

Morphology and the tripartite parallel architecture of the grammar

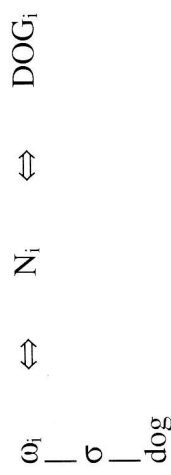
1. INTRODUCTION

The aim of this paper is to discuss the way in which word combinations with a morphological function such as periphrastic forms in word paradigms and progressive constructions in Germanic languages have to be dealt with in the grammar. The background for the analyses to be presented is the idea of the tripartite parallel architecture of the grammar, as defended in Jackendoff (2002). This conception of the grammar is outlined shortly in section 2. Section 3. presents a second background assumption, the notion "constructional idiom". Section 4. then shows how word combinations with a morphology-like function can be accounted for. Section 5. summarizes the results.

2. TRIPARTITE PARALLEL ARCHITECTURE

A word is a complex piece of information. It links a particular sequence of sounds to a particular meaning, and also has formal properties such as a syntactic category label. The information contained in the English simplex word *dog*, for instance, can be represented as follows:

Figure 1. *The lexical representation of dog*



The first piece of information in Figure 1 concerns the phonological properties of this word: it is a phonological word (ω) that consist of one syllable (σ) that in its turn consists of a sequence of three sounds. This phonological word bears

the same index as the syntactic information about this word (that it is a noun), and the semantic information that it expresses the predicate DOG. Coindexation is used here to specify the correspondence between the three kinds of information involved in knowing a word. We thus see that a word has a tripartite parallel structure.

Let us now look at a complex word such as the English word *baker*, a noun derived from the verb *bake* through suffixation with *-er*. The three kinds of information (phonological, formal, and semantic) concerning this word can be represented as follows (this is a strongly simplified version!):

Figure 2. *The lexical representation of baker*



The phonological structure of *baker* is that of a phonological word consisting of two syllables, $(be:)_i$ and $(k\partial r)_k$. Its formal structure is that of a deverbal noun, as indicated by the tree that represents its formal morphological structure.

The semantic structure of *baker* as given in Figure 2 requires somewhat more explication. The semantic structure of a word is called its Lexical Conceptual Structure (LCS). Part of this LCS (that part that has direct consequences for its syntactic behaviour) is usually represented in terms of a predicate and one or more arguments (x, y , etc.) that denote the entities involved in the situation or event expressed by the verb. The Predicate Argument Structure (PAS) of the base verb *bake* can therefore be represented as [BAKE, x, y]. The two arguments indicate that two participants are involved in the event of baking as denoted by the predicate. What is the semantic structure of the derived noun *baker*? A baker is someone who bakes, that is, this word denotes the x -argument of the predicate BAKE. In other words, *baker* is a subject noun. The object of baking, the y -argument, is obviously not expressed by the word *baker*. If we wish so, it can be expressed, as in the phrase *the baker of this bread*, where *this bread* is the y -argument.

The representation in Figure 2 may be generalized into a rule, the rule for deriving subject nouns from verbs by means of the suffix *-er*. This is achieved by omitting the word-specific information. This morphological rule thus specifies that there is the following systematic relation between the tree kinds of linguistic information involved:

Figure 3. *The template for deverbal -er*



In Figure 3 the level of the syllables has been omitted because the number of syllables of words ending in *-er* is not fixed, but depends on the phonological make up of the base verb. Hence it is a computable, predictable property of each individual deverbal noun in *-er*. Instead of the specific predicate BAKE, the general label PAS is used to refer to the syntactically relevant part of the semantic structure of base verbs.

The tripartite structure in Figure 3, an instance of a word formation template, is meant to make clear that morphology is not a module of grammar on a par with the phonological or the syntactic module, modules that deal with one aspect of linguistic structure only. Morphology is word grammar, and similar to sentence grammar in its dealing with the relationships between three kinds of information. It is only with respect to the domain of linguistic entities that morphology is different from sentence grammar since morphology has the word domain as its primary focus.

3. CONSTRUCTIONAL IDIOMS

Constructional idioms are syntactic constructions with a (partially or fully) non-compositional meaning contributed by the construction, in which – unlike idioms in the traditional sense – only a subset (possibly empty) of the terminal elements is fixed. The idea of constructional idioms can be found in the work of Langacker (1987), in the framework of Construction Grammar (cf. Goldberg 1995; Fillmore/Kay/O'Connor 1988; Kay/Fillmore 1999; Pitt/Katz 2000), and in recent work by Jackendoff (1995; 2001; 2002). Other terms used are ‘lexical phrases with a generalized frame’, and ‘idiomatic patterns’. An example of a Dutch constructional idiom is the *N van een N*-construction:

- (1) een schat van een kind ‘lit. a sweetheart of a child, a sweet child’
 een kast van een huis ‘lit. a cupboard of a house, a big house’
 een boom van een kerel ‘lit. a tree of a chap, a big chap’

Semantically, the noun of the PP-complement functions as the head, and it also determines the gender of the relative pronoun for which it is the antecedent as shown by the following example:

- (2) een kast van een huis, *die / dat nodig geveerd moet worden "a big house that needs to be painted"

The noun *kast* is non-neuter, whereas *huis* is neuter; the relative pronoun *dat* is the pronoun for antecedents with neuter gender. The two nouns have to agree in number. For instance, the plural of *een schat van een kind* is *schatten van kinderen*, with both nouns in their plural form: both **schatten van een kind* and **een schat van kinderen* are ill formed in the interpretation given here.

This class of constructional idioms can be extended, and hence they do not form a fixed list of expressions. The first noun has to be a noun that expresses an evaluation of properties of the noun in the PP-complement. For instance, it is possible to coin the phrase *een godin van een vrouw* "lit. a goddess of a woman, a ravishing woman" as a new instantiation of this constructional idiom. Nevertheless, this construction does not lend itself to unlimited extension, and the example *een godin van een vrouw* is experienced as a case of creative language use. That is, the notion "restricted productivity" applies, a notion that is standardly used for describing morphological patterns. Similar constructional idioms are found in English (*a brute of a man*), German (*ein Teufel von einem Mann* "a devil of a man, a brute man"), Spanish (*esa mierda de libro* "that shit of a book, that shitty book") and French (*une drôle d'histoire* "a strange story").

The implication of the existence of such constructional idioms is that the lexicon, the list of fixed linguistic expressions, has to be extended with partially underspecified idioms, in this case the NP-type *een N₁ van een N₂* with the meaning "N₂ who/which is an N₁".

The *een schat van een kind* construction is mentioned here only as an illustration of the notion "constructional idiom", and is not to be seen as an alternative to morphological expressions. In this article I will focus on constructional idioms that do function as alternatives to morphological expressions, and I will argue that it is typically constructional idioms that may perform that function.

4. PERIPHRAISIS

4.1. Passive constructions

A well known case of periphrasis is the expression of the perfective passive form in Latin by means of a combination of the past participle plus an appropriate form of the verb *esse* "to be", as in *laudatus est* "he has been praised" (Börjars/Vincent/Chapman 1997; Sadler/Spencer 2001). These periphrastic combinations are only used for the perfective passive, whereas synthetic forms are used for expressing the imperfective passive, as illustrated in (3) (from Sadler/Spencer 2001: 74)

- (3) Paradigm of 3rd pers. sg. forms of *laudare* "to praise"

IMPERFECTIVE	Active	Passive
<i>Present</i>	laudat	laudatur
<i>Past</i>	laudabat	laudabatur
<i>Future</i>	laudabit	laudabitur
PERFECTIVE	Active	Passive
<i>Present</i>	laudavit	laudatus/a/um est
<i>Past</i>	laudaverat	laudatus/a/um erat
<i>Future</i>	laudaverit	laudatus/a/um erit

The fact that this periphrastic form is the only possible form for expressing the perfect past shows that the form fills a cell in the inflectional paradigm. Moreover, as pointed out by Börjars/Vincent/Chapman (1997), in the case of deponentia (verbs with a passive form and an active meaning) such as *loquor* "to speak", the periphrastic form has an active meaning, just like the other, synthetic, forms: *locutus est*, for instance, means "he has spoken". Börjars/Vincent/Chapman (1997) propose to account for the functional equivalence of such word combinations to synthetic morphological forms in the inflectional paradigm of Latin verbs in terms of unification of the functional structures of the two words into one functional structure at the level of f(functional)-structure. However, as Sadler/Spencer (2001: 78) argue, there is a problem with this compositional approach: the forms of *esse* "to be" that are used in this construction are imperfective forms, and yet the whole construction bears perfective aspect. Hence, it is the periphrastic construction as a whole that has to be assigned the perfective aspect.

The notion "periphrasis" can also be used in a looser sense, namely for the analytic expression of information in a certain language that is expressed morphologically in other languages (cf. Haspelmath 2000). This applies to the expression of information with respect to voice, aspect, *Aktionsart*, and similar categories. This kind of analytic expression is a widespread property of natural languages, as is also clear from the grammaticalization studies in Bybee/Dahl (1989), and Bybee/Perkins/Pagliuca (1994). It is the very phenomenon of grammaticalization that makes us expect to find such patterns of analytic expression of grammatical information: lexical words can develop into grammatical words (and these in their turn may subsequently develop into bound grammatical morphemes).

A well-known case of this morphology-like use of syntax is the passive construction in Indo-European languages, which developed from regular syntactic patterns. However, it is not always the case that there are also synthetic passive forms (as is the case in Latin as discussed above), and hence there is no strict argument for considering the periphrastic passive constructions of such languages as filling cells of the inflectional verbal paradigm.

The Dutch passive construction is of particular interest because it shares a property with the Latin periphrastic passive: the perfective forms are expressed with imperfective forms of the verb *zijn* "to be". Consider the following data:

In fact, the classical division of four aspectual classes in Vendler (1967) is partially based on their (in)compatibility with the progressive construction.

Additional restrictions on the Dutch progressive, observed by Boogaart (1999: 187) that do not hold for English are that it cannot be used in the passive voice, nor with a habitual meaning:

- (8) *De krant was aan het lezen geworden 'The paper was being read'
 *Vroeger waren ze aan het ontbijten in de keuken 'Formerly, they were having breakfast in the kitchen'

As pointed out by Depraetere (1995) and Boogaart (1999), there is no incompatibility between the use of the progressive form and telic events, that is events with an inherent endpoint: we must distinguish between (a) telicity which has to do with the presence of potential endpoints, and is a case of *Aktionsart*, and (b) (un)boundedness, which has to do with the presence of actual temporal boundaries, and is a matter of aspect. Progressive / non-progressive is an aspectual distinction that often establishes an unbounded reading, that is a reading without temporal boundaries, as is the case in sentence (6). The *aan het INF*-construction in combination with the verb *zijn* 'to be' clearly requires an event with duration. There is also psycholinguistic evidence for *aan het INF* as a construction.

Note that *aan het* is not a syntactic constituent by itself. Yet, it behaves as a unit in language production. In the corpus of spoken Dutch developed by Mirjam Ernestus at the Vrije Universiteit Amsterdam (Ernestus 2000) we find repetitions of *aan het* of the following kind:

- (9) aan het ... aan het doen bent
 at the ... at the doing are
 "are doing"
 aan het ... aan het dichten
 at the ... at the poetry writing
 "poetry writing"

Such repetitions indicate that *aan het* is a ready-made unit after which the speaker can and has to decide which verb is going to be used; in case of hesitation this results in repetition of the fixed word sequence *aan het*.

Similar progressive constructions occur in a number of Germanic languages such as German (the *am-* form of the Rhineland dialect of German) and Frisian (Ebert 2000), and also in Afrikaans, a daughter language of Dutch (Ponelis 1979). As noted by Bybee/Dahl (1989: 78-82), and by Bybee/Perkins/Pagliuca (1994), the use of the verb *to be* plus a PP with an originally local meaning for the expression of action in progress is widespread cross-linguistically.

An alternative way of expressing progressive meaning in Dutch (and other Germanic languages) is the use of postural verbs in combination with the sequence *te* + Infinitive, as illustrated by the following examples from Dutch:

- (10) Jan zit te lezen
 John sits to read-INF
 "John is reading while sitting"
 (11) De kinderen zitten te klieren
 The children sit to nag-INF
 "The children are nagging"

In sentence (11), the verb *zitten* has lost its literal postural meaning completely, since the sentence does not mean that the children are actually sitting while nagging.

A remarkable property of the construction with *zijn* is that it inherits the syntactic valency of the verb that appears in the infinitival form. For instance, if the verb allows for a direct or prepositional object, this is also possible with the *aan het INF* construction.

- (12) Jan is de aardappels aan het schillen
 John is the potatoes at the peel-INF
 "John is peeling the potatoes"
 Hij is zijn geld aan het op-maken
 He is his money at the up-make-INF
 "He is using up his money"
 Jan is naar de papieren aan het zoeken
 John is for the papers at the look-INF
 "John is looking for the papers"

Note that the direct and prepositional objects do not appear directly before the verb to which they belong, but before the *aan*-PP. There is a similarity here with the infinitival particle *te* 'to' that also separates objects from the verb:

- (13) Jan belooft de aardappels te schillen "John promises to peel the potatoes"

The *aan het INF* construction has this external valency in combination with the verb *zijn* 'to be', but also with the other verbs that induce a progressive interpretation such as the modal verbs, the *accusativus-cum-infinitivo*-verbs, and the verb *blijven* 'to keep'. The use of inchoative verbs in combination with a direct or prepositional object, on the other hand, leads to ungrammatical sentences:

- (14) Jan bleek de appels aan het schillen "John appeared peeling the apples"
 Hij bleef de boeren aan het bedriegen "He kept cheating the farmers"
 Ik zag hem naar de papieren aan het zoeken "I saw him looking for the papers"

- *Hij ging de kinderen aan het wassen "He started washing the children"
- *Hij kreeg de kinderen fruit aan het eten "He got the children eating fruit"

On the other hand, the infinitival verb in the *aan het INF* construction does not exhibit the normal projection potential of a verbal infinitive within the *aan het*-PP. Verbal infinitives in Dutch can either be preceded by a direct object-NP, which reflects its verbal nature, or followed by a PP-complement, which reflects that the verbal infinitive is simultaneously nominal in nature. However, this syntactic valency of verbal infinitives is not available in the *aan het INF* construction. For instance, of the following sentences, only the first is grammatical:

- (15) Hij is de appel aan het eten
He is the apple on the eat-INF
"He is eating the apple"
- *Hij is aan het de appel et-en
He is at the the apple eat-INF
"He is eating the apple"
- *Hij is aan het et-en van de appel
He is at the eat-INF of the apple
"He is eating the apple"

Compare other cases of the use of infinitives as the heads of NPs; in these cases the infinitive does allow for preverbal or postverbal complements:

- (16) Het naar de oplossing zoek-en kostte veel tijd
The for the solution search-INF took a lot of time
"Searching for the solution took a lot of time"
- (17) Het et-en van appels is gezond
The eat-INF of apples is healthy
"Eating apples is healthy"

The progressive construction under discussion here thus constitutes a violation of the Head Constraint (Jackendoff 2002: 145) which reads as follows: "The syntactic arguments and adjuncts in a phrase express the semantic arguments and modifiers of the phrases's head". *De appel* in sentence (15) is not the argument of *is*, but of the embedded predicate *eten*. Thus, we see here the mismatch between syntax and semantics that we may expect for constructional idioms.

It has been observed in Booij (2002b: 214) in relation to particle verbs such as *op maken* in (12) that lexical categories within periphrastic constructions do not project. For instance, the particle in a particle verb construction cannot be modi-

fied by adverbs. The same observation is valid for classificatory AN phrases that function as periphrastic forms of AN compounds. For instance, one cannot modify the adjective *hard* in *hard disk*: *a very hard disk* sounds odd. Interestingly, as observed above, this generalization also holds for verbs in the progressive construction. Note, however, that the V in *aan het V-INF* can be a so-called separable complex verb, that is, a verb preceded by a particle, a generic noun, or a bare adjective that functions as a lexical unit (Booij 2002a; 2002b). Therefore, the progressive construction can be used to determine the lexical unit status of complex predicates. As shown below, the infinitive may be separated from the *aan het* sequence by a generic object, an adjective, or a particle. According to Dutch orthographic rule, particle verbs are written as one orthographical word, without an internal space; below, I deviate from this rule for reasons of clarity.

(18) *With generic objects*

Ik ben aan het thee zett-en
I am at the tea make-INF
"I am making tea"

Ik ben thee aan het zett-en
I am tea at the make-INF
"I am making tea"

*Ik ben aan het zett-en van thee
I am at the make-INF of tea
"I am making tea"

(19) De kinderen waren aan het sneeuwballen gooie-en
The children were at the snowballs throw-INF
"The children were throwing snowballs"

De kinderen waren sneeuwballen aan het gooie-en
The children were snowballs at the throw-INF
"The children were throwing snowballs"

*De kinderen waren aan het gooie-en van sneeuwballen
The children were at the throw-INF of snowballs
"The children were throwing snow balls"

(20) Ze zijn aan het brieven schrijven-en
They are still at the letter write-INF
"They are still writing letters"

*Ze zijn aan het schrijven-en van brieven
They are at the write-INF of letters
"They are writing letters"

*Ze zijn aan het lange brieven schrijven
They are at the long letters write-INF
“They are writing long letters”

Ze zijn lange brieven aan het schrijven
They are long letters at the write-INF
“They are writing long letters”

In these examples, the nouns *thee*, *sneeuwballen* and *brieven* either function as direct object NPs, and hence appear before *aan het INF*, or they function as the left constituents of separable complex verbs. These N-V combinations mention conventionalized activities such as making tea, throwing snowballs, and writing letters. In the case of *thee zetten*, the noun is a mass noun, in the other two examples the noun appears in the plural form, and these plural forms have a generic interpretation. In this use, these nouns are non-projecting, in line with what we observed above for the verb in the *aan het INF* construction: as soon as we modify such nouns, they have to appear before the *aan het INF* construction. That these word combinations function as lexical units is also clear from the fact that they can feed word formation. For instance, we can coin deverbal agent nouns such as *theezetter* “tea-maker”, *sneeuwballengooier* “snowball thrower”, and *brievenschrijver* “letter writer”.

Similar observations can be made for separable A V combinations such as *schoonmaken* “to clean” and *witwassen* “to white-wash”:

(21) Ze was fruit aan het schoon mak-en
She was fruit at the clean make-INF
“She was cleaning fruit”

*Ze was aan het fruit schoon mak-en
She was at the fruit clean-make-INF
“She was cleaning fruit”

*Ze was aan het schoon mak-en van fruit
She was at the clean make-INF of fruit
“She was cleaning fruit”

(22) Jan was geld aan het wit wass-en
John was money at the white wash-INF
“John was white-washing money”

*Jan was geld wit aan het wass-en
John was money white at the wash-INF
“John was white-washing money”

*Jan was aan het geld wit wass-en
John was at the money white wash-INF
“John was white-washing money”

*Jan was aan het wit wass-en van geld
John was at the white wash-INF of money
“John was white-washing money”

In the case of *wit wassen* it is the metaphorical meaning that is the only possible one since this is the conventionalized meaning of this word sequence. Therefore, it can only be interpreted structurally as a separable verb, hence the ungrammaticality of **Jan was geld wit aan het wassen*.

The third category of word combinations that appear after *aan het* in the progressive construction, are the particle verbs:

(23) Hij is zijn moeder aan het op bell-en
He is his mother at the up call-INF
“He is phoning his mother”

*Hij is zijn moeder op aan het bell-en
He is his mother up at the call-INF
“He is phoning his mother”

*Hij is aan het zijn moeder op bell-en
He is at the his mother up call-INF
“He is phoning his mother”

*Hij is aan het op bell-en van zijn moeder
He is at the up call-INF of his mother
“He is phoning his mother”

(24) Ze was de kinderen aan het uit lach-en
She was the children at the out laugh-INF
“She was laughing at the children”

*Ze was de kinderen uit aan het lach-en
She was the children out at the laugh-INF
“She was laughing at the children”

*Ze was aan het de kinderen uit lach-en
She was at the the children out laugh-INF
“She was laughing at the children”

*Ze was aan het uit lach-en van de kinderen
She was at the out laugh-INF of the children
“She was laughing at the children”

In conclusion, verbs do not take normal syntactic complements when they occur in the INF position of the *aan het INF*-construction. However, the verb may

combine with a particle, an adjective or a generic NP (a noun) into a complex predicate that is allowed in the INF position. In other words, we find here the three kinds of complex predicates that function as lexical units of Dutch: verbs preceded by a noun, an adjective or a particle (cf. Booij 2002a; 2002b). Thus, we can use the *aan het INF* construction as a standard test for the separable complex word status of a word sequence of the type N-V, A-V, and Preposition/Adverb-V. As argued in Booij (2002a; 2002b), these separable complex words are also to be considered constructional idioms.

The progressive construction can be accounted for as follows:

$$(25) (a_n, a'_j)_{i_0} (x_k) (y_l)_{i_0} \Leftrightarrow [P_i \text{ Det}_j [V_k]_{i_0} \text{pp} [ZIJN]_{i_0}]_V \Leftrightarrow \text{CONTINUOUS ACTIVITY } V_k \\ [+infinitive]$$

This tripartite template expresses that there is a particular kind of constructional idiom that functions semantically as a verbal predicate with progressive aspect. The infinitival form of the verb functions as a noun in the PP. The construction consists of the prosodic word [a:nət] followed by the phonological sequence corresponding to the variable verb and the prosodic word that corresponds with one of the forms of the lexeme *ZIJN* 'to be'. The tripartite architecture enables us to specify the unitary nature of this constructional idiom. An additional necessary specification which I will not go into here is that the syntactic valency of the verbal infinitive is transferred to the whole construction, with the implication that arguments of the verb are expressed before the word sequence *aan het*.

The progressive construction has a morphology-like function in that it functions as an alternative to the morphological expression of progressive aspect. In Dutch present participles can also be used to express the progression of an event, but only in attributive position, before a head noun:

- (26) De fietsende jongen 'The cycling boy'
 *De jongen is fietsend 'The boy is cycling'

This complementarity of synthetic and analytic expression of progressive aspect receives a natural account by considering both forms as lexically specified templates, one for a morphological form (the present participle of verbs), and one for a syntactic form (the *aan-het*-construction).

This kind of complementarity is also found in language comparison. For instance, many languages (such as Turkish) have morphological means of expression for causatives. In Dutch and Italian, however, causatives, at least deverbal ones, are analytical. The causative constructions must be considered constructional idioms, however, since they behave as units:

(27) *Dutch*

Ik liet het boek aan mijn collega zien
 I let the book to my colleague see.INF
 'I showed the book to my colleague'

Italian

Ho fatto vedere il libro a-1 mio collega
 have.1SG make.PTCP see the book to-DEF my colleague
 'I showed the book to my colleague'

The unitary nature of *laat zien* (Coopmans/Everaert 1988) and *ho fatto vedere* manifests itself in the fact that they select a recipient argument marked by a preposition, whereas neither the causative verb nor the main verb select a recipient itself. In Italian, both the dative object and the direct object have to precede the verb cluster if they are pronominal clitics:

- (28) Glielo faccio vedere / *Gli faccio vederlo
 To.him-it make.1sg see
 'I show it to him'

This underscores the unitary nature, and hence the constructional idiom status of the Italian causative construction. In Italian, deadjectival causatives can be formed synthetically, as in *allargare* 'to widen'. Dutch uses either conversion or another constructional idiom, the particle verb, for this purpose, as in *op leuken* 'to make nicer'.

5. CONCLUSIONS

It is clear that there must be a strict formal distinction between words and phrases based on the principle of Lexical Integrity that functions as a criterion to distinguish phrasal lexical units from words. However, both morphological and syntactic constructs serve as lexical units, and may have similar functions. There are morphological and syntactic templates for the construction of new lexical units, and these templates may exhibit complementary distribution. The necessity of lexical multi-word templates for periphrasis, progressive forms, particle verbs, and causative constructions, to name just a few, relativizes a strict distinction between lexicon and syntax.

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