

ENGLISH MANNER SATELLITES IN FUNCTIONAL GRAMMAR



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This article discusses the treatment of (English) manner satellites within the Functional Grammar framework. First, it is shown that their analysis as modifiers of the nuclear predication as a whole is not entirely satisfactory to account for the relations they hold with verbal predicates. Second, manner adverb formation in *-ly* is here treated as a derivational process that has to be handled by means of a Predicate Formation rule. Finally, the recent proposals of including the word class adverb in the lexicon as well as the addition of the predicate variable *f* are considered adequate to formalise the data presented.¹

1. INTRODUCTION

Within Functional Grammar (henceforth FG) much recent research has concentrated on the further development of the Layered Hypothesis as originally put forward in Hengeveld (1989). Among the principal studies on this central theory-internal issue the set of articles contained in Nuyts et al. (1990) and Fortescue et al. (1992) clearly reflect the enormous interest that Hengeveld's proposal has raised. Despite the various amendments suggested (see Cuvalay (1995) for a general review of them), its explanatory capacity is generally accepted and has been fruitfully confirmed with studies on many diverse linguistic phenomena.

In this article I wish to contribute to the FG clause structure by examining the behaviour of a particular semantic class of adverbial constructions: English manner satellites at the predicate level. Hopefully it will be shown that the orthodox treatment of these elements, as found in Dik (1989), is not adequate to account for their peculiarities.

In so doing, I will pursue Hengeveld's (1992) proposal that adverbial predicates deserve a category of their own in the lexicon. In the same line, it will be suggested that adverb formation in *-ly* is a derivational process that has to be dealt with by means of Predicate Formation rules and not Expression Rules as has been standard practice in FG until now. Finally, the analysis of some evidence will lead me to conclude that manner adverbs should be best considered predicates over the variable *f* as proposed by Keizer (1992) and Hengeveld (1992).

2. MANNER ADVERBIALS IN FUNCTIONAL GRAMMAR

In FG linguistic expressions are assumed to consist of four different layers that represent different types of entities according to the semantic classification in Lyons (1977, 440-445). The following table shows the general layout of the FG clause model (see Hengeveld 1989).

¹ Thanks are due to Kees Hengeveld for comments on an earlier version of this paper. Part of the research included here was reported in one session of the FG-colloquium held weekly in Amsterdam (16 Feb 1996). I would like to thank the participants there for their comments and criticisms. Needless to say, all errors are my own.

TABLE 1. CLAUSE LEVELS IN FG

Clause:	(E _i : [ILL (S) (A) (X _i : etc. (X _i))] (E _i))	4
Proposition:	(X _i : [(e _i : etc. (e _i))] (X _i))	3
Predication:	(e _i : [Pred _β (x _i) ... (x _n)] (e _i))	2
Term	(x _i)	1

Each one of the variables in the diagram refers to a particular entity. Thus (x_i) refers to an individual that participates in the relation established by the verbal predicate (Pred_β). The insertion of lexical items in the argument positions forms a nuclear predication which designates a State of Affairs (e_i). States of Affairs (SoA) can be classified according to the following semantic parameters: [±Dynamic], [±Telic], [±Momentaneous], [±Control] and [±Experience] (Dik 1989, 91-100). This position departs from other approaches in which the aspectual properties of linguistic expressions are defined on the basis of a typology of predicates. In FG, both predicates and arguments are held responsible for the semantic nature of the predication.

Next, a SoA can be turned into a proposition (X_i) that refers to a Possible Fact. Finally, the (E_i) variable represents a Clause that designates a Speech Act. Each one of those layers can be modified by means of grammatical (operators (π)) or lexical elements (satellites (σ)) that express categories such as tense, aspect, modality, etc. The addition of these elements contributes to distinguishing three sub-layers within the predication:

- i. The *nuclear predication*, which consists of the predicate plus the semantically required arguments;
- ii. The *core predication*, which consists of the nuclear predication plus π₁ operators and σ₁ satellites;
- iii. The *extended predication*, which consists of the core predication plus π₂ operators and σ₂ satellites.

With such a clause model it is possible to classify adverbial constructions according to the layer they modify. Table 2 shows the correspondences between satellite types and the structure of the clause:

SATELLITE TYPE	CLAUSE LEVEL
- Predicate satellites (σ ₁)	- Nuclear predication
- Predication satellites (σ ₂)	- Extended predication
- Proposition satellites (σ ₃)	- Proposition
- Illocutionary satellites (σ ₄)	- Clause

TABLE 2. SATELLITES AND THE STRUCTURE OF THE CLAUSE

The following example shows a complex linguistic expression in which the four types of satellites are present (Dik et al. 1990, 29):

(1) Frankly σ_4 , Mary probably σ_3 danced beautifully σ_1 yesterday σ_2

The FG underlying representation for (1) is given below. It shows both the hierarchical relations among the clause layers and the scope of the different satellites:

(2) $[E_i: Decl [X_j: [Past e_j: [[dance_V (d1x_j: Mary_N (x_j))_{Ag} Subj] (beautiful)_{Man}] (yesterday)_{Temp} (e_i)] (probable)_{Prob} (X_i)] (frank)_{Manner} (E_i)]$

As can be seen in this bracketed structure, arguments and satellites receive a Semantic Function which expresses the semantic content they convey to the clause. This suggests that within each layer satellites can be further classified according to their semantic contribution. The following table exemplifies the semantic classes that are recognised within σ_1 satellites (Dik et al. 1990, 30-32):

semantic domain	satellite function
Additional participants	Beneficiary, Company, Instrument, Inner Cause
Manner and means	Manner, Speed, Quality
Spatial orientation	Source, Path, Direction

TABLE 3. SEMANTIC FUNCTIONS OF PREDICATE SATELLITES

There is an important aspect in this treatment of predicate adverbials that seems relevant here. Unlike other theoretical models in which predicate adverbials are treated as modifiers over the verbal predicate, the orthodox version of FG considers them modifiers over the nuclear predication as a whole, i.e. the verbal predicate plus the semantically required arguments (Dik et al. 1990, 64). However, not all σ_1 satellites are treated alike. In particular, the treatment of manner satellites differs somehow from the one proposed for the rest of adverbials at the predicate level.

Both in Dik (1978a, 49-54) and (1989, 194) it was suggested that [+control] and/or [+dynamic] State of Affairs (SoA), that is, Actions and Processes, could be optionally modified by a constituent carrying the semantic function *manner*. This was achieved by introducing an implicit slot in the underlying representation of those SoA's. The following example, adapted from Dik (1989, 194), illustrates this proposal:

(3) Peter removed the lid from the jar
 $[remove_V (d1x_1: Peter_N (x_1))_{Ag} (d1x_2: lid_N (x_2))_{Go} (d1x_3: jar_N (x_3))_{So}] (x_i)_{Man}$

Dik claims that the manner slot $(x_i)_{Man}$ will not be expressed unless it is filled with further information as in (4):

(4) Peter *cautiously* removed the lid from the jar

[remove_v (d1x₁: Peter_N (x₁))_{Ag} (d1x₂: lid_N (x₂))_{Go} (d1x₃: jar_N (x₃))_{So}] (x₄: cautious_A (x₄))_{Man}

The main reason to assume the existence of an implied manner slot centres in the possibility of inserting this manner constituent as a discourse referent once a SoA of the relevant type is present (Dik 1989, 194):¹

(5) Peter removed the lid from the jar. *The manner* in which he did it was rather cautious.

Likewise, once the predication is introduced it seems rather odd to question, deny or add the existence of the manner constituent (Dik 1989, 194):

- (6) a. *Peter removed the lid from the jar in a manner
 b. *Peter removed the lid from the jar, but not in a manner
 c. *Did Peter remove the lid from the jar in a manner or didn't he?

This contrasts with the behaviour of other σ_1 satellites as illustrated by the naturalness of the following example with a Beneficiary (Mackenzie 1986, 17):

- (7) a. I baked the cake for someone ('s sake/benefit)
 b. I baked the cake, but not for anyone ('s sake/benefit)

However, as Mackenzie (1986) has rightly pointed out there are more semantic functions that seem to be implicit in the representation of SoA's. Presumably, all Actions and Processes can be located in spatio-temporal terms so that implicit slots for the semantic functions *Location* and *Time* may be also included in their underlying representations. The following examples suggest that this is indeed the case:

- (8) a. *Peter removed the lid from the jar in a place
 b. *Peter removed the lid from the jar, but not in a place
 c. *Did Peter remove the lid from the jar in a place or didn't he?

In the light of these facts, Mackenzie (1986, 18) proposes to establish a distinction between implied satellites (represented with the variable *y*) and non-implied satellites (*z*) and concludes that both arguments and *y*-satellites belong in the nuclear predication. In Mackenzie's terms, *y*-satellites are "quasi-arguments" whereas *z*-satellites entail a "much more distant relation to the predicate than the *y*-satellites". He then proposes a scale of semantic closeness to the predicate which he names *intimacy hierarchy*:

(9) Intimacy hierarchy: arguments > *y*-satellite > *z*-satellite

Mackenzie's suggestion is borne out by recent studies on the distinction argument/satellite which seem to favour a gradual relationship to the predicate rather than a discrete split as is normally assumed (see the discussion in Siewierska 1991, 55-62). Due to this rather fuzzy behaviour of predicate satellites it seems no surprise that the degree of intimacy to the predicate may vary according to the semantics of individual predicates. Thus, with certain predicates, *y*-satellites may behave as true arguments as can be seen in the following well-known examples:

- (10) a. John behaved *well*
 b. The meeting lasted *for hours*
 c. Peter lives in Istanbul

Moreover, languages may present morphological processes to productively turn *y*-satellites into arguments. This process is known in FG as *satellite absorption* (Dik 1985, 4)

¹ But note *John disappeared happily*. **The manner in which he disappeared was happy* (Kuroda 1968: 380).

and is assumed to apply to those satellites that are more closely associated with the predicate (Dik et al. 1990, 50). In English, this process can be illustrated with the following example which significantly involves manner satellites:

- (11) Foris sells *The Theory of Functional Grammar*
 **The Theory of Functional Grammar* sells
The Theory of Functional Grammar sells well

As it stands, Dik's implicit-slot approach and Mackenzie's extension suggest that manner satellites hold an intimate relation with the verbal predicate. These observations will be confirmed with data from an analysis of English manner adverbials to be developed below.

The second aspect of the treatment of predicate manner adverbials in FG that I should like to point out relates to the handling of co-occurrence restrictions with SoA's. As is well known, manner adverbials cannot modify stative predicates. In FG this possibility is excluded by referring to the SoA parameters (Dik et al. 1990, 42). Since, as said above, manner satellites can only be combined with [+control] and/or [+dynamic] SoA's, predications lacking these values will be immediately ruled out:

- (12) *The book was on the table *carefully* [-dyn] [-con]

This outline of adverbial modification in FG suffices as an introduction to the most relevant points to be taken into account in my exposition. In the following section I will examine the behaviour of English manner satellites in order to accommodate the observations in the FG framework as presented above.

3. ENGLISH MANNER ADVERBIALS

English manner adverbials can be examined by paying attention to several different parameters. In this section I will restrict myself to those aspects that might potentially present a problem for FG. Thus, I will refer to their internal structure, their positional properties and the collocational restrictions they maintain with verbal predicates. In the remaining subsections, I will review the main aspects of each one of those parameters:

3.1. INTERNAL STRUCTURE

There are two basic ways to build up manner expressions in English:

3.1.1 Derivation by means of suffixes: *ly*, *wise*, *like*, *style*, etc.

- (13) a. Peter unfolded the letter *carefully*
 b. The dial must be turned *clockwise*
 c. John dresses *lady-like*
 d. He courts women *French-style*

By far, the most productive of these suffixes is *-ly*. Most grammars of English suggest that this element "is added totally productively to adjectives" (Bauer 1983, 225). Restrictions in its application seem to be irrelevant; Quirk et al. (1985, 1556) mention the following:

- i. Several familiar adjectives *fast*, *hard*, *well*, *long*, etc. do not present a derived adverbial counterpart;
- ii. Adjectives ending in *-ly* do not receive the suffix again when they are used adverbially (*early*, *ugly*, *slovenly*, etc.);
- iii. The addition of the suffix is generally avoided in those adjectives ending in *l*, (*ill*, etc.);

iv. Certain adjectives do not undergo this process *difficult*/**difficulty*.

3.1.2. Prepositional Phrases: *in a AP manner/way*, *like NP*, *(in) the same way as NP/VP*, *with NP*:

- (14) a. He was looking at them *in a vicious manner/way*
 b. Peter played the tune *like a professional*
 c. He picked up the flowers *the same way as I did*
 d. He stroked her face with care and tenderness

The formalisation of these constructions exceeds the scope of this paper and, consequently, will not be discussed here.

3.2. COLLOCATIONAL RESTRICTIONS

As mentioned above, manner satellites cannot feature with stative predicates, but this does not imply that all dynamic predicates can combine with any manner satellite. The following examples adapted from Matthews (1981, 137) illustrate this statement:

- (15) a. He wore his clothes *neatly*
 b. ?He wore his clothes *scrupulously*
 c. She dresses *loudly*
 d. ?She makes up *loudly*
 e. They build *shoddily*
 f. ?They cook *shoddily*
 g. I used to drink *heavily*
 h. ?I used to fornicate *heavily*

This set of examples indicates that there are semantic restrictions that hold between adverbs and verbal predicates. These restrictions seem difficult to formalise if manner satellites are taken to modify the whole nuclear predication and indeed they are given no explanation in FG. In the following subsection it will be observed that this semantic closeness between manner adverbs and predicates is also reflected syntactically.

3.3. POSITIONAL PROPERTIES

There seem to be relevant differences as to the positional properties of the different types of manner expressions in English. Unlike most adverbial constructions, those manner adverbs consisting of a single element present a great positional freedom. Being “lighter” than prepositional phrases they can occupy positions normally reserved for other constituents. Thus, they tend to appear close to the verbal predicate and can even be placed between the verb and its complements, especially if these are prepositional:

- (16) a. John was looking *carefully* at the picture
 b. John was looking at the picture *carefully*
 c. John was looking at the picture *with care/in a careful manner*
 d. ?John was looking *with care* at the picture
 e. ??John was looking *in a careful manner* at the picture

As these examples show, the grammaticality of the construction decreases as the length of the manner constituent increases. The results are similar if the adverbials are placed preverbally.

- (17) a. He *easily* found the solution to the problem
 b. ?He *with ease* found the solution to the problem
 c. ??He *in an easy way* found the solution to the problem

This capacity to appear close to the predicate is especially significant in the case of the so-called *split infinitive* construction (Quirk et al. 1985, 496-498), by means of which manner adverbs (and others such as *further*, *even*, *so*, *actually*, etc.) can be placed between the infinitival particle *to* and the verbal predicate:

- (18) a. She ought to *seriously* consider her position
 b. They tried to *viciously* peck at the corn
 c. You must continue your research in order to *conclusively* determine the role of adverbials in discourse

Within FG, these facts could be explained by means of LIPOC (*Language Independent Preferred Order of Constituents*), a general ordering principle that basically states that constituents tend to be placed in an order of increasing complexity (Dik 1989, 351). Since the arguments of the verbal predicates in the examples above are all "heavier" than adverbs in *-ly* it may seem understandable that they can be placed before them. Nevertheless, that these data cannot be accounted for from a purely constituent order approach is reflected in the fact that other *-ly* adverbs do not show that behaviour:¹

- (19) a. *Briefly* σ_4 , he accepted the proposal
 b. *He decided to *briefly* σ_4 accept the proposal
 c. *Probably* σ_3 , he will suggest an answer to your question
 d. *He is expected to *probably* σ_3 suggest an answer to your question
 e. *Apparently/allegedly* σ_3 he robbed the bank office
 f. *He tried to *apparently/allegedly* σ_3 rob the bank office
 g. He has visited his parents *recently* σ_2
 h. *To *recently* σ_2 visit your parents has been very nice
 i. He *frequently/continuously* σ_2 opens the refrigerator
 j. ?To *frequently/continuously* σ_2 open the refrigerator may cause frost inside

As the examples show, only *Duration* and *Frequency* adverbials may marginally present a similar behaviour to manner adverbs. Although these data may seem problematic for the idea suggested above, there are reasons to believe that the behaviour of these elements might well be expected. Categories like duration or frequency typically relate to the more general category *Aspect* which in FG pertains to both the predicate and the predication level in the structure of the clause. It seems reasonable, then, that in certain cases, these σ_2 satellites may behave as true σ_1 satellites. In this respect, Vet (1990) has claimed that the presence of a duration adverbial in the predication may affect the lexical nature of predicates, turning them from transitional to non-transitional. This suggests that duration and frequency adverbials hold a much more intimate relation to the predicate than the rest of σ_2 satellites.

In the same line, Quirk et al. (1985, 495) argue that the syntactic position immediately before the main verb in a VP is semantically associated with degree and manner adverbials. Interestingly, this position allows the placement of complex constituents as long as they are of the required semantic class:

- (20) a. The room must have been *quite carefully* searched by the police
 b. My answer may have *to some extent* displeased them

Significantly, they also claim that the category degree is "sometimes blended with time relations (frequency or duration)" (Quirk et al. 1985, 486) which provides further support to the idea suggested above.

¹ Combination with infinitives is also used in Wanders (1993, 21) as a criterion to classify Spanish adverbs in *-mente*.

From the evidence presented in this section, we can conclude that the positional properties of manner satellites result from the interaction of two principles or tendencies: the complexity or “heaviness” of the manner constituents and the semantic closeness they maintain with verbal predicates. As such, these facts corroborate Dik’s statement that the degree of cohesion between two elements A and B is “a matter of iconic patterning to the extent that the greater the degree of formal cohesion between A and B, the greater also their semantic cohesion” (1986, 30).

The data presented in this section, together with the implicit-slot approach shown above, suggest that manner satellites stand in a close relationship to verbal predicates. Their analysis as modifiers of the whole nuclear predication, then, seems difficult to justify. In the following section I will show that also within a theory-internal perspective the generation of manner adverbs in *-ly* requires further refinement.

4. ADVERB FORMATION IN FUNCTIONAL GRAMMAR

In the orthodox version of FG (Dik 1989, 162) three categories of predicates are recognised: Verbal, Nominal and Adjectival. These categories are defined on the basis of the prototypical functions they fulfil in the building up of linguistic structures. The recognition of a lexical category Adverb is not deemed necessary in the lexicon; the reasons for this omission are, to my knowledge, not given.¹ This position implies the treatment of adverb formation in another component of the grammar, outside the *Fund*.² Thus, adverb formation in *-ly* is taken care of by means of an Expression Rule in the following fashion (Connolly 1995, 2):

(21) Realisation [ITEM_A] = ITEM *-ly*

However, this position does not seem to be in keeping with the treatment of morphological processes in the theory. As pointed out by Watters (1985, 88), morphology in FG affects two components of the model: inflectional morphology is what is relevant to the Expression Rules, whereas derivational morphology is what is relevant to the *Fund* (or, rather, to Predicate Formation Rules (De Groot 1986, 7)). Consequently, adverb formation in *-ly*³ is considered an inflectional process in FG, which runs counter to the widespread opinion that morphological processes that change the syntactic category of the input predicate are always derivational.

On the other hand, some scholars have suggested that adverb formation might well be considered an inflectional process. Bybee (1985, 84) claims that an important difference between derivational and inflectional morphological processes is related to the notion of generality: inflectional processes “*must* have full lexical generality” whereas “derivational processes are more likely than inflectional processes to have lexical restrictions on their applicability” (see Hewson (1975, 80) for a similar argumentation). In the light of the general applicability of adverb formation to most adjectives, she concludes that this process may be considered inflectional and that the common belief that a change in syntactic category implies the derivational nature of morphological processes may be false.

¹ Kees Hengeveld has pointed out to me that Dik’s reluctance to include this word class in the lexicon might be due to the fact that i) few languages present a significant non-derived adverbial group and ii) adverbs may be commonly paraphrased by means of referential constructions.

² In FG the *Fund* consists of both basic and derived predicates (and terms), whereas the *Lexicon* contains only the former.

³ Henceforth, the label *adverb formation* will be used to refer to the formation of adverbs in *-ly*.

Indeed, this position is defensible if we accept that adverb formation is a general process that affects most adjectives, as is normally claimed. However, and contrary to what most grammars suggest, there seem to be important restrictions in its application. Kjellmer (1984) notes that the majority of English adjectives do not form adverbs in *-ly*. On the basis of a study on the adverbial productivity of several adjectival classes Kjellmer reports the rather striking fact that less than a 20% of adjectives regularly form adverbs in *-ly*. According to this linguist, the process is related to the aspectual status of the input adjectives so that only dynamic ones are adverb-forming. A basic test for establishing the dynamic character of an adjective is related to the possibility of occurring in imperative sentences. Compare the following examples:

- (22) a. *Be tall
b. Be careful

Tall refers to a stative, non-controllable property, whereas *careful* can be seen as designating a quality that is "thought to be subject to control by the possessor" (Quirk et al. 1985, 434). Adjectives like *careful* are usually referred to as dynamic in the literature. However, in order to avoid confusion with the concept of dynamism as used in FG I will call these adjectives *controllable* and attribute the feature [+control] to their arguments. The different behaviour of these adjectives can thus be accounted for in their lexical entries in the following fashion:

- (23) a. tall_A (<-con> x_i)
b. careful_A (+con> x_i)

We can conclude now that only controllable adjectives can undergo adverb formation. Hence, from (23b) we can get the adverb *carefully* whereas the form *tally* is ungrammatical. It must be taken into account, however, that, in certain contexts, stative properties can be interpreted as controllable. Consider the following example:

- (24) Please, don't be so British

The adjective *British* is here attributed to the hearer as a transitory condition of his/her behaviour. As a result, temporarily controlled adjectives may in rather marked contexts undergo the process as in the following example actually attested by Kjellmer (1984, 16):

- (25) Yet Wales in that year voted in referendum, general and European elections more 'Britishly' than any other part of the United Kingdom

The fact that the word class Adjective is typically stative explains the low percentage obtained by Kjellmer in the application of adverb formation and the restriction of the process to adjectives like *blue*, *Spaniard*, *tall*, etc. that refer to stative properties.¹ Controllability is also the relevant factor to account for the different productivity of semantically related items: *greatl* *greatly*; *bigl*/**bigly*. If these observations are correct this alleged generality is no longer tenable, which provides further evidence for the treatment of adverb formation as a derivational process.

Even if these arguments fail to convince sceptical minds, there are still theory-internal reasons that also indicate the derivational nature of the referred process. Dik claims that derived predicates are those that are formed by means of a synchronically productive rule. This notion of productivity is further explained (1980, 26):

¹ Despite their claim about the generality of adverb formation, Quirk et al. (1985, 438n) also point out the relevance of the aspectual status of adjectives for the application of this process.

By a synchronically productive rule I mean a rule which can be formulated in terms of some open-ended class of input predicates. An open-ended class is a class the members of which need not be enumerated one by one, but may be characterized by some general property or several such properties. ... In terms of linguistic behaviour, synchronically productive rules are such rules as speakers and hearers may apply in new instances. In other words, derived predicates are those which a speaker may form and use correctly and a hearer may interpret correctly even if they have never used or heard the predicate before.

These criteria are fulfilled by the process at issue. First, as said above, *-ly* regularly applies to adjectives that share the feature [+controllable], which indeed can be considered a fairly general property.¹ Second, if a speaker is confronted for the first time with a new adjectival predicate, he/she will know whether its adverbial counterpart is also possible and will not doubt to use it later in the discourse. This evidences that adverb formation is a synchronically productive process.

These facts together indicate that the treatment of adverb formation in FG needs to be refined so that it is correctly accounted for in the Fund as a derivational productive process. We need, therefore, a Predicate Formation rule that takes adjectives from the lexicon to derive adverbs in *-ly*. The rule I shall propose has the following form:

(26) ADVERBIAL PREDICATE FORMATION IN *-ly*: Manner adverb formation

INPUT: pred_A (<con> x_i)

OUTPUT: pred-*ly*_{Adv} (f_i; pred_V: <dyn> (f_i))

MEANING: Property denoted by Pred_{Adv} applies to Pred_V designating the manner in which it takes place.

This rule states that controllable adjectives may form adverbial counterparts in *-ly* that will function as predicates over verbal predicates. In order to exclude the combination with stative predications the verbal predicate slot, represented with an *f* variable (see next section), is provided with the grammatical restriction <dyn>.

The introduction of this rule has some other advantages for the treatment of the very specific semantic restrictions noted by Matthews and presented above. With the orthodox formulation of the theory it seems impossible to account for those facts since it is the SoA's parameters that explain co-occurrence restrictions and these pertain to the nuclear predication. Rather, we want to relate predicates and adverbs and formalise their semantic restrictions. These restrictions fulfil the following premises (Cruse 1986, 104):

First of all it is generally possible to specify a SELECTOR and a SELECTEE in a construction in which co-occurrence restrictions are operating. In a head-modifier construction, the modifier is the selector, but in a head-complement construction it is the head which is the selector. Selectors may generally be identified by the fact that they presuppose one or more semantic traits of their selectees. So, for instance, *pregnant* in a *pregnant X* presupposes that its selectee (in this case the head of the construction) bears the semantic trait 'female'. Likewise the verb *drink* in a verb-object construction is the selector since it presupposes that its direct object bears the trait 'liquid'.

Since adverbs are modifiers, we can infer from this quote that the incompatibility between *scrupulously* and *wear* in (15) above is due to the fact that the latter does not fulfil the

¹ The notion of productivity must be carefully distinguished from that of generality. As Bybee (1985, 84) states "even productive derivational processes may be applicable only in a very restricted semantic, syntactic or phonological domain".

semantic requirements imposed by its selector *scrupulously*. In order to formalise these observations we need to resort to certain familiar and yet controversial notions: selection restrictions.¹ Formally, we can equate the notion *selector* with *predicate*, as these are the ones that impose semantic restrictions on their arguments or selectees as in the cases of *pregnant* (Adj) and *drink* (Verb) just presented.

The question is, then, what selection restrictions does an adverb impose on its arguments? In FG selection restrictions are formed on the basis of predicates of the object language, and, as such, they have to be available in the lexicon (Dik 1989: 78). Indeed, if this requirement is to be fulfilled, it seems impossible to find the appropriate selection restrictions for the arguments of many verbal predicates and, probably, of most adverbial ones. A solution to this puzzle can be found if we adopt Dik's proposal (1978b) of formulating a general rule to form selection restrictions. According to Dik, given a predicate frame $\emptyset(x_i)_{Ag}(x_j)_{GO}$ a term t_i can be inserted in the first argument position if it is true that t_i can \emptyset and a term t_j can be inserted in the second position if it is true that t_j can be \emptyset 'd. Thus, it is not necessary to assume that the goal argument of *drink* has to bear the selection restriction [+liquid]; we rather postulate that any element that is to be inserted in that position must fulfil the requirement "t_j can be *drunk*".

This rule may be extended so as to account for the behaviour of adverbs in the following way:

(27) Given a predicate frame [pred-ly_{Adv} (f_i: pred_V: <dyn> (f_j))] a verbal predicate f_j can be inserted in the argument position if it is true that f_j can be effected pred-ly.

Now, in order to avoid anomalous combinations like *wear scrupulously*, we postulate, according to the rule, the selection restriction "that can be effected *scrupulously*" to be fulfilled by the argument of the adverb.

This analysis offers an explanation for the positional facts observed above, but it implies an important departure from orthodoxy in FG. If manner adverb formation is handled by means of a Predicate Formation rule we need to recognise a fourth class of predicates in the lexicon, that of adverbs. In the following sections it will be observed that this position does not present a major problem for FG and that two important proposals have already been suggested in the same line.

5. ADVERBIAL PREDICATES

The analysis of English manner satellites presented above demonstrates that it is necessary to modify the current state of the theory in order to capture the facts correctly. In the course of the presentation it was assumed that a possible solution for the problems described implies the treatment of adverbs as predicates and the introduction of a new word class in the lexicon. In view of the following quote this possibility has also been considered in FG (Dik et al. 1990, 64):

Also, certain theoretical issues have been left unresolved. For example, the question whether satellites can be analysed as predicates over the units which they take in their scope (as

¹ There seems to be certain controversy in FG as to the pertinence of selection restrictions. See Dik (1989, 76-81) for a defence of their necessity in the theory and Nuyts (1989, 5) for the opposite view. See also the discussion in Bakker (1994, 203-215).

proposed in Vet 1986), or should be regarded as some type of modifiers different from predicators (as in Dik 1989).

Indeed, this position has been defended by Vet (1986) in his treatment of temporal adverbs and later taken up by Hengeveld (1992) in his classification of part-of-speech systems. In the same line, Wanders (1993) analyses Spanish adverbs in *-mente* as predicates over the different clause layers.

However, introducing this word class is not enough to give an account of the problems just described. Still, it is necessary to formalise the relationship between manner satellites and verbal predicates. In order to do so, I will adopt Keizer (1992) and Hengeveld's (1992) proposal of providing predicates with a variable *f*, an idea that was originally hinted at by Dik (1989, 50) in a diagram of clause levels.

The reasons for the introduction of this variable are mostly seen in the referential capacity of predicates as in the following examples taken from Keizer (1992, 4):

- (28) a. Ernest is sleeping. *So* is Jack.
 b. Cecily saw a unicorn yesterday. Gwendolen saw *one* too.
 c. Algernon is a fool, although he doesn't look *it*.
 d. Gwendolen is intelligent, *which* you are not.
 e. I bought a black car yesterday. Gwendolen bought a green *one*.

As we see in (28) the anaphoric proforms *so*, *one*, *it* and *which* have verbal, nominal and adjectival predicates respectively as coreferential terms. If those predicates are not singled out by means of a referential variable, it seems difficult to formalise these facts in the underlying representation of the clause.¹ The introduction of the *f* variable provides an adequate formalism to express these relations as in the following example taken from Hengeveld (1992, 33):

- (29) (i1x_j: (f_j: **car**_N (f_j)) (x_j: (f_j: blue_A (f_j)) (x_j)) "a blue car"
 (i1x_j: (**Af_j**)) (x_j: (f_k: green_A (f_k)) (x_j)) "a green one"

For the purposes of this study, this variable accounts for the relation between adverbs and verbal predicates as shown in the following (simplified) underlying representation:

- (30) John wore his clothes *neatly*
 (f_i: wear_V (f_j: (f_j: neatly_{Adv} (f_j)) (f_j)) (John)_{Ag} (clothes)_{Go})

This notation expresses that *neatly* is an adverbial predicate that takes a verbal predicate (f_j) as argument; the relevant selection restrictions are obtained by means of the rule presented above. As Hengeveld (1992, 40) has pointed out, there is the possibility of classifying adverbs according to the structural layer they take as argument. Now, the two uses of an adverb like *wisely* in the following two well-known examples can be accounted for in the lexical entry for this item, making it clear that it can optionally take f-arguments and X-arguments:

- (31) a. John answered the question *wisely* σ₁
 b. *Wisely* σ₃, John answered the question

The treatment of adverbs as predicates has another advantage for the handling of expressions of the type:

- (32) a. Peter is *abroad*

¹ A more extensive argumentation in favour of this proposal and the advantages it offers may be found in Keizer (1992) and Hengeveld (1992). See also the discussion in Cuvalay (1995). For an alternative view see Van der Auwera (1992).

b. The meeting is *upstairs*

The process for the generation of these sentences is now parallel to the one for expressions like *Peter is handsome*, in which an adjectival predicate is applied to the nominal argument. The *f*-variable provides a natural way to account for these predicative uses of adverbs:

(33) Pres [(*f*_i: abroad_{Adv} (*f*_i)) (d1*x*_i: Peter_N (*x*_i))]

The presence of the *Pres* operator will trigger the application of the rule of *Copula-support* that accounts for the insertion of *be*.

Thus, the predicate variable provides an extra layer for the representation of the clause. With this modification the structure of utterances remains as follows:

Clause:	(<i>E</i> _i : [ILL (S) (A) (<i>X</i> _i : etc. (<i>X</i> _i))] (<i>E</i> _i))	4
Proposition:	(<i>X</i> _i : [(<i>e</i> _i : etc. (<i>e</i> _i))] (<i>X</i> _i))	3
Predication:	(<i>e</i> _i : [(<i>f</i> _i : etc. (<i>f</i> _i))] (<i>e</i> _i))	2
Term	(<i>x</i> _i)	1
Predicate	(<i>f</i> _i : Pred _β (<i>x</i> _i)... (<i>x</i> _n) (<i>f</i> _i))	0

TABLE 4. CLAUSE LEVELS IN FG (REVISED)

The new zero-layer can be modified by means of operators and satellites as any other layer. Keizer (1992, 5) specifically mentions Manner and Instrument expressions as candidates for satellites at this level.

The question now arises whether all σ_1 satellites and π_1 operators can be treated as modifiers of verbal predicates. If the answer to this question is affirmative, the intermediate level *core predication* would no longer be necessary and might be removed from the underlying representation. This alternative runs against the position recently defended by Cuvalay (1995), who suggests that this level should be granted a variable (*c*_i). This linguist does accept Keizer's proposal of providing predicates with a referential variable *f*, but unlike her, she reserves σ_0 satellites and π_0 operators to formalise those derivational processes that affect the nature of the predicate itself (1995, 18). In FG, derivation is normally handled by means of Predicate Formation rules, but Cuvalay's proposal seems more adequate for those languages in which certain morphological processes seem to combine a smack of both derivation and inflection.

The existence of different approaches to establish the relationships among the elements that pertain to the lowest clause levels clearly indicates the fuzziness of this area of research. In order to formulate relevant modifications for the layered structure of the clause it seems necessary to study in greater detail and on the basis of further typological evidence the intricacies of the relations between predicates, arguments and π_1 operators and σ_1 satellites.

Even so, it seems difficult to arrive at a definite and cross-linguistically valid representation that accounts for the variance at this level; languages may vary as to the way they express the different semantic classes that are recognised within σ_1 satellites (see table 3 above). For example, an Instrument constituent may be an argument, a predicate satellite or a nuclear predication satellite, according to the predicate it combines with and the degree of grammaticalisation of this category in the language concerned (see Dik 1978, 28 for an illustrative example from English). As mentioned above, presumably, these relations will have to be dealt with in terms of a gradation or scale of intimacy to the predicate rather than in absolute discrete categories.

This seems to suggest that research in this area has mainly attained a level of general description that is not entirely satisfactory to accommodate all data from the many diverse languages. This is probably the reason why Functional Grammarians seem to disagree in the way of representing the predicate and predication levels.

6. CONCLUSION

In this article I have reviewed the main characteristics of English manner satellites and the treatment they receive within the FG model. I hope to have convincingly demonstrated that a proper account of the behaviour of these elements requires several modifications in the theory.

First, my findings bear out both the necessity of including the word class adverb in the lexicon (as defended by Hengeveld 1992) as well as the addition of the referential variable *f* (Keizer 1992; Hengeveld 1992). At the same time, adverb formation in *-ly* is now treated as a derivational process that has to be handled in the Fund by means of a Predicate Formation rule.

The evidence presented here fits well in the predicate hierarchy as given in Hengeveld (1992, 47). This hierarchy states that, typologically, the category of adverbial predicates is the less likely to occur as a separate part of speech. Indeed, many languages lack this word class and others seem to use a different category in adverbial functions. Though I have claimed that in English it is necessary to assume the relevance of this class, it must be admitted that it does not present what might be considered a prototypical predicate behaviour. The set of basic adverbial predicates seems to be restricted to a few items (*here*, *downstairs*, *upstream*, etc.), whereas most adverbials are derived by means of the Predicate Formation rule proposed in this paper or, alternatively, by generating prepositional constructions.

The reason for this peculiar behaviour of manner adverbs, as compared with other adverbial constructions, might be due to their scarce referential potential. Unlike prepositional phrases, which are formed by applying a semantic function to a nominal predicate, manner adverbs do not introduce entities but properties, which are not the most prototypical elements in the category of referents.

Finally, the treatment of adverbs as predicates has the advantage of reducing the formalisation of the relationships between lexical items to the familiar notions predicate/argument, a solution that seems much more economical for the technical apparatus of the theory. Thus we can dispense with the rather loose analysis of satellites as "some type of modifiers different from predicators" (Dik et al. 1990, 64; see quote above) which reminds us of the still more controversial and much-quoted statement "some version of X-bar theory" from another familiar theoretical framework.

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