

WFFG

---

working papers in functional grammar

WFFG no. 20  
March 1987

---

Predicate formation in Functional Grammar  
Casper de Groot  
University of Amsterdam



**Predicate formation in Functional Grammar**

Casper de Groot  
University of Amsterdam

(To appear in *Acta Linguistica Hungarica*.)



## PREDICATE FORMATION IN FUNCTIONAL GRAMMAR

Casper de Groot  
Institute for General Linguistics  
University of Amsterdam

June 1986

### 0. Introduction

In natural languages we often find systematic relations between several classes of predicates (verbs, adjectives and nouns) such as intransitives, transitives, causatives, inchoatives, reflexives etc. This is for instance the case in Hungarian, consider:

- |     |    |           |                |
|-----|----|-----------|----------------|
| (1) | a. | szép      | 'pretty'       |
|     | b. | szépül    | 'get prettier' |
|     | c. | szépit    | 'make pretty'  |
| (2) | a. | mos       | 'wash'         |
|     | b. | mosakodik | 'wash oneself' |
|     | c. | mosat     | 'have wash'    |

An account of the relation between these types of predicates merely in terms of 'stem/root + affix' is, of course, not sufficient, because it does not do justice to relevant properties such as valency, as well as to the relation between the predicates and the states of affairs which they can designate. The first aim of this paper is to demonstrate the relevance of valency and states of affairs in derivational processes. The second aim is to demonstrate that the theory of Functional Grammar (FG) as developed by Dik (1978)<sup>1</sup> offers a formalism which can account for all these properties.

In this paper I shall make use of material and views presented in earlier writings on predicate formation in FG. Although no efforts have been made to give a complete survey of types of predicate formation rules and the effects they can have on their input, the paper can be seen as offering a 'state of the art' description of predicate formation.

The first section presents an outline of the theory of Functional Grammar, followed by some remarks on productivity in section 2, and the place of morphology in FG in section 3. States of affairs, properties of predicates and the semantic functions of their arguments are dealt with in section 4. The last section discusses a number of predicate formation rules relevant to Hungarian.

## 1. Functional Grammar

FG aims at a maximum of practical applicability in the analysis of diverse aspects of language and language use. An attempt is made to reach this goal by (i) maximizing the degree of typological adequacy, while (ii) minimizing the degree of abstractness of linguistic analysis. By degree of abstractness is meant the distance (as measured in terms of rules, operations, or procedures) between the structures postulated for a given language on the basis of the theory, and the actual linguistic expressions of that language which are reconstructed in terms of these structures. Constraints restricting the degree of abstractness are:

- (i) transformations in the sense of structure-changing operations are avoided;
- (ii) empty elements in underlying structure which do not receive expression are avoided;
- (iii) filter devices are disallowed;
- (iv) abstract lexical decomposition is not applied (instead the semantic relations between words are accounted for through meaning definitions).

The overall layout of FG can be indicated globally as follows:

- (i) the **fund**, which consists of a set of **predicates** and a set of **terms** (including those predicates and terms that are derived by formation rules);
- (ii) the **predications**, which are structures created by combining predicates and terms;
- (iii) **expression rules**, which map predications onto linguistic expressions.

(i) The fund contains a **lexicon**, i.e. a list of all predicates, or contentives, of a language. They are called **basic predicates**. The set of basic predicates can be extended with a set of **derived predicates** by means of a system of productive **predicate formation rules**, such as rules of derivation and composition. All other formations of a basic predicate which cannot be considered the result of some productive rule (this also includes non-productive aspects of inflection) are given in the lexicon too (see section 2 for further discussion).

Predicates are expressions designating properties or relations. They are contained in **predicate-frames**, structures which specify their fundamental semantic and syntactic properties, such as (i) the syntactic category of the predicate (Verbal, Nominal, Adjectival), (ii) the number of arguments, (iii) the semantic functions of the arguments (Agent, Goal, Recipient etc.). Consider the following example:

(3)            give<sub>V</sub> (x<sub>1</sub>)<sub>Ag</sub> (x<sub>2</sub>)<sub>Go</sub> (x<sub>3</sub>)<sub>Rec</sub>

The order in which the predicate and the arguments are given has no direct or necessary relation to the linear order in which these constituents will finally be realised. Predicate-frame (3) could just as well be given in another linear form or in a two or three-dimensional form. The representation of predicate-frame (3) is purely a matter of convention.

Basic and derived predicate-frames are together referred to as **nuclear predicate-frames**. All predicate-frames have a **meaning definition**, for instance:

(4)            boy<sub>N</sub> (x<sub>1</sub>)<sub>∅</sub>  
               df  
               child<sub>N</sub> (x<sub>1</sub>)<sub>∅</sub> : male<sub>A</sub> (x<sub>1</sub>)<sub>∅</sub>

Nuclear predicate-frames can be extended by **satellites** (non-arguments). The semantic functions of arguments express the relations between the predicate and the arguments; the semantic functions of satellites express the relation between the **state of affairs** (designated by the predicate-frame) and the satellites. Consider:

(5)            [buy<sub>V</sub> (x<sub>1</sub>)<sub>Ag</sub> (x<sub>2</sub>)<sub>Go</sub>] ACTION (y<sub>1</sub>)<sub>Loc</sub>

The variables indicating the arguments in predicate-frames and satellites can be replaced by inserting **terms**, i.e. the forms underlying referring expressions.<sup>2</sup> If such insertion is applied to all open slots of a given predicate-frame, the result is a (closed) **predication**. Consider:

(6)            [buy<sub>V</sub> (Peter)<sub>Ag</sub> (a new coat)<sub>Go</sub>] (the market)<sub>Loc</sub>

Many grammatical elements, such as those expressing Tense and Aspect distinctions, are introduced by means of operators<sup>3</sup>:

(7)            Past buy<sub>V</sub> (Peter)<sub>Ag</sub> (a new coat)<sub>Go</sub>

(ii) Alongside the semantic functions given in the predications themselves, there are also two other types of functions, syntactic and pragmatic. Functional Grammar recognizes only two **syntactic functions**: Subject and Object. Syntactic functions express the perspective from which a certain state of affairs is presented. Different

syntactic function assignment accounts for the difference in the expression of the same state of affairs in (8)a-b.

- (8) a. Past buy<sub>v</sub> (Peter)<sub>AgSubj</sub> (a new coat)<sub>GoObj</sub>  
 'Peter bought a new coat'
- b. Past buy<sub>v</sub> (Peter)<sub>Ag</sub> (a new coat)<sub>GoSubj</sub>  
 'A new coat was bought by Peter'

In (8)a, the state of affairs is presented from the point of view of the Agent; in (8)b it is presented from the point of view of the Goal. These differences are formally captured by assigning the Subject function to the Agent or the Goal of the underlying predication.

In FG, four **Pragmatic functions** are distinguished. There are two pragmatic functions external to the predication proper, Theme and Tail, and two pragmatic functions internal to it, Topic and Focus. Consider:<sup>4</sup>

- (9)           That new coat, he       bought it       on the market, Peter  
           Theme                    Topic            Topic Focus           Tail  
   [-----Predication-----]

(iii) The expression rules form the last component in the model. The expression rules determine the way in which functional structures are mapped onto the syntactic structures of linguistic expressions. This component takes care of constituent ordering, case marking, voice, copula support, auxiliary elements, agreement etc.

The organization of a Functional Grammar is given in figure 1 below.



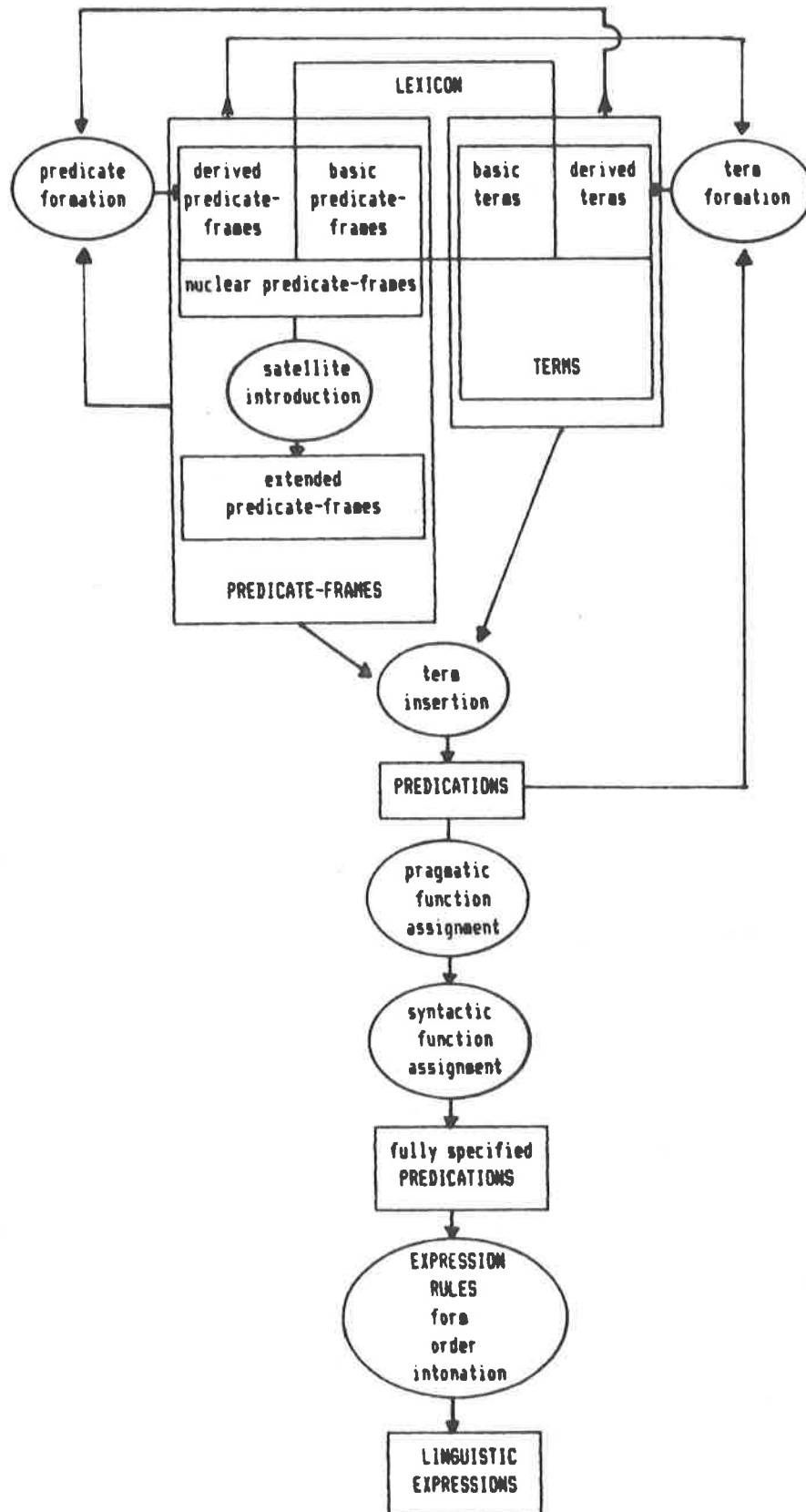


Figure 1. The organization of a Functional Grammar (Dik 1978)

## 2. Productivity, rules and regularities

All rules, such as predicate formation rules and expression rules, are considered to be completely productive, where **productivity** is defined in terms of the ability of a competent speaker to apply the process in question in correctly deriving output expressions which he may never have heard before. Examples of **rules** are for instance the application of the causative formative suffix -tat/-tet in Hungarian, or the past tense suffix -ed in English. In a lexicon of Hungarian we will find entries such as sétál 'walk' and köhög 'cough'. In case of causativization a predicate formation rule will introduce the formative suffix -tat/-tet: sétáltat 'make walk', köhögtet 'make cough'. In a lexicon of English we will find entries such as walk and cough. When the past tense has been applied an expression rule will take care of the application of the past tense suffix -ed to the verbal stem: walked and coughed.

All formations of a basic predicate which cannot be considered the result of some productive rule are given in the lexicon. Consider buy opposed to walk (Dik 1979):

- (10) a. {walk<sub>V</sub>} (x<sub>1</sub>)<sub>Ag</sub>  
 b. {buy<sub>V</sub>, Past bought<sub>V</sub>, Past Part bought<sub>V</sub>} (x<sub>1</sub>)<sub>Ag</sub> (x<sub>2</sub>)<sub>Go</sub>

Patterns such as sing, sang, sung and ring, rang, rung are stored in the lexicon as such (cf.(10)b). Their common patterning constitutes a **regularity** in the lexicon.

## 3. Morphology

In the overall structure of FG, as given in figure 1, there is no mention of a morphological component as such. However, the location of morphology in the model is well defined.

Morphemes can be divided into two categories. The first category consists of an open class of elements, i.e. there is no limit to the number of elements. The second category consists of a closed class of elements, i.e. there **is** a limit to the number of elements. Examples of elements which belong to the open category are: work, walk, train, table, nice, and long. Elements which belong to the closed category are for instance the, of, re-, -ed, and -s. Elements of the open category can be characterized as **lexical elements**, and elements of the closed category as **grammatical elements**. FG reflects this distinction in the following way: lexical elements are contained in the lexicon, grammatical elements (which include

derivational and inflectional affixes) in other components. We can now say that the domain in which morphology is located can be anywhere but the lexicon.<sup>5</sup>

The basic distinction between derivational and inflectional morphology can also be considered to be a theory-internal one, as has been pointed out by Watters (1985). Given the provision that the lexicon does not belong to the domain in which morphological processes apply, we may characterize morphology in FG with a slight modification after Watters (1985) in the following fashion:

- (11) (i) Derivational morphology is what is relevant to the **predicate formation rules**  
 (ii) Inflectional morphology is what is relevant to the **expression rules**

FG provides a natural, theory-internal distinction between derivational and inflectional morphology. Derivational morphology is that morphology found in the predicate formation component and inflectional morphology is that morphology found in the expression rules. Note that predicate formation rules and expression rules do not necessarily involve any morphology. This is for instance the case in the formation of certain derived intransitive verbs in English (e.g. intransitive write 'this pen writes well' from transitive write), or in the expression of the order of constituents. Thus, it is incorrect to say that predicate formation and expression rules are synonyms of respectively derivational and inflectional morphology.

The following figure indicates the location of morphology in FG:

Morphology	open class of elements	closed class of elements	
		derivational elements	inflectional elements
Functional Grammar	lexicon	predicate formation rules	expression rules

Figure 2. FG and morphology

As such, morphology within FG is diffuse, not being localized in any one part of the theory. It should be noted that the two types of morphology are distinct in terms of their ordering within complex words. This ordering can be specified by the following schema, which by and large holds across languages (Watters 1985, Bybee 1985):

- (12) [inflection [derivation [stem/root] derivation] inflection]

#### 4. Predicates

##### 4.1. States of affairs

Nuclear predications consist of predicates and terms. Terms refer to entities in some world, and predicates designate properties of, or relations between such entities. A nuclear predication as a whole designates a set of states of affairs. The term state of affairs is used in the broad sense of 'conception of something which can be the case in some world'.

States of affairs can be divided into different types, according to the values which they can have for a number of distinguishing parameters. These parameters and their different values together define a semantic cross-classification of states of affairs.<sup>6</sup>

The most important semantic parameters defining the typology of states of affairs are given in (13); one test-frame is given for each of the parameters in (14) through (17):

- |      |                  |       |
|------|------------------|-------|
| (13) | +/- Dynamic      | [dyn] |
|      | +/- Momentaneous | [mom] |
|      | +/- Control      | [con] |
|      | +/- Telic        | [tel] |

##### (14) Dynamic

A [-dyn] state of affairs is a state of affairs which does not involve any change. One criterion for distinguishing between [+dyn] and [-dyn] states of affairs is that the latter do, but the former do not combine with satellites of Speed:

- |    |               |        |
|----|---------------|--------|
| a. | walk slowly   | [+dyn] |
| b. | *stand slowly | [-dyn] |

##### (15) Momentaneous

A test which distinguishes between [+mom] and [-mom] states of affairs is the so-called 'almost-test'. Consider the following two sentences:

- |    |                                |        |
|----|--------------------------------|--------|
| a. | John almost reached the summit | [+mom] |
| b. | John almost read a book        | [-mom] |

The first sentence tells us that John did not reach the summit. The second example is ambiguous in the following fashion:

- (i) John intended to read a book but changed his mind and did nothing at all;
- (ii) John began to read a book and he almost but not quite finished reading it.

## (16) Control

A test which distinguishes between [+con] and [-con] states of affairs is based upon the consideration that [+con] states of affairs can occur in the true imperative, whereas the other type cannot. For instance:

- a. go! [+con]
- b. \*know! [-con]

## (17) Telic

Telic states of affairs can be extended with the 'within an hour' phrase, atelic states of affairs cannot<sup>7</sup>. Consider:

- a. reach x within an hour [+tel]
- b. \*work within an hour [-tel]

It seems, however, that not all combinations of parameters within one state of affairs are possible. SoAs cannot be both non-dynamic and telic, or both momentary and atelic. It seems that some parameters entail others (cf. Vester 1983, De Groot 1983). Consider:

- (18) a. [-dyn] > [-tel]
- b. [+mom] > [+tel]

## 4.2. Nuclear semantic functions

### 4.2.1 First argument

The structure of predicate-frames has no direct relevance for the final positions the constituents take in the syntactic structures of actual linguistic expressions. There is, however, another sort of ordering, which is hierarchical rather than linear. It concerns the intrinsic relationship among the semantic functions, such that some semantic functions are more 'central' to the predicate than others. If only one argument is involved in an Action state of affairs ([+con],[+dyn]), that argument will necessarily designate the entity controlling the Action. The arguments having this property are assigned the semantic function of **Agent**. If only one argument is involved in a dynamic non-controlled state of affairs, a Process, that argument will designate either the entity that is primarily involved in a Process, or the non-controlling entity instigating a Process. The arguments having these properties are assigned the semantic functions of **Processed** and **Force** respectively. As for non-dynamic states of affairs, the following two semantic functions are recognized: **Positioner** ([+con],[-dyn]) and **Zero** ([-con],[-dyn]).

Thus any one-place predicate has an argument with either Agent, Processed, Force, Positioner, or Zero function. Because we often want to be able to say that a certain grammatical rule applies to any first argument, no matter what its

semantic function is, the notion **first argument** has been introduced (De Groot 1981)<sup>9</sup>. The first argument of a predication is defined as the most central (possibly the only) argument of that predication.

#### 4.2.2 Non-first arguments

Apart from the semantic functions of first arguments, at least the following further semantic functions must be distinguished as potentially relevant for nuclear predicate-frames:

- (19) Goal (Patient): the entity affected or effected by the operation of some Controller (Agent or Positioner) or some Force.  
 Recipient: the entity to which something is transferred.  
 Direction: the entity towards which something moves/is moved.  
 Source: the entity from which something moves/is moved.  
 Location: the place where some entity is located.

The following constructions exemplify these functions, and some of their possible combinations:

- (20) Peter<sub>Ag</sub> gave the book<sub>Go</sub> to Mary<sub>Rec</sub>  
 (21) Mary<sub>Ag</sub> sent the boy<sub>Go</sub> to the office<sub>Dir</sub>  
 (22) Thomas<sub>Ag</sub> read the newspaper<sub>Go</sub>  
 (23) Ann<sub>Ag</sub> returned from England<sub>So</sub>  
 (24) John<sub>Pos</sub> lives in London<sub>Loc</sub>  
 (25) Vera<sub>Proc</sub> received a letter<sub>Go</sub> from her aunt<sub>So</sub>

In contrast to what is possible with respect to first arguments, it is not possible to generalize over a group of semantic functions as 'second argument' or as 'third argument'. This is because, apart from the functions of Goal and Recipient, all functions given under (19) also occur as semantic functions of satellites. For instance:

- (26) Thomas read the newspaper (in the garden<sub>Loc</sub>)  
 (27) Jane prepared a supper (from left-overs<sub>So</sub>)

In other words, there is no defined group of semantic functions which exclusively relates to second arguments or third arguments.

Goal and Recipient function apply only to arguments and not to satellites. Prototypically, Goal relates to the second argument and Recipient to the third argument of a predicate. It seems that the second argument in three-place predicates always has the function of Goal. Consider the following constructions:

- (28) a. John spread the butter on the bread  
 b. John spread the bread with butter  
 (29) a. Mary taught the children to sing  
 b. Mary taught geography to the children

It has been argued that verbs such as spread (Dik 1980) and teach (Workgroup 1981) must be assumed to have two different predicate-frames according as they occur in constructions corresponding to (28)a and (28)b, or (29)a and (29)b. Consider:

- (30) a. spread<sub>V</sub> (John)<sub>Ag</sub> (the butter)<sub>Go</sub> (the bread)<sub>Dir</sub>  
 b. spread<sub>V</sub> (John)<sub>Ag</sub> (the bread)<sub>Go</sub> (the butter)<sub>Instr</sub>  
 (31) a. teach<sub>V</sub> (Mary)<sub>Ag</sub> (the children)<sub>Go</sub> (to sing)<sub>Compl</sub>  
 b. teach<sub>V</sub> (Mary)<sub>Ag</sub> (geography)<sub>Go</sub> (the children)<sub>Rec</sub>

We will return to these patterns in section 5.4.

#### 4.3. The relation between parameters and predicates

Predicate-frames designate sets of states of affairs. Which sets are designated is, however, partly determined by the predicates themselves. For instance, a predicate such as walk will only occur in dynamic states of affairs and not in non-dynamic states of affairs. In this light De Groot (1985) has argued that predicates can be characterized in terms of the parameters determining the typology of states of affairs. I shall refer to the specifications predicates have for the states of affairs which they can designate as 'features of predicates'. Thus, we can say that the predicate walk has a feature [+dyn]. A distinction can be made between two types of features: (i) inherent features, [dyn] and [mom], and (ii) contingent features, [con] and [tel].

Predicates only occur either in dynamic states of affairs or in non-dynamic states of affairs, or either in momentary states of affairs or in non-momentary states of affairs. We will therefore say that [dyn] and [mom] are inherent features of predicates. Consider:

- (32) a. Peter is running                    [+dyn]  
       b. Mary is standing                [-dyn]
- (33) a. Louis has hit Charles            [+mom]  
       b. Joan is reading a book        [-mom]

Contrary to what is said about predicates and the features [dyn] and [mom], there are predicates which can occur in both controlled and non-controlled states of affairs, or in both telic and atelic states of affairs. For instance:

- (34) a. Mary stands in the corner            [+con]  
       b. the cupboard stands in the corner    [-con]
- (35) a. John read the book                    [+tel]  
       b. John is reading                      [-tel]

The contingent features [con] and [tel] cannot be associated with lexical properties of the predicates (whereas inherent features can), but they can be associated with arguments or satellites of predicates. For instance, the feature [con] always affects the first argument of a predicate and not any other. We can say that [con] binds the first argument. Consider (36)a, where John is the controller of an Action, and (36)b where Mary is a 'non-controller' in a Process:

- (36) a. give<sub>v</sub> (John)<sub>Ag</sub> (the book)<sub>Go</sub> (Mary)<sub>Rec</sub>            [+con]  
       b. receive<sub>v</sub> (Mary)<sub>Proc</sub> (the book)<sub>Go</sub> (John)<sub>So</sub>        [-con]

Telicity, which is sometimes also described as 'goal-orientedness', can be associated with those arguments or satellites of predicates which set the terminal point in the state of affairs. In general, telicity binds the affected argument of a predicate or the Directional argument/satellite in a predication. Consider the following examples, where the underlined phrases define the terminal point:

- (37) a. John read the newspaper<sub>Go</sub>  
       b. Mary walks to the station<sub>Dir</sub>

Note, however, that not all predicates are compatible with both [+con] and [-con] or [+tel] and [-tel] states of affairs. Consider:

- (38) a. exist                    [-con] / \* [+con]  
       b. reach                    [+tel] / \* [-tel]



In these cases we may also say that [con] and [tel] are inherent features. There remains the difference concerning the relation between the features and the predicate-frames: [dyn] and [mom] relate to lexical properties of predicates, [con] and [tel] relate to participants or entities involved in the state of affairs.

This leads to two constraints on the relation between the parameters defining the typology of states of affairs and certain properties of predicates:

- (39) Predicate-frames cannot be specified for both (opposite) values of inherent features.
- (40) Predicate-frames cannot be specified for features which bind different entities.

In relevant cases, I shall use the following notational convention for indicating the relation between features and predicate-frames:

- (41)            [+dyn], [-mom] read<sub>v</sub>    ([+con] x<sub>1</sub>)<sub>Ag</sub>    ([±tel] x<sub>2</sub>)<sub>Go</sub>

## 5. Predicate formation

### 5.1. Introduction

In section 1 a distinction was made between basic and derived predicates. The lexicon represents the stock of basic predicates which language users must know in order to be able to use them, while the predicate formation component reflects what they may form by themselves. Thus, derived predicates are those predicates which can be formed by means of some synchronically productive rule. All predicates, whether basic or derived, are contained in predicate-frames which specify their semantic properties. The input of a predicate formation rule can consist of basic and derived predicate-frames. The output predicate-frames of a predicate formation rule are necessarily derived. Predicate formation can schematically be represented as follows:

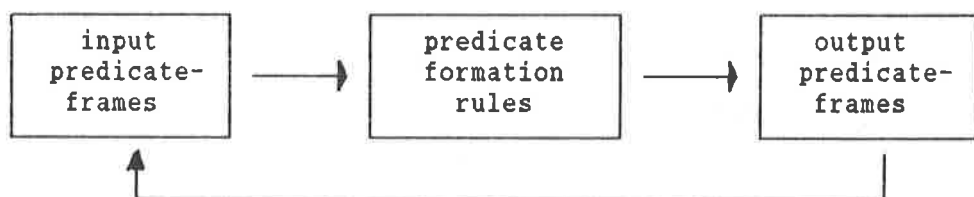


Figure 3. Predicate formation

Differences between the input and the output of predicate formation rules can be given in two different ways. This can be done by describing the differences between the input and output predicate-frames in terms of

- (i) valency, semantic functions and categories, and
- (ii) the features [dyn], [mom], [con], and [tel].

Dik (1980) has argued that predicate formation rules may have different sorts of effects on the input predicate-frame. The most important effects are given in (42):

- (42) (i) Effects on the valency of the predicate
  - (a) valency extension
  - (b) valency reduction
- (ii) Other effects on the input predicate-frame
  - (c) semantic function shift of the arguments of the predicate
  - (d) semantic modification of predicate
  - (e) change in the syntactic category of the predicate

Given the theory concerning the relation between predicates and features of SoAs (see section 4.3. above) we can postulate the following types of differences between input and output predicates:

- (43) (a) opposite values of inherent features
- (b) contingent features bind different entities

In the following sections I shall give examples of several types of predicate formation rules relevant to Hungarian. Since it is the function of these examples to illustrate some aspects of predicate formation, I shall not discuss these predicate formation rules with respect to productivity and special properties of the input and output predicate-frames. I shall confine myself to showing that some fundamental properties of predicate formation can easily be accounted for within the formalism offered in FG.

The predicate-frames in the examples will not be fully specified for semantic, syntactic and pragmatic distinctions. The Hungarian examples are meant merely to illustrate the valency of the predicates, the derivational markers, and the expression of the semantic functions.

## 5.2. Valency extension

A classic example of a derived construction involving valency extension is causative predicate formation. Many languages have a predicate formation rule which derives a causative predicate from a non-causative predicate.<sup>9</sup> In general such a rule can be formulated in the following way:

- (44)           input:        pred<sub>V</sub> (x<sub>1</sub>) (x<sub>2</sub>) ... (x<sub>n</sub>)  
                  output:       pred<sub>V-E</sub> (x<sub>0</sub>)<sub>Causer</sub> (x<sub>1</sub>)<sub>Causee</sub> (x<sub>2</sub>) ... (x<sub>n</sub>)

The effect of this rule is that (i) an extra argument (x<sub>0</sub>) with the function of Causer is added to the input predicate-frame, (ii) the first argument of the input predicate-frame gets the function of Causee in the output predicate-frame, and (iii) an extension marker E is added to the input predicate to signal the causative status of the output predicate.

In a great many languages, the extension marker E is an affix. This is for instance the case in Hungarian. Consider the following examples:

- (45) a.       Mari kimos-t-a       a ruhák-at  
               Mary wash-past-3s the clothes-acc  
               'Mary washed the clothes'  
       b.       Mari-val kimos-at-t-am       a ruhák-at  
               Mary-instr wash-caus-past-1s the clothes-acc  
               'I had Mary wash the clothes'

Other examples are: épít 'build' - építtet 'have build', sétál 'walk' - sétáltat 'take for a walk', olvas 'read' - olvastat 'have read', tart 'hold' - tartat 'have hold', ül 'sit' - ültet 'have sit down'.

The following predicate formation rule by and large accounts for causative formation in Hungarian:<sup>10</sup>

- (46)           CAUSATIVE PREDICATE FORMATION IN HUNGARIAN  
                  input:        pred<sub>V</sub> ([+con] x<sub>1</sub>) ... (x<sub>n</sub>)  
                  output:       pred-E<sub>V</sub> ([+con] x<sub>0</sub>)<sub>AgCauser</sub> (x<sub>1</sub>)<sub>Causee</sub> ... (x<sub>n</sub>)  
                  E = -(t)at/- (t)et  
                  meaning:    'x<sub>0</sub> brings it about that the state of affairs  
                               designated by the input predicate-frame takes place'

Note that this rule accounts, inter alia, for the introduction of the causative formative suffix and the extra argument. It also accounts for there being different

controllers of the state of affairs designated by the input and output predicate-frames. Compare (47)a and (47)b, where szándékosan 'intentionally' depends on the will of Mari in (47)a, and on the will of Péter in (47)b:

- (47) a. Mari szándékosan kimos-t-a a ruhák-at  
 Mary intentionally wash-past-3s the clothes-acc  
 'Mary intentionally washed the clothes'
- b. Péter szándékosan kimos-at-t-a a ruhák-at Mari-val  
 Peter intentionally wash-caus-past-3s the clothes-acc Mary-instr  
 'Peter intentionally had Mary wash the clothes'

### 5.3. Valency reduction

By valency reduction we understand an operation that takes an n-place predicate as input and gives as output the n-place predicate minus one argument<sup>11</sup>. For instance (48) and (49):

- (48) FIRST ARGUMENT REDUCTION
- input:  $\text{pred}_V (x_1) (x_2) \dots (x_n)$
- output:  $\text{pred}_{V-R} (x_2) \dots (x_n)$

- (49) SECOND ARGUMENT REDUCTION
- input:  $\text{pred}_V (x_1) (x_2) \dots (x_n)$
- output:  $\text{pred}_{V-R} (x_1) \dots (x_n)$

An example of a predicate formation rule that involves the reduction of the first argument of input predicate-frames is the formation of a class of process predicates in Hungarian. Consider the following two examples:

- (50) a. János zárja az ajtó-t  
 John close the door-acc  
 'John closes the door'
- b. az ajtó zár-ódik (\* János által)  
 the door close-R John by  
 'the door closes'

Other examples of this pair of predicates are: rak 'put' - rakódik 'be deposited', csinál 'make' - csinálódik 'be done', pácol 'pickle' - pácolódik 'be in the process of pickling', ír 'write' - íródik 'be written', and elad 'sell' - eladódik

'be sold'. The following predicate formation rule may account for the relation between these pairs of verbs:

- (51) INTRANSITIVE PREDICATE FORMATION IN HUNGARIAN  
input:  $\text{pred}_V ([+con] x_1)_{Ag} ([\pm tel] x_2)_{Go}$   
output:  $\text{pred-R}_V ([-con], [\pm tel] x_2)_{Proc}$   
 $R = \text{-ódik/-ődik}$   
meaning: 'the predicate  $\text{pred}_V$  is relevant only to  $(x_2)$ '

The formation of verbal reflexives and reciprocals in Hungarian constitutes an example of second argument reduction. Consider the following examples:

- (52) a. a borbély borotválja Feri-t  
the barber shave Feri-acc  
'The barber shaves Feri'  
b. Feri borotvál-kozik (\* magá-t)  
Feri shave-R himself-acc  
'Feri shaves himself'

A predicate formation rule that derives verbal reflexives/reciprocal from transitive predicates in Hungarian may have the following form (cf. Dik 1983):

- (53) REFLEXIVE/RECIPROCAL PREDICATE FORMATION IN HUNGARIAN  
input:  $\text{pred}_V ([+con] x_1)_{Ag} ([\pm tel] x_2)_{Go}$   
output:  $\text{pred-R}_V ([+con], [\pm tel] x_1)_{Ag}$   
 $R = \text{-kozik/-kezik/-közik}$   
meaning: 'the relation expressed by  $\text{pred}_V$  applies to  $x_1$ '  
condition: input predicate must be a predicate which can take an animate Goal.

Rule (53) may also account for the relation between the following pairs of predicates: törül 'dry' - törülközik 'dry oneself', beírat 'have something listed' - beíratkozik 'enrol', bemutat 'introduce' - bemutatkozik 'introduce oneself', elígér 'promise' - elígérkezik 'engage oneself', and ölel 'embrace' - ölelkezik 'embrace each other'.

Apart from operations such as valency reduction, rules (51) and (53) also account for the following difference between the one-place output predicates: the

first argument in an output predicate-frame of rule (51) will be a non-controller in a Process state of affairs, whereas the first argument of an output predicate-frame of rule (53) will be the controller in an Action state of affairs.

The two types of output predicate-frame have in common the property that they can be used in telic states of affairs without any need for a satellite to set the terminal point. With respect to this property, the output predicate-frames differ from other one-place predicates such as sétál 'walk' and hull 'fall', in that the latter predicates need a satellite to set the terminal point in a telic state of affairs. Consider the following sentences:

- (54) János megborotválkozott  
'John shaved himself'
- (55) az ajtó bezáródott  
'the door closed'
- (56) Mari sétált (a pályaudvarra)  
'Mary walked' ('to the station')
- (57) a levél hullott (a földre)  
'the leaf fell' ('to the ground')

Thus, the contingent features and their different values together define a semantic cross-classification of one-place predicates in Hungarian as given in the following figure:<sup>12</sup>

	+con	-con
+tel	borotválkozik (54)	záródik (55)
-tel	sétál (56)	hull (57)

Figure 4. A typology of one-place predicates in Hungarian

#### 5.4. Semantic function shift

In the application of the intransitive predicate formation rule in Hungarian (cf. (51)), we have seen that the argument with the semantic function of Goal in the input predicate-frame becomes the argument with the semantic function of Processed in the output predicate-frame. We refer to this shift as 'semantic function shift'. Many predicate formation rules have several effects on input predicate-frames, for instance a change in valency number together with semantic function shift. Example

(58) illustrates a semantic function shift between the second and third arguments of a predicate. There is no valency extension or valency reduction involved.

Many languages possess oppositions corresponding to the following pair of expressions:<sup>13</sup>

- (58) a. János vaj-at ken a kenyér-re  
 John butter-acc spread the bread-subl  
 'John spreads butter on the bread'
- b. János vaj-jal keni a kenyér-et  
 John butter-instr spread the bread-acc  
 'John spreads the bread with butter'

Unlike similar examples from other languages, construction (58)b in Hungarian does not necessarily have an element of 'completeness'. Both constructions, (58)a and (58)b, can have an holistic reading. This is the case when perfective aspect has been applied (see De Groot 1984 for further discussion). The difference in the expressions (58)a and (58)b in Hungarian rather is the choice of the entity affected/effected by the predicate. Based on Dik's (1980) proposal for Dutch, the following formation rule may account for the relation between constructions such as (58)a and (58)b:

- (59) VALENCY REARRANGEMENT PREDICATE FORMATION IN HUNGARIAN
- input:  $\text{pred}_V (x_1)_{\text{Ag}} ([\pm\text{tel}] x_2)_{\text{Go}} (x_3)_{\text{Loc/Dir}}$
- output:  $\text{pred}_V (x_1)_{\text{Ag}} ([\pm\text{tel}] x_3)_{\text{Go}} (x_2)_{\text{Instr}}$
- meaning: 'the Action expressed by  $\text{pred}_V$  affects  $x_3$ ,  
 by using  $x_2$ '

Note the shift of the input Goal to Instrument alongside the shift of the input Location/Direction to Goal. Note also that the feature [tel] binds different entities in the input and output predicate-frames. This accounts for the application of different preverbs and different holistic interpretations with perfective aspect. Consider:

- (60) a. János rá-keni a vaj-at a kenyér-re  
 John pf-spread the butter-acc the bread-subl  
 'John will spread (all) the butter on the bread'
- b. János a vaj-jal meg-keni a kenyér-et  
 John the butter-instr pf-spread the bread-acc  
 'John will spread (all the slices of) the bread with the butter'

We may therefore conclude that an account of the relation between the Hungarian constructions under discussion can best be given in terms of telicity binding different entities.

### 5.5. Categorical change of input predicate

In languages across the world the following triplet of expressions often occurs:

- (61) a. be happy (State)  
 b. get happy (Process)  
 c. make happy (Action)

In most cases the adjective can be considered the basic form from which the inchoative/pseudo passive and transitive/causative form can be derived. The rules for doing this can in general be formulated in the following way:<sup>14</sup>

- (62) input:  $\text{pred}_A (x_1) \emptyset$   
 output 1:  $\text{pred}_{V-D} (x_1)_{\text{Proc}}$   
 output 2:  $\text{pred}_{V-D} (x_2)_{\text{Ag}} (x_1)_{\text{Go}}$

This pattern is also found in Hungarian. Consider the following sentences:

- (63) a. Mari szép  
 Mary pretty  
 'Mary is pretty'  
 b. Mari szép-ül- $\emptyset$   
 Mary pretty-inch-3s  
 'Mary is getting prettier'  
 c. Mari szép-ít-i magá-t  
 Mary pretty-caus-3s herself-acc  
 'Mary beautifies herself'

Examples of other such triplets are: rövid 'short' - rövidül 'shorten' - rövidít 'shorten', szabad 'free' - szabadul 'be freed' - szabadít 'liberate', vak 'blind' - vakul 'go blind' - vakít 'put somebody's eyes out', mély 'deep' - mélyül 'deepen' - mélyít 'deepen', kék 'blue' - kékül 'become blue' - kékít 'make blue'. The following predicate formation rules may account for the relation between these predicates:



## (64) DEADJECTIVAL PREDICATE FORMATION IN HUNGARIAN

input: [-dyn] pred<sub>A</sub> ([-con] x<sub>1</sub>)<sub>∅</sub>output 1: [+dyn] pred-D<sub>V</sub> ([-con], [±tel] x<sub>1</sub>)<sub>Proc</sub>D = -ul/-ülmeaning: 'the property expressed by pred<sub>A</sub> is presented as coming about through a process'output 2: [+dyn] pred-D<sub>V</sub> ([+con] x<sub>2</sub>)<sub>Ag</sub> ([±tel] x<sub>1</sub>)<sub>Go</sub>D = -ítmeaning: 'x<sub>2</sub> brings it about that the property expressed by pred<sub>A</sub> applies to x<sub>1</sub>'

The effect of this rule is that (i) the categorial status of the output predicates is Verb, (ii) the inherent feature of those predicates is [+dyn], (iii) one of the arguments is bound by the feature [tel], and (iv) the marker -D is added to the input predicate to signal the deadjectival status of the output predicate.

6. Conclusions

In this paper it has been shown that Functional Grammar offers a framework that can account for many morphological and semantic aspects of predicate formation.

(i) Distinctions between morphological categories can be considered to be theory-internal. We may summarize this in the following way: 'roots/stems' are listed in the lexicon, derivational morphemes in the predicate formation component, and inflectional morphemes in the expression rules component.

(ii) Given the formalism of predicate-frames as defined in FG (category, valency, semantic functions of the arguments, and specifications for the sets of states of affairs they designate), the model can account for a number of predicate formation rules in terms of:

- (a) change of category
- (b) change in valency
- (c) semantic function shift
- (d) different distribution of features

(iii) Predicate formation as described above does not require an extension of the theory: predicate formation rules make use of an available formalism. The rules proposed for Hungarian are not 'ad hoc' rules, because basically the same rules can be formulated for many other languages. Moreover, the model can account for several aspects of different types of predicate formation within a language in a unifying way. As an example I mention the role semantic function shift and the assignment of the feature [tel] play in the derivation of one-place and three-place predicates.

### Notes

1. And further developed in Dik (1980), Dik ed. (1983, 1985), Hoekstra et al. eds. (1981), Bolkestein et al. (1981) and Bolkestein et al. eds. (1985a, 1985b).
2. Two types of terms are distinguished: (i) basic terms, expressions which can only function as terms and are given as such in the lexicon (e.g. personal pronouns, proper nouns, question words) and (ii) derived terms, which can be formed by the following general schema:

$$(i) \quad (\Omega x_1 : \Phi_1(x_1) : \Phi_2(x_1) : \dots : \Phi_n(x_1))$$

Here  $x_1$  is the term variable symbolizing the intended referent of the term; the symbol  $\Omega$  indicates one or more **term operators** (operators for definiteness, number etc.); each  $\Phi(x_1)$  indicates some 'open predication in  $x_1$ ', that is, a predicate-frame all of whose argument positions have been bound except for  $x_1$ . Each open predication in  $x_1$  can be regarded as a **restrictor** specifying some property which  $x_1$  must have in order to qualify as a potential referent of the term. Restrictors are stacked onto each other through the relation indicated by ':' ('such that').

3. Operators are applied at several levels of the predications. A distinction is made between **predication operators** (e.g. illocution), **predicate operators** (e.g. tense, aspect, mood) and **term operators** (e.g. definiteness and number). Operators typically belong to subsystems with a limited number of 'values' from which a choice can be made. They reflect what is more traditionally known as the grammatical, morpho-syntactic, or morpho-semantic 'categories' relevant to a language.
4. The **Theme** specifies the universe of discourse with respect to which the subsequent predication is presented as relevant; the **Tail** presents, as an 'afterthought' to the predication, information meant to clarify or modify it. The **Topic**, one of the two pragmatic functions internal to the predication proper, presents the entity/entities 'about' which the predication predicates something in a given setting ('he' and 'it' in (9)). The other function, **Focus**, presents what is relatively the most important or salient information in a given setting ('on the market' in (9)).

5. One example of morphology in the lexicon may be the following. Regularities in the lexicon will usually go unnoticed, but may occasionally be 'abstracted' from the relevant forms by the speaker, and then lead to incidental innovations of the bring - brang - brung type (cf. Dik in prep. ch.10).
6. For discussion and other references see Brigden (1984), Dik (1978), De Groot (1983, 1985), Vester (1983), and Vet (1980).
7. I interpret the notion Telicity in the sense of Comrie (1976) in the following way: if a state of affairs has built into it a terminal point, the state of affairs has the feature Telic.
8. The notion of First argument is not the same as the notion of External argument (Williams 1981) since FG does not recognize 'VP'.
9. See for instance Dik (1980:Ch.3), Junger (1985a), Van Schaaik (1985), and Vet (1985).
10. See Hetzron (1976) for a discussion of semantic properties of input and output predicates, constraints on the Causee, and case assignment.
11. See Mackenzie (1985a, 1985b) for argument reduction in nominalizations, and Kahrel (1985) for an alternative 'step by step' treatment of derived intransitives.
12. The typology of one-place predicates can be made more precise if the inherent features [dyn] and [mom] are also taken into consideration.
13. See for instance: Anderson (1971), Comrie (1985), Dik (1980), Hopper & Thompson (1980), and Moravcsik (1978). For a discussion of this type of predicate within FG: Bolkestein (1983, 1985), Dik (1980:ch.2), De Groot (1984).
14. The relation between the three constructions does not necessarily have to be the one presented here. There may also be an ordering in the formation rules, for instance:
  - I. State ---> Process
  - II. Process ---> Action

## References

- ANDERSON, Stephen R.  
 1971 'On the role of deep structure in semantic interpretation'. **Foundations of Language** 7, 378-396.  
 1982 'Where is morphology?' **Linguistic Inquiry** 13, 571-612.
- BOLKESTEIN, A. Machtelt  
 1983 'The role of discourse in syntax: evidence from the Latin Nominativus cum Infinitivo'. K. Ehlich & H.C. van Riemsdijk (eds.) **Connectedness in Sentence, Discourse and Text**, 111-140. TSSL-4. Tilburg: Dept of Language and Literature, Tilburg University.  
 1985 'Discourse and Case-Marking: Three-place predicates in Latin'. Chr. Touratier (ed.) **Syntax et Latin**, 191-225. Aix en Provence: Université de Provence. 1985.

- BOLKESTEIN, A.Machtelt, Henk A.Combé, Simon C.Dik, Casper de Groot, Jadranka Gvozdanovic, Albert Rijksbaron & Co Vet  
 1981 **Predication and Expression in Functional Grammar**. London & New York: Academic Press.
- BOLKESTEIN, A.Machtelt, Casper de GROOT & J.Lachlan MACKENZIE eds.  
 1985a **Syntax and Pragmatics in Functional Grammar**. Functional Grammar Series 1. Dordrecht: Foris.  
 1985b **Predicates and Terms in Functional Grammar**. Functional Grammar Series 2. Dordrecht: Foris.
- BRIGDEN, Nigel  
 1984 'Towards a Functional Grammar of Aspect in Finnish'. In: De Groot & Tommola eds. (1984), 179-198.
- BYBEE, Joan L.  
 1985 **Morphology**. Typological Studies in Language 9. Amsterdam: Benjamins.
- COMRIE, Bernard  
 1976 **Aspect**. Cambridge: Cambridge University Press.  
 1985 'Causative verb formation and other verb-deriving morphology'. In: Shopen ed. (1985), 309-348.
- DIK, Simon C.  
 1978 **Functional Grammar**. North-Holland Linguistic Series 37. Amsterdam: North-Holland. (Third printing, 1981, Dordrecht: Foris).  
 1979 'Funktionale Morfologie' T. Hoekstra & H. van der Hulst eds. **Morfologie in Nederland**, 72-100. Glot-special, Leiden.  
 1980 **Studies in Functional Grammar**. London & New York: Academic Press.  
 1981 'Over de behandeling van niet-productieve regelmatigheden'. **Forum der Letteren** 22, 29-50.  
 1983 'On the status of verbal reflexives'. **Communication and Cognition** 16, 39-63. (= L. Tasmowski & D. Willems (eds.) **Problems in Syntax**, 321-255. Studies in Language 2. Gent: Plenum/Communication and Cognition 1983).  
 1985a 'Formal and semantic adjustment of derived constructions'. In: Bolkestein, De Groot & Mackenzie eds. (1985b), 1-28.  
 1985b 'Valentie en valentie-operaties in Funktionale Grammatika'. In: Dik ed. (1985), 95-114.  
 in prep. **The theory of Functional Grammar. Part I: the simple predication**.
- DIK, Simon C. ed.  
 1983 **Advances in Functional Grammar**. Dordrecht: Foris  
 1985 Valentie in Funktionale Grammatika. **TTT; Tijdschrift voor Taal- en Tekstwetenschap** 5, nr. 2.
- GROOT, Casper de  
 1981 'The structure of predicates and verb agreement in Hungarian'. S. Daalder & M.Gerritsen (eds.) **Linguistics in the Netherlands 1981**, 149-158. Amsterdam: North-Holland. 1981.  
 1983 'Typology of states of affairs'. H.Bennis & W.U.S.Van Lessen Kloeke (eds.) **Linguistics in the Netherlands 1983**, 73-81. Dordrecht: Foris. 1983.  
 1984 'Totally affected. Aspect and three-place predicates in Hungarian'. In: De Groot & Tommola eds. (1984), 133-151.  
 1985 'Predicates and features'. In: Bolkestein, De Groot & Mackenzie eds. (1985b), 71-84.

- GROOT, Casper de & Hannu TOMMOLA eds.  
 1984 **Aspect Bound. A voyage into the realm of Germanic, Slavonic and Finno-Ugrian Aspectology.** Dordrecht: Foris.
- HETZRON, Robert  
 1976 'On the Hungarian causative verb and its syntax'. M. Shibatani (ed.) **Syntax and Semantics 6: the grammar of causative construction**, 371-398. London & New York: Academic Press.
- HOEKSTRA, Teun, Harry van der HULST & Michael MOORTGAT eds.  
 1981 **Perspectives on Functional Grammar.** Dordrecht: Foris. (= *Glot* 3 (1980), 3-4).
- HOPPER, Paul & Sandra A. Thompson  
 1980 'Transitivity in grammar and discourse'. **Language** 56, 251-299.
- JUNGER, Judith  
 1985a 'Morphological causatives in Modern Hebrew'. In: Bolkestein, De Groot & Mackenzie eds. (1985b), 235-257.  
 1985b 'Valentiereductie in het Modern Hebreews'. In: Dik ed (1985), 141-160.
- KAHREL, Peter  
 1985 'Some aspects of derived intransitivity'. **Working Papers in Functional Grammar** 4.
- MACKENZIE, J. Lachlan  
 1985a 'Nominalization and valency reduction'. In: Bolkestein, De Groot & Mackenzie eds. (1985b), 29-47.  
 1985b 'Genominaliseer'. In: Dik ed. (1985), 177-198.
- MORAVCSIK, Edith A.  
 1978 'On case-marking of objects'. J.H. Greenberg (ed.) **Universals of Human Language.** Stanford: Stanford University Press, Vol. 4, 249-289.
- SAMUELSDORFF, Paul O.  
 1982 'The treatment of morphology in a Functional Grammar with special reference to Swahili'. **Folia Linguistica** 16, 385-398.
- SCHAAIK, Gerjan van  
 1983 'A functional analysis of aspects of Turkish grammar'. MA Thesis, Institute for General Linguistics, University of Amsterdam.  
 1985 'Valentiereductie in het Turks'. In: Dik ed. (1985), 127-139.
- SHOPEN, Timothy ed.  
 1985 **Language typology and syntactic description, Part III. Grammatical categories and the lexicon.** Cambridge: Cambridge University Press.
- VESTER, Elseline  
 1983 **Instrument and Manner Expressions in Latin.** Assen: Van Gorcum.
- VET, Co  
 1980 **Temps, aspect et adverbess de tempess en français contemporain.** Geneve: Droz.  
 1985 'Passive, reflexive and causative predicate formation in French'. In: Bolkestein, De Groot & Mackenzie eds. (1985b), 49-69.
- WATTERS, John R.  
 1985 'The place of morphology in FG: the case of the Ejjaham verb system'. In: Bolkestein, De Groot & Mackenzie eds. (1985b), 85-104.

WILLIAMS, Edwin

1981 'Argument structure and morphology'. *Linguistic Review* 1, 81-114.

WORKGROUP ON FUNCTIONAL GRAMMAR

1981 'On the Functional Grammar of Teaching Verbs'. In: Hoekstra, Van der Hulst & Moortgat eds. (1981), 203-231.