rigid PoS systems are expected to use rigid DC constructions (at least in those functions that can be fulfilled lexically). Notice, however, that in the latter case we have to reckon with the above-mentioned fact that many languages with rigid PoS systems have morpho-syntactic function-marking, even though they do not need it. When such function-marking is indeed present, this would, at least from the point of view of functional transparency, allow a language with rigid PoS classes to have a flexible DC construction.

A third and final prediction that we make is in fact a non-prediction. It concerns those languages with rigid PoS systems in which two functions cannot be filled lexically or only with members of a small, closed PoS class. In the schemas in Section 4.2 this holds for the languages whose PoS systems are represented in (70)–(77).<sup>17</sup> Since there are no large open PoS classes to express these functions, there is also no basis to predict whether the DCs in those functions will be rigid or flexible. In those cases, we expect to find both patterns, as long as functional transparency is not violated.

### 6.3 Results

The hypotheses are largely supported by our data. First, we find that many languages with one or more flexible PoS class(es) also display flexibility in their DC system. This holds for Kambara, Samoan, Santali, Imbabura Quechua, Kayardild, Turkish, and Ma̍di. There are three languages with a lexical class of flexible modifiers that do not have a corresponding flexible modifier clause construction: Ma̍di,<sup>18</sup> Lango, and Abun.

It is noteworthy that in many cases (the multifunctional clauses in Samoan and Kayardild being the exceptions) the flexible DC construction in a specific language has a somewhat smaller range of use than the corresponding flexible PoS class in that language. More specifically, many flexible DC constructions can be used only in functions (iii) and (iv) but not in function (ii), i.e. they are nominal clauses, while the flexible PoS class in that language *can* be used in function (ii) and possibly also in function (i), i.e. they are non-verbs or contentives. For example, Imbabura Quechua has lexical non-verbs that can be used in functions (iii), (iv) and (ii), whereas its nominal clauses can be used only in functions (iii) and (iv).

Bearing this in mind, we may interpret the finding that the lexical modifier classes in Ma̍di, Lango and Abun do not have flexible clausal equivalents as just another case of a DC construction being less flexible than its lexical counterpart: if a DC construction is ‘one step’ less flexible than a lexical modifier, then this amounts to a fully rigid construction, because there is only one function left. Moreover, we must take into account that all three languages have, apart from their class of flexible modifiers, a class of rigid manner adverbs. This may partly explain the absence of flexible DCs in these languages.

In fact, in all languages of our sample with flexibility in both their PoS system and their DC system, we have attested rigid DC constructions alongside the flexible ones. Notice however, that this finding does not contradict our hypothesis, since we predicted that flexible languages would allow flexible DCs, not that they would disallow rigid ones, since rigid DCs are functionally transparent by definition. A similar argument holds for the finding mentioned above, namely that flexible DCs often have less functional possibilities than flexible PoS. It means that those functions that cannot be expressed with the flexible DC must be expressed with a rigid construction, which is again by definition functionally transparent.

Turning now to the results concerning languages with rigid PoS systems, we find that, as expected, many such languages use only rigid DC constructions, at least in those functions for which a large, open PoS class is available. However, in four languages with fully rigid PoS systems — Basque, Georgian, Pipil, and Berbice Dutch Creole — we find a flexible DC construction, alongside the rigid ones. These languages all have a flexible nominal clause construction, (Basque even has two). We will discuss each of these constructions in turn.

In Basque, DCs with the conjunction *-en* can be used as the head and modifier in a referential phrase. In the former function the construction is normally used for interrogative or subjunctive complements. However, it can also be used as a complement clause with a factive meaning, mainly by speakers of western (mostly Bizkaian) Basque. In this latter function it is combined with a determiner, which ensures functional transparency (Hualde & Ortiz de Urbina 2003: 646).<sup>19</sup> The flexible use of the *-en* construction is illustrated in (124) a and b:

- (124) a. Entzun dut Amaiaren neba hil d-en-a  
 hear AUX Amaia.GEN brother die AUX-CONJ-ART  
 ‘I heard that Amaia’s brother died.’ (Hualde & Ortiz de Urbina 2003: 646)
- b. Pellok ekarri du-en dirua galdu dut  
 Peter.ERG bring AUX-CONJ money.DET lose AUX  
 ‘I lost the money Peter brought.’ (Hualde & Ortiz de Urbina 2003: 764)

When used on a complement clause, *-en* can always be replaced by the complementizer *-ela*, but there is some pragmatic difference: the use of *-en* implies that the statement expressed in the complement is taken by the speaker as a true fact, while the same does not hold for a complement marked with *-ela*.

The second flexible construction in Basque is the so-called *bait*-clause, illustrated in (125a) (as a complement clause) and (125b) (as a relative clause):

- (125) a. Hau da haren abanrailik handiena ez baitu  
 this is this advantage.PART biggest.DET not CONJ.AUX  
 ainitz xahutzen  
 much spend.IPFV  
 ‘That’s the main advantage, that he doesn’t spend much.’ (Hualde & Ortiz de Urbina 2004: 648)
- b. Landibarren badira lau kartier, horiek  
 Landibar.LOC *ba*.are four neighbourhood those(RP)  
 bait-ira Behaunem Dona Martine, Donoztia eta Azkonbegi  
 CONJ-are Behaune Dona Martine, Donoztia and Azkonbegi  
 ‘There are in Landibarre four neighbourhoods, which are Behaune, Dona Martine, Donoztia and Azkonbegi.’ (Hualde & Ortiz de Urbina 2004: 816)

Two points are of interest here. First, as can be seen in (125b), when the *bait*-clause functions as a relative clause, a resumptive pronoun can optionally be used, in order to clarify the function of the construction. More generally, the use of *bait*-clauses for complementation is uncommon, while for relativization it is very common in present day spoken Basque, especially in eastern dialects (Hualde & Ortiz de Urbina 2003: 648, 816).

Georgian has a DC construction marked with the conjunction *rom*, which can also be used as a complement clause and as a relative clause. These uses are illustrated in (126a–b), respectively:

- (126) a. (is) uk've še-v-a-mčn-i-e  
 (that(NOM)) already PREV-I-NV-notice-TS-AOR.INDC  
 rom es xalk-i sando ar ar-i-s  
 SUBORD this people-NOM trustworthy(NOM) not be-PRS-it  
 'I have already noticed that this people is not trustworthy.' (Hewitt 1995: 613)
- b. gušin rom (bečed-I) m-a-čuk-e,  
 yesterday SUBORD ring-NOM me-LV-present-AOR.INDC  
 is bečed-I sad ar-i-s?  
 that(NOM) ring-NOM where be-PRS-it  
 'Where is that ring which you presented to me yesterday?' (Hewitt 1995: 607)

However, as can be seen in (126a), the *rom*-construction can be combined with a correlative element in the main clause when functioning as a complement. This is even obligatory when the complement clause is dependent on a postposition or functions obliquely (i.e. follows a verb that takes instrumental case). The correlative disambiguates the function of the dependent clause in a way similar to the resumptive pronoun in the Basque relative *bait*-clause. Moreover, the examples in (126) illustrate a contrast in terms of the position of the conjunction: very often, though not obligatorily, complement clauses start with *rom*, while in relative clauses *rom* avoids the first position. This is an additional way to differentiate between the two uses of a *rom*-clause.

Pipil normally uses rigid constructions for complementation and relativization: the former are introduced by one of the complementizers *ka(h)* and *ta(y)*, while the latter take a relativizer *te* or *ke*. However, the complementizer *ka(h)* can, 'at times' also introduce a relative clause (Campbell 1985: 128). The two uses of the *ka(h)*-clause are illustrated in (127a–b):

- (127) a. Tesu ki-matikatka ka ne i-siwa:-w se:bru:hah  
 no it-know before that the his-wife-POSS a witch  
 'He didn't know before that his wife is a witch.' (Campbell 1985: 126)
- b. Ni-k-miktih ne mistun ka ki-kwah ne tu:tut  
 I-it-killed the cat that it-ate the bird  
 'I killed the cat that ate the bird.' (Campbell 1985: 129)

The two functions of *ka*-clauses can be differentiated by means of constituent order: complement clauses are postverbal, and relative clauses always come after their head.

In Berbice Dutch Creole finite complement clauses and relative clauses are normally marked with *dati* and *wati*, respectively. Optionally, however, both the complementizer and the relativizer can be omitted. This results in a single flexible zero-marked construction, as illustrated in (128a–b):

- (128) a. Ek glof ka o nin-te musu  
 1SG believe NEG 3SG know-PP V much  
 'I don't believe he knows much.' (Kouwenberg 1994: 242)
- b. Di sem jermatoko eke pan-te ju abot  
 the same woman.child 1SG .tell-PPV 2SG about  
 'The same girl I told you about.' (Kouwenberg 1994: 268)

As in Pipil, potential functional ambiguity is resolved through fixed constituent order: object complements come after the main verb, and relative clauses follow their head.

To sum up, we have attested four languages that combine a completely rigid PoS system with a flexible nominal DC construction. In fact, this finding is not surprising, if we recall that many languages with rigid PoS classes also have morpho-syntactic function marking. Under the condition that function-marking is present, a flexible DC construction is allowed from the perspective of functional transparency. And in fact, this condition holds for all cases discussed above: the *-en* clauses in Basque are functionally disambiguated through the use of the determiner; the *ka(h)* clauses in Pipil and the asyndetic clauses in Berbice Dutch through word order. In the cases of Basque *bait*-clauses and Georgian *rom*-clauses, the ambiguity problem can be solved, as shown, through the use of resumptive pronouns and correlatives, respectively.

Finally, our last prediction, the non-prediction, is also borne out by the data: when a language has no PoS classes to fulfill the two modifier functions, then the DC constructions in those functions can be both flexible and rigid. Eight languages in the sample have the relevant PoS system. Out of these, two use a single, flexible modifier construction: Mandarin Chinese and Krongo. In these languages, functional transparency is achieved through various other means. Mandarin Chinese has fixed modifier-head-order in both referential and ascriptive phrases, in combination with a lexical noun-verb distinction. In Krongo relative clauses agree with their head noun in gender and number. Five other languages, namely Alamlak, Hdi, Tamil, Garo, and Nivkh, use one or more rigid construction(s). In Tuscarora, finally, there are no dependent clauses at all; this language uses independent clauses only.

## 7. Conclusion

This paper has shown how lexical and clausal constructions can be defined in the same way within the theory of Functional Discourse Grammar, in terms of the functional slots they may occupy. These functional possibilities were described and compared for the PoS classes and DC constructions of 23 languages. On the basis of our theoretical framework, combined with earlier research into the influence of lexical and morpho-syntactic categorization on the establishment of functional transparency, we investigated whether and in how far the functionality of PoS classes in languages is related to the functionality of DC constructions.

On the one hand, we found preliminary evidence for such a correlation: many languages with a flexible PoS system have one or more flexible DC constructions, whereas many languages with a rigid PoS system use only rigid DC constructions in those functions for which they have a large, open PoS class. In those functions for which only a small, closed PoS class is available, or no PoS class at all, we find both rigid and flexible DC constructions. On the other hand, our data show that functional transparency can be reached through different strategies within a language system, and that more than one disambiguating strategy may be at work at the same time. This explains the finding that flexible DC constructions often do not cover the same range of functions as flexible PoS classes in the same language, as well as the fact that rigid DCs are attested alongside flexible DCs in languages with a flexible PoS system. Finally, it accounts for the fact that flexible DC constructions are also attested in languages with rigid PoS, as long as functional transparency is preserved.

## Abbreviations

The following is a list of those abbreviations that are not included in the List of Standard Abbreviations of the Leipzig Glossing Rules.

ADVR	=	adverbializer
AOR	=	aorist
CONJ	=	conjunction
EMPH	=	emphatic marker
ITER	=	iterative
LV	=	locative version
NON-PST	=	non-past
NV	=	neutral version
PART	=	partitive
PREV	=	preverb
PRON	=	pronominal
RBL.SBJ	=	subject relativizer
RP	=	resumptive pronoun
SUBORD	=	subordinator

TS	=	thematic suffix
VE	=	ventive

## Notes

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1. This section is partly based on Hengeveld & Wanders (2007).
2. Note that FDG is strictly a theory about grammar, although one that makes use of psycholinguistic evidence in its basic architecture.
3. There are a number of higher units of analysis at the interpersonal level, but these are mostly relevant to larger stretches of discourse, and we do not need to go into those here. One of these higher units is called 'Act', which motivates our usage of the term 'subact' for ascription and reference. Although this higher 'Act' does not play a role in the present paper and therefore the relationship with 'subact' is not obvious here, we use 'subact' in order to ensure compatibility with other work in the FDG framework.
4. Note that this is an innovation with respect to the publications on FDG mentioned earlier. The use of the *f*-variable for the complex property that is the head of (*e*) is similar to Cuvalay-Haak's (1997: 69) '*c*' for the 'situational concept' (Vet 1990: 280), which serves as the description of an event. In Vet's (1990: 280) words: "By applying the predication [the situational concept, KH, EvL] to the time-space region *e*<sub>i</sub> the latter becomes a 'conceptualized time-space region' (see Bartsch 1986, 1989) or 'situation.'" We prefer to think of this unit as a linguistic rather than a conceptual one. By using this variable we arrive at a three-layered organization of event-descriptions ((*e*<sub>1</sub>), (*f*<sub>1</sub>), and (*f*<sub>2</sub>)) as proposed in different forms and for different reasons in Dik (1997), Cuvalay-Haak (1997) and Rijkhoff (2002).
5. There is also the option of *the marriage of the boy*, but that is irrelevant to our argument here, because it still involves a phrase with a lexical rather than a complex head.
6. As explained in Section 3.3, the head-modifier distinction is also relevant at the interpersonal level, but this does not play a role in the definitions of the PoS classes that we are currently interested in.
7. Note that the predicative use of manner adverbs, as in (24), in Dutch is limited to just a few cases.
8. In most cases there is no distinction between adjectives and manner adverbs in Dutch. In other words, there is one class of lexemes that can be used as modifiers in both referential and ascriptive phrases (see the discussion on lexical flexibility further on in this section). However, Dutch also has a, relatively unproductive, process to derive manner adverbs from adjectives, namely with the suffix *-(t)jes*, as in this example.
9. For a recent discussion on the (generative) syntactic and semantic interpretation of bare nominals in Dutch, see De Swart et al. (2005).

10. See Hengeveld (2008) for a discussion of the distinction between reference modification and referent modification in the context of FDG.
11. In two cases, namely Kayardild in (60) and Berbice Dutch in (69), the C is followed by a question mark. This means that the status of the PoS class was not entirely clear from our sources. In Kayardild, the class of adjectives is quite large (about 100 items (Evans 1995: 238), but seems to be nevertheless of a closed nature. In Berbice Dutch, there are only two lexical items that seem to qualify as manner adverbs: (*so*)*so* 'like this, thus' and *gau* 'quickly' (Kouwenberg 1994: 112–113).
12. For a discussion about the theoretical and practical consequences of this approach, see Van Lier 2006, in preparation.
13. Note that for reasons of simplicity we only indicate the relevant subacts in these and following representations.
14. The capital letters indicate which segments of this affix are subject to consonant-vowel harmony.
15. This means that the languages in (102)–(110) are the ones with flexible PoS systems, while the languages in (111)–(123) have rigid PoS systems. This ordering is maintained in order to facilitate the comparison of the PoS tables and DC tables.
16. Strictly speaking, as we saw in Table 2 of Section 4.1, for nouns, adjectives and adverbs there is no one-to-one relationship between lexeme class and syntactic function, because these PoS may also be used as the head of a predicate phrase. However, these PoS do have a single *defining* function.
17. The two relevant 'empty' or 'near-empty' functions are always the two modifier functions.
18. Note that Ma'di also has a flexible class of nominals, which *is* in fact reflected in the dependent clauses system: Ma'di has a flexible nominal clause construction.
19. Functional transparency is further promoted through relatively fixed word order: object complements tend to appear to the right of the main verb, whereas relative clauses mostly precede the head. The latter ordering is 'almost obligatory for many speakers of present-day Basque' (Hualde & Ortiz de Urbina 2003, 452, 765).

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