CHAPTER 8

# Verb clusters and branching directionality in German and Dutch

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## 0. Introduction

The analysis and description of Dutch and German Verb clusters proposed here is cast in terms of the theory of *Semantic Syntax* (SeSyn; Seuren 1996). In SeSyn, a grammar is an algorithm that takes as input a Semantic Analysis (SA), formulated in a regimented variety of the *language of predicate calculus*, and produces a Surface Structure (SS) as output. The relevant details, as well as the wider cognitive environment of the SeSyn model, are given in the Sections 1, 2 and 3. One important parameter, allowing for crosslinguistic variation, is *branching directionality* (Section 1.2). Tree structures in specific parts of the grammar of a language are marked for left branching (LB) or right branching (RB); the rules that operate on them conform automatically. Dutch and German V-clusters ('coherent constructions'; Bech 1955) are discussed in the Sections 4 and 5, respectively. They result from similar syntactic systems, but with overall RB for Dutch, and overall LB for German V-clusters. Yet when in a derivation a German (LB) V-cluster headed by an *R-verb* (e.g. *können*, *wollen*, *dürfen*) stands directly under the perfective auxiliary *haben* or under the futuricity auxiliary *werden*, the remaining derivation of the cluster becomes RB, obligatorily for *haben* and optionally for *werden*. Given the specific SA-regimentation posited for the Germanic (and many other) languages, the relevant German facts follow automatically. The same regimentation explains the defective paradigm of the English modals, as well as many other similar phenomena. This analysis crucially fits the *uncontroversial* facts of Standard German. There are, however, also many *controversial* facts, especially in German, due to the complexity of the constructions, the rich array of admissible topicalizations, and the consid-

erable dialectal variation. Section 6 discusses the data problem. It is concluded that the norms for Standard German are too flexible to allow for a description that yields *all* the possibly correct constructions. Instead, we must be content with a description that yields *only* correct constructions, leaving room for some parametric variation for less clear cases. Even so, it is felt that the description approximates the norms of Standard German in a nontrivial way. The last section gives a *mise au point* of what is actually claimed, in terms of linguistic reality, by the analysis presented. The central claim is that the *derivational* character of the system proposed is indispensable to its explanatory value: any physical implementation of the system must be derivational and cannot be just representational.

## 1. The Semantic Syntax model

### 1.1 General architecture

Semantic Syntax (SeSyn; Seuren 1996) is a *transformational mediational* model of grammar. It considers a natural language grammar to be a mediating device mapping Semantic Analyses (SAs) of sentences onto corresponding Surface Structures (SSs) and vice versa. SAs are formulated in a *regimented version of the language of modern predicate calculus* or LPC, consisting of a lexical nucleus or matrix commanded by a number of operators.[1] The regimentation differs crosslinguistically but stays within the broad syntactic format of LPC. The differences concern mostly the build-up of the Auxiliary System of the language in question, containing tenses, aspects, modalities, negation, quantification and other (adverbial) operators. It is assumed that Auxiliary Systems of languages are built up according to language-specific semantic *auxiliary checklists* (see Note 5 below).

In this study we concentrate exclusively on the top-down or generative part, the transforming of SAs into SSs, leaving out the bottom-up part where SSs are parsed into SAs. The reason for this restriction is mainly practical: the description of the top-down transformational process has been strikingly successful in that significant generalizations could be captured, both within the languages described and crosslinguistically. No such successes have been achieved so far in specifying the bottom-up parsing process. It is felt that a parser, one which transforms input surface structures of sentences into corresponding semantic analyses, will have to rely heavily on the top-down gener-

ative mechanism, besides being dependent also on cognitive factors that filter out pragmatically improbable meanings.

SeSyn is embedded in an overall architecture linking it up with, on the one hand, cognition and, on the other, the physical media of sound and script. It is premissed on the assumption that cognition produces discourse-linked *thoughts*, i.e. mental propositions combined with a commitment operator. The latter defines the modality of the speaker's personal responsibility or commitment with respect to the former. Linguistic interaction is not primarily a matter of transfer of information, as superficial theorizing usually has it, but is primarily a matter of social position-taking with respect to a proposition: the speaker guarantees the truth of the proposition concerned, or enquires about its truth, or expresses a hope or wish or order to see the propositional representation realized, and so on.

We are, however, not concerned with the speech-act quality of uttered sentences; only with the propositional component. A proposition is, in principle, the mental act of assigning a property to some (concrete or abstract, existing or imagined) entity or entities. Little is known about the precise mechanisms and structures involved in the coming about of propositions. Here we assume that thoughts are generally structured as shown in Figure 1.

Any particular thought is a unique discourse-linked token occurrence, which has to be processed by a type-level linguistic machinery to be converted into a token utterance. The type-level machinery is what has been called the speaker's *linguistic competence*, a complex processor whose functioning is for the most part automatic and inaccessible to introspection. It is assumed that a lexical search order is issued by the machinery for the main lexical predicate expressing the property assigned, and for the predicates to be used in forming the nominal and other terms of the sentence to be. When the proper lexical choices have been made, a syntactic structure is built up largely according to (a) the restrictions imposed by the predicates found, (b) the instructions issuing from the regimented LPC in question (the auxiliary checklist), and (c) the discourse structure at hand (topic-comment modulation). The result is a Semantic Analysis (SA), a linguistic tree structure cast in a typologically restricted variety of LPC. The overall 'skeletal' format of a right-branching SA as found in all European and many non-European languages is given in Figure 2 below. The SA is then fed into a GRAMMAR, which transforms SAs into SSs. A morphological and a phonological component subsequently specify the phonetic (or orthographic) form of the ensuing token utterance. The transformational grammar is our central concern here.

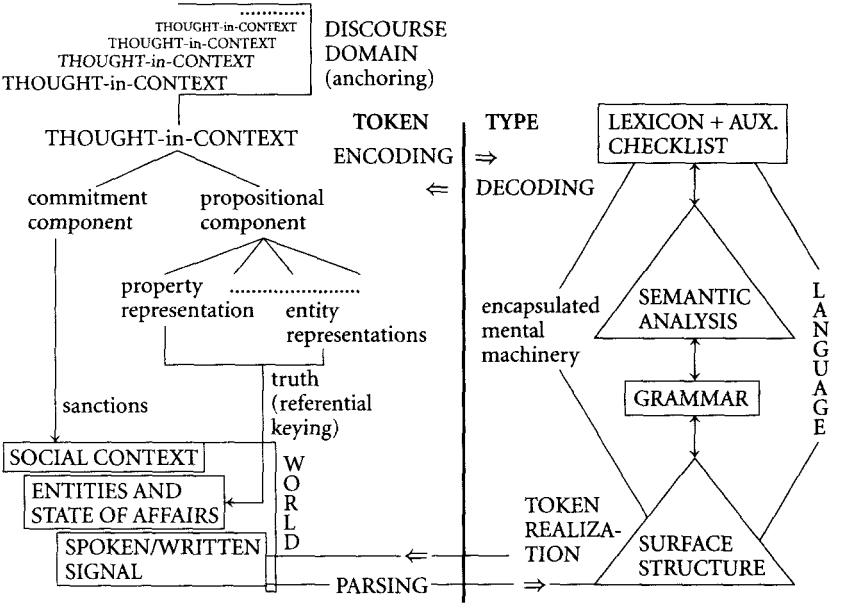



**Figure 1.** More detailed environment of a mediational grammar

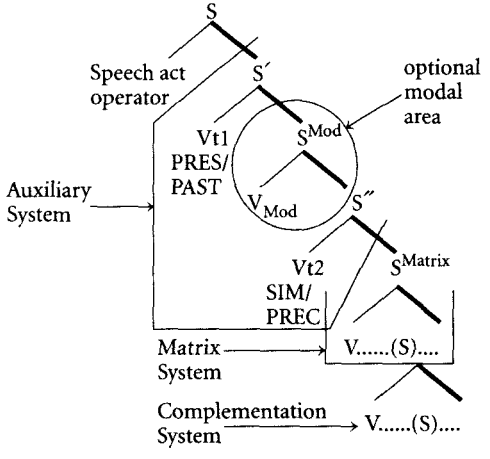



**Figure 2.** Skeletal structure of SA in VSO-format (right-branching)

Apart from the speech act operator, an SA consists of an Auxiliary System, a Matrix System, and optionally a Complementation System. The Auxiliary System specifies at least the tenses and optionally also modality, quantifiers and all kinds of possible adverbial adjuncts, in particular negation, that can be added to the Matrix sentence. In most European and many other languages there are two tenses, whose values have to be be specified for a sentence to come about. The first tense (Vt1) is deictic and is specified as either PRESENT or PAST, the second (Vt2) is relational with regard to the time denoted by Vt1 and is specified as SIMULTANEOUS or PRECEDING.

The Auxiliary System consists of predicates called *operators* since they modify or restrict the semantic applicability of the Matrix sentence. The Matrix System contains the main clause of the sentence, with the main lexical predicate and its terms. If any of the terms is again of a sentential nature, it is called a Complement-S, to be processed by the Complementation System of the Grammar, recursively.

It is assumed, furthermore, in keeping with an old tradition in Transformational Grammar, that the rule system that converts SAs into SSs falls into two main components. First the *cyclic rules* apply, at each successive S-cycle starting from the bottom of the tree. When the Cycle is over, i.e. when the highest S has been processed, the result is called *Shallow Structure* (ShS). The ShS is then input to a set of linearly ordered *postcyclic rules.* The cyclic rules are, for the most part, induced by the V-constituent at each cycle. They are also assumed to be highly constrained by universal principles, and thus very uniform across languages. The postcyclic rules are much more language-specific and much less tied up with lexical predicates.

## 1.2 Branching directionality

It appears that one of the main parameters in grammars is branching directionality. Main sections or subsections of the grammar are defined for right branching (RB) or left branching (LB). If the syntax of a language L is defined as RB for overall sentence structure (i.e. S-projections are programmed for RB), the verb comes first, followed by its terms, typically in the order Subject–Indirect Object–Direct Object (V-S-IO-DO), normally known as VSO-order. If the S-syntax is defined as LB, the verb comes last and is preceded by its terms, in the same order (S-IO-DO-V), normally known as SOV-order. Figure 3 below shows the two general formats for SA-structures. When L has a surface SVO-order, canonical SSs will consist of an NP followed by a VP, so that, in practice, SVO-order equals NP-VP order.[2] It is shown below how a surface SVO(=NP-

S → (V–) NP/S (–V)
subj.

S → (V–) NP/S – NP/S (–V)
subj. dir.obj.

S → (V–) NP/S – NP – NP/S (–V)
subj. ind.obj. dir.obj.

**Figure 3.** General format of SA-structures in (V)-S-IO-DO-(V)

VP)-order results naturally from a particular transformational processing of underlying VSO-order structures.

If L has overall VSO-order, the main parts of the syntax will also be RB, and analogousy for SOV-order and LB. There are, however, exceptions, as languages do occasionally shift from one main word order to the other (mostly as a result of language contact), in which case mixed forms are found.[3] Thus, in German, V-clusters are predominantly LB, even if the syntax as a whole is probably best taken to be RB. In Dutch, on the other hand, V-clusters are predominantly RB, just as S-syntax: V-projections are programmed for LB in German, for RB in Dutch. Morphological *flection* and *declension* processes tend to be LB in the languages of the world: an overwhelming majority has verbal and nominal suffixes, rather than prefixes, to indicate tense, modality, case, agreement and the like.[4] Morphological *lexical derivation*, on the other hand, varies a great deal between LB and RB. In the present study, the directionality parameter is a major factor in the explanation of the facts and thus of prime importance.

In the diagrams the branching directionality has been marked by heavy lines wherever appropriate. In *S-syntax* the branching directionality is taken to be rooted in (programmed for) the S-nodes of SAs. In *category syntax* the directionality is taken to be rooted in (programmed for) the category symbols in the SA-structure at hand, in particular those whose lexical fillers induce cyclic or postcyclic rules. How precisely branching directionality is best implemented in the grammar machinery is a technical question.

The general format specified in Figure 3 is taken to apply across the board, to all main and embedded structures, both in the lexicon and in the grammar. This means that many elements that are labeled 'V' (predicate) in SA-trees must be *relabeled into the appropriate surface category*, which is specified in the lexicon. The grammar carries out this relabeling during the transformational process when the element in question is up for treatment, mostly during, but sometimes after the cycle.

## 1.3 The Auxiliary System

Since, in the theory at hand, verb clusters contain both matrix lexical material and material from the Auxiliary System, something must be said about that. In doing so we will restrict ourselves to the tenses and the modals, other aspects of the Auxiliary System being less relevant for the present purpose.

### 1.3.1 *The tenses*

The tense system follows Beauzée (1767) and Reichenbach (1947), who made a distinction between *utterance time* (S), *event time* (E), i.e. the time in which the event or situation described in the proposition is or was actually situated, and *reference time* (R), i.e. the discourse-related time focused on by the speaker at S, the time of speaking. These authors found that E is pointed down linguistically by a two-tiered system: first R is located with regard to S, then E is located with regard to R. It has been found that this framework provides an adequate syntactic as well as semantic basis for the description of the tenses in the European and many other languages.[5]

We therefore posit two tense operators (predicates), Vt1 expressing R and Vt2 expressing E (S is given anyway). Vt1 is either a deictic 'present' (PRES) or an anaphoric 'past' (PAST); Vt2 is defined relative to Vt1 and is either 'simultaneous' (SIM) or 'preceding' (PREC) with respect to Vt1. In most European languages, PRES and PAST are manifest as verbal suffixes. SIM is usually not lexicalized (except in English, where the dummy verb *do* acts for SIM and is deleted under certain conditions). PREC is realized as a perfect tense auxiliary (*have* or *be*). There are, however, also languages such as Ijo or Berbice Dutch (Kouwenberg 1994) where Vt1 is manifest as an auxiliary verb and Vt2 as a suffix, or, as in Latin and Ancient Greek, where both Vt1 and Vt2 are manifest as verbal suffixes, or, as in Creole languages, where both Vt1 and Vt2 tend to be lexicalized as preverbal particles or preverbs.

Futuricity does not fit into the tense system, but is part of the modal system and mixed in with the tense system, as shown in §1.3.2 below. The fact that many languages express futuricity by morphological means is no sufficient ground for treating it as a tense. (Turkish, for example, expresses possibility by means of an affix, yet possibility is clearly not a tense.)

The SA of every main sentence has to have the two tense operators, but embedded clauses may either have two tenses, in which case the embedded clause is S′, i.e. it contains a finite verb, or have only Vt2 (embedded clause is S″), or even be without any tense operator at all ($S^{Matr}$; see §1.4). In the latter two cases the embedded clause, S″ or $S^{Matr}$, is infinitival or participial. The SA

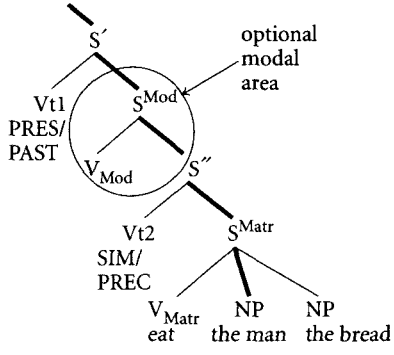



**Figure 4.** The position of the tenses

position of Vt1 and Vt2 is shown in Figure 4, which also gives the optional modal area between the two tenses, discussed in §1.3.2 below.

The four main tenses of English and, analogously, German, Dutch, French etc., are composed as follows:

| | | | |
|---|---|---|---|
| PRES + SIM | → | simple present | (I walk) |
| PAST + SIM | → | simple past | (I walked) |
| PRES + PREC | → | present perfect | (I have walked) |
| PAST + PREC | → | pluperfect | (I had walked) |

**Figure 5.** The composition of the tenses

The grammatical processing leading from SA to SS is discussed below.

### 1.3.2 *Auxiliation*

There is a peculiar phenomenon regarding predicates with lexically weak meanings and whose main function is to modify the meaning or the application range of stronger lexical predicates. The phenomenon affects mainly predicates expressing a modality, especially futuricity, but also other predicates expressing temporal aspect, aktionsart or appearance. All these predicates require an embedded complement-S in subject position.

The phenomenon consists in the fact that such predicates normally originate, in the history of any given language, as lexical matrix predicates, occurring in the position of $V_{Matr}$ in Figure 4, but then show a tendency to 'climb' into the Auxiliary System via a number of distinct steps. This process

we call *auxiliation*. Sometimes we also find that such verbs, besides undergoing auxiliation, still retain a parallel existence as old-fashioned matrix verbs.

The details of auxiliation are not well understood. It seems, however, that an early step may well be a tendency of the verb in question to develop a preference for the position of Vt2. Once this has grown into a fixture in the grammar, the verb can no longer occur in a perfective tense, since the Vt2 position has been taken, nor can it be followed by a perfective infinitive, for the same reason. As a result, their past participle form, which only occurs in the perfective tenses, is lost from the paradigm, and the status of their infinitival form is considerably weakened, as these verbs can no longer occur in an infinitival complement clause. This appears to have happened, for example, with Italian *bisogna* (it is necessary) and French *il faut* (it is necessary; with dative personal pronoun). It also seems to be beginning to break through with Italian *importa* (it matters).

If this is correct, it may provide an explanation for the fact that French allows, for example, for (1a, b) but not for (1c–f).

| | | | |
|---|---|---|---|
| (1) | a. | Il lui faut/fallait partir. | (he has/had to leave) |
| | b. | Il lui faudra/faudrait partir. | (he will/would have to leave) |
| | c. | *Il lui faut être parti. | (he has to have left) |
| | d. | *Il lui a fallu partir. | (he has had to leave) |
| | e. | *Il va/peut/doit lui falloir partir. | (he will/may/must have to leave) |
| | f. | *Il vient de lui falloir partir. | (he has just had to leave) |

Similarly for Italian *bisogna*:

| | | | |
|---|---|---|---|
| (2) | a. | Bisogna/bisognava partire. | (one has/had to leave) |
| | b. | Bisognerà/bisognerebbe partire. | (one will/would have to leave) |
| | c. | *Bisogna essere partiti. | (one has to have left) |
| | d. | *Ha bisognato partire. | (one has had to leave) |
| | e. | *Va/può/deve bisognare partire. | (one will/may/must have to leave) |

In general, the relation between so-called 'defective' verbal paradigms and auxiliation processes requires a great deal of further research, which cannot be carried out here (cp. Erb 2001). One thing, however, stands out with relative clarity: many such lexically weak verbs end up in a position between Vt1 and Vt2, that is, the area in the Auxiliary System marked as 'optional modal area' in Figures 2 and 4. This clearly applies to the English modal auxiliaries *can*, *may*, *will*, *must*, *shall* and *ought to*, which are, of course, known for their defective paradigm lacking infinitives and participles. Their SA position between Vt1 and Vt2 guarantees that they can occur only in the simple present or past

tense. Since, moreover, complement-Ss are either fully or partially tensed or untensed, but never modal, they cannot occur as infinitives.[6]

Clear cases of full auxiliation in German are the auxiliary verb of futuricity *werden* as well as epistemic (not deontic) *müssen* (Erb 2001) and the 'half-modals' (Halbmodalen) *drohen*, *scheinen*, *versprechen* and *pflegen* in their impersonal meanings (Richter 2000: 136–149):

| | | | |
|---|---|---|---|
| (3) | a. | Er wird es schaffen. | (he will manage) |
| | b. | *Er hofft, es schaffen zu werden. | (he hopes that he will manage) |
| | c. | Das muß wahr sein. | (that must be true) |
| | d. | *Das hätte wahr sein müssen. | (that should have been true) |
| | e. | Er scheint gegessen zu haben. | (he seems to have eaten) |
| | f. | *Er wird zu essen scheinen. | (he will seem to eat) |
| | g. | Es drohte zu sinken. | (it threatened to sink) |
| | h. | *Es hat gedroht zu sinken. | (it has threatened to sink) |
| | i. | Es pflegte zu regnen. | (it used to rain) |
| | j. | *Es kann zu regnen pflegen. | (it may habitually rain) |
| | k. | Es verspricht zu regnen. | (it promises to rain) |
| | l. | *Es wird zu regnen versprechen. | (it will promise to rain) |

Interestingly, the corresponding verbs in Dutch have so far not or hardly been affected by auxiliation: the direct translations of (3a–l) sound reasonably correct, in any case not clearly incorrect, in Dutch. Only the verb *schijnen* (seem, Ger. *scheinen*) is beginning to show auxiliation tendencies, as it no longer seems to allow for the perfective tenses.

It will become clear below that the auxiliation of German futuricity *werden* and the non-auxiliation of its Dutch equivalent *zullen* are directly relevant for the proper description of German and Dutch V-clusters. Here we merely note that the Dutch direct translation of (3b):

(4) Hij hoopt het te zullen klaren. (he hopes that he will manage)

is fully grammatical in Dutch, contrary to the German original (3b). This fact is explained by the auxiliation hypothesis.

## 1.4 Complementation types

SeSyn assumes there to be six types of complementation at SA level. Embedded argument clauses can be a fully tensed S′ (with Vt1 and Vt2), or a partially tensed S″ (with only Vt2), or an untensed $S^{Matr}$. Moreover, each of these three types can occur with or without a directly dominating NP. In English, both bare

| | | | |
|---|---|---|---|
| $S'$ | → ***that*-clause** | $_{NP}[S']$ | → ***that*-clause** |
| $S''$ | → **infinitival** | $_{NP}[S'']$ | → **participial** |
| $S^{Matr}$ | → **infinitival** | $_{NP}[S^{Matr}]$ | → **participial** |

**Figure 6.** Six possible Complement-S-types in European languages

$S'$ and $_{NP}[S']$ become a finite subordinate clause (the default complementizer is *that*),[7] and both bare $S''$ and bare $S^{Matr}$ become infinitive constructions. $_{NP}[S'']$ and $_{NP}[S^{Matr}]$ become participial constructions. Figure 6 gives a survey of these six possibilities in English grammar.

The important thing to note here is that there is no complementation type 'Modal', which would allow for the embedding of an $S^{Mod}$ without a higher $S'$ containing Vt1. That is, clauses that contain a modal predicate can only be embedded together with the highest tense which secures the finiteness of the verb form immediately below it, as will be shown below.

## 2. The rule system and some examples

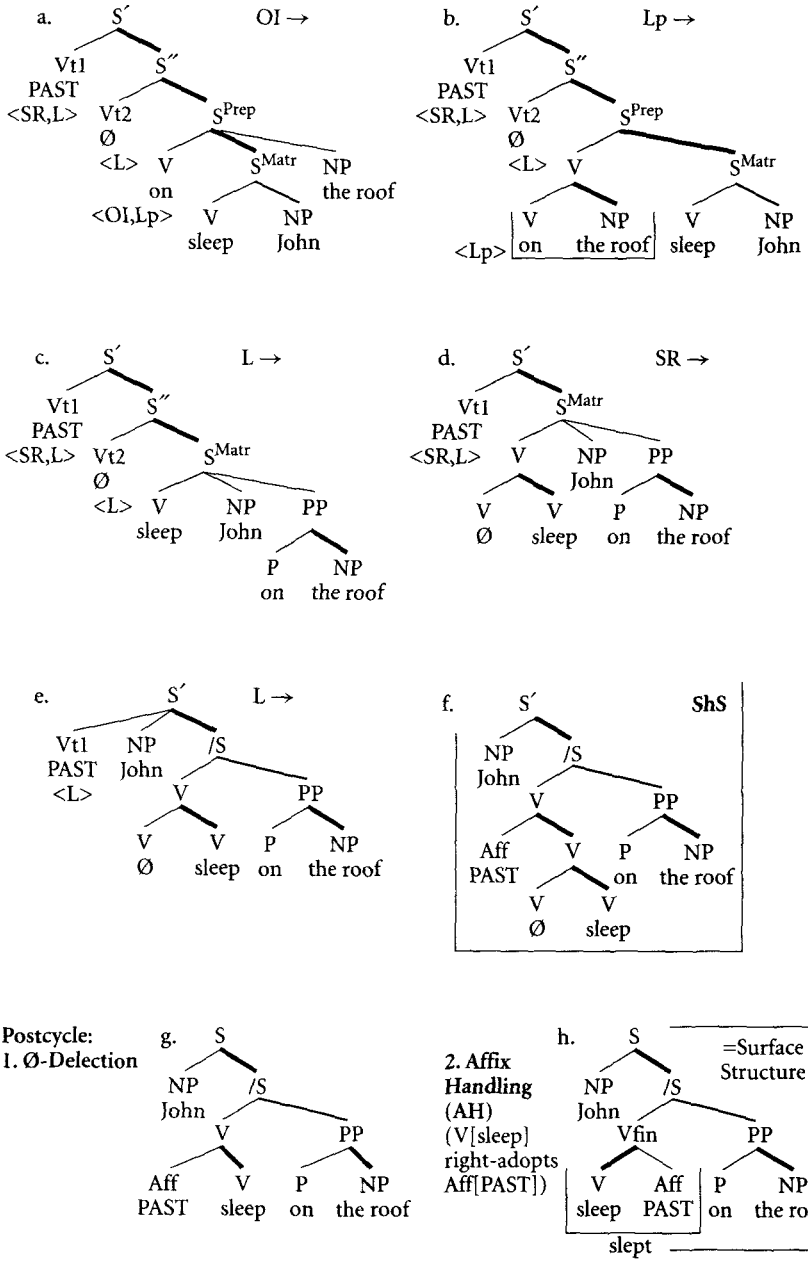
The rule system of SeSyn takes as input a given SA structure. It consists, first, of a set of *cyclic rules*, whose application starts with the most deeply embedded S and subsequently through each higher S-node, till the highest S has been processed. The resulting structure is called *Shallow Structure* (ShS). This is then input to a set of linearly ordered *postcyclic rules*, which add final trimmings to the sentence structure and prepare it for the morphological component, which is left unspecified here. The cyclic rules have a high degree of universality and are, for the most part, induced by the predicate on each S-cycle, in which case they are given between angled brackets in each tree structure until they have been applied. The postcyclic rules are much more language-specific and are, for the most part, structure-induced.

Let us now, by way of illustration, follow the generation process of some simple example sentences. Consider first the English sentence (5):

(5) John slept on the roof.

The derivation is given in (6a–h). 'OI' stands for (cyclic) 'Object Incorporation', 'Lp' for (cyclic) 'Peripheral Lowering', 'L' for (cyclic) 'Lowering onto V', 'SR' for (cyclic) 'Subject Raising', and 'AH' for the postcyclic rule of 'Affix Handling'. The filler 'Ø' for Vt2 stands for 'SIM'.

(6)


a.
S′
OI →
Vt1
PAST
<SR,L>
S″
Vt2
Ø
<L>
S^Prep
V
on
<OI,Lp>
S^Matr
NP
the roof
V
sleep
NP
John
b.
S′
Lp →
Vt1
PAST
<SR,L>
S″
Vt2
Ø
<L>
S^Prep
V
S^Matr
<Lp>
V
on
NP
the roof
V
sleep
NP
John
c.
S′
L →
Vt1
PAST
<SR,L>
S″
Vt2
Ø
<L>
S^Matr
V
sleep
NP
John
PP
P
on
NP
the roof
d.
S′
SR →
Vt1
PAST
<SR,L>
S^Matr
V
NP
John
PP
V
Ø
V
sleep
P
on
NP
the roof
e.
S′
L →
Vt1
PAST
<L>
NP
John
/S
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PP
V
Ø
V
sleep
P
on
NP
the roof
f.
S′
ShS
NP
John
/S
V
PP
Aff
PAST
V
P
on
NP
the roof
V
Ø
V
sleep
Postcycle:
1. Ø-Delection
g.
S
NP
John
/S
V
PP
Aff
PAST
V
sleep
P
on
NP
the roof
2. Affix Handling (AH) (V[sleep] right-adopts Aff[PAST])
h.
S
=Surface Structure
NP
John
/S
Vfin
PP
V
sleep
Aff
PAST
P
on
NP
the roof
slept

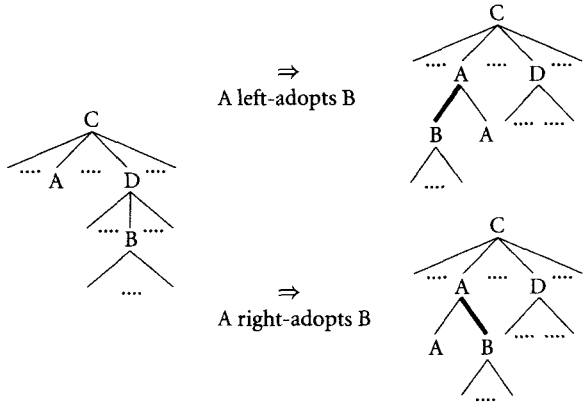



**Figure 7.** Adoption of the constituent B by the constituent A

Structure (6a) is the SA-structure. The first rule to apply, on the $S^{Matr}$-cycle, is OI , which takes the object NP and unites it with V by means of *adoption*, a standard unification procedure illustrated in Figure 7.

That is, the highest node A of the constituent A forms a copy of itself above itself; then constituent B is attached to the new copy node A. The right or left attachment ensures the correct directionality for the A-cluster. Since English V-clusters are RB, the attachment is to the right, as shown in (6b).

The entire complex predicate $_V$[on the roof] is now subject to *Peripheral Lowering* (Lp), which lowers the element in question to the far right of the argument-S. The result is shown in (6c), which marks the end of the $S^{Matr}$-cycle. Note that while Lp applied, the labeling of the constituent changed: the highest V has become Preposition Phrase (PP) and the V-node immediately dominating *on* has been relabeled as 'Preposition' (P). This follows from the general principle that surface categories are assigned during the cyclic processing.

Now we move up to the S˝-cycle, where $_V$[Ø] must undergo Lowering (L), i.e. adoption by $V_{Matr}$. Since the structure involved is RB, and since $_V$[Ø] comes from higher up in the tree, there is left adoption, resulting in a RB V-cluster, as shown in (6d).[8]

On the next cycle, the S´-cycle, the first rule to apply is Subject Raising (SR). The general format of SR is shown in Figure 8.

That is, the subject-NP of the argument-$S_{n+1}$ is removed from its position and given the position of its own immediately dominating S-node, which is moved one position to the right. This S-node is demoted to the status of /S, i.e. an S that has lost its subject-NP. What is called '/S' in SeSyn corresponds

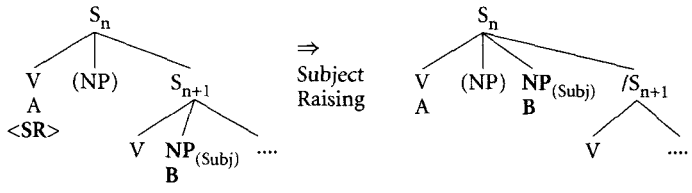



**Figure 8.** Rule schema of Subject Raising (SR)

to 'VP' in traditional terminology. We prefer '/S' because it shows the fact that VPs are nothing but Ss that have lost their subject-NP one way or another. An /S still has some characteristics of S-structures, but not all of them: /Ss are weakened Ss.

SR applies to NP constituents in subject position. The S from which the subject-NP is removed may be a subject or an object S. In the former case the raised subject-NP becomes a new subject to the higher V; in the latter case it becomes a new direct object to the higher V, normally marked for accusative case in languages that mark cases. The latter form of SR corresponds to the *Accusative-cum-Infinitive* (AcI) construction known from Latin and Ancient Greek. The result of SR on the S´-cycle is shown in (6e).

The next and last rule to apply on the S´-cycle is, again, L, resulting in (6f). Note that $_{V}$[PAST] has been relabeled as $_{Aff}$[PAST]: 'V' has become 'Affix', with consequences for the Postcycle and for the morphology.

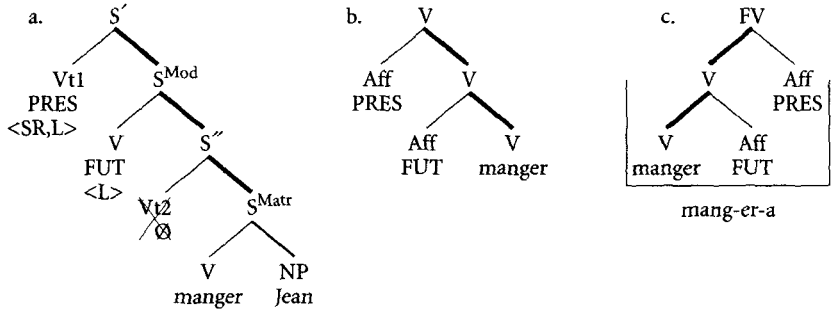
We have now completed the Cycle, and the postcyclic rules apply from here on. The two rules that apply in this case are *Ø-Deletion*, resulting in the deletion of $_{V}$[Ø], as in (6-g), and *Affix Handling* (AH), by which $_{V}$[sleep] right-adopts $_{Aff}$[PAST], surprisingly resulting in a LB V-cluster. The branching directionality has been inverted on account of the fact that affixes are flectional morphological elements and flectional morphology is LB. The final result is (6-h), which, when processed by the morphology, is the surface structure corresponding to (5).

The V-cluster [$_{V}$[sleep]$_{Aff}$[PAST]] has been relabeled 'Vfin' (finite verb). Special stipulations within the rule AH may cause relabeling. Thus, after AH a structure $_{V}$[$_{V}$[X]$_{Aff}$[PRES/PAST]] is relabeled $_{Vfin}$[$_{V}$[X]$_{Aff}$[PRES/PAST]]; $_{V}$[$_{V}$[X]$_{Aff}$[EN]] is relabeled $_{PaP}$[$_{V}$[X]$_{Aff}$[EN]]; $_{V}$[$_{V}$[X]$_{Aff}$[ING]] is relabeled $_{PrP}$[$_{V}$[X]$_{Aff}$[ING]]. Vtl is responsible for the finiteness of a verb form.

The inverted branching directionality as part of AH is neatly shown by the processing of French future verb forms. The French futuricity modal predicate changes its category from V to Affix during the cyclic processing, los-

ing verbal status. This means that a French finite verb form may have two affixal elements, as opposed to only one in English. Example (7) shows how the finite verb *mangera* ('he will eat') is generated from the SA (7a) representing *Jean mangera* (Jean will eat). The Cycle combines PRES and FUT into the V-cluster (7b) ($_{Vt2}$[Ø] is unrealized). (7b) then undergoes AH twice: first $_{Aff}$[FUT] is right-adopted by $_{V}$[manger]; then $_{Aff}$[PRES] is right-adopted by the complex constituent $_{V}$[$_{V}$[manger]$_{Aff}$[FUT]]. The result is the LB V-cluster (7c), corresponding to the finite verb form *mang-er-a*.

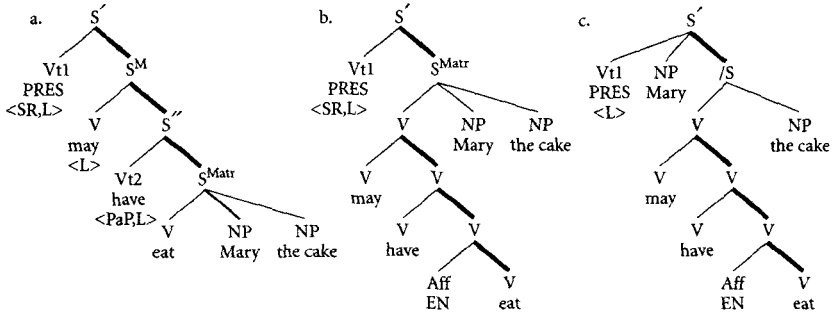
(7)



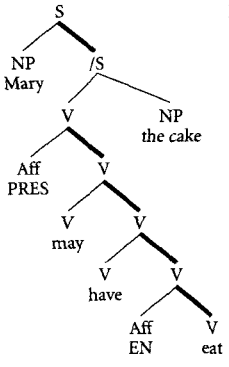

Finally, consider (8), whose abbreviated derivation is shown in (9a–e):

(8) Mary may have eaten the cake.

(9)

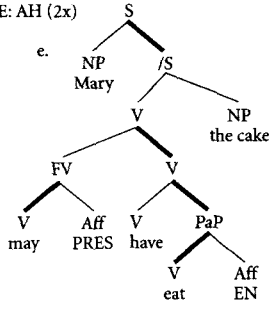


(9) d.




POSTCYCLE: AH (2x)

e.




The first cyclic rule to apply is PaP: $_{V}$[eat] left-adopts the new element $_{Aff}$[EN], later to be processed as the past participle morpheme. Then $_{V}$[have] is lowered onto the lower V by L. On the $S^{M}$-cycle, $_{V}$[may] likewise undergoes L. The result is (9b). SR on the S′-cycle gives (9c) and L gives the NP-/S (=NP-VP) structure (9d). In the Postcycle, AH makes $_{V}$[may] attract $_{Aff}$[PRES] into a LB FV-constituent, and makes $_{V}$[eat] attract $_{Aff}$[EN] into a LB PaP-constituent.

## 3. Matrix Greed

$S^{Matr}$ being the main frame of the sentence, elements from the Auxiliary System as well as elements from complement-Ss are, as much as possible, incorporated into $S^{Matr}$ (the limits of what is possible are set by each individual language). Languages go a long way to secure the fattening of $S^{Matr}$ at the expense of both the Auxiliary and the Complementation Systems. We call this the *Principle of Matrix Greed.*

We have seen that auxiliary elements tend to be incorporated into $S^{Matr}$ by Lowering, which is either *Lowering onto V* (L), leading to V-clusters, or *Peripheral Lowering* (Lp), which makes the lowered element land at the far right of the embedded S. In general, complex auxiliary elements, such as Preposition Phrases, take Lp, but single auxiliary elements may do the same. The German and Dutch negations, for example, take peripheral lowering (Lp), unlike the negation in English, which takes lowering on V (L).

The only case running counter to Matrix Greed is Subject Raising (SR) induced by Vt1 and leading to surface NP-/S (=NP-VP) structures with SVO basic constituent order. Why so many languages do this, is not clear, but there

may be something to the contention, which is sometimes heard, that a middle position of the main verb enhances ease of comprehension. Creole languages, which maximize semantic transparency (Seuren & Wekker 1986), are all SVO. If this view is correct, there is a good functional reason for SR induced by Vt1. It is, anyway, interesting to observe that without Vt1-induced SR the result is a straightforward RB VSO language, and that SVO languages are likewise predominantly RB in their syntax.[9]

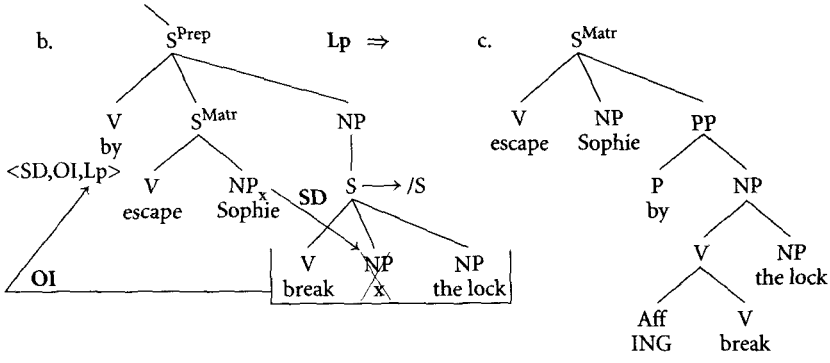
In the Complementation System we also find a pressure to incorporate elements into $S^{Matr}$, yet less strongly than in the Auxiliary System, perhaps because of the less abstract and more lexically prominent status of complement-Ss. Finite, i.e. fully tensed, subordinate clauses are largely left alone. But embedded S″ or $S^{Matr}$ is always affected. A variety of strategies is found. In some languages, for example, there is a tendency to nominalize untensed or partially tensed complement-Ss. In other languages the subject-NP is removed and, consequently, the dominating S is reduced to /S, or the dominating S-node is removed, and its constituents are amalgamated with $S^{Matr}$. We shall have a closer look at the latter two strategies, removal of the lower subject-NP and removal of the lower S-node.

Removal of the lower subject-NP occurs in two different ways. When the lower subject-NP is referentially bound by a controlling NP term in the Matrix-S (i.e. the lower NP takes its reference value from the controlling NP), the regular process is Subject Deletion (SD), which deletes the lower subject-NP and reduces its dominating S to /S. In most cases the controlling Matrix-NP is the subject, but object NPs also frequently act as controllers of SD. This form of SD is called *vertical SD*, as the deletion occurs in an embedded complement-S. There is, however, also *horizontal SD*, deleting the referentially controlled subject-NP in untensed or partially tensed SA object-Ss with a preposition like *by* or *in* or *on* as SA predicate. Horizontal SD is found in sentences like:

(10) a. Sophie escaped by breaking the lock.

derived as shown in (10b, c) (details omitted):

(10)




The general formats of the various forms of SD are given in Figure 9.

The second form of subject-NP removal is Subject Raising (SR), illustrated above in Figure 8. SR occurs when the lower subject-NP is not referentially controlled by a higher NP in the Matrix-S. Often, in languages that have SR,

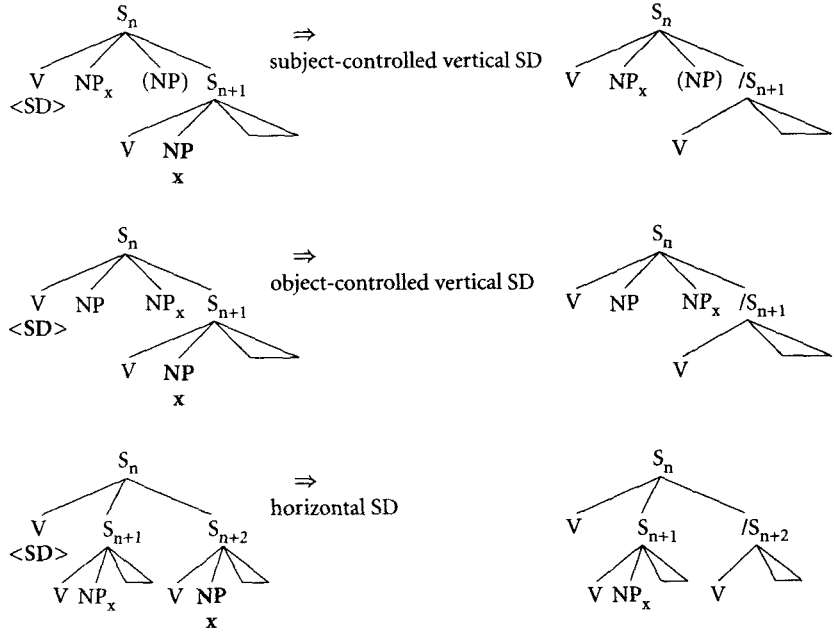



**Figure 9.** Rule schemata for Subject Deletion (SD)

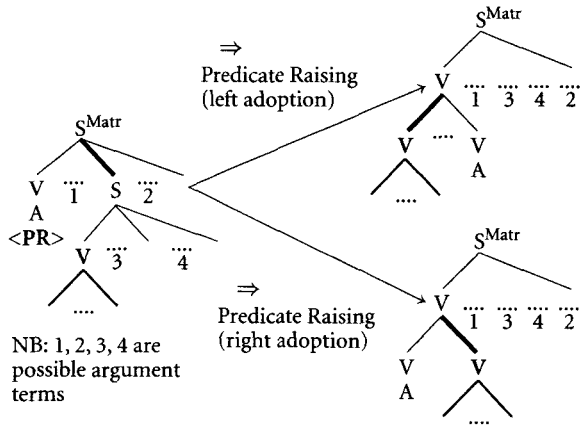



**Figure 10.** Rule schemata for Predicate Raising

SD and SR alternate in that SD applies when there is coreferentiality between the designated higher term and the lower subject-NP, while SR applies when there is not, as in English *I want to go* versus *I want you to go.*

The other strategy, besides subject-NP removal, is Predicate Raising (PR). PR implies the removal of the whole dominating S- or /S-node, whose constituents are amalgamated with the higher S. This is the regular procedure in languages that have PR, as opposed to SR. PR takes the V-constituent of the embedded S, which must be a bare S″ or $S^{Matr}$ (unmodified by negation or adverbial operators), and unites it by means of RB or LB adoption with the higher V, as shown in Figure 10. A general universal principle is assumed implying that an S-structure that loses its V thereby loses its S-status, so that the S-node in question disappears and all remaining material is simply re-attached higher up in the order of occurrence. PR is the farthest a grammar can go in incorporating material from a complement-S into $S^{Matr}$.

There appears to be a typological distinction between languages that have SR and those that have PR in their Complementation System (both in combination with SD). For example, English, Portuguese, Latin, Ancient Greek, Ijo are SR-languages. But German, Dutch, Aztec, Luiseño, Japanese, Sre, and many more, are PR-languages. French is mixed: it takes SR for subject clauses, but predominantly PR for object clauses.

One striking result of PR is that the matrix-S with the complex V-cluster will often end up with more argument terms than the original matrix-S with the non-complex lexically defined predicate. Moreover, when PR is right-

branching, there will be crossing dependencies – a fact that has attracted a great deal of attention in the literature. Crossing dependencies make a structure less semantically transparent and put a strain on on-line processing. In fact, it seems that natural comprehension capacity allows for a maximum of four accumulated argument terms. With more than four terms, the structure is no longer interpretable other than by explicit (pen and paper) analysis.

A further consequence is that a lower subject-NP often surfaces as the middle term between the higher subject and the original lower direct object, and thus occupies the position of indirect object (see Figure 3 above). In fact, one sees that in many languages the original lower subject term turns up in SS as a DATIVE (indirect object) when flanked by a direct object in the embedded S (see Seuren 1972[2001] for extensive discussion). Thus, in the French sentence (11a) the dative *à Pierre* (to Pierre) is the original semantic subject of the verb *voir* (see), and likewise in the Dutch sentence (11b), where the dative *aan Pieter* (to Pieter) is the original semantic subject of the verb *zien* (see):

(11) a. Je ferai voir la lettre à Pierre.
I will-make see the letter to Pierre
'I will make Pierre see the letter'

b. Ik zal de brief aan Pieter laten zien.
I will the letter to Pieter let see
'I will make Pieter see the letter'

c. Ich werde den Mann den Brief sehen lassen.
I will $the_{ACC}$ man $the_{ACC}$ letter see let
'I will make the man see the letter'

Such 'derived' datives are typically, but not always, found with PR constructions in the languages of the world. German is among the exceptions: as can be seen from (11c), German assigns accusative case to the raised subject term (although there are signs in colloquial spoken German that the dative is beginning to gain ground).[10]

## 4. Dutch V-clusters

### 4.1 Optional and obligatory PR

It is now time to have a closer look at the Dutch V-clusters, which result from the application of Matrix-Verb-induced PR.

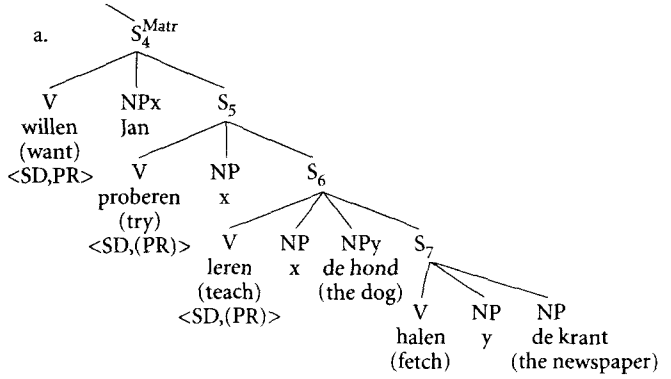
Consider the Dutch subordinate clauses (12a–d), all meaning 'that Jan wanted to try to teach the dog to fetch the newspaper'.

(12) a. ... dat Jan wilde proberen de hond te leren de krant te halen
b. ... dat Jan wilde proberen de hond de krant te leren halen
c. ... dat Jan de hond wilde proberen te leren de krant te halen
d. ... dat Jan de hond de krant wilde proberen te leren halen

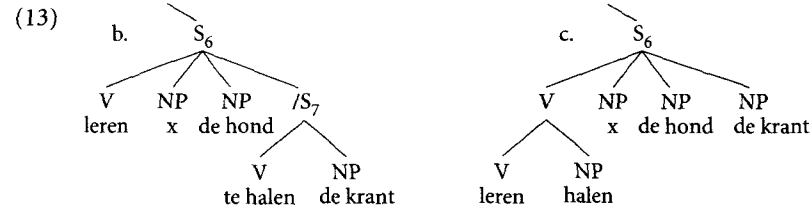
We can now show that they all derive from the SeSyn rule system as set out so far, provided the predicates involved are given the right rule specifications. *Willen* (want) induces the rules SD and PR; both *proberen* (try) and *leren* ('teach') induce SD and optional PR. Moreover, *proberen* adds the particle *te* (to) to the following infinitive, whether PR has applied or not; *leren* adds *te* only if PR has not applied. Note, finally, that in Dutch as well as in German the postcyclic rule V-Final applies. In main clauses, this rule moves the non-finite part of the V-cluster, in non-main clauses and infinitival or participial constructions the entire V-cluster to the far right, but never across an embedded S or /S (German does allow V-Final to cross an embedded /S). Since in subordinate clauses the entire V-cluster is left intact, whereas it is cut up into two parts in main clauses, it is customary, in grammatical studies of the two languages concerned, to present examples in the form of subordinate clauses, as these give a clearer picture of the syntactic structure of the sentence. Dutch V-clusters are predominantly RB.

The common SA of (12a–d) – without the Auxiliary System – is (13a). Application of SD on the $S_6$-cycle gives (13b); subsequent optional application of PR on the same cycle gives (13c).

(13) a.

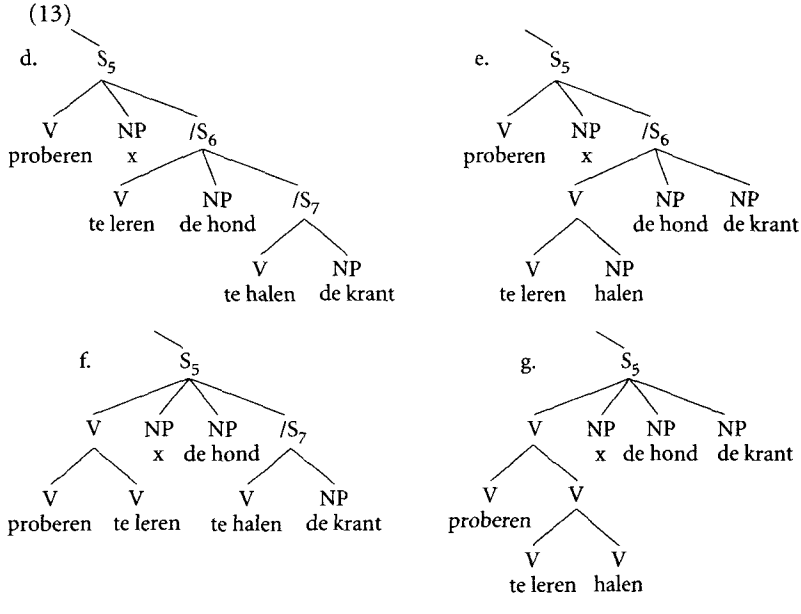


(13)



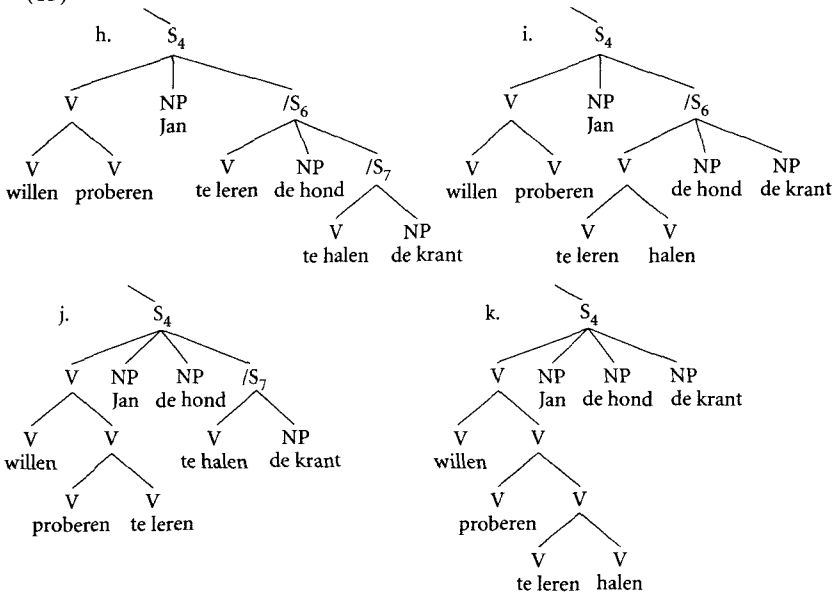

On the $S_5$-cycle SD is obligatory but PR is optional. If only SD is applied, then (13b) leads to (13d), while (13c) leads to (13e). However, when PR is applied additionally, then (13b) gives (13f), while (13c) gives (13g).

(13)




We now have four versions. On the $S_4$-cycle both SD and PR apply obligatorily, so that there will be no further increase in the number of possible variants. (13d) becomes (13h); (13e) becomes (13i); (13f) goes to (13j), and (13g) to (13k).

(13)




The ordinary tense routine and postcyclic V-Final within each S-structure then give (12a–d), respectively.

In Dutch, PR has as a secondary consequence that the cyclic PaP-rule induced by the perfective auxiliary is cancelled whenever the lower V is clustered with one or more other Vs. The expected past participle then surfaces as an infinitive, the so-called *Infinitivus pro Participio* (IPP), as in (14), where the form *willen* (want) is infinitival despite its direct dependence on the perfective auxiliary *hebben* (have):

(14) ... dat zij het boek heeft *willen* verkopen
... that she the book has want sell
'... that she has wanted to sell the book'

## 4.2 The Third Construction

In spite of the preceding, clauses like (15a–c) are common, especially in spoken Dutch:

(15) a. ... dat zij Jan nooit heeft besloten het boek te verkopen
... that she Jan never has decided$_{PaP}$ the book to sell

b. ... dat zij Jan het boek nooit heeft besloten te verkopen
... that she Jan the book never has decided to sell
both: '... that she has never decided to sell Jan the book'
c. ... dat zij nooit met Han verwachtte gezien te worden
... that she never with Han expected seen to be
'... that she never expected to be seen with Han'

(15a–c) are problematic in that the leftmost main constituent of the embedded /S occurs to the left of the /S in question, somewhere between the higher subject-NP and the commanding V-cluster. The regular forms would be (16a, b), respectively:

(16) a. ... dat zij nooit heeft besloten /S[Jan het boek te verkopen]
b. ... dat zij nooit verwachtte /S[met Han gezien te worden]

The construction shown in (15a, b) has been called *Third Construction* (Den Besten & Rutten 1989). In order to avoid confusion, we speak of the Third Construction when *there is evidence of an embedded /S whose leftmost non-verbal constituent or constituents are found to the left of the /S in question, i.e. as a direct dependent of the commanding higher verb.* This means that the term and the concept 'Third Construction' are theory-dependent. Since the term is now used rather widely in different theoretical frameworks, one should realize that it may have different meanings in different theories.

The Third Construction is thus a phenomenon that is conditional upon the occurrence of an embedded infinitival object clause (/S), whose underlying subject has been deleted through SD.[11] It cannot be a variant of PR, since it never occurs with verbs that take obligatory PR. It does occur, however, with verbs that take optional PR, such as *proberen* (try) or *hopen* (hope). The conclusion seems obvious that when it occurs with the latter class of verbs, PR has not applied, so that an embedded /S automatically results (after SD). This explains why a clause like the following is ruled out, at least in standard Northern Dutch:

(17) *... dat hij Jan heeft proberen het boek te verkopen
... that he Jan has $try_{INF}$ the book to sell
'... that he has tried to sell Jan the book'

The infinitive *proberen* shows that PR has been applied, which must result in a V-cluster and not in an embedded /S. (In many varieties of Southern Dutch (17) is fully acceptable, as they allow for PR clustering with one or more arguments united with the raised V, so-called VP-Raising.)

The Third Construction has so far resisted attempts at providing a convincing treatment in terms of transformational grammar. Den Besten and Rutten

(1989:50) posit a Scrambling rule, 'which is held responsible for (part of) the relatively free word order in the middlefield of Dutch and German sentences.'[12] A possible explanation may be found in the assumption of a process of *weak topicalization*: for reasons of focus or emphasis, the constituent in question is moved to the left out of its /S and into the superordinate /S. The movement is restricted to the superordinate /S, so that the subject NP forms a left-hand-side barrier. Within the superordinate /S the focused constituent moves as far to the left as possible (there may be obstacles due to scope, as shown in (19) below). We shall leave the details of such a *Left Extraposition* (LE) rule undiscussed here, (a) because it seems that the Third Construction facts can be treated as an isolated set of phenomena with a somewhat marked sociolinguistic and discourse status, left over after an otherwise convincing analysis in terms of optional or obligatory PR, and (b) because a full discussion would go way beyond the restrictions of size imposed on the present study.

To see the complexity of the matter, one is invited to note that certain forms of LE appear to be banned. To give just one example, it does not seem possible to let LE generate (18a) or (18b) from the regular (18c). Apparently, there is something about the external dative *aan Jan* (to Jan) that blocks LE:

(18) a. *... dat zij aan Jan nooit heeft besloten het boek te verkopen
b. *... dat zij het boek aan Jan nooit heeft besloten te verkopen
c. ... dat zij nooit heeft besloten $_{/S}$[het boek aan Jan te verkopen]

Yet there is no general blocking of LE-induced movement of PPs, witness (15c). There, however, as one will have noticed already, LE stops short of the adverb *nooit* (never), whereas in (15a, b) the extraposed NP happily crosses *nooit*. The variant (19) is not entirely ruled out, but definitely less natural:

(19) ?... dat zij met Han nooit verwachtte gezien te worden

The linguistic expert's intuition says that this is probably connected with the fact that both *nooit* and *met Han* represent scope-bearing operators, with *nooit* taking scope over *met Han*. Given the general tendency in language to position larger scope operators to the left of smaller scope operators, it is to be expected that (19) is less acceptable than (15c). To make this general statement, however, is a great deal simpler than to implement this tendency in a grammatical mechanism.

Not surprisingly with such a complicated system, speakers often make mistakes. Note, for example, the sentence (20a) (uttered by the great soccer coach Rinus Michels):

(20) a. *Ik heb die jongen altijd geprobeerd z'n gevoelens te sparen.
I have that boy always tried his feelings to spare
'I have always tried to spare that boy's feelings.'
b. Ik heb altijd geprobeerd $_{/S}$[die jongen z'n gevoelens te sparen]

The sentence is, though actually uttered, grossly ungrammatical, no doubt because $_{NP}$[die jongen] is not an argument-NP. The grammatical version is (20b). In (20a) $_{NP}$[die jongen] has been moved into the superordinate /S, out of the complex NP $_{NP}$[die jongen z'n gevoelens] (that boy's feelings) in the embedded /S. Native intuition suggests that what was meant was probably something like 'I have, as far as that boy is concerned, always tried to spare his feelings'.

## 4.3 Directionality

As has been said, Dutch V-clusters are, on the whole right-branching (RB). Occasionally, however, LB V-clusters are observed, as in (21b), which is as acceptable as the normal RB (21a) (both: 'that she wanted to leave'):

(21) a. ... dat ze wilde$^1$ vertrekken$^2$
b. ... dat ze vertrekken$^2$ wilde$^1$

The LB variety is possible only in the simple present or simple past, not in the perfective tenses, and only, normally speaking, with a small class of modal verbs, including *willen* 'want'. $V^2$, moreover, must not be clustered. All Dutch modal verbs are full nuclear lexical verbs, and all induce PR without the particle *te*. The class of verbs allowing for LB – let us say the *L-class* – contains at least the following verbs:

**L-class:**

*zullen* (shall, will) *willen* (want) *mogen* (may, be allowed)
*kunnen* (be able, can) *moeten* (must, have to)

Other PR-inducing verbs, such as *zien* (see), *horen* (hear), *voelen* (feel), *laten* (let, allow), (all without the particle *te*) can marginally be treated as L-verbs, but LB then provokes a literary or poetic effect:

(22) ... dat ze mij dansen$^2$ zag$^1$
... that she me dance saw
'... that she saw me dance'

*We posit that V-nodes are programmed for the directionality of their projections: RB in principle but with an optional switch to LB when an unclustered $V^2$ stands*

*under a non-perfective* $V^1$ *of the L-class.* For a literary style register the L-class is extended with verbs of perception and *laten.* All L-verbs, both unmarked and marked, induce PR without *te.*

We shall see below that directionality switch also occurs, though under different conditions, in German, where it is much more conspicuous.

### 4.4 Creeping

One final phenomenon in Dutch V-clusters, which we have decided to call CREEPING (following Evers and also Kaplan & Zaenen, both in this volume; Seuren 1996 speaks of 'End Cluster Arrangement'), must be dealt with. This concerns the fact that verbal particles as well as past participles have the freedom to move upward, or 'creep', within V-clusters, as can be seen from the following examples:

(23) a. ... dat ze mij [zou$^1$ kunnen$^2$ hebben$^3$ **gegroet$^4$**]
... that she me would can have greeted
'... that she would have been able to greet me'
b. ... dat ze mij [zou$^1$ kunnen$^2$ **gegroet$^4$** hebben$^3$]
c. ... dat ze mij [zou$^1$ **gegroet$^4$** kunnen$^2$ hebben$^3$]
d. ... dat ze mij [**gegroet$^4$** zou$^1$ kunnen$^2$ hebben$^3$]
e. *... dat ze **gegroet$^4$** mij zou$^1$ kunnen$^2$ hebben$^3$

(24) a. ... dat ze het boek [zou$^1$ willen$^2$ mogen$^3$ **op**bergen$^4$]
... that she the book would like be allowed put away
'... that she would like to be allowed to put away the book'
b. ... dat ze het boek [zou$^1$ willen$^2$ **op** mogen$^3$ bergen$^4$]
c. ... dat ze het boek [zou$^1$ **op** willen$^2$ mogen$^3$ bergen$^4$]
d. ... dat ze het boek [**op** zou$^1$ willen$^2$ mogen$^3$ bergen$^4$]
e. *... dat ze **op** het boek zou$^1$ willen$^2$ mogen$^3$ bergen$^4$

(25) a. ... dat ze het boek [zou$^1$ kunnen$^2$ hebben$^3$ **opgeborgen$^4$**]
... that she the book would can have put away
'... that she might have put away the book'
b. ... dat ze het boek [zou$^1$ kunnen$^2$ **op** hebben$^3$ **geborgen$^4$**]
c. ... dat ze het boek [zou$^1$ kunnen$^2$ **opgeborgen$^4$** hebben$^3$]
d. ... dat ze het boek [zou$^1$ **op** kunnen$^2$ hebben$^3$ **geborgen$^4$**]
e. ... dat ze het boek [zou$^1$ **op** kunnen$^2$ **geborgen$^4$** hebben$^3$]
f. ... dat ze het boek [zou$^1$ **opgeborgen$^4$** kunnen$^2$ hebben$^3$]
g. ... dat ze het boek [**op** zou$^1$ kunnen$^2$ hebben$^3$ **geborgen$^4$**]
h. ... dat ze het boek [**op** zou$^1$ kunnen$^2$ **geborgen$^4$** hebben$^3$]
i. ... dat ze het boek [**op** zou$^1$ **geborgen$^4$** kunnen$^2$ hebben$^3$]

j. ... dat ze het boek [**opgeborgen**[4] zou[1] kunnen[2] hebben[3]]
k. *... dat ze **op** het boek zou[1] kunnen[2] hebben[3] **geborgen**[4]
l. *... dat ze **opgeborgen**[4] het boek zou[1] kunnen[2] hebben[3]
m. *... dat ze het boek **geborgen**[4] zou[1] **op** kunnen[2] hebben[3]

Note that, at least in standard Northern Netherlandic, PPs that have become lexically incorporated into a verb creep obligatorily to the very top of the V-cluster. Consider the compound verb *in de steek laten* (leave in the lurch; German: *im Stich lassen):*

(26) a. ... dat ze haar broer niet **in de steek** zou hebben
... that she her brother not in the lurch would have
**gelaten**
left
'... that she would not have left her brother in the lurch'
b. ... dat ze haar broer niet **in de steek** zou **gelaten** hebben
c. ... dat ze haar broer niet **in de steek gelaten** zou hebben
d. *... dat ze haar broer niet **gelaten in de steek** zou hebben
e. *... dat ze haar broer niet zou hebben **in de steek gelaten**
f. *... dat ze haar broer niet zou **in de steek** hebben **gelaten**

The variants (26e) and (26f) are ungrammatical in standard Northern Netherlandic but grammatical in standard Belgian Dutch.

These phenomena require a postcyclic rule like the following:

> CREEPING (**Northern Netherlandic**):
> Past participles, verbal particles and other adverbial or adjectival elements in a V-cluster (see the next section) may climb through the V-cluster without limit. PPs that have become a lexical part of a verb must climb to the top of the V-cluster. A past participle may never climb across a verbal particle or PP belonging to the same verb.

It is important to note that the CREEPING phenomena, and in particular the ungrammatical cases in (23)–(25), are strong independent confirmation of the reality of V-clusters in Dutch: the 'creeping' of elements up the V-cluster is restricted to the V-cluster itself; further movement outside the V-cluster leads to ungrammaticality. Since it is only rarely that one sees transformations at work so clearly (in terms of a canonical form and its transformational variants), and so clearly within the bounds of one particular type of constituent structure, CREEPING deserves a prominent place in the theory of grammar.

## 4.5 Non-verbal (pseudo)complements

In Dutch, as well as in German and many other languages, it is not always lower surface *verbs* that are attracted by PR. In some cases, the higher V attracts lower predicates that have different, in particular adverbial or adjectival, surface labelings. The usual term for such non-verbal raising products is *small clauses*, but this term seems misleading since, I argue, they are not clauses at all in surface structure, but raised elements in a V-cluster, originating from embedded complement-Ss whose predicate is marked for a non-V surface category, such as adjective, adverb, past participle, or particle. Instead, we speak of *non-verbal complements* (many or most of which are *pseudo*complements, as will be explained presently).

The elements thus raised partake in CREEPING, as explained in the previous section. In Dutch, these raisings differ from the V-raisings that have been discussed so far in that they are subject to left-branching, not to the customary right-branching, directionality. (In German they are likewise LB, just like the V-raisings.)

The following clauses are cases in point (the elements that have been raised by PR are printed in italics):

(27) a. ... dat Jan de deur had willen *blauw* verven
... that Jan the door had wanted blue paint
'... that Jan had wanted to paint the door blue'

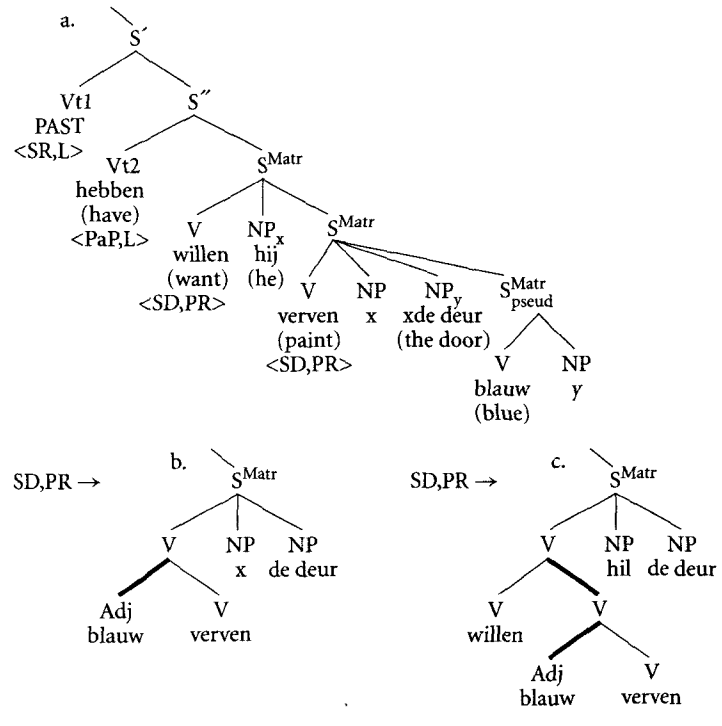
b. ... dat Dan de ladder *rechtop* heeft gezet
... that Dan the ladder upright has put
'... that Dan has put the ladder up'

c. ... dat Han mij *arm* heeft gegeten
... that Han me poor has eaten
'... that Han has made me poor by his eating'

CREEPING allows the alternative orderings *had blauw willen verven* and *blauw had willen verven* for (27a); *heeft rechtop gezet* for (27b), and *heeft arm gegeten* for (27c).

Let us consider the relevant part of the derivation of, for example, (27a).

(28)




We note first that in the SA (28a) the verb *verven* (paint) has an irregular argument assignment. Besides the normal subject-NP and object-NP, there is an extra $S^{Matr}_{pseud}$ that does not figure in its lexical subcategorization frame. Such additional complements, which we call *pseudocomplements*, occur, one way or another, in all languages (see Seuren 2002 for extensive discussion). Their subject term is normally controlled by an argument of the higher verb (in this case by the object-NP *de deur* of the verb *verven*).

Pseudomplements express either a purpose, or a result (as in (27a)), or a concomitant circumstance with regard to the embedding S. They are the source of the well-known *serial verb constructions* found in many Asian, African and Creole languages (see Seuren 1991, 2002). They are also the source of most verb-particle constructions, usually fully lexicalized with specialized meanings, such as English *put up, hand out, stow away, pay off*, etc., or German separable verbs like *weglaufen* (run away), *wiedersehen* (see again), etc., as well as many similar verbs in Dutch.

Moreover, as has often been observed in the literature, Dutch has constructions with verbs of movement or position, like *zitten* (sit), *lopen* (walk), *staan* (stand), *gaan* (go), that are used semantically as durative or progressive auxiliaries while their original lexical meaning is bleached considerably, as in *Hij ligt te slapen* (he is asleep <while lying down>). Grammatically, however, these verbs function as full lexical verbs, allowing for the full range of tenses and moods, and it seems to make sense to treat the embedded complement-S as a conventionalized (lexicalized) subject-controlled pseudocomplement in the sense discussed here (with the meaning of concomitant circumstance). It is clear that the V of the complement-S is raised to the higher verb by PR, forming a V-cluster. In this case the cluster is right-branching, as the raised element is a surface verb.

Generally, in Dutch and German, verbs that take a pseudocomplement acquire the rule feature <PR>, but in both languages the PR is left-branching whenever the element raised is non-verbal.[13] The lower predicate is relabeled appropriately ('Adjective' in the case of (27a)). If there is control, the rule feature <SD> is likewise added automatically.[14]

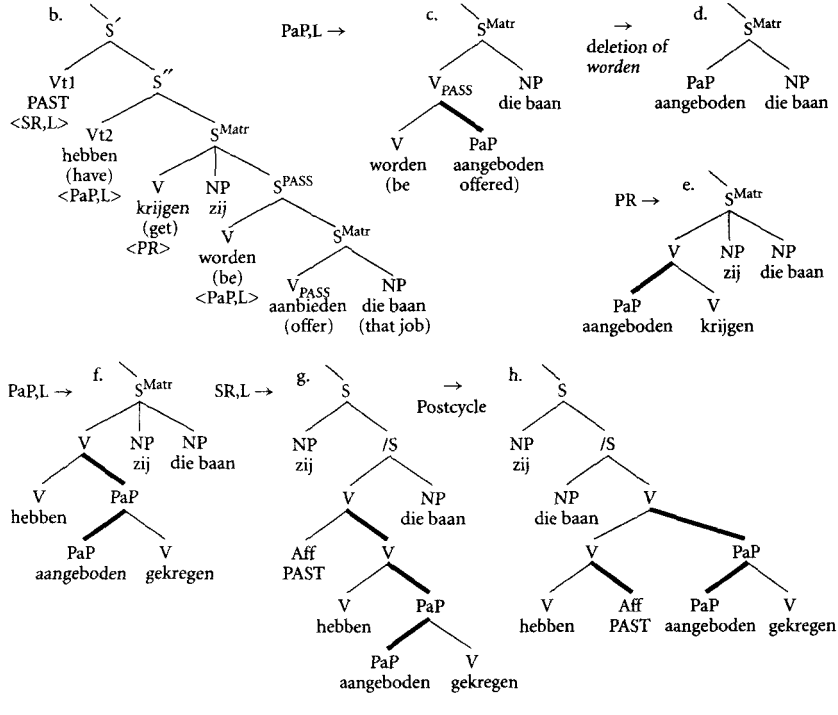
Let us now consider the question of the derivation of (29a) (also discussed in Kempen & Harbusch, this volume), which is not a case of pseudocomplementation but merely of non-verbal raising. (29a) is somewhat problematic since this construction appears to have quite a few idiosyncrasies. It has also hardly been studied in the literature in a way that serves our purpose. This is the best we can do.

(29) a. ... dat zij die baan had *aangeboden* gekregen
... that she that job had offered got$_{PaP}$
'... that she had been offered that job'

Given the general premisses of the theory, it seems reasonable to assume an SA of the form (29b). The complement $_S$[[worden]$_S$[aanbieden,die baan]] is not a pseudocomplement but a regular passive object-S that Dutch *krijgen* (get, receive) is subcategorized for. Following normal procedure, this object-S is converted into $_S$[$_V$[$_V$[worden]$_{PaP}$[aangeboden]],die baan] (=(29c)). Now we must get rid of $_V$[worden], so as to be left with the bare $_{PaP}$[aangeboden]. The simplest assumption is that the deletion of $_V$[worden] is induced by the conditions that must be assumed to come with the passive object-S, but it must be admitted that no detailed analysis of this kind of construction is available. On this assumption we get (29d). Then, on the *krijgen*-cycle, $_{PaP}$[aangeboden] is adjoined to $_V$[krijgen] by PR. The resulting cluster is left-branching since the raised element is not labeled 'V'. This gives (29e). The next step is the cyclic

processing of the perfective auxiliary $_V$[hebben], which induces the rules PaP and Lowering, in that order. PaP assigns past-participle morphology to the first lexical V down the V-cluster (the PaP rule is not canceled because the V-cluster contains just one lexical V). Lowering then results in (29f). Further processing gives the shallow structure (29g), converted into the surface structure (29h) in the postcycle.

(29)




(29a) thus represents the form without any postcyclic CREEPING. With CREEPING the forms *aangeboden had gekregen* (leftmost PaP moved) and *aangeboden gekregen had* (entire PaP-cluster moved) are possible. No other variant is generated.

## 5. German V-clusters

We turn now to German V-clusters. As in the case of Dutch, we limit ourselves in principle to *standard modern German* (SMG), realizing that the dialects of Dutch and German deviate significantly from the respective standard languages, in particular with respect to V-cluster phenomena. A full study of all dialects is not feasible given the inherent limits of this study. Moreover, the status of dialectal data is, on the whole, doubtful, partly because native dialect speakers are hard to question on syntactic matters, but also because every dialect is profoundly affected by the standard language. But we do claim that the data in (30) unambiguously represent standard modern German.

The subdomain of German V-clusters is, in principle, LB, as can be read from the descending order of superscripts on the verb forms in (30). There are, however, infractions of this principle. (30b, e, g, j, l, n, q) show a RB arrangement at the top end of the V-cluster, a phenomenon known as *Oberfeldumstellung*. The question is: how do we catch these phenomena into a rule, thereby excluding the ungrammatical cases (30c, h, m, o, r, s)?

(30) a. ..., daß sie ausgehen$^2$ will$^1$
... that she out-go wants
'... that she wants to go out'

b. ..., daß sie hat$^1$ ausgehen$^3$ wollen$^2$
... that she has out-go want
'... that she has wanted to go out'

c. *..., daß sie ausgehen$^3$ gewollt$^2$ hat$^1$
... that she out-go wanted has
'... that she has wanted to go out'

d. ..., daß sie mich ausgehen$^2$ sah$^1$
... that she me out-go saw
'... that she saw me go out'

e. ..., daß sie mich hat$^1$ ausgehen$^3$ sehen$^2$
... that she me has out-go see
'... that she has seen me go out'

f. ..., daß sie mich ausgehen$^3$ gesehen$^2$ hat$^1$
... that she me out-go seen has
'... that she has seen me go out'

g. ..., daß ich sie habe$^1$ tanzen$^4$ gehen$^3$ lassen$^2$
... that I her have dance go let$_{INF}$
'... that I have let her go dance'

h. *..., daß sie wird[1] ausgehen[2]
... that she will out-go
'... that she will go out'

i. ..., daß sie ausgehen[2] wird[1]
... that she out-go will
'... that she will go out'

j. ..., daß sie wird[1] ausgehen[3] wollen[2]
... that she will out-go want
'... that she will want to go out'

k. ..., daß sie ausgehen[3] wollen[2] wird[1]
... that she out-go want will
'... that she will want to go out'

l. ..., daß sie das wird[1] haben[2] tun[4] können[3]
... that she that will have do $can_{INF}$
'... that she will have been able to do that'

m. *..., daß sie das haben[2] tun[4] können[3] wird[1]
... that she that have do $can_{INF}$ will
'... that she will have been able to do that'

n. ..., daß sie das muß[1] haben[2] tun[4] können[3]
... that she that must have do $can_{INF}$
'... that she must have been able to do that'

o. *..., daß sie das haben[2] tun[4] können[3] muß[1]
... that she that have do $can_{INF}$ must
'... that she must have been able to do that'

p. ..., daß sie das tun[3] können[2] muß[1]
... that she that do $can_{INF}$ must
'... that she must have been able to do that'

q. ..., daß sie das wird[1] müssen[2] haben[3] tun[5] können[4]
... that she that will $must_{INF}$ have do $can_{INF}$
'... that it will be so that she must have been able to do that'

r. *..., daß sie das müßen[2] haben[3] tun[5] können[4] wird[1]
... that she that $must_{INF}$ have do $can_{INF}$ will
'... that it will be so that she must have been able to do that'

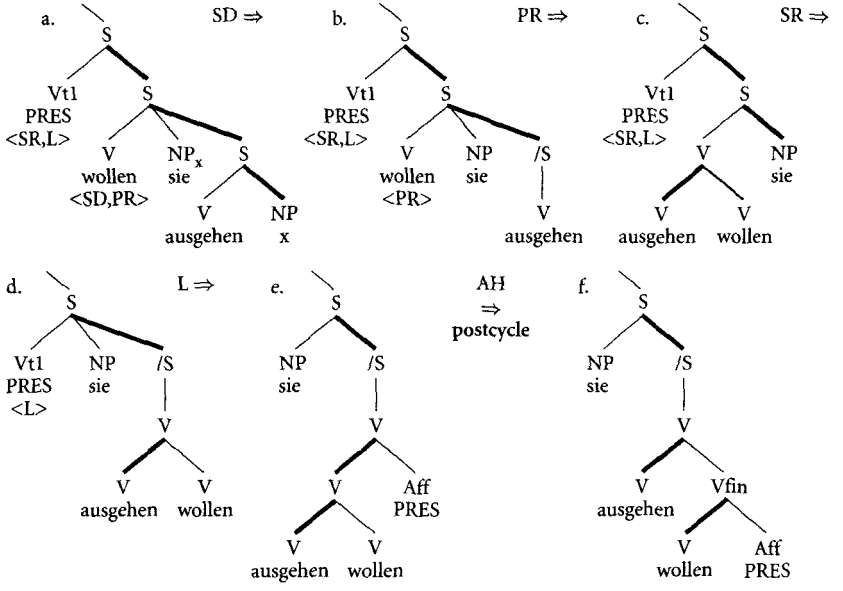
s. *..., daß sie das muß[1] werden[2] haben[3] tun[5] können[4]
... that she that must $will_{INF}$ have do $can_{INF}$
'... that it must be so that she will have been able to do that'

Note, incidentally, that the Dutch equivalent of (30s) is fully grammatical:

(31) √..., dat zij dat moet[1] zullen[2] hebben[3] kunnen[4] doen[5]
... that she that must will$_{INF}$ have can$_{INF}$ do
'... that it must be so that she will have been able to do that'

To avoid misunderstanding, let us see first how a simple sentence like (30a) is generated in SeSyn. The derivation is as in (32a–f). (32a) is the input SA, (32e) the Shallow Structure, and (32f) the Surface Structure:

(32)




To account for the switch from LB to RB in V-clusters we posit a class of **R-verbs**, consisting at least of the following members (*sehen, hören, fühlen* are full members in SMG but optional members in some almost standard dialects):

**R-class:**

| | | | | | |
|---|---|---|---|---|---|
| *sehen* | 'see' | *können* | 'be able' | *mögen* | 'like','may' |
| *hören* | 'hear' | *müssen* | 'must' | *dürfen* | 'be allowed' |
| *fühlen* | 'feel' | *sollen* | 'must' | | |
| *lassen* | 'let, allow, make' | *wollen* | 'want' | | |

We posit that these verbs are subject to the **R-Condition**, which applies at the appropriate moment in the Cycle and turns the directionality of all further additions to the V-cluster from the default LB to marked RB under the following conditions:

When an R-verb $V_R$ is the highest matrix-V of a (LB) V-cluster below an Auxiliary System, then all subsequent Lowerings onto V in the Auxiliary System are right-branching (i.e. with left-attachment):

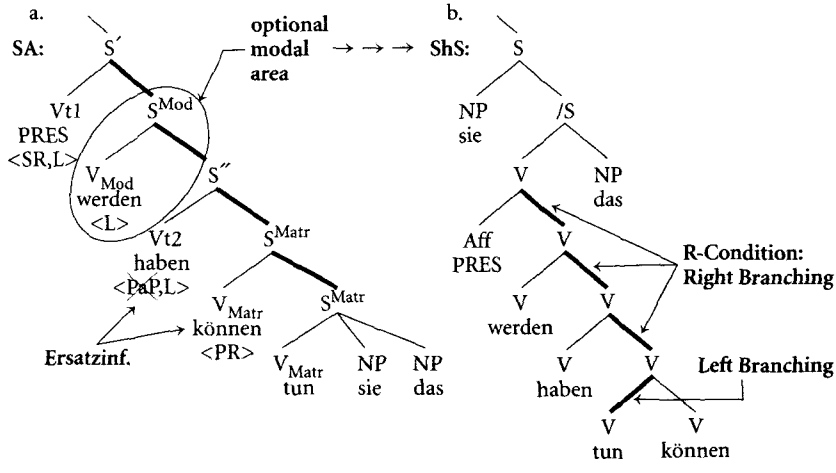
(a) obligatorily when $V_R$ stands directly under a perfective auxiliary (*haben* in all cases) and the clause contains Vt1;[15]

(b) optionally when $V_R$ stands directly under the modal verb of futuricity *werden* ('will').

When the R-Condition applies, the rule *Past Participle* is inoperative (resulting in a so-called 'Ersatzinfinitiv', the German counterpart of Dutch IPP).[16]

This gets all the data of (30) right, provided the modal predicate of futuricity *werden* is placed, in the SA, between Vt1 and Vt2, and may never occur without Vt1, as specified above in Figures 2 and 4 (cp. the examples (3a–l) in Section 1.3.2 above). (33b) shows the shallow structure of (30l) cyclically derived from the SA (33a):

(33)




Here the order must be [werden[1]–haben[2]–tun[4]–können[3]], since the V-cluster is RB as from the addition of *haben*, owing to the R-Condition which says that all subsequent Lowerings must be RB as well. Therefore, the later addition of *werden* must proceed in the RB fashion. This explains why (30j, k) are both grammatical: the R-Condition leaves the switch to RB optional for R-verbs under *werden*. However, the corresponding form with the perfective *haben* only

allows for the RB version, as in (30l); (30m) is judged to be ungrammatical (Duden 1995:787; Heidolph et al. 1981:724).[17] ((30h) is ungrammatical because *ausgehen* is not an R-verb.)

It is thus clear that the intertense position of the modal auxiliaries, together with the classification of German *werden* as a modal auxiliary, is a crucial element of the analysis. The analysis is, moreover, cast in general theoretical terms applicable to groups of languages, while the specific values on the various parameters have been restricted largely to the lexicon or anyway defined in close relation with classes of lexical items. This gives the analysis a firm footing in the general theory of grammar.

If CREEPING occurs in German, it is much more restricted than in Dutch. It may pay off to assume optional CREEPING to the top of the V-cluster for PPs that have become a lexical part of a verb, as in *im Stich lassen* (leave in the lurch). This assumption is warranted if (34b), which is identical in meaning to (34a), is considered grammatical.

(34) a. ... weil ich den Jungen nie hätte **im Stich** lassen
... because I the boy never had$_{SUBJ}$ in the lurch leave
können
can
'... because I could never have left the boy in the lurch'
b. ... weil ich den Jungen nie **im Stich** hätte lassen können

If (34b) is grammatical in standard German (which it does seem to be), then PP[im Stich] has 'crept' up to the very top of the V-cluster.

Moreover, it seems that past participles, with or without the passive auxiliary *werden*, are allowed to creep (cp. Haider, this volume, ex. (23a–d)):

(35) a. ... daß es getan$^4$ hätte$^1$ werden$^3$ sollen$^2$
... that it done had$_{SUBJ}$ be shall$_{INF}$
(hätte getan werden sollen)
b. ... daß es getan$^4$ werden$^3$ hätte$^1$ sollen$^2$
both: '... that it should have been done'

Then, optional *Left /S-Extraposition*, probably induced by some form of *weak topicalization* (cp. the Dutch Third Construction), must be posited for German, but not for Dutch (see Zifonun et al. 1997, Vol. 3:2186–2214 for many examples). This allows for one single /S-constituent, but without any possible embedded /Ss, to be moved leftward into the superordinate /S. This gives, e.g., (36a, b) but not (36c) (cp. 5, 11 of Table 1 below):

(36) a. ... weil er sich /S[den Wagen abzuholen] schon
... because he himself the car to fetch already
vorgenommen hatte
proposed had
'... because he had already planned to fetch the car'

b. ... weil er /S[zu versuchen] verspricht /S[das Fahrrad zu
... because he to try promises the bicycle to
reparieren]
repair
'... because he promises to try to repair the bicycle'

c. *... weil er /S[zu versuchen /S[das Fahrrad zu reparieren]]
... because he to try the bicycle to repair
verspricht
promises
'... because he promises to try to repair the bicycle'

But note that (36b), though with a different structure, is also generated through PR induced by *versuchen* (try).

It appears, moreover, that /S-topicalization in subordinate clauses is also permitted to the top of the clause, as in 9 of Table 1 below, where the complex /S[zu versuchen /S[das Fahrrad zu reparieren]], has been thus topicalized, or in 17 and 20, where this has happened to only /S[das Fahrrad zu reparieren]. We must, however, refrain from giving explicit rules for such phenomena, whose treatment is contingent upon the system proposed.

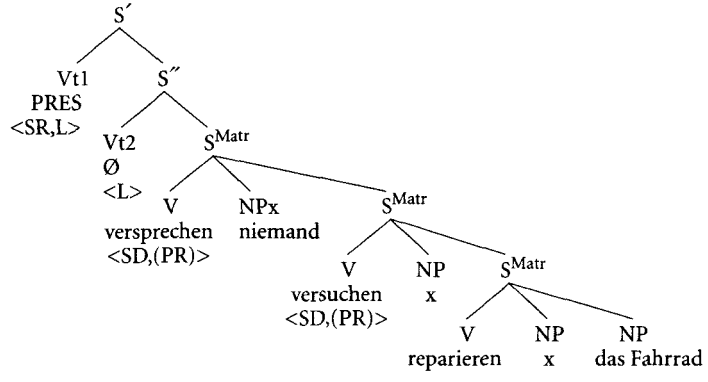
## 6. The data problem (with special reference to German)

After all the work of the previous sections, we still face the question of the empirical adequacy of the machinery. The question has a certain urgency with respect to German, because there is an especially acute problem as regards the German data. German speakers' acceptability judgements, as well as forms used by competent speakers in well-monitored speech, appear to vary beyond what can be captured in terms of one single system. On the other hand, there is a core of clearly well-formed, unmarked construction types that are accepted by all speakers as being representative of SMG. The large range of variation is perhaps due to dialectal variation, which is considerable among speakers of German. What we have aimed for in this study is a generative rule system that captures the core of those SMG data that are beyond suspicion in terms of one

single system, leaving out of account the variant forms that are acceptable to some but not to all speakers. To what extent we have been successful in doing so is a question that should be settled by further systematic data collection.

Meanwhile, a spot check has been carried out on 11 competent speakers of SMG, who were asked to rank 30 variants of a single German subordinate clause (taken from Rambow 1994a) on a scale of 'fully grammatical' or '√', 'doubtful' or '?', and 'fully ungrammatical' or '*'. Their judgments are given in Table 1 below, where the judgments presented in Rambow (1994a) have been counted as those of one individual (although in fact they represent the judgments of a group of native speakers). On the whole, the results support SeSyn, whose output is given in the right hand side column, though not unambiguously. It must be taken into account, however, that the test conditions were far from optimal: when confronted with 30 variants of one clause, subjects are likely to get confused. Moreover, the number of 11 respondents is too low to be statistically relevant. An improved test, with a greater variety of forms to be judged, a larger number of test subjects and better controls is obviously called for. In defense of the SeSyn generative system it may be mentioned that a distinct correlation was found between those variants that are marked '(√)' under SeSyn (that is, left open by SeSyn; to do with weak topicalization) on the one hand, and specific groups of respondents on the other: one group (5 persons) was clearly in favor of these variants, a second group (2 persons) was systematically against, and a third group (4 persons) systematically hesitated.

(37)




The Rambow clause has the SA (37). All the variants are assumed to be derivations from this one SA, some illicit and others legitimate. (The fact that

**Table 1.** Grammaticality judgments by 11 speakers of German
NB: (√): left open by SeSyn; to do with weak topicalization

| | | √ | ? | * | SeSyn |
|---|---|---|---|---|---|
| 1 | weil niemand das Fahrrad zu reparieren verspricht zu versuchen | | 6 | 5 | * |
| 2 | weil das Fahrrad niemand zu versuchen zu reparieren verspricht | 1 | 4 | 6 | * |
| 3 | weil das Fahrrad niemand zu reparieren zu versuchen verspricht | 2 | 6 | 3 | * |
| 4 | weil das Fahrrad niemand zu versuchen verspricht zu reparieren | | 4 | 7 | * |
| 5 | weil niemand zu versuchen verspricht, das Fahrrad zu reparieren | 7 | 2 | 2 | √ |
| 6 | weil zu versuchen niemand das Fahrrad zu reparieren verspricht | | 2 | 9 | * |
| 7 | weil das Fahrrad niemand verspricht zu versuchen zu reparieren | | 5 | 6 | * |
| 8 | weil niemand das Fahrrad verspricht zu reparieren zu versuchen | 1 | 6 | 4 | * |
| 9 | weil zu versuchen, das Fahrrad zu reparieren, niemand verspricht | 9 | 2 | | (√) |
| 10 | weil niemand das Fahrrad zu reparieren zu versuchen verspricht | 6 | 3 | 2 | √ |
| 11 | weil niemand zu versuchen, das Fahrrad zu reparieren, verspricht | 4 | 5 | 2 | * |
| 12 | weil niemand das Fahrrad verspricht zu versuchen zu reparieren | 2 | 1 | 8 | * |
| 13 | weil niemand das Fahrrad zu versuchen zu reparieren verspricht | 2 | 6 | 3 | * |
| 14 | weil das Fahrrad niemand zu reparieren verspricht zu versuchen | 2 | 3 | 6 | * |
| 15 | weil das Fahrrad zu versuchen zu reparieren niemand verspricht | 4 | 5 | 2 | * |
| 16 | weil das Fahrrad niemand verspricht zu reparieren zu versuchen | | 4 | 7 | * |
| 17 | weil das Fahrrad zu reparieren niemand zu versuchen verspricht | 8 | 2 | 1 | (√) |
| 18 | weil das Fahrrad zu versuchen niemand zu reparieren verspricht | 1 | 2 | 8 | * |
| 19 | weil zu versuchen niemand verspricht, das Fahrrad zu reparieren | 1 | 3 | 7 | * |
| 20 | weil das Fahrrad zu reparieren niemand verspricht zu versuchen | 5 | 4 | 2 | (√) |
| 21 | weil niemand verspricht, das Fahrrad zu versuchen zu reparieren | 5 | 4 | 2 | * |
| 22 | weil niemand zu versuchen das Fahrrad verspricht zu reparieren | | | 11 | * |
| 23 | weil niemand verspricht, das Fahrrad zu reparieren zu versuchen | 8 | 2 | 1 | √ |
| 24 | weil das Fahrrad zu versuchen niemand verspricht zu reparieren | | 4 | 7 | * |
| 25 | weil zu versuchen niemand das Fahrrad verspricht zu reparieren | | 1 | 10 | * |
| 26 | weil niemand verspricht zu versuchen, das Fahrrad zu reparieren | 11 | | | √ |
| 27 | weil niemand das Fahrrad zu versuchen verspricht zu reparieren | | 3 | 8 | * |
| 28 | weil zu versuchen das Fahrrad niemand zu reparieren verspricht | | | 11 | * |
| 29 | weil zu versuchen das Fahrrad niemand verspricht zu reparieren | | 1 | 10 | * |
| 30 | weil das Fahrrad zu reparieren zu versuchen niemand verspricht | 6 | 5 | | (√) |

$_{NP}$[niemand] represents a negative existentially quantified NP has not been taken into account in the SeSyn rule system.)

The SeSyn system is supported by the responses to the clauses 1, 2, 4, 6, 7, 8, 9, 12, 14, 16, 18, 19, 22, 24, 25, 26, 27, 28 and 29. Supportive evidence is also provided by 5, 10, 17, 23, and 30, in sofar as these clauses are favored by speakers who, apparently, have stored the verbs *versprechen* and *versuchen* as inducing PREDICATE RAISING. Doubtful are 3, 11, 13, 15, 20 and 21. 11 may be seen as an instance of *Left /S-Extraposition* of two embedded /Ss, disallowed in

SeSyn, but apparently considered acceptable by some spreakers. The doubtful cases 13, 15 and 21, all ruled out by SeSyn, show right branching (RB), just like 1 and 2, where German normally has left branching (LB). This does seem to occur, at least in spoken German (I have not been able to check whether this RB feature correlates with certain dialects). Recently I heard a competent German speaker utter the sentence:

(38) Ich glaube, ich habe Ihnen etwas vergessen[1] zu sagen[2].

which may be taken to have the RB V-cluster $_{V}$[vergessen[1] zu sagen[2]], where SMG would have the left-branching $_{V}$[zu sagen[2] vergessen[1]], provided SMG allowed for *vergessen* to induce PREDICATE RAISING (which, for many speakers, apparently, it does not do).

A striking contrast in the position of SeSyn with regard to the responses is seen between 20 and 21: the responses are identical (though the respondents differ greatly among themselves), but SeSyn comes out with opposite results. 20 is not ruled out by SeSyn, but not ruled in either, as it appears to involve a form of subordinate clause topicalization of $_{/S}$[das Fahrrad zu reparieren] from the embedded $_{/S}$[zu versuchen $_{/S}$[das Fahrrad zu reparieren]]. 21 is ruled out, as has been said, because it involves RB.

Note, moreover, that 16 is ruled out because $_{NP}$[das Fahrrad] has been moved from a /S containing a V-cluster, a form of extraposition (or scrambling) that we have not considered so far for German. 3 is structurally ambiguous. It may have arisen from a structure with the LB V-cluster $_{V}$[zu reparieren zu versuchen verspricht]. It may also have arisen from Left Extraposition of $_{/S}$[das Fahrrad $_{V}$[$_{V}$[zu reparieren] $_{V}$[zu versuchen]]]. In both cases, however, $_{NP}$[das Fahrrad] must follow, and not precede, $_{NP}$[niemand], as in 10, which scores much better. The fact that 3 does not score too badly may be due to special rules (not gone into here) applying to the positioning of German indefinite pronouns, such as *niemand* (nobody). In fact, it would seem that 3 with, for example, *er* (he) instead of *niemand* would score dramatically worse.

Many more aberrations from the standard system have been observed, as one would expect given the complex character of the German system. A well-known case (Berry 1989)[18] is the North-Swabian dialect form (39a), which not only has a right-branching V-cluster but also the past participle on the wrong verb. According to Berry (1989) sentences like (39a) are common and considered acceptable among North-Swabian dialect speakers, though apparently lexically restricted to the verb *helfen* 'help'. The subordinate clause form (39b) is also commonly accepted, much more than the fully right-branching (39c):

(39) a. Ich habe[1] das Gras helfen[2] gemäht[3].
I have the grass help mowed
'I have helped mow the grass'
b. ... daß ich das Gras helfen[2] gemäht[3] habe[1]
c. *?... daß ich das Gras habe[1] helfen[2] gemäht[3]

These and similar complications are left out of account in the present study, which is restricted to SMG and concentrates on less controversial cases.

## 7. Discussion

What are the real empirical claims inherent in the analysis presented in this study? This question is important if we want to do justice to the facts while avoiding empty notational claims. That is, we need to specify what we take to be necessary elements, regardless of nonessential notational aspects, in whatever will turn out to be the physical implementation of the grammars of German and Dutch (and other languages showing similar phenomena) in the brains of competent speakers. In the following we will survey the relevant real claims of our analysis, including those that are inherent both in the notation used and in the overall architecture and environment of the theory as explained in Section 1 above.

One central element is the *assumption of V-clusters*, more precisely the amalgamation of embedded and superordinate propositional structures by means of V-clustering and argument unification. It certainly is one claim of the present analysis that some such procedure is needed to establish a systematic link between the surface structures in question and their semantic interpretation. Strong empirical evidence for V-clustering has been adduced, in addition to the arguments already presented in the existing literature such as Bech (1955), Evers (1975) or Haider (1993, 1994, this volume). Among the arguments developed here we mention, in particular, the CREEPING facts of Dutch (Section 4.4), the emergence of 'derived' datives (Section 3), and the branching phenomena, including the German 'Oberfeldumstellung' (Sections 1.2; 5).

Further evidence consists in reflexivization phenomena. For example, Dutch has clauses like (40a) (German has analogous counterparts), with the SA matrix-S (40b)

(40) a. ... dat Karel$_i$ zich$_i$ het pakje liet bezorgen
... that Karel$_i$ himself$_i$ the parcel let deliver
'...that Karel had the parcel delivered to him'
b. ... S[V[laten] NP[hij$_i$] S[V[bezorgen$_{PASS}$] NP[hem$_i$] NP[het pakje]]]

In our treatment, the lower $_V$[bezorgen] is obligatorily clustered with the superordinate $_V$[laten] (which is categorized for obligatory PR) and their arguments are serialized under one S-node, making the higher subject $_{NP}$[Karel$_i$] and the lower indirect object $_{NP}$[hem$_i$] clause-mates under one S. The latter is thus subject to reflexivization (assuming that reflexive pronouns are transformationally sensitive morphological variants of their non-reflexive counterparts). This contrasts with cases that have the same embedding structure as (40b) but disallow V-clustering, such as (41):

(41) ... dat Karel$_i$ opdroeg hem$_i$ / *zich$_i$ het pakje te bezorgen
... that Karel$_i$ ordered him$_i$ / *himself$_i$ the parcel to deliver
'... dat Karel gave the order to deliver the parcel to him'

Here no V-clustering has taken place, since the verb *opdragen* (order) does not induce PR. This means that the surface structure has an embedded $_{/S}$[$_{NP}$[hem$_i$] $_{NP}$[het pakje] $_V$[te bezorgen]]. Now $_{NP}$[Karel$_i$] and $_{NP}$[hem$_i$] have not become clause mates and no reflexivization can take place.

In the face of all this evidence, and in the absence of convincing evidence to the contrary, we feel justified in claiming that V-clustering is a real element in the physical implementation of the grammars of Dutch and German (and many other languages as well), no matter what biological form this implementation will eventually turn out to take.

If, however, the assumption of V-clusters and clause unification were all there is to the present analysis, then, within certain limits, most of the formalism used would be arbitrary. For it is perfectly possible to express this idea in a variety of different ways. One may, for example, subcategorize PR verbs for the incorporation of any other verb and develop a mechanism for the proper unification of the arguments of both verbs, placing the whole operation within the lexicon, so to speak. Conversely, one may undo PR constructions by a well-defined system of categorial function analysis that reveals the proper semantic relationships. Such techniques make it appear as if no SA, i.e. no level of semantically analytic representation, is needed, though in fact, of course, any structural composition or functional unraveling requires a specification of the semantic relationships, and thus some form of SA.

The real question is whether the relation between surface structures and their SAs is to be specified in terms of a purely semantic calculus or in terms of formal mappings from linguistic structures onto linguistic structures involving (a) a semantically and formally well-defined SA-structure that lays out the semantic relationships explicitly and unambiguously, (b) a formally well-defined surface structure, and (c) any number of intermediate structures. The semantic

interpretation of the surface structures is then defined jointly by their form and the mapping machinery that relates them to an appropriate SA. This latter class is often called *derivational*, whereas the systems working with a purely semantic calculus are known as *representational*. Transformational grammars, and thus also the analysis presented in the present paper, are by definition derivational.

Mainly for reasons of computational convenience, a body of opinion has formed lately holding that grammars should be representational, not derivational. Not only do representational techniques appear to facilitate automatic parsing procedures (still problematic in derivational systems), it is also felt that the semantic computations envisaged are not, or much less, subject to the methodological requirement of maximal crosslinguistic universality. Unfortunately, this feeling of liberty is totally unjustified, due as it is to a general lack of methodological reflection. One may, with good reason, raise many objections against currently fashionable forms of generative or transformational grammar, but its insistence on universal constraints is a powerful positive factor. Given the variety of languages in the world, the criterion of a universal charter constraining linguistic structures and processes is undeniably an indispensable element in any study of linguistic machinery. Obviously, the drawing up of such a charter is typically a long-term bootstrapping process. No such universal charter has so far been formulated, but partial hypotheses have been and are being put forward, and in circles of generative or transformational grammar the criterion of crosslinguistic unity is an important element in the evaluation of linguistic analyses. (As far as my own analysis of verbal clusters is concerned, the reader will easily check that the universality criterion has been prominent in all my work in this respect since 1972.)

The main point here, however, is that the derivational approach is to be preferred not only because it stands in a tradition where universal constraints play an active role in evaluating proposals, but also, decisively, on empirical grounds. This means that no matter how convenient the representational approach may be for a limited range of practical purposes, it is claimed to be insufficient for an adequate understanding of the machinery at work in linguistic processing. Such an understanding requires an apparatus of successively ordered constituent tree structures and well-defined mapping operations on them of at least roughly the kind specified above, together with the surrounding environment as specified in Figure 1 above.

What makes us say so? Again we may refer to the importance of branching directionality and, in particular, to the analysis presented of the German phenomenon of Oberfeldumstellung, i.e. the conditions under which German left-branching embedding operations shift to right-branching ones. For this analy-

sis to work a detailed analysis of the Auxiliary System is necessary, in particular the assumption of a class of modal auxiliaries, with futuricity as a prime case, occurring between the two tenses, as specified in Figures 2 and 4 above. The members of this class have undergone *auxiliation* (Section 1.3.2 above): their status as lexical verbs has been weakened, a process resulting in their 'moving up' the auxiliary tree to land in the intertense position. Their occurrence in this position automatically accounts for their well-known defective paradigm: they only occur as finite forms and lack infinitives and participles (see Seuren 1996:84–87, 113–114). This, it is claimed, explains the defective paradigm of English modals like *will*, *can*, *may*, *must*, and a few others, as it explains similar phenomena in many other languages.

In the Germanic languages futuricity appears in surface structure as a verb, but in the Romance languages as a morphological element, while in most Creole languages it surfaces as a particle word (with clearly verbal origin). In SeSyn these differences are reduced to different relabelings during the transformational process. The nature of the new label determines further grammatical treatment, either in the open syntax or in the morphology of the language in question.

It has been argued that the German futuricity verb *werden* has undergone auxiliation, in contrast with its Dutch counterpart *zullen* which has so far remained a full lexical verb. This explains the fact that German (42a) is ungrammatical whereas its word-by-word Dutch counterpart (42b) is fully grammatical (cp. (3b) above):

(42) a. *Ich hoffe, das Kapitel morgen abschließen zu werden.
I hope the chapter tomorrow off-close to $will_{INF}$

b. Ik hoop het hoofdstuk morgen te zullen afsluiten.
I hope the chapter tomorrow to $will_{INF}$ off-close
both: 'I hope to round off the chapter tomorrow.'

German futuricity *werden* is thus taken to occupy the position between the two tenses, as specified in Figures 2 and 4 and in (33a) above.

This, in turn, is a necessary element in the explanation of the fact that Oberfeldumstellung of *werden* is obligatory when *werden* is followed by the perfective auxiliary *haben*, but optional when it directly commands a non-perfective R-verb, as shown in (30j–m) above, repeated here for rhetorical emphasis:

(30) j. ..., daß sie $wird^1$ $ausgehen^3$ $wollen^2$
... that she will out-go want

k. ..., daß sie ausgehen$^3$ wollen$^2$ wird$^1$
... that she out-go want will
both: '... that she will want to go out'

l. ..., daß sie das wird$^1$ haben$^2$ tun$^4$ können$^3$
... that she that will have do can$_{INF}$

m. *..., daß sie das haben$^2$ tun$^4$ können$^3$ wird$^1$
... that she that have do can$_{INF}$ will
both: '... that she will have been able to do that'

This follows from the R-Condition (Section 5), which says that V-clustering becomes, and stays, right-branching:

(a) obligatorily when an already clustered verb $V_R$ of the R-class stands directly under a perfective auxiliary (*haben* in all cases) and the clause contains Vt1;
(b) optionally when $V_R$ stands directly under the modal futuricity verb *werden* ('will').

Since *wollen* (want) and *können* (be able) are both members of the R-class, it follows that both (30j) and (30k) are grammatical, while of the second pair only (30l) can be.

Moreover, given that epistemic *müssen* has likewise undergone full auxiliation (Section 1.3.2), it follows that (43a) and (43c) should be grammatical, while (43b) and (43d) should not be. This prediction is indeed borne out by native speakers' judgments:

(43) a. ... daß er das sagen können muß
... that he that say can$_{INF}$ must

b. *... daß er das muß sagen können
... that he that must say can$_{INF}$
both: '... that he must be able to say that'

c. ... daß er das muß haben sagen können
... that he that must have say can$_{INF}$

d. *... daß er das haben sagen können muß
... that he that have say can$_{INF}$ must
both: '... that he must have been able to say that'

This follows from the fact that (43a, b) do not contain the perfective auxiliary *haben*, so that the R-Condition does not apply even though the R-verb *können* occurs, whereas in the SA of (43c, d) the R-verb *können* is directly commanded by the perfective *haben*, so that here the R-Condition applies obligatorily for the whole remainder of the derivation. Clearly, this system will only work on the

assumptions we have made about SA-structure and about the transformational rule system.

These may seem relatively insignificant details of the entire V-cluster story, yet they constitute crucial evidence in favor of a derivational and against a representational treatment of the relevant facts. Other theories, in particular those of the representational kind, will no doubt be able to *accommodate* these facts one way or another, but only, one fears, as isolated idiosyncrasies. In the derivational system of SeSyn, however, these facts are seen to follow from a treatment that is cast in terms of *general principles of linguistic theory.*

To summarize, we claim that the analysis presented here, complete with the SA-structures, the rule systems and the constituent-tree-structure notation proposed, is a necessary, but obviously far from sufficient, condition for a proper understanding of the linguistic machinery as it is implemented in the brain as a result of both innate predispositions and acquired programming. Any actual implementation of the linguistic system in the brain of language users must be taken to express, in some regular way, the significant generalizations caught in terms of tree structures and operations on them. This claim will be upheld until a more powerful theory is presented, with greater explanatory power, in which these elements have been subsumed under more general principles. Meanwhile, it makes sense to take a closer look at the formal and empirical properties of the derivational theory at hand, including its potential for a proper parsing procedure.

## Notes

1. One should note that the *semantics* of LPC is not necessarily that of modern predicate calculus: the semantic definitions of the logical terms of LPC are likely to be different in natural language from what they are in modern standard logic. They also differ considerably from language to language.

2. I do not follow the new habit to speak of 'DP' (Determiner Phrase) instead of the more traditional 'NP' (Noun Phrase). The modern usage of 'DP' is motivated by the desire to have a uniform terminology for phrases, whereby phrases are called after their functional head: a PP (Prepositional Phrase), for example, is so called because the semantic value of a PP is the value of the function 'Preposition', which takes an NP as argument. Analogously, a DP would be so called because its semantic value is taken to be the value of the function 'Determiner' with a noun as argument. This analysis appears correct for NPs with definite articles and perhaps also (depending on the theory adopted) for NPs with quantifiers. However, there are many NPs where no Determiner is in sight. For example, in the PP *by breaking the lock* the prepositional argument *breaking the lock* is best taken to be an NP, just as in other, more canonical, PPs. Yet to treat either *breaking* or *the lock* as a Determiner seems very far-fetched

indeed. Given the present, still highly underdeveloped, state of NP-theory, it looks as if we have to conclude that DPs are best taken to be a subclass of NPs. We shall let the matter rest here.

3. For example, the Germanic languages, which were originally SOV, changed to surface SVO, some with a strong V2-Constraint, probably as a result of intensive contact with Celtic speakers. The Celtic languages are predominantly VSO, but some are also prone to the preposing of argument terms, most often subjects, that function as topic in a given discourse (e.g. Borsley & Kathol 2000), a process that may give rise to a surface SVO-order, with a V2-Constraint.

4. Matthew Dryer, personal communication, based on his survey of ±900 languages.

5. The precise *semantics* of the tenses in question in those languages that conform to this scheme is a great deal more detailed and more varied from language to language, and from dialect to dialect, than has been indicated here. But these complications are not germane to the topic at hand. Neither are others, such as those caused by the passé défini (aorist) in Greek and the Romance languages. We make the general assumption that auxiliary systems are built up according to what we may call *auxiliary checklists*, which specify the kind of information required for a well-formed sentence or clause. These differ considerably from language to language. Thus English has no parameter for 'reported information', but Turkish does. It is assumed that in tenseless languages, such as Chinese or Malay, the auxiliary checklist contains no time-related questions.

6. This account of the defective paradigm of certain modals in English, French and German was first presented in Seuren (1996).

7. The difference between bare S´ and $_{NP}$[S´] is manifest in the ungrammaticality of a preposed *that*-clause, which requires NP-status (e.g. **That John left seems*, versus *That John left is likely*), or in semantic differences (see Seuren 1989, 1996: 145–149).

8. In most European languages $_{V}$[Ø] is unlexicalized. In English, however, $_{V}$[Ø] is replaced postcyclically with a dummy verb $_{V}$[do] when not immediately followed by $V_{Matr}$. Otherwise $_{V}$[Ø] is postcyclically deleted.

9. John Hawkins (pers. com.) informs me that statistically VSO languages have rich verb agreement, whereas SOV languages tend to have rich NP marking, and SVO languages typically have neither. Since this means that languages with little flectional morphology are predominantly SVO, one might expect a tendency for languages that are losing morphological endings to become SVO. However, little is known about such phenomena.

10. In Seuren (1972[2001]) it is argued, in line with the Generative Semantics tradition (e.g. McCawley 1968b), that causative verbs often incorporate a hidden syntactic structure resulting from PR. Evidence for this view is found in the fact that many causative verbs that may occur not only as ditransitives but also as simple transitives assign dative case to the semantic subject of the semantically embedded lower verb when used ditransitively, but accusative case when used transitively. For example, English *serve* assigns dative and accusative case when used with two objects, as in *serve soup to the client*, but accusative case when accompanied by only one object, whether direct or indirect: *serve soup* or *serve the client.* (Hence the story of the two ladies in a restaurant who are told by the waiter 'We only serve men', upon which one of them answers 'We'll have one each, then.') Other such verbs are, e.g., *teach*,

*advise, pay, refuse, delegate, prompt.* Similar sets of verbs are found in many other languages. Such facts are typically neglected in non-transformational theories of grammar.

11. But note that the Third Construction is impossible (a) when the higher verb is reflexive, such as *zich voornemen te* (to plan to), (b) when the higher verb takes a pronominal uptake of the embedded clause, as in *erop rekenen te* (to count on it to), or (c) when the higher verb itself takes an NP-complement, as in *het besluit nemen te* (to take the decision to), or any combination of these. It does not matter whether or not the higher verb is itself clustered by PR, as in (i). In such cases, the irregularly placed constituent, here *de hond* (the dog), simply jumps the whole V-cluster:

(i) ... dat Jan de hond heeft moeten willen besluiten uit te laten
... that Jan the dog has must want decide out to let
... that Jan must have had to want to decide to take the dog out

It would be wrong to conclude that *besluiten* (decide) takes optional PR, given the ungrammaticality of:

(ii) ...*dat Jan de hond heeft besluiten uit te laten

with the IPP *besluiten* for what must be the past participle *besloten.* Note that this is further confirmation for the reality of PR-induced V-clusters.

12. *Middlefield* is a term commonly used in the grammars of German and Dutch for the section of the sentence between the *forefield*, i.e. the subject plus finite verb form in main clauses or just the subject in subordinate clauses, and the verbal final part or *endfield.* The middlefield contains mainly NPs and adverbial expressions (cp. Kathol 2000). So far, our theory has made no use of the 'field' terms, unlike some other, more structuralist, theories of Dutch and German grammar, where they play a central role in the various mechanisms proposed.

13. In English, the higher V's rule feature for adverbial pseudocompements is either SUBJECT RAISING, leading to constructions like *He put the ladder up*, or PREDICATE RAISING, giving *He put up the ladder.* There is thus no need for a rule of PARTICLE MOVEMENT, generally assumed in the early transformational literature.

14. Except in some cases where reflexivization takes place, as in *Hij lachte zich dood* (he laughed himself dead; more idiomatically: he laughed himself silly). Here, the lower controlled subject $_{NP}[x]$ is not deleted but kept as a full argument and then reflexivized as a result of its coreference relation with the new subject term. Clearly, a more detailed study of the precise conditions, including the lexical licensing conditions, would transgress the necessary confines of the present paper.

15. Most competent German speakers dislike Oberfeldumstellung when the V-cluster lacks a finite verb form at the top and even more so when the cluster contains *zu*, as in:

(i) ??... ohne ihn $_V$[haben warten zu lassen]
... without him have wait to let
(√ohne ihn $_V$[warten gelassen zu haben])
'... without having made him wait' (Haider, this volume, ex. (29a, b))

Note that it is not the infinitival form *haben*, but rather the absence of a finite verb in the cluster and/or the presence of the particle *zu* that make (i) suspect: (30l) above is fine. Cp. also Zifonun et al. (1997, Vol. 2: 1286) where the following are all accepted:

(ii) a. ... weil Hans ihn kommen[4] sehen[3] haben[2] will[1] (with Ersatzinfinitiv *sehen*!)
b. ... weil Hans ihn will[1] kommen[4] sehen[3] haben[2] (idem)
c. ... weil Hans ihn will[1] haben[2] kommen[4] sehen[3] (but: *will kommen sehen)
'... because Hans wants to have seen him come (says that he has seen him come)'

Clearly, the phenomena connected with V-clustered object-complement-Ss (here under *wollen*) will have to be investigated further.

16. The Ersatzinfinitiv also occurs in discourse-conditioned cases of ellipsis:

(i) A: Wir haben es vorgezogen, nicht sofort die ganze Summe zu zahlen.
We have it preferred not at-once the whole amount to pay
'We have preferred not to pay the entire amount at once.'

(ii) B: Aber Sie hätten können.
But you would-have can-INF
'But you would have been able to.'

Sentence (ii) is fully grammatical, provided the material deleted by ellipsis is supplied by the discourse, i.c. the preceding sentence (i), uttered by speaker A. This, incidentally, is strong evidence in favor of the reality of ellipsis as a grammatical process.

17. Strangely, the voluminous German grammar Zifonun et al. (1997) (2569 pages!) makes no mention at all of the position of futuricity *werden* together with perfective *haben* in V-clusters.

18. I am indebted to Manfred Kripka for bringing this to my attention, and to Tilman Höhle for providing me with the material.