Arguments and Structure

Studies in Generative Grammar 67

Editors

Henk van Riemsdijk
Jan Koster
Harry van der Hulst

Teun Hoekstra

Arguments and Structure

Studies on the Architecture of the Sentence

Edited by

Rint Sybesma
Sjef Barbiers
Marcel den Dikken
Jenny Doetjes
Gertjan Postma
Guido Vanden Wyngaerd

Mouton de Gruyter
Berlin · New York

Contents

Preface

This book contains fourteen articles (co-authored) by the Dutch generative linguist Teun Hoekstra. In 1998, when he died at the age of 45, Teun was widely considered to be one of the leading syntacticians in the field. This volume confirms that indeed he was.

In selecting the papers to be included in this volume, we tried to do justice to both the depth and the breadth of Teun's work. As to the breadth, Teun has made important contributions to the development of theoretical insights into such diverse topics as: argument structure, complementation, transitivity, predication, small clause theory, tense, lexical decomposition, nominalizations, bracketing paradoxes, etc. This book contains papers representative of all these subjects. The only topic that Teun worked on that is entirely missing from this volume is child language (for no other reasons than limitations of space).

As to the depth, all papers in this volume are ground breaking in one way or another. What is more, despite the fact that some of these papers are 10 to 20 years old, and were ground breaking at the time, they are still highly relevant to current theorizing. Teun's views on tense (10 years old), on the relation between active and passive voice (15 years old) and on resultatives (20 years old) are by no means outdated.

With a few exceptions, the articles included in this volume are previously unpublished or were published in less accessible places or less accessible languages (such as Dutch). In fact, one of the main reasons why we decided to publish this volume is that we judged that not all of Teun's best work had appeared in readily available sources. As a result, we felt that the international scientific community perhaps did not enjoy full access to Teun's world of ideas.

In making this book, we did a minimum of editing, but we had to do some, which we did, mostly without indicating that we did it. We harmonized matters of style and lay-out and we updated the references. All footnotes are as in the original; editors' footnotes are identified as such. At the end of each article a note has been added detailing the bibliographical history of the article.

The editors would like to thank the following people for their help in realizing this project in one way or another: Frits Beukema, Abdelkader Fassi Fehri, Jacqueline Guéron, Vincent van Heuven, Menno, Femke and

Elmer Hoekstra, Richard Kayne, Henk van Riemsdijk, Erik Schoorlemmer, Tim Stowell en Maarten van Wijk. We also thank the co-authors of the articles that appear here.

This publication would have been impossible without the financial help from the Leiden Centre for Linguistics ULCL.

Most of all we remain deeply indebted to Teun.

The editors

Teun Hoekstra's Bibliography

1977

Een funktionele verklaring van verplaatsingstransformaties: negative raising [A functional explanation of movement transformations: negative raising]. *Forum der Letteren* 18 (2): 91–104.

1978

a. De status en plaats van het indirekt objekt [The indirect object: Its status and place]. In *Aspekten van woordvolgorde in het Nederlands*, Jan Kooij (ed.), 40–69. Leiden: Publikaties van de vakgroep Nederlandse Taal- & Letterkunde. [Included in his volume.]
b. Waarom NIET niet NEG is [Why NIET isn't NEG]. *GLOT* 1 (2): 93–117.
c. Functionele grammatika [Functional grammar]. *Forum der Letteren* 19 (4): 293–312.

1979

a. Passief en het lexicon [Passive and the lexicon]. *Forum der Letteren* 20 (2): 137–161 (with Michael Moortgat).
b. Het Freezing Principle en gestrande preposities [The Freezing Principle and stranded prepositions]. *GLOT* 2 (1): 45–55.
c. Review of H.C. van Riemsdijk, *A case study in syntactic markedness. GLOT* 2 (2): 181–194 (with Michael Moortgat).
d. Review of J. Koster, *Locality principles in syntax. GLOT* 2 (2): 195–214 (with Michael Moortgat).

1980

a. Introduction. In *Lexical Grammar*, Teun Hoekstra, Harry van der Hulst & Michael Moortgat (eds.), 1–48. Dordrecht: Foris Publications (with Harry van der Hulst & Michael Moortgat).
b. Het lexicon en de klasse van mogelijke grammatica's [The lexicon and the class of possible grammars]. *Forum der Letteren* 21 (3): 177–195 (with Harry van der Hulst & Michael Moortgat).
c. The status of the indirect object. In *Linguistics in the Netherlands 1977-1979*, Wim Zonneveld & Fred Weerman (eds.), 152–169. Dordrecht: Foris Publications.
d. The Freezing Principle and stranded prepositions. In *Linguistics in the Netherlands 1977-1979*, Wim Zonneveld en Fred Weerman (eds.), 321–335. Dordrecht: Foris Publications.

1981

a. An outline of Functional Grammar. In *Perspectives on Functional Grammar*, Teun Hoekstra, Harry van der Hulst & Michael Moortgat (eds.), 3–18. Dordrecht: Foris Publications. [Also appeared as *GLOT* 3 (3/4).]

b. De theorie van funktie-argument struktuur [The theory of function-argument structure]. In *Studies voor Damsteegt*, G. Dibbets, Jan Kooij, Marijke van der Wal, Ariane van Santen & J. van der Schans (eds.), 78–91. Leiden: Publikaties van de vakgroep Nederlandse Taal- & Letterkunde.

c. The base and the lexicon in Lexical Grammar. In *Linguistics in the Netherlands 1981*, Saskia Daalder & Marinel Gerritsen (eds.), 93–101. Amsterdam: North-Holland.

1983

a. The distribution of sentential complements. In *Linguistics in the Netherlands 1983*, Hans Bennis & W.U.S. van Lessen Kloeke (eds.), 93–103. Dordrecht: Foris Publications.

b. An alternative approach to Swahili grammar, review of Anthony J. Vitale *Swahili syntax*. *Lingua* 60 (1): 53–85 (with Gerrit Dimmendaal).

c. Government and the distribution of sentential complements in Dutch. In *Sentential complementation*, Wim de Geest & Yvan Putseys (eds.), 105–116. Dordrecht: Foris Publications.

d. MET met PRO of MET zonder PRO [MET with PRO or MET without PRO]. *De Nieuwe Taalgids* 76 (6): 532–548 (with Frits Beukema).

e. *De syntaxis van het Nederlands* [The syntax of Dutch]. Dordrecht: Foris Publications [Textbook] (with Hans Bennis).

1984

a. *Transitivity. Grammatical relations in Government-Binding Theory*. Dordrecht: Foris Publications.

b. Krijgen. In *Linguistics in the Netherlands 1984,* Hans Bennis & W.U.S. van Lessen Kloeke (eds.), 65–73. Dordrecht: Foris Publications.

c. Gaps and parasitic gaps. *The Linguistic Review* 4 (1): 29–87 (with Hans Bennis).

d. Extractions from WITH-constructions. *Linguistic Inquiry* 15 (4): 689–698 (with Frits Beukema).

e. Review of George Horn, *Lexical-Functional Grammar*. *Linguistics* 22: 243–246.

1985

a. Een gat in de distributie van OM-zinnen [A gap in the distribution of OM-sentences]. *GLOT* 8 (1): 5–23 (with Hans Bennis).

b. Parasitic gaps in Dutch. *Proceedings of NELS* 15, 1–14 (with Hans Bennis).

c. De nominale infinitief [The nominal infinitive]. *GLOT* 8 (3): 257–274 (with Pim Wehrmann). [Included in his volume.]

1986

a. Review article of Terence McKay, *Infinitival complements in German*. *Lingua* 68 (2/3): 263–273.
b. Deverbalization and inheritance. *Linguistics* 24 (3): 549–584.
c. Passives and participles. In *Linguistics in the Netherlands 1986*, Frits Beukema & Aafke Hulk (eds.), 95–104. Dordrecht: Foris Publications.
d. Overerving bij nomina agentis [Inheritance in nomina agentis]. *GLOT* 9 (1/2): 42–56.

1987

Extraposition en SOV [Extraposition and SOV]. *TABU* 17 (3): 133–142.

1988

a. Struktuur-paradoxen bestaan niet [Bracketing paradoxes do not exist]. *Spektator* 17 (4): 300–316 (with Harry van der Hulst & Frans van der Putten). [Included in his volume.]
b. The innateness hypothesis. In *Explaining language universals*, John Hawkins (ed.), 31–55. Oxford: Blackwell (with Jan Kooij).
c. Les chaînes-T, et les verbes auxiliaires [T-chains and auxiliaries]. *Lexique* 7: 61–85 (with Jacqueline Guéron). [Included in his volume.]
d. Small Clause results. *Lingua* 74 (2/3): 101–139.
e. Complexe verba [Complex verbs]. *GLOT* 10 (1): 61–77 (with Monic Lansu & Marion Westerduin). [Included in his volume.]
f. Inheritance phenomena. In *Morphology and modularity*, Martin Everaert, Arnold Evers, Riny Huybregts & Mieke Trommelen (eds.), 163–186. Dordrecht: Foris Publications (with Frans van der Putten).

1989

a. T-chains and the constituent structure of auxiliaries. In *Annali di Ca' Foscari. Constituent structure: Papers from the 1987 GLOW Conference*, Anna Cardinaletti, Guglielmo Cinque & Giuliana Giusti (eds.), 35–99 (with Jacqueline Guéron).
b. Why Kaatje wasn't heard sing a song. In *Sentential complementation and the lexicon*, Dany Jaspers, Wim Kloosters, Yvan Putseys & Pieter Seuren (eds.), 21–40. Dordrecht: Foris Publications (with Hans Bennis). [Included in his volume.]
c. PRO and the Binding Theory. In *Linguistics in the Netherlands 1989*, Hans Bennis & Ans van Kemenade (eds.), 11–20. Dordrecht: Foris Publications (with Hans Bennis).
d. A representational theory of empty categories. In *Linguistics in the Netherlands 1989*, Hans Bennis & Ans van Kemenade (eds.), 91–100. Dordrecht: Foris Publications (with Hans Bennis).

e.   *Generatieve Grammatica* [Generative Grammar]. Dordrecht: Foris Publications [Textbook] (with Hans Bennis).

f.   *Vragenboek bij Generatieve Grammatica* [Problem sets to accompany *Generative Grammar*]. Dordrecht: Foris Publications [Textbook] (with Hans Bennis).

1990

a.   Unergatives as copular verbs; locational and existential predication. *Linguistic Review* 7 (1): 1–79 (with René Mulder).

b.   Agreement and variables. In *Grammar in progress: GLOW essays for Henk van Riemsdijk*, Joan Mascaró & Marina Nespor (eds.), 211–220. Dordrecht: Foris Publications.

c.   Markedness and growth. In *Logical issues in language acquisition*, Iggy Roca (ed.), 63–83. Dordrecht: Foris Publications.

1991

Lacunes parasites: chaînes unifiées ou chaînes composées? [Parasitic gaps : unified or composed chains?]. In *Grammaire générative et syntaxe comparée*, Jacqueline Guéron & Jean-Yves Pollock (eds.), 107–128. Paris : Éditions du CNRS.

1992

a.   Aspect and theta theory. In *Thematic structure. Its role in grammar*, Iggy Roca (ed.), 145–174. Berlin: Foris Publications.

b.   Voorzetsels en verbindingen [Prepositions and connections]. In *De binnenbouw van het Nederlands*, Hans Bennis & J.W. de Vries (eds.), 133–144. Dordrecht: ICG Publications.

c.   Small clause theory. *Belgian Journal of Linguistics* 7: 125–151.

d.   Chaînes temporelles et phrases réduites [T-chains and small clauses]. In *Structure de la phrase et théorie du liage*, Hans-Georg Obenhauer & Anne Zribi-Hertz, (eds.), 69–92. Saint-Denis: Presses Universitaires de Vincennes (with Jacqueline Guéron).

e.   Subjects inside out. *Revue québécoise de linguistique* 22 (1): 45–75.

1993

Middle constructions in Dutch and English. In *Knowledge and language, Volume II, Lexical and conceptual structure*, Eric Reuland & Werner Abraham (eds.), 183–220. Dordrecht: Kluwer Academic Publishers (with Ian Roberts).

1994

a.   The acquisition of functional structure. In *Other childern, other languages: Issues in the theory of language acquisition*, Yonata Levi (ed.), 113–135. Hilsdale NJ: Lawrence Erlbaum Associates.

b. Introduction: on the initial states of language acquistion. In *Language acquisiton studies in Generative Grammar*, Teun Hoekstra & Bonnie Schwartz (eds.), 1–20. Amsterdam: John Benjamins (with Bonnie Schwartz).

c. From adjunct to head. In *Language acquisition studies in Generative Grammar*, Teun Hoekstra & Bonnie Schwartz (eds.), 119–149. Amsterdam: John Benjamins (with Peter Jordens).

d. Have as Be plus or minus. In *Paths towards Universal Grammar: Studies in honor of Richard S. Kayne*, Guglielmo Cinque, Jan Koster, Jean-Yves Pollock, Luigi Rizzi & Raffaela Zannutini (eds.), 199–215. Washington DC: Georgetown University Press.

1995

a. The function of functional categories. *Glot International* 1 (2): 3–6.

b. To have to be dative. In *Studies in comparative Germanic syntax*, Hubert Haider, Susan Olson & Sten Vikner (eds.), 119–137. Dordrecht: Kluwer Academic Publishers.

c. The temporal interpretation of predication. In *Small Clauses* [*Syntax & Semantics 28*], Anna Cardinaletti & Maria-Teresa Guasti (eds.), 77–107. San Diego, CA: Academic Press (with Jacqueline Guéron).

d. De status van VAN [The status of VAN]. *TABU* 25 (9): 160–164.

e. Have and augmented Have. In *Actes du 1er colloque Langues et Grammaire*, Léa Nash & Georges Tsoulas (eds.), 85–101. Paris: Publications de l'université de Paris VIII (with Rose-Marie Déchaine & Johan Rooryck).

f. Categories and arguments. In *Proceedings of the 24th Western Conference on Linguistics WECOL 94 (Volume 7)*, Vida Samiian & Jeannette Schaeffer (eds.), 135–154. Fresno CA: Department of Linguistics, California State University. [Included in his volume.]

1996

a. Possession and transitivity. In *Linguistique comparée et langues au Maroc*, Abdelkader Fassi Fehri (ed.). Rabat: Publications de la Faculté des Lettres et des Sciences Humaines de la Université Mohammed V, Rabat [Série: Colloques et Séminaires no. 51], 49-73. [Included in his volume.]

b. The syntax and interpretation of dropped categories in child language: a unified account. In *The Proceedings of the 14th West Coast Conference on Formal Linguistics*, Jose Camacho, Lina Choueiri & Maki Watanabe (eds.), 123–136. Stanford: CSLI (with Nina Hyams).

c. Missing heads in child language. In *Proceedings of the Groningen Assembly on Language Acquisition*, Charlotte Koster & Frank Wijnen (eds.), 251–261. Groningen: Centre for Language and Cognition (with Nina Hyams).

d. The active-passive configuration. In *Configurations: Essays on structure and interpretation*, Anna-Maria DiSciullo (ed.), 41–50. Somerville MA: Cascadilla Press. [Included in his volume.]

1997

The underspecification of number and the licensing of root infinitives. In *Proceedings of the 21st Annual BU Conference on Child Language Development*, Elizabeth Hughes, Mary Hughes & Annabel Greenhill (eds.), 293–306. Somerville MA: Cascadilla Press (with Nina Hyams and Misha Becker).

1998

a. Aspects of root infinitives. *Lingua* 106 (1-4): 81–112 (with Nina Hyams).
b. Agreement and the finiteness of V2: evidence from child language. In *Proceedings of the 22nd Annual BU Conference on Child Language Development*, Annabel Greenhill, Mary Hughes, Heather Littlefield & Hugh Walsh (eds.), 360–373. Somerville MA: Cascadilla Press (with Nina Hyams).

1999

a. The role of the specifier and finiteness in early grammar. In *Specifiers: Minimalist approaches*, David Adger, Susan Pintzuk, Bernadette Plunkett, George Tsoulas (eds.), 251–270. Oxford: Oxford University Press (with Nina Hyams and Misha Becker).
b. Parallels between nominal and verbal projections. In *Specifiers: Minimalist Approaches*, David Adger, Susan Pintzuk, Bernadette Plunkett & George Tsoulas (eds.), 163–187. Oxford: Oxford University Press. [Included in his volume.]
c. The eventivity constraint and modal reference effect in root infinitives. In *Proceedings of the 23rd annual BU Conference on Child Language Development*, Annabel Greenhill, Heather Littlefield & Chery Tono (eds.), 240–252. Somerville MA: Cascadilla Press (with Nina Hyams).
d. Auxiliary selection in Dutch. *Natural Language and Linguistic Theory* 17 (1): 67–84.
e. Evidence for the early convergence from child Catalan and child Russian imperatives. In *Proceedings of the 23rd annual BU Conference on Child Language Development*, Annabel Greenhill, Heather Littlefield & Chery Tono (eds.), 697–707. Somerville MA: Cascadilla Press (with Véronique van Gelderen & John Grinstead).

2000

a. The function of functional categories. In *The first* Glot International *State-of-the-Article book*, Lisa L.-S. Cheng & Rint Sybesma (eds.), 1-25. Berlin: Mouton de Gruyter.
b. The nature of verbs and Burzio's generalization. In *Arguments and case: Explaining Burzio's Generalization*, Eric Reuland (ed.), 57–78. Amsterdam: John Benjamins.

2004

Arguments and structure. Studies on the achitecture of the sentence. Berlin: Mouton de Gruyter

Edited volumes

1979

Morfologie in Nederland [Morphology in the Netherlands], Leiden: Leiden Press (with Harry van der Hulst).

1980

Lexical Grammar, Dordrecht: Foris Publications (with Harry van der Hulst & Michael Moortgat).

1981

a. *#The scope of lexical rules*, Dordrecht: Foris Publications (with Harry van der Hulst & Michael Moortgat).

b. *Perspectives on Functional Grammar*, Dordrecht: Foris Publications (with Harry van der Hulst & Michael Moortgat).

1984

Language acquisition studies in Generative Grammar, Amsterdam: John Benjamins (with Bonnie D. Schwartz).

I. Argument structure

Possession and transitivity

1. Background

This paper deals with the verbs HAVE and BE.[1] There are two relationships I want to investigate: on the one hand the relationship between so-called main verb HAVE, as used primarily in the expression of possession, and auxiliary HAVE, as used in the formation of compound tenses. On the other hand, the relationship between both HAVEs and the verb BE, which equally has a use both as a main verb and an auxiliary, at least according to traditional grammar.

An optimal theory should not postulate different verbs HAVE and different verbs BE: rather the different functions should be derived from a unifying characterization of these verbs. Similarly, as we shall demonstrate, HAVE and BE are quite closely related, within and across languages, to such an extent that various proposals have been made to derive one from the other. More specifically, HAVE is argued to be derived from BE through the incorporation of an element into BE. This particular view on the relationship between HAVE and BE, but not necessarily the syntactic implementation of it, is known as the Benveniste hypothesis, who suggested that "*avoir* n'est rien d'autre qu'un *être* à inversé" (1960: 197).

As for the verb BE in English, various different BEs have been proposed in the traditional, but also in the generative literature. At least the following can be discerned (cf. Déchaine 1995).

(1) *John is ill*   copula BE
(2) *John was the cause of all trouble*   equative BE
(3) *John was beaten*   passive BE
(4) *John was playing at the neighbors*   progressive BE
(5) *I think, therefore I am*   existential BE
(6) *John is in the garden*   main verb BE

Yet, all these different uses of BE appear to be motivated by the same considerations, viz. as a carrier of inflectional information which cannot be expressed on the complement. A general representation of the BE-sentences in (1)–(6), then, can be given as in (7):

(7)   INFL …(BE)…[$_{XP}$ DP X']

in which the subject of BE finds its origin in BE's complement. This complement may be of a variety of different categorial types, but they have in common that inflectional information cannot be expressed on the complement head itself. Déchaine (1995) argues that the relevant inflectional component that induces BE in English is T. While this may be correct for English, other languages may have different triggers for BE. Quintessential in (7) is that BE's subject is generated in its complement, which is to say that BE does not itself assign any thematic information. Whether BE will indeed surface as such depends on the nature of the inflectional system of the particular language and on the nature of the category which constitutes the basis of the predicate of the complement XP in (7).

Traditional grammar rejects a copula analysis of locational predication, on the grounds that either the verb BE featuring in this type of sentence is meaningful, i.e. means 'reside', or by pointing out that in several languages without an overt copula in 'nominal' sentences, there is a verb BE in location sentences, as is the case in e.g. Hungarian. Yet, such motivations are without force: the fact that BE in locative sentences may be replaced by *reside* does not indicate that BE means 'reside', but rather that the locative meaning of the preposition concurs with the meaning of 'reside', or whatever verb one uses. The appearance of a verb BE in locative sentences in languages without an overt copula similarly is no argument against this verb being a copula verb. Consider the following paradigm from Hungarian:

(8)   a.   *Janos   beteg.*
           John   (is)   ill

      b.   *a   gyerek-ek   beteg-ek.*
           the   child-PL   ill-PL

      c.   *Janos   a   kert-ben   van.*
           John   the   garden-LOC   is

      d.   *en   beteg   vagyok.*
           I   ill   am

      e.   *Janos   beteg   volt.*
           John   ill   was

As these examples show, a form of BE occurs with a third person subject in locational predications, but not with adjectival predications, on the basis of which one might reject a unifying analysis of BE in (8a/b) and (8c). How-

ever, this is misguided, as is shown by the occurrence of a form of BE in (8d), with an adjectival predicate and a first person subject, and in (8e) with third person subject and an adjectival predicate, but in past tense. The Hungarian sentential inflectional system can be analyzed as involving the following paradigm of features:

(9)   PERS   NUM   TNS
     1   k   -$\varnothing$ SG $\varnothing$ PRES
     2   sz/l   -k   PL   -t   PAST
     3     $\varnothing$

Values of these features need to be specified: present tense and third person are represented by zeros in the system. As adjectives show agreement for number, a copula bearing any agreement features is unnecessary in third person under present tense, as carrying the relevant features is required. Prepositional predicates differ from nominal predicates in not carrying any agreement features. Therefore, even in third person present tense a copula verb is required to carry number, apparently a requirement in Hungarian. Under this view, then, the fact that a copula is lacking or appearing is not per se connected to the expression of location, but rather to a simple requirement on visibility of features. The evident implications of this analysis for a checking framework (Chomsky 1993) will not be spelled out here. It should also be noted that not all languages lacking an overt copula are like Hungarian: Chinese, for instance, appears to feature a copula, the element *shi*, only with DP-predicates (cf. Vinet 1995). Hence, crosslinguistically, the appearance of an overt copula is determined by visibility requirements, which are met by different constellations of overt morphological contrasts.

    We hence conclude that there is just a single BE, which is not involved in the determination of thematic structure of the sentences it appears in. More problematic would seem to be a similarly unified analysis of the various occurrences or uses of HAVE. We shall start with a comparison of HAVE and BE as occurring in the examples in (10), which are more or less equivalent.

(10)   a.   *There are mountains in the east of France.*
       b.   *France has mountains in the east.*[2]

These examples illustrate the close relation that exists between location and possession. Possession is usually attributed to the meaning of main verb

HAVE. Yet, just like we showed that location is not part of the meaning of BE, we may wonder whether it is indeed correct to attribute the meaning of possession to HAVE.

2. HAVE and BE: semantic inverses

Before looking more closely at the examples in (10), let us first concentrate on a simple locational sentence such as (11).

(11)   *John is in the garden.*

We have here an instance of the structure in (7), a copular sentence, with a prepositional head of the predicate. Copular sentences involve the inclusion of the subject referent in the denotation of the predicate. This is so according to first order predicate logic, where the sentence *John is ill* is said to be true if *John* is a member of the set denoted by *ill*. Guéron and Hoekstra (1995) argue that Agr is in fact an inclusion operator, having precisely this effect. Agr's role therefore is not just to establish a relationship, but rather it is semantically relevant as the expression of inclusion. As BE is often triggered by the requirement to overtly manifest Agr, one might be inclined to attribute this semantic role to BE. According to this view, then, (11) means that *John* is included in *the garden*, which is adequate, just as *John is ill* means that *John* is included in the set of things which are *ill*.

Adjectives, as well as verbs, occur in different varieties. Some predicate of individuals, whereas others predicate of stages of individuals (Carlson 1977b; Diesing 1992). Prepositional predicates, in contrast, do not show such semantic bifurcation: they typically denote presence at a location at a particular moment in time. This is ontologically quite understandable, as being at a particular location is barely an inherent property of individuals. We take it, then, that prepositional predicates are stage-level.

Let us now turn to the example in (10a). I follow here the analysis of *there*-sentences proposed in Hoekstra and Mulder (1990). Following Moro (1989) we analyze *there* as a raised predicate. The structure of (10a), then, is as in (12): BE takes a small clause complement, which itself is taken to be a Agr-projection. By virtue of this Agr, the predicate PP *there* and the subject *mountains* share their features. These features themselves need checking by the inflectional structure dominating BE. In non-inverted structures, it is the subject of the small clause which raises to the matrix SpecAgr for the purposes of feature checking. As predicate and subject of the small

clause share their features, indicated by α in (12), checking may equally take place by raising the predicate.

(12)   Spec Agr…BE [$_{AgrP}$ DP Agr [$_{PP}$ *there*$_i$]] [$_{PP}$ *in the east of France*]$_i$
          α   α   α

The sentence final PP is an adjunct, coindexed with *there*, a relationship which is similar to that between *it* and extraposed clauses. Its adjunct status is clear from the prohibition against extraction from the PP, yielding contrasts of the type in (13):

(13)   a.   W*hich stadium will the match be played in?*
          b. **Which part of France are there mountains in?*

I refer to Hoekstra and Mulder (1990) and Moro (1989) for further discussion of the adjunct nature of the so-called coda in *there*-sentences. This particular relationship between *there* and the coda requires that the coda is semantically compatible with *there*. As *there* is prepositional, and hence, as we claim, stage-level, the coda must similarly be a stage-level predicate. This explains the contrasts between (14a) and (14b), observed by Milsark: individual level adjectives may not occur in *there*-sentences.

(14)   a.   *There are some students absent.*
          b. **There are some students intelligent.*

While the structure in (12) in principle allows both the predicate and its DP subject to move to the matrix subject position for reasons of checking, the choice between these two options is not neutral: movement to SpecAgr, certainly where it is optional, triggers a specificity or familiarity requirement (cf. Honcoop 1992; Adger 1993). So, if the subject of the small clause is familiar, it will be preposed to the matrix subject position, yielding the semantics that it is included in the reference of the predicate. Is the subject unfamiliar, on the other hand, while the predicate is familiar, predicate inversion takes place, yielding an inverse copula construction. Clearly, the latter situation obtains in existential or presentational sentences: the predicate *there* refers to a familiar place, i.e. a location which is discourse understood as being either the current discourse (location) or some location introduced in the preceding discourse. In fact, the so-called 'expletive' in Dutch existentails is *er*, a pronominal adverb. The subject of the small clause in existentials is the unfamiliar one: usually indefinite, non-specific,

or otherwise new on the scene, as in *there was John all of a sudden*. In so-called equative sentences, the choice of moving the subject of the predicate to the specifier of the matrix Agr is similarly dependent on such discourse factors: if *the cause of the trouble* is the topic of the discourse, it will be moved, rather than *John*, as in (15b):

(15)   a. *John was the cause of all the trouble.*
       b. *The cause of all the trouble was John.*

This interaction between morphosyntax and pragmatics makes understandable that predicate preposing is less likely, or even impossible, with non-referential predicates, such as in (16a,b). However, such predicate preposing become more acceptable if properly contextualized. Emonds (1976: 35) mentions in his discussion of preposings around BE preposed adjectival predicates containing comparatives, as in (16c). Clearly, the comparative contextualizes the predicate, because it sets the predicate in comparison to an earlier mentioned degree, making the predicate contextually familiar. The same effect obtains in nominal predicates, as in (16d).

(16)   a. ??*Ill was only John.*
       b. ?*A real criminal is the major of this town.*
       c.   *More important would be the appointment of a syntactician.*
       d.   *An even more obnoxious person is John's brother.*

Returning to (10a), now, we can see that the combination of elements we have introduced in the analysis yields the required effects: in the reference of *there*, i.e. in *the east of France* is inserted the complement of BE, viz. *mountains*. Not only is there a reversal in a syntactic sense, there is equally a reversal in a semantic sense. We can also see immediately why (10a) is equivalent to (10b), if we make the further assumption that HAVE is the semantic inverse of Agr+BE: while in a BE-sentence, the subject is included in the denotation of the complement, the complement of HAVE is included in the referent on the subject. In either case in (10), *mountains* are said to be included in *the east of France*: in (10a) via locative inversion, in (10b) via HAVE.

    It is not the case, however, that all locational predications are equivalent to possessive predications. The stage-level nature of PPs makes locational predications less suitable for situations where something inherently is contained in a certain location. *There is a big nose on John* is not untrue, or even ungrammatical perhaps, but it denotes a stage-level location of some-

thing which is inherently part of *John*. HAVE is aspectually stative or perfective, while BE is neutral in this regard (in fact, freely occurs in imperfective aspect formations as in the English progressive). Potentially, the reason for the unacceptable nature of such sentences is the fact that persons are unfit as locations, at least in certain combinations, specifically stative ones, as persons are likely to change places. This at least is the case in sentences such as (17).

(17) a. *Ik* *zet* *een* *vaas* *op* *de* *tafel.*
           I   put   a   vase   on   the   table

    b. **Ik* *zet* *een* *hoed* *op* *Jan.*
           I   put   a   hat   on   John

    c. *Ik* *zet* *Jan* *een* *hoed* *op.*
           I   put   John   a   hat   on

I shall not go into this issue at this point, but note that the relationship between (17b) and (17c) is very similar to that between *there is a big nose on John* and *John has a big nose*. I conclude here that especially inalienable possession is rendered with HAVE-sentences, at least in languages that have the option of HAVE. We see, then, that HAVE can be regarded as a semantic inverse of BE, an inversion which can be obtained by subject predicate reversal in the case of BE as well, if certain conditions are met. In the next section we shall argue that HAVE and BE are also syntactically each other's counterparts.

3. HAVE and BE: syntactic inverses

It is useful to distinguish between two types of transitivity: on the one hand, there is the semantic or logical notion of transitivity, which refers to the semantic property of being a relator concept. The verb *see* is a transitive verb because it expresses a 'see'-relation between two entities. A preposition such as *in* is similarly a semantically transitive element, expressing a relation between a locatum and a located object. On the other hand, there is a syntactic notion of transitivity, which can be formulated in terms of the grammatical functions subject and object: a verb is transitive if it has a subject and an object. Clearly, on many occasions these two notions will converge, as a semantically transitive verb will project a syntactic structure with two arguments, realized as subject and object. But, they obviously do

not always converge. For instance, in a passive sentence, there is normally no object, while the verb may still be semantically transitive. The same is true for anti-passives.

A conclusion to be drawn here is that syntactic transitivity is a morpho-syntactic property, independent, at least in principle, of the semantic transitivity of the lexical element. In Chomsky's (1993) checking program, this particular view is implemented by the postulation of two functional projections, S-Agr and O-Agr, licensing domains of subject and object respectively.[3] While subject and object are licensed through a specifier-head relationship in these domains, the lexical head is itself licensed for its features by the functional heads. The clause structure Chomsky (1993) proposes is given in (18):

(18)

```
            S-AgrP
           /      \
        Spec      S-Agr'
                 /      \
             S-Agr      TP
                       /   \
                    Spec    T'
                           /  \
                          T   O-AgrP
                             /      \
                          Spec     O-Agr'
                                  /      \
                              O-Agr      VP
                                         |
                                         V
```
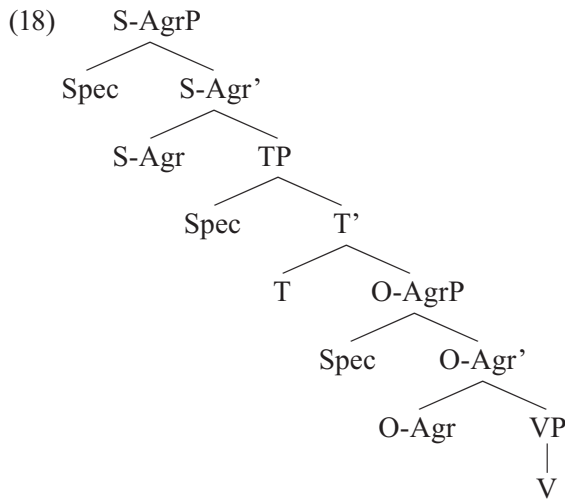
NPs (or rather DPs) bear case, and their case is checked in the SpecAgr-configuration. This makes the prediction that nominative case, or case in general, and agreement are connected: the nominative DP will determine the S-agreement on the verb, while the accusative DP will determine O-agreement on the verb. There is an asymmetry between the two Agrs, in that the case feature checked in the S-Agr domain is T-dependent (nominative), while the case feature in O-Agr is V-dependent (accusative). It is here where the connection between syntactic and semantic transitivity lies: in the normal case, a semantically transitive verb will provide a case feature for O-Agr. Yet, under a non-active 'diathesis', as in passives and anti-passives, the verb may loose its capacity to contribute this case feature (cf. the concept of case absorption in earlier analyses), while maintaining its semantic transitivity.

Let me at this point elaborate a little these notions passive and antipassive. A first point to make is that both types of diathesis are considered in some sense derivative, which requires that there is also a basic type. The basic type, then, would be the active diathesis, and this diathesis can then be taken to involve two Agrs if the verb is semantically transitive, with a cross-linked licensing of the arguments in these Agr-projections:[4]

(19) DP_i S-Agr … DP_j O-Agr [$_{VP}$ t_i V t_j]

Passive is derivative in the sense that the internal argument of V is licensed by the uppermost Agr, rather than O-Agr. The external argument is not Agr-licensed, and therefore fails to appear, or is rendered by an oblique adjunct. We can understand this by assuming that O-Agr is not available for the internal argument, which then is licensed in S-Agr. The external argument apparently is free to not appear, let us assume because an element in O-Agr allows it to remain silent. This blocking element of O-Agr in Romance can be identified as *se/si* (cf. Postma 1996), and we assume that in analytic passives an abstract counterpart of *se/si* occupies O-Agr, excluding the possibility of the internal argument to be licensed in its specifier. In Dutch, there is an overt manifestation of this element, viz. the prefix *ge-*, which, in combination with the aspectual suffix *-d* forms the participle. English has an empty counterpart of *ge-/se*, which also features in English modals (cf. Hoekstra and Roberts 1993). This leads to the representation of a participial passive as in (20):

(20) DP_j S-Agr $-d_T$ $ge_{O\text{-}Agr}$ [pro_i V t_j]

Anti-passives are less familiar than passives. They are found in so-called ergative languages, like Eskimo. Anti-passive is like passive in destroying the syntactic transitivity, but differs in that in antipassives it is not the external argument which is shunted, but rather the internal argument. The effect is similar in the sense that the internal argument is no longer Agr-licensed, but may appear as an obliquely marked adjunct, in Eskimo with instrumental case. To give an idea of an antipassive, one may think of (21b), which Kayne (1984) actually analyzes as an anti-passive counterpart of (21a):

(21)   a.   *They provided me a book.*
          b.   *They provided me with a book.*

Starting again with the active structure in (19), an antipassive construction may be analyzed in a fashion parallel to (20), as in (22):

(22)   DP$_i$ S-Agr T AP$_j$ [$_{VP}$ t$_i$ V t$_j$] DP$_{OBL}$

In this analysis, the anti-passive morpheme (AP) is supposed to be generated in the position of the internal argument, and raised to O-Agr, with the trace optionally doubled by an oblique DP.[5]

As the analysis in (20) makes clear, I take the participial structure to be essentially passive, i.e. a configuration in which the internal argument is not licensed in O-Agr. This is essentially the analysis I put forth in Hoekstra (1984b). The passive nature of the participial structure is most transparent in its absolute use, i.e. as an adjunct, as illustrated by (23):

(23)   a.   *Captured by the police John spent the night in jail.*
         b. * *Read all of Marx John could not claim any naivety.*

As (23a) shows, the past participle of a transitive verb may be used in an adjunct, with the understood subject of the adjunct having the role of the object of the transitive verb. Such past participial adjuncts may not retain their transitivity, as (23b) shows.
    The verb BE is a neutral verb in the following sense. It does not on its own account provide a case feature for O-Agr. In a simple copula sentence, only S-Agr is relevant, and the clause is in that sense syntactically intransitive. However, if BE participates in a T-chain with a transitive verb, it may obtain the capacity to license O-Agr from this verb, as in English progressives (cf. Guéron and Hoekstra 1995). Disregarding these cases, however, BE normally occurs in a syntactically intransitive clause, i.e. with inactive or unavailable O-Agr. This neutral character of BE is evident in construction with participles, as shown in (24), where the passive nature of the participle is retained by the intransitivity of BE:

(24)   a.   *John was captured by the police.*
         b. * *John was read all of Marx.*

The representation of (24a) can now be given as in (25), which combines the representation of (7) with that of (20):

(25)   DP$_j$ INFL BE [$_{S\text{-}AgrP}$ t$_j$ [$_T$ −*ed*] [$_{O\text{-}Agr}$ SE [$_{VP}$ pro V t$_j$]]]

The analysis given in (25) might be surprising, as it claims that participial agreement is S-agreement, rather than O-agreement, as was originally

claimed by Kayne (1985a, 1989a). It should be borne in mind, however, that the differentiation between O-Agr and S-Agr is not based on an inherent distinction: it refers only to different relative positions. In addition, in finite clauses, S-Agr links up with nominative providing T. That is not the case in (25): the S-Agr has no case-feature at all, hence the intransitivity of participles in their absolute use. Rather, the internal argument must move through this position on its way to the matrix nominative position for reasons of locality. Using Rizzi's (1990) minimality framework, we can express this by saying that an intervening A-position may not be skipped. Note that the claim that participial agreement represents S-Agr rather than O-Agr is required from the perspective of the mirror principle: the agreement morphology is attached external to the Tense morphology. This argument obviously depends on the *–ed* morpheme as an instantiation of T. For argumentation that this identification is correct I refer to Guéron and Hoekstra (1995).

In contradistinction to BE, the verb HAVE is syntactically transitive in the sense of licensing O-Agr to check accusative case on its own account. This is clear in simple possessive sentences, with a syntactic subject and a syntactic object, but the difference between HAVE and BE is most obvious in combination with past participles, at least in languages that allow these to be combined with either HAVE and BE in principle. HAVE reverses the contrast in (24a,b), restoring transitivity.

(26) a. *John has captured by the police.*
      b.   *John has read all of Marx.*

What should be the representation of the transitive participial structures? Here we postulate a matrix HAVE licensing an O-Agr in its functional domain which in turn case-licenses the verb's internal argument. The verb's external argument is licensed in the tense-supplied S-Agr of HAVE's domain, yielding (27) as a first approximation of the structure of (26b):

(27) *John*$_i$ S-Agr T [$_{O\text{-}AgrP}$ Spec O-Agr HAVE [.....[$_T$ ed] [$_{O\text{-}Agr}$ SE [e$_{i\text{-}}$ V DP$_j$]]]]

where DP$_j$ is case licensed in the matrix SpecO-AgrP. Movement to this position is normally postponed until LF, at least in French, and probably also in English. Only if a clitic or a *wh*-phrase occupies this position at surface structure, does the object trigger agreement on the participle in French. The importance of this in the current context is that the embedded S-Agr position must be available, but that it cannot be used by the external argument to move through it, as the external argument never triggers agree-

ment on the participle. Within the context of Chomsky's assumptions in the minimalist program, this situation is hard to analyze: on the one hand, the appearance of agreement on the participle suggests that the embedded domain constitutes the maximal checking domain of the participle; on the other hand, the external argument is able to leave this domain apparently in one fell swoop. I return to this issue below.

4. Ergative for morphosyntactic transitivity

In the previous section we established that HAVE provides a mechanism to supply syntactic transitivity to a detransitivized verbal base, whereas BE is neutral. However, languages do not only employ such a verbal mechanism. While in e.g. Dutch and English both possessors and transitive subjects in certain tenses or aspects feature as the subject of HAVE, other languages render both possessors and transitive subjects with the same case, ergative, genitive or dative (cf. Allen 1964). This is true, for instance in Maya languages and Eskimo languages where both appear with ergative case cf.:

(28) West Greenlandic

    a. *Piita-up   iglu-a*
        Peter-ERG   house-3SG
        'Peter's house'

    b. *Piita-up   Maali   taku-v-a-a.*
        Peter-ERG   Molly-ABS   see-V-a-3SG
        'Peter saw Molly.'

    c. *Piita-mik   Maali   taku-v-o-q.*
        Peter-ABL   Molly-ABS   see-V-BE-3SG

As a matter of fact, the morpheme glossed as V in (28b) may without further ado be equated with the participial morpheme in languages such as English. The addition of this morpheme 'passivizes' as it does in English. It therefore also is present in the passive counterpart of (28b), given in (28c). The fact that a genuine passive exists side-by-side with the ergative structure shows that the passive hypothesis of ergative case patterns, proposed by Von der Gabelentz (1861) and endorsed by many linguists thereafter, is not correct for all ergative structures. The only morphological difference with respect to the arguments DPs between (28b and (28c) is the case of the logical subject:

ablative in (28c), and ergative in (28b). Concomitantly, the agreement on the verb is different: in (28b) there is 'possessive agreement', i.e. agreement with the ergative DP, while in (28c), agreement is with the absolutive DP. The agreement morphemes are different, however: there is transitive vs. intransitive agreement, the former essentially being nominal agreement, also found on possessed nouns. The ergative case, like HAVE in English, restores the transitivity which is suppressed by the participial morphemes. So, while both constructions in (28b,c) are built upon a passivized stem, only (28c) is passive in the sense of an intransitive construction with an oblique adjunct. (28b), on the other hand, is a possessive construction, i.e. a transitive construction, with a different system of case marking than in HAVE-type transitive constructions, despite a functional similarity.

The ergative case pattern raises the following question: if the possessed object bears nominative, is it then the subject? In Chomsky (1993), nominative is assumed to be provided by T: DP bearing nominative is checked for case in the specifier-head configuration in S-Agr, to which T has raised. This would make the possessed object the structurally most prominent element. However, binding asymmetries may be taken to suggest that the ergative or dative possessor c-commands the possessed object. This is demonstrated for Georgian by Nash (1994) with the following example:

(29) Georgian
    Vano-s   marto tav-is   tav-i   hqav-s   am kveqanaze.
    Vano-DAT only   self-GEN self-NOM HAVE/BE-3sg this world-LOC
    'Vanos only has himself in this world.'

The same problem arises in transitive constructions with an ergative-absolutive case pattern. Quite generally, in such constructions the ergative DP (the logical subject) may be the antecedent of a reflexive anaphor in the absolutive. This is illustrated for Basque in (30), from Levin (1983: 324), and for Chamorro in (31), from Chung (1981, ex. 44a):

(30) Basque
    Nik   nire-burua jo   dut.
    I-ERG   refl-ABS   beat AUX.1SG,3SG
    'I have beaten myself.'

(31) Chamorro
    Ha-chachak maisa gui 'ni se'si si   Juan.
    ERG3SG-cut self   him OBL knife UNM Juan
    'Juan cut himself with a knife.'

If the nominative DP indeed is taken to be T-dependent, and licensed in S-Agr, these facts suggest that the ergative DP is still higher up, and similarly for the ergative or dative possessors. We might conjecture that the S-AgrP is dominated by a nominal kind of further projection, i.e. a nominal COMP-like projection, similar or identical to a determiner, with the obliquely marked subject residing in its specifier, from where it c-commands the nominative. Under such an approach, the situation encountered here is consistent with Chomsky's general claim concerning the relationship between Agr and case. It is equally in line with Kayne's (1993) analysis of dative possessor constructions in general (to which we return below) assuming now that the dative/ergative DP is licensed in the specifier of a D or C type functional projection:

(32)

```
                D/CP
              /      \
        DP_i          D/C'
       <erg>         /     \
                  D/C       S-AgrP
                          /        \
                      DP_j          S-Agr'
                     <nom>         /       \
                               S-Agr        …
                                            VP
                                          /    \
                                      DP_i      \
                                               /    \
                                              V      DP_j
```
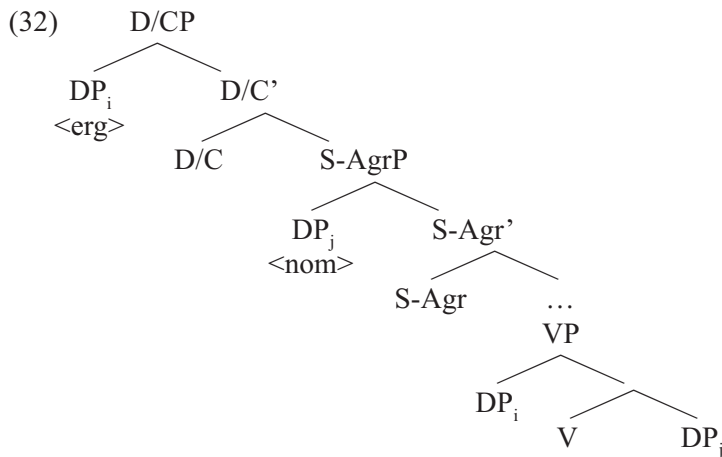
This approach to ergative structures is decidedly different from that hinted at in Chomsky (1993). Essentially Chomsky assumes that ergative and nominative can be equated as being T-licensed Agr, while absolutive is the parallel of V-licensed Agr (i.e. O-Agr). He further assumes that languages have an option with respect to intransitives: they can either exploit the higher Agr, yielding the nominative/accusative pattern, or exploit the lower Agr, yielding the ergative/absolutive pattern, intransitive subjects appearing with absolutive case. Rather the approach which I developed above can be considered an instantiation of the defective verb hypothesis, verbs being defective with respect to licensing O-Agr. As we already saw, this defectivity can come about both by participial morphology or by anti-passive morphology. The former hypothesis on the nature of ergative systems is the Von der

Gabelentz hypothesis mentioned above. However, as the examples from Eskimo given in (28) show, this can only be part of the story. The structure of the passive (28c) is identical to the S-AgrP part of (32), with a potential adjunct identifying the external argument and a verbal base carrying the inflectional morphology. On top of this structure a nominal projection can be built, with the external argument rendered in ergative case. Unlike Chomsky's proposal, an analysis like that in (32) makes direct sense of the fact that transitive agreement, unlike intransitive agreement, is identical to possessor agreement found on nouns. So, rather than equating nominative with ergative, it should be equated with absolutive, the unmarked case in both types of systems. As a matter of fact, the analysis in (32) boils down to the nominal sentence analysis, another old-time favorite in the explanation of ergativity.

There is another, and obvious sense in which ergative and nominative case are similar, viz. in that both function to license the external argument of an active transitive construction. We can take the analogy a step further by realizing the functional similarity between D and T. These functional categories form the backbone of every referential chain. Their differentiation pertains to the categorial differentiation between nouns and verbs. This is indeed the fundamental difference, I would suggest between a nominative system and an ergative system, as represented in (33).

(33)　　… DP_i … $[_{\text{S-AgrP}} DP_j$ …… $[_{VP} t_i V t_j]]$
　　a.　$DP_i F [_V$ HAVE $[DP_{j……}$
　　b.　$DP_i F [DP_{j……}$

In (33a) a verbal functional superstructure accommodates the syntactic transitivity, in (33b) a nominal superstructure does the same.

5. Possessors

As mentioned above, Kayne (1993) argued that the oblique subjects, specifically the dative subject found in the Old Persian perfective, are case-licensed in the specifier of a determiner. He models his analysis on possessive constructions in Hungarian, which are very similar to those in Eskimo. The noun shows agreement with the possessor, which may occur with dative case in the specifier of the determiner, as in (34):[6]

(34) a. *Janos-nak-Ø   a   haza-Ø*
          John-DAT-3SG   the   house-3SG
          'John's house'

      b. *nek-em   a   haza-m*
          DAT-1SG   the   house-1SG
          'my house'

In possessive sentences, according to Kayne, the dative possessor raises to the subject position of BE, as in (35):

(35) a. *nek-em   van   haza-m.*
          DAT-1SG   BE.3SG   house-1SG
          'I have a house.'

      b. Spec … BE [$_{DP}$ *nek-em*$_i$ D … [$_{NP}$ t$_i$ *haza-m*]]
          |_____|

This dative construction in Hungarian is the only means to express inalienable possession. To be sure the dative construction should not be taken as fully similar to a locative construction. First, the dative possessive construction is subject to a definiteness effect (cf. Szabolcsi 1994) of the type described by Guéron (1985a), but the locative construction is not. So, the only way in which to express 'I have the book', with a definite possessum, is as in (36a), recalling English constructions of the type *I have the book with me*. Note the absence of possessor agreement on the noun in (36a).

(36) a. *nalam   van   a   könyev.*
          at-1SG   is   the   book

      b. *ce   livre   est   à   moi.*
          this   book   is   to   me

In this respect, (36a) is similar to the French construction (36b), which should also not be mistaken for a possessive dative construction. This is clear from the fact that a dative clitic (**ce livre lui est*) is impossible. Rather, (36b) is a locative construction, on a par with (36a). The possessive dative construction in (35), on the other hand, is the counterpart of the HAVE-type possessive construction, yielding the patterns in (37):

(37) a. DP$_i$ BE   DP$_j$
          DAT   NOM

     b. DP$_i$ HAVE   DP$_j$
          NOM   ACC

The nominative, used by the possessed DP$_j$ in the BE-pattern, is used to license the possessor in the HAVE-pattern. In either case, an additional case is required: in the BE-pattern this is the dative, assigned to the possessor, in the HAVE-pattern this is the accusative, borne by the possessed.

   To account for HAVE-type languages/constructions, Kayne proposes a similar underlying structure as in (35b). Rather than assigning dative case to its specifier, the determiner is incorporated into BE, which yields HAVE. The possessor, not being case-licensed by the incorporated D, moves on to the matrix subject position. Thus, the Benveniste hypothesis is syntactically implemented.

   A nice piece of support for the similarity between HAVE and BE plus dative can be obtained from the following. Eastern Dutch has two types of inalienable possessive constructions, given in (38)–(39), cf. Van Bree (1981) for extensive description. The examples are taken from Broekhuis and Cornips (1994):

(38) a. *Hem*   *zijn*   *de*   *handen*   *vies.*
          Him   are   the   hands   dirty

     b. *Haar*   *zijn*   *de*   *haren*   *grijs.*
          Her   are   the   hairs   grey

     c. *Hem*   *is*   *de*   *fietsband* *lek.*
          Him   is   the   bike tire   flat

(39) a. *Hij*   *heeft* *de*   *handen*   *vies.*
          He   has   the   hands   dirty

     b. *Zij*   *heeft* *de*   *haren*   *grijs.*
          She   has   the   hairs   grey

     c. *Hij*   *heeft* *de*   *fietsband* *lek.*
          He   has   the   bike tire   flat

These constructions are not allowed in western or standard Dutch. The property setting western and eastern Dutch apart in this respect is not immediately evident, but involves the use of a definite determiner, where

western Dutch would use a possessive adjectival pronoun or a genitival DP. Let us describe this difference as in (40):

(40) a.   Western Dutch: [$_{DP}$ DP$_{gen}$/pron$_i$ NP]
      b.   Eastern Dutch: DP$_i$ [$_{DP}$ def$_i$ NP]

which is meant to express that in eastern Dutch a DP external possessor is allowed which is connected to the definite determiner (cf. Guéron 1985b for discussion). The relevance of (38)–(39), then, is that this external possessor once admitted can be realized either as a dative DP in a BE-type construction, or as a nominative DP in a HAVE-type construction. This underscores their functional similarity.

As a matter of fact, the difference between (40a) and (40b) goes further than this: as there is no DP external to the possessed DP, HAVE nor an obliquely marked DP are possible. So, western Dutch renders the constructions in (39) by plain copular constructions as in (41):

(41) a.   *Zijn   handen   zijn   vies.*
           His   hands   are   dirty

      b.   *Haar   haren   zijn   grijs.*
           Her   hairs   are   grey

      c.   *Zijn   fietsband   is   lek.*
           His   bike tire   is   flat

A combination of HAVE with a possessive pronoun is excluded:

(42) a.   **Hij heeft zijn handen vies.*
      b.   **Zij heeft haar haren grijs.*
      c.   **Hij heeft zijn fietsband lek.*

This suggests that the external DP in (38)–(39) does not bear a theta role by virtue of HEBBEN or the dative, but one determined within the DP, from which it is raised, as in Kayne's analysis.

Let us first look at the representation of the western Dutch counterpart, given in (41). Here the possessor is expressed within the DP expressing the possessed object. Its structure can be seen as a simple instantiation of other copula-BE sentences, involving a small clause complement from which the subject is raised to the S-Agr associated with BE, as in (43):

(43) [$_{DP}$ *zijn handen*]$_i$ … BE [$_{SC}$ t$_i$ … *vies*]

The structures of (38) and (39) under Kayne's approach is decidedly differ-
ent: instead of a simple small clause, which I take to be Agr-projections,
the complement of BE should now be a DP, yielding a structure such as
(44) for (38).

(44) BE [$_{DP}$ *hem*$_{dat}$ D … *de handen vies*

Alternatively, this D-element may be incorporated into BE, yielding a sup-
pletive lexicalization with HAVE. The possessor does not then receive
dative case, and moves on to the subject position, where it receives nomi-
native case:

(45) *Hij*$_i$ S-Agr … BE+D$_j$ [t$_i$ t$_j$ … *de handen vies*

While the case distribution in the HAVE-construction is relatively clear, if
we assume that the incorporation of D licenses a case feature for an O-Agr
dominating HAVE, it remains unclear in what way the possessed object in
the BE-patterns is checked for nominative case.

    The difference with eastern Dutch is two-fold: on the one hand, eastern
Dutch allows the possessor to be realized external to the possessed object;
on the other hand, it licenses dative case. It is not evident to me that these
two aspects are related. One might be tempted to assume that it is the definite
determiner used in eastern Dutch which licenses the dative DP, much as in
Hungarian, and that this dative DP may subsequently be moved out of the
specifier position. Yet, if that were the case, the presence of an overt deter-
miner in the complement of HAVE, as in (39) is not expected under Kayne's
approach, as HAVE results from the incorporation of a D-element. Hence,
the relevant D-element should be distinct from the D in the possessed object.
There are further reasons to doubt the hypothesis that the dative possessor
is raised from inside the DP. In certain cases the alleged position of the trace
category is contained in a prepositional phrase, as in (46). Postulating a
transformational relationship here runs into conflict with the otherwise valid
requirement that movement to an A-position in Dutch is incompatible with
P-stranding.

(46) *Jan   heeft   een   hoed   op   (het   hoofd*).
    John   has   a   hat   on   the   head

(47) a. *Il   a   les   mains   sur   le   dos.*
      he   has   the   hands   on   the   back
      'He has his hands on his back.'

    b. *j' ai   mis   le   bébé   sur   le   dos.*
      I   have   put   the   baby   on   the   back
      'I have put the baby on its back.'

Further problems for a transformational derivation arise in the cases in (47). In (47a), there are two candidates for the underlying position of *il* (cf. Tellier 1990), which makes the structure look like a parasitic gap construction. In (47b), movement of *le bébé* from the NP *le dos* would violate the theta criterion, as *le bébé* would receive two theta roles. For such cases, then, an analysis in which the empty position inside the possessed object has a pronominal representation seems more adequate. It is unclear whether we need to assume that the antecedent of this pronominal empty category is itself independently theta-marked, or whether the relationship in these cases can be assimilated to clitic licensed A'-chains, an analysis that agrees with Kayne for the dative cases in as much he takes the dative position in the specifer of D to be an A'-position. Alternatively, we may assume that the external possessor is theta-marked independently, by some non-overt element X or by the dative assigning element itself. This would result in a structure of (27) as in (48):

(48)   … BE … DP_i X … [$_{DP}$ pro_i *de handen*] *vies*

X would semantically be a transitive predicate, selecting a possessed complement and a possessor subject. As a matter of fact, X would have the semantics of main verb HAVE. I return to this option below.

    In conclusion we should make up the balance at this point. As for dative possessor constructions, we are left with the problem of the case-licensing of the possessed object. In HAVE-possessive constructions, we have seen reason to doubt a possessor raising analysis from inside the possessed object, raising a question with respect to the validity of the idea that HAVE lexicalizes BE plus a determiner. Finally, we still have the problem of the subject of HAVE in participial constructions. In the next section we shall provide independent evidence for the X postulated in (48), as an element

providing an independent semantic contribution. In section 7, finally, we turn to the problem of the assignment of nominative in BE-possessives.

6. Modality: the possession of power

Modal constructions show, crosslinguistically, the same alternation between nominative and dative as possessive constructions. Consider (49):

(49) Hungarian
  a. *Janos-nak kellet meni-e a piac-ra.*
    John-DAT must go-INF-3SG the market-to
    'John must go to the market.'

  French
  b. *Il lui   faut faire cela.*
    it him-DAT must do that
    'He must do that.'

The dative argument in Hungarian and French is rendered by a nominative argument in the English translations. Before discussing this variation in case it will be useful to examine the semantics of modal constructions in somewhat greater detail. The Dutch modal verbs *kunnen* and *moeten* may occur in sentences which are in principle four-way ambiguous.[7] Consider the examples in (50) and (51):[8]

(50) *Jan kan mee spelen.*
  a. 'It is possible that John plays along.'
  b. 'It is permitted that John plays along.'
  c. 'It is permitted to John that he plays along.'
  d. 'John has the ability to play along.'

(51) *Jan moet Engels spreken.*
  a. 'It has to be the case that John speaks English.'
  b. 'It is required that John speaks English.'
  c. 'It is required of John that he speaks English.'
  d. 'John insists on speaking English.'

These ambiguities can be understood in the following way. The a-readings, corresponding to the traditional concept of epistemic modality, involve the

circumstances as the source of either the possibility (in [50a]) or the necessity (in [51a]) of what is denoted by the complement. A more adequate rendering would perhaps be 'according to the available evidence, an option is that *x*/no other option is available than that *x*'. The source in the b-reading is different: it is localized in some person, which may be added in Dutch in an overt *van*-phrase as in (52) (cf. English: *he got permission from his father*).

(52) *Jan   kan/moet meespelen van   z'n   vader*
     John can/must along-play from his   father
     'His father makes John play along.'

This option is less acceptable in the case of *kunnen*, as the verb *mogen* (may) is a better alternative for this reading.[9] The b-reading differs from the c-reading with respect to the recipient of the permission or obligation. (50) might be an answer to John's request to play along, or to a request made by e.g. the coach of John's team. Note that the b-reading is the only one available if the subject of *kunnen/moeten* is not an adequate recipient of permission or obligation, as in the examples in (53):

(53) a. *Het doelpunt kan gemaakt worden in de   tweede helft.*
        the goal   can scored become in the second half
        'The goal may be scored in the second half.'

     b. *Er   moet gescoord worden van   de   trainer.*
        there must scored   become from the trainer
        'The trainer insists that a goal be scored.'

Finally, in the d-reading, the source and the recipient fall together: the option of playing along is permitted to John on account of his own capacities (cf. note 5). The obligation to speak English is placed upon John by himself. These readings may be said to be reflexive.

    What this four-way ambiguity illustrates is that a basic distinction between deontic and epistemic modality, as is traditionally made in studies of modality, underdetermines the range of options. Also evident is the fact that the variation in meaning is not so much located in the modal verbs themselves, but rather in the nature of the source and availability of the recipient role.

    The traditional distinction between deontic and epistemic modality would have it that epistemic modals are raising verbs, i.e. verbs that select no

external argument, while deontic modals are control verbs, assigning a thematic role to their subject which controls the non-overt subject of the infinitival complement, and are hence considered transitive in the same sense as main verb HAVE. This doesn't seem to be the right distinction. Apart form a large number of problems in the execution of this idea, the hypothesis is hampered by the fact that deontic modals in French and Hungarian take an expletive subject, something which is unexpected under a control view on deontic modal verbs. The distinction between epistemic and deontic modality in these cases seems to be the availability of a recipient argument, corresponding with the c- and d-readings of (50) and (51). I shall reserve the term deontic to refer to these readings, with the d-readings then as reflexive deontics.

From the perspective on these dative arguments in Hungarian developed by Kayne, we would be led to postulate (54) as the structure underlying these deontic modals:

(54)   MOD [DP X YP]

where MOD is the modal verb (*kellet*, *falloir*) and X corresponds to the dative assigning determiner in Hungarian, and to the element providing dative in French, which may be prepositional. YP is the complement, an infinitival construction, with a PRO-subject, controlled by DP. In Dutch and English, on the other hand, X does not provide dative case to DP. Rather it incorporates into the modal verb, as it does in HAVE, and the DP raises to the subject position of the sentence, bearing nominative case.

In this analysis, then, modal verbs are always ergative verbs in the sense that they do not select an external argument. Yet they may appear to be two-place verbs in that their complement may either involve a single clausal argument (YP in [54]), or a more complex complement, involving some 'recipient' DP in addition. The analysis of (50) under the b- and c-reading is then as in (55a) and (55b) respectively:

(55)   a.   *Jan$_i$ kan* [t$_i$ *meespelen*]
       b.   *Jan$_i$ kan* [t$_i$ X [PRO *meespelen*]]

(55a) is indeed a one-place predicate, while (56b) is a two-place predicate, as is brought out by the two different patterns, shown in (56):

(56)   a.   *dat kan/moet*   'that can/must'   epistemic
       b.   *Jan kan/moet dat*   'John can/must that'   deontic

In French, such 'reduced' forms come out as:

(57) a. *ça se peut / il le faut*   epistemic
      b. *il le peut / il le lui faut*   deontic

In either case the a-sentences only have epistemic modality, while the b-sentences are exclusively deontic.

What this shows, however, is that not only a case needs to be assigned, but that a theta role is similarly required, a recipient or possessor of the modality. We would therefore need, in addition to a mere case-assigning mechanism, a role assigning element. This, I suggest, is the element X introduced earlier, as representing the possessive role marker. One might think of it as the element Poss found in much recent work on the structure of DP.

7. Dative once again

We have established that a BE plus dative pattern is functionally identical to a HAVE pattern, but that certain problems remain, specifically the question how the possessed object in the BE-pattern receives case marking. One might extend the proposal I made for ergative case patterns to cover the pattern in datives of possession constructions, but from the French and Hungarian modal constructions it would appear that the dative is not in a position dominating the subject position of the sentence.

   Den Dikken (1992) argues that the prepositional *to*-dative is in fact a locative predicate, which he motivates by showing that it may undergo locative inversion in passives, as in (58):

(58) *To Mary were given some books.*

Den Dikken adopts the analysis of locative inversion which was discussed in section 3. In a more recent paper, Den Dikken (1994) discusses a particular problem that arises for a general theory of predicate inversion, viz. the fact that next to (59a,b) (=[15]) a similar inversion is not allowed in the examples in (60) without the appearance of BE:

(59) a. *John was the cause of all the trouble.*
      b. *The cause of all the trouble was John.*

(60) a. *The cause of all the trouble seems *(to be) John.*
       b. *We considered the cause of all the trouble *(to be) John.*

He then constructs an account which is based on the economy principles of Chomsky (1993). Consider again the structure of a simple copular sentence, given in (61):

(61) Spec (… BE) [$_{SC}$ DP Agr XP]

Movement of either DP or XP to Spec in (61) is allowed if we assume that there is no intervening structure, i.e. if BE is simply taken as a inflectional feature carrying element. In the case of (60), without BE, on the other hand, only the DP is allowed to move to the matrix specifier, this specifier being too far removed from XP. Additional functional structure is therefore needed, represented by F in (62):

(62) Spec Agr [$_{VP}$ *seem/consider* [Spec F [$_{SC}$ DP Agr XP]]]

In order to prepose the predicative XP in (62) to the matrix SpecAgr (of S-Agr in the case of *seem*; of O-Agr in the case of *consider*) it is necessary to extend the domain of the embedded Agr-head of the small clause. This obtained by incorporation of this Agr into F, which in a way analogous to the extension of V's checking domain by V-movement to O-Agr in Chomsky (1993), extends the checking domain of Agr to include the specifier of F. SpecF is equidistant to DP and XP in (62), therefore. Hence, XP can move to this position, and then move on to the matrix SpecAgr, checking the features shared between DP and XP by virtue of the embedded Agr. The nominative of DP can thus be checked by locative inversion.

   We shall now try to exploit Den Dikken's analysis to solve the problem of the nominative on the possessed object in possessive dative constructions. First we shall assume that the dative possessor in Hungarian DPs is moved to the specifier position of D from a complement position of the noun. So, the structure of a Hungarian DP such as (34a) involves the movement indicated in (63):
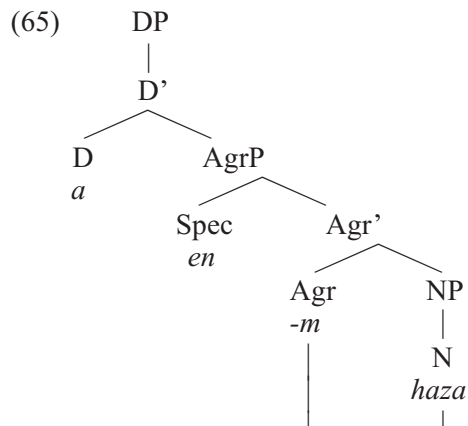
(63) [$_{DP}$ [$_{PP}$ *Janos-nak*]$_i$ *a* [$_{NP}$ [$_N$ *haza-∅*] t$_i$]]

Actually, the internal structure of the DP-structure is considerably more complex (cf. Szabolcsi 1994 for discussion). As the examples in (34) show,

the noun carries an agreement marker with the possessor. However, it seems unlikely that this agreement marker is triggered by the dative DP directly for a number of reasons. First of all, as I remarked above, no such agreement is found on indefinite noun phrases, even if a dative possessor has, at least under Kayne's analysis, passed through the specifier of D. Secondly, it is quite uncommon for agreement to be triggered by a PP, crosslinguistically. Thirdly, there is an alternative to the examples in (34), viz. with a nominative possessor in post-determiner position. This is illustrated in (64):

(64) a. *a   Janos   haza-∅*
          the   John.NOM   house-3SG

      b. *az   en   haza-m*
          the   I   house-1SG

It seems more likely therefore that the agreement it triggered from this position, in a structure of the type in (65):

(65)   DP
            |
            D'
           / \
          D   AgrP
          a   / \
             Spec   Agr'
             en   / \
                  Agr   NP
                  -m |
                         N
                        haza

with head-raising of N to Agr (alternatively, the form *hazam* is inserted in fully inflected form, and checked in the Agr-position). We may then further assume that the nominative possessor in the examples in (34) remains silent, Hungarian being a pro-drop language. This pronominal element takes the dative DP as its antecedent. Note that this analysis is in line with our earlier conclusion regarding the eastern Dutch constructions discussed in section 5, where we also concluded that a pronominal element should be present in the possessed object.

Let us next turn to possessive HAVE-constructions, assuming that these involve dative prepositional phrases as well, and that these undergo locative inversion. This suggests the structure in (66) as the underlying structure:

(66)   …… HAVE [Spec F [$_{SC}$ DP Agr PP]]

We can then implement the Benveniste hypothesis in much the same way as Kayne (1993) proposes, viz. by suggesting that HAVE incorporates the dative marking prepositional element from the PP when it is in SpecF. The residual part, i.e. the DP moves on to the matrix subject position, while the possessed object, i.e. the small clause subject, moves to the O-Agr associated with HAVE. The verb *give* differs from HAVE in that such incorporation is optional: if it does not take place, a locative inversion structure such as (58) results, which is an inverted counterpart of 'some books were given to Mary'. If it does take place, it yields the indirect object passive 'Mary was given some books'. It will be evident that the so-called dative alternation is open to a similar analysis, now involving O-Agr, rather than S-Agr.[10]

A final question concerns the nature of F in this discussion. Den Dikken (1994) argues that F is a tense node, by which the presence of *to be* in (60) can be explained. However, in HAVE-sentences no *to be* is found to lexicalize to the postulated F-head. I would like to suggest that this is due to the fact that HAVE itself arises in this position, basically as an aspectual verb. HAVE raises from F to a higher V position, incorporating the dative preposition from the specifier of FP. It then becomes a main verb in the sense of an element with theta-assigning capacity, this capacity arising as a result of incorporation of the prepositional element into an otherwise aspectual predicate. F is an aspectual head. Instead of HAVE other aspectual verbs may be thought to arise in this F-position, for instance the positional verbs which occur in Dutch with mere aspectual value, as in the examples in (67):

(67) a. *Er   zit   een   fout   in   de   tekst.*
          There sits   a   mistake   in   the   text

      b. *Er   staat   een   raar   verhaal   op   pagina   2.*
          There stands a   strange story   on   page   2

We may functionally equate the position F with the determiner or COMP-like element which we postulated for ergative structures in ergative languages as Eskimo (cf. the structure in [32]). The difference between these systems

and the system as analyzed here resides, as I indicated in the earlier discussion, in the difference between verbal and nominal sentences. Although strongly parallel, therefore, these systems are not identical. However, not all ergative structures are nominal like those in Eskimo: other ergative languages have clearly verbal structures, e.g. in the Indo-Aryan languages. Although these ergative structures are similarly built on a participial, i.e. passive basis, these languages do not show possessive agreement: rather the verb BE, not HAVE, is used in such participial transitives, with BE agreeing with the logical object, which appears in the nominative. There does not appear to be any reason to assume the presence of a determiner-like element to license the oblique (ergative) subject: rather, the ergative may be similarly treated as a preposed prepositional phrase, sharing its features with the nominative object. This is the main difference between the analysis presented here and Kayne's, who takes the dative as inherently licensed by D, rather than as a (predicative) PP, which moves to D's specifier in some languages, and to an Agr-position in others. Consequently, we regard HAVE not as BE plus determiner, but rather as HAVE, which licenses an empty P (or incorporates it), thus staying closer to Benveniste's dictum.

Editors' note

Notes

1. As will be evident from the content, I benefited greatly from the support of Marcel den Dikken and Gertjan Postma. I also acknowledge gratefully the discussions I have had with Rose-Marie Déchaine and Johan Rooryck over various topics discussed in this paper.

2. Interestingly, *France* is the possessor of *the east*, in (10a) as much as in (10b). Instead of having *France* as the subject in the (10b), we might also have taken the entire *the east of France* as the subject.

3. The labels S-Agr and O-Agr are of mnemonic relevance only, i.e. there are no intrinsic differences between them, as Chomsky (1993) stresses. There are no 'subject' features, then, so that the grammatical function of subject would be primitively defined by them.

4. Although a full discussion is beyond the scope of the present paper, it is clear that there is an interaction between aspect and transitivity in some languages, which is absent in others. Accusative case might be thought of as aspect related, while nominative is tense related, in the sense that (accusative) objects determine the aktionsart or aspect of the verb. In Georgian, there does not seem to be any accusative case: semantic objects in the first series, the imperfective series of which the present is a representative, are marked with dative case. In perfective aspect, there is an ergative/nominative pattern, where the perfectivity is often also marked by one of the preverbs or particles.

5. It is not immediately evident, however, whether this is the correct representation for e.g. Eskimo, or ergative languages like it, in that it would appear to be the case that these languages lack accusative case entirely.

6. The prepositional element *nek/nak* in Hungarian is a so-called agreeing preposition: the DP corresponding to the complement of prepositions in English precedes *nek/nak*, which itself is suffixed with an agreement marker of the so-called definite agreement paradigm. We may think of these prepositions to be dominated by an Agr-projection, the object of P moving to the specifier of this Agr, and the P itself incorporating into the Agr (adjoining to the left). The DP in SpecAgr appears in the unmarked or nominative case, pronouns normally remaining silent (pro).

7. A type of modality also occurs with HAVE in various languages, as in *you have to do this* and Dutch *je hebt dat te doen*. Although very interesting in itself, and certainly relevant to the issues dealt with in this paper, I have to refrain from discussing this type of modality.

8. I am grateful to Sjef Barbiers for discussion of these readings, even though my approach is radically different from his.

9. The stem of *mogen* is the only one used in nominal constructions involving existential modality (i.e. possibility). Actually, there are two nouns, *mogelijkheid* (possibility) and *vermogen* (capacity), where the second clearly involves the reflexive deontic modality, whereas the former involves epistemic modality, in

the sense we are using these terms. The prefix *ver-* may also be used in a verbal construction, as in (i), where we are dealing with reflexive deontic modality.

(i) *ik vermag   dat niet in te zien*
    I   VER-may that not   in   to   see
   'I am unable to understand that.'

10. The ungrammaticality of **some books were given Mary* can be accounted for in terms of economy considerations (partial locative inversion plus P-incorporation, but also movement of the DP-subject of the lowest small clause), or in terms of an illegitimate distance being crossed by the latter, if the matrix SpecAgr is too distant for this DP. Less clear is how dialects in which these passives are acceptable should be analyzed.

The indirect object: its status and place

1. Introduction

A number of issues concerning the Indirect Object (IO from now on) are addressed in this article.[1] Attention will be focused principally on those IOs occurring in constructions that also contain (or may contain) a Direct Object (DO from now on). This statement is not meant to convey that I view other constituents traditionally regarded as IOs as fundamentally different. The reason why only a subfamily of the set of constituents normally referred to as IO is focused on here is that, in spite of similarities, – which as far as I can see amount to these constituents having dative case in languages with a case system – there are structural as well as semantic differences that warrant the division.

As stated above, the structural difference is the potential occurrence of a DO by the side of the IO, while constructions with IO + DO have the semantic property of denoting a transfer. The set of IO + DO constructions can be further subdivided into two groups (Van der Toorn 1971): a set denoting the transfer of a concrete object, for example Dutch *geven* 'give', *afstaan* 'renounce/give up', *toedelen* 'assign/allot' or their converses, such as Dutch *weigeren* 'refuse', and a second group conveying the transfer of the 'contents of an utterance', commonly known as *verba dicendi* or speech-act verbs, such as Dutch *vertellen* 'tell', *zeggen* 'say' or *meedelen* 'inform'. The transferred entity is the syntactic DO in the active voice while the IO denotes the recipient, which in this capacity, for obvious reasons, is generally a person.

It will be investigated what the categorical status of the IO is in underlying structure, what its hierarchical status is, and where (linearly speaking) the IO occurs with respect to other constituents in the sentence. Asking questions of this sort basically expresses that the various constructions with IO and DO can be insightfully related by transformation, while it implies at the same time that the prepositional phrase (PP) interpreted as the IO is taken to be in the same grammatical relation as its nominal counterpart (NP). This presumption is not shared by everyone (see Balk-Smit Duyzentkust 1968 and Janssen 1974). Section 9 deals with this issue in some detail. In the first few sections a number of properties of the IO – which I think any description of the Dutch language must account for – are discussed. I will

provide such an account as we go along. In section 5 the IO is related to causative constructions; here I closely follow Seuren (1973, 1975). It will be argued that certain simplifications and generalizations are made feasible by relating the IO in the constructions under consideration to a causative analysis with the help of lexical decomposition. I do not believe, however, that it is useful (although often usual) to take for granted that the more formal syntax found in EST (Extended Standard Theory) is incompatible with the more semantically slanted analysis admitted by lexical decomposition. What I hope to show here is that, when this position is given up, it becomes possible to relate the 'origin of the IO' in a generalizing and insightful way to passivization.

The final section deals with the issue of whether there are factors that condition the various places in which the IO occurs in surface structure. It will be argued that the placement possibilities of the IO expressed as a PP are to a very high degree similar to those of PPs in other functional categories (adverbial PPs, for example).

2. Transformational analyses

In Dutch sentences with two objects three constructions are possible (if we leave the possibility that one of the objects occupies first position out of account for the moment; I will return to this in section 10):

(1)   a. *Jan geeft een boek aan Marie*
             Jan gives a   book to   Marie
        b. *Jan geeft Marie een boek*
        c. *Jan geeft aan Marie een boek*

while (1d) is impossible:

        d. ***Jan geeft een boek Marie*[2]

This set-up is very similar to what we see in English:

(2)   a. *John gives a book to Mary*
        b. *John gives Mary a book*
        c. ***John gives to Mary a book*
        d. ***John gives a book Mary*

It would seem obvious to look for a relationship between these sentences and part of my intentions here is to show that it is indeed necessary to do so. Several proposals have been put forward in the transformational literature. Questions relevant at this point are (a) which construction do we take to be underlying, and (b) is the IO in underlying structure a nominal or a prepositional phrase?

For English the order in (2a) is normally assumed to be the underlying order, with the IO as a PP. Burt (1971) is an exception, but she provides hardly any arguments for her choice. I will now briefly turn to two transformational proposals, one of which is non-structure-preserving (Jackendoff and Culicover 1971) while the other describes the transformation of (2a) into (2b) as a structure-preserving operation (Emonds 1972).

Jackendoff and Culicover point to additional cases of object permutation, with or without preposition deletion. Thus, besides the alternation in (2a) and (2b) we find pairs like:

(3) a. *I spoke to Harry about the movie*
    b. *I spoke about the movie to Harry*

(4) a. *He blamed the fiasco on Jack*
    b. *He blamed Jack for the fiasco*

(5) a. *He credited Bill with the discovery*
    b. *He credited the discovery to Bill*

It is their aim to provide a description for these pairs that also generalizes across the permutation in (2). Their point of departure is that in the pairs in (4) and (5) both prepositions are present in underlying structure (the potential issue of the mutual order of the two PPs is not raised by the authors). Accordingly, the underlying structure of (4) would be *He blamed for the fiasco on Jack*. An optional rule of PP-shift is then formulated (Jackendoff and Culicover 1971: 402):

(6) PP-shift
     X – V – {NP/PP} – PP – Y   →   1 – 2 – 4 – 3 – ∅ – 5
     1   2   3   4   5

This rule puts the hindmost PP in front of the first in (3)–(5); in a similar fashion, it would shift the IO in front of the direct object NP. Next, Jackendoff and Culicover (1971: 402) formulate an obligatory rule of P-deletion

which deletes the preposition to the immediate right of the verb, but this rule applies only in the case of specific verbs (the rule is therefore lexically governed):

(7)   P- deletion
       X – V – P – Y   →   1 – 2 – ∅ – 4
       1   2   3   4

Quite a few objections can be raised against this rule, but before I go into this, I will deal with Emonds' proposal. Emonds also takes the order DO – IO, with the IO as PP, as basic (as in [2a]), and formulates a structure-preserving rule deriving (2b) from (2a). The hypothesis that certain transformations are structure-preserving mainly aims to reduce the power of transformations in a general fashion: it states that such transformations may only move constituents to positions that can be base-generated. His rule has the following format (Emonds 1972: 588):

(8)   Dative movement
       X+V – NP – (P) – [$_{PP}$ *to/for*] – NP – Y   →   1 – 5 – 3 – ∅ – 2 – 6
       1   2   3   4   5   6   OPT

Term 3 is the location for particles. The rule moves two NPs to each other's original position and deletes the preposition in term 4. It is clear that this rule is 'lexically governed', too, and that verbs allowing this rule to operate must be marked as such by a rule feature in the lexicon. However, this is not quite sufficient either since the rule (or the rule feature) will have to refer to the specific functional relation of IO, or to the semantic contribution of the PP, the P of which is deleted:

(9)   a.   *The secretary sent a schedule out to the stockholders*
       b.   *The secretary sent the stockholders out a schedule*
            (by rule [8])

But we cannot have:

(10)   a.   *The secretary sent the girls out to the market*
       b. **The secretary sent the market out the girls*

The difference here is that in (9) the *to*-PP is an IO whereas *to the market* in (10) is an adverbial adjunct.

   Dutch runs up against a specific problem with the rule in (8) as the direct object shows up in a PP. A rule such as PP-over-V (Koster 1973) could then

move the DO even farther back in the sentence. This unwelcome effect can be short-circuited in two ways. One could not only delete the P, but the whole PP with it. This would clearly result in a non-recoverable deletion, however, which is not admissible. Secondly, one could order PP-over-V before rule (8), but this is not attractive either: a theory admitting extrinsic rule-ordering is a more powerful theory than one that does not, because in point of fact an ordering requirement is an extra rule. Strictly speaking, it might be maintained that Emonds proposed his rule only for English. It is often assumed out of hand that rules like this are suitable for Dutch as well: this may not seem surprising given the considerable resemblance of constructions in the two languages.

Admittedly, there would be various objections to both proposals if their use in Dutch is considered. Dative movement is object-creating in English, i.e. the output of Emonds' rule (8) and the combination of Jackendoff and Culicover's (6) and (7) can be input for passivization, turning the original IO into the subject, as in:

(2)   e. *Mary was given a book by John*

This is impossible in Dutch, cf.:

(1)   e. **Marie   werd   bloemen   gegeven   door   Jan*
         Marie   was   flowers   given   by   Jan

A rule-ordering precept might work here, too; if we order passivization before dative movement in Dutch, the problem would be solved. But then, the same objection as before would hold.

Another difference between Dutch and English follows from a comparison of (1c) with (2c): the Dutch word order IO – DO is also grammatical when the IO is a PP, which is not allowed in English. P-deletion is not obligatory in Dutch, although some speakers consider (1c) somewhat marginal. In section 10 an explanation is provided.

Jackendoff and Culicover's (1971) proposal runs into other objections that also hold for English. First, one would expect that, if both prepositions were present in underlying structure in (4) and (5), they would emerge in nominalizations, which they do not:

(4')   a. **the blaming for the fiasco on Jack*
       b. **the blaming on Jack for the fiasco*
       c. *the blaming of the fiasco on Jack*
       d. *the blaming of Jack for the fiasco*

A further objection is that the generalization the authors refer to on page 402, i.e. "that it is always the preposition next to the verb that is deleted" is not a generalization about observed data but about structures containing prepositions which Jackendoff and Culicover postulate themselves (Seuren 1973). Seuren also points out that it is definitely not the case that instances like (4) and (5) occur regularly, which Jackendoff and Culicover suggest, and that, moreover, it cannot be predicted when prepositions are deleted and when they are not.[3]

The third objection Seuren points to does not seem correct to me. He writes: "Nor does it (i.e. the P-deletion rule *T.H.*) explain why, in V-NP$_1$-NP$_2$, it is the NP$_2$ which is the object, not NP$_1$, whereas in other cases it is the NP whose preposition is (supposedly) deleted which becomes the object." (Seuren 1973: 32). It is not true that in NP$_1$-NP$_2$-V the NP$_2$ is the object; rather, it is the NP which originally was the IO as PP. As we have seen, after dative movement the original IO can become the subject of a passive sentence, which is precisely the defining characteristic of the object. In Jackendoff (1977b) another proposal for dative movement is discussed, to which I will return in section 8.

The purpose of this section was to describe a number of differences between Dutch and English, which immediately shed light on a number of properties of derivational rules that need to be taken into account in the analysis proposed here.

3. Inherence of IO and Verb

The left-right ordering of modifying elements seems to be used regularly to represent semantic hierarchies. The closer a modifying element is to a nucleus, the more inherent is the relationship between these two. Conversely, it might be maintained that the more inherent the relationship is between a modifying element and a nucleus, the closer the element can be placed to the nucleus. Roose (1956) shows how this principle works in the case of prenominal modifiers: that only (11a) is acceptable out of the possibilities in (11) is explained by this principle:

(11) a. *vier   mooie   stenen   gebouwen*
           four   beautiful   brick   buildings
      b. **vier stenen mooie gebouwen*
      c. **stenen vier mooie gebouwen*
      d. **stenen mooie vier gebouwen*

Koster (1974) notes that a similar principle holds for sentences: adverbial adjuncts order themselves with respect to the verb in the order from left to right, in accordance with the principle alluded to:

(12) a. *dat   Jan   tijdens   de   pauze   aan   zijn   vader   dacht*
            that   Jan   during   the   break   of   his   father   thought
          '… that Jan thought of his father during the break.'

    b. ?**dat Jan aan zijn vader tijdens de pauze dacht*

A comparison of these sentences with their English equivalents makes it clear that the principle also operates in English:

(13) a. *John thought of his father during the break*
      b. ?**John thought during the break of his father*

It is true that the mutual order of the elements is precisely the inverse of what we seen in English, but with respect to the verb the order is identical, on the assumption that in underlying structure the verb in Dutch is in final position while in English it is in second position. The order in (12b) may occur in main clauses, which Koster explains by PP-over-V, in which process the verb functions as a 'mirror center': Dutch PPs may also occur behind the verb, but the order in relation to the verb remains what it is.
    Looking at real nominalizations, we notice a fixed serialization in them:

(14) a. *het geven   van   een   boek   aan   Marie*
            the   give-INF   of   a   book   to   Marie
          'the giving of a book to Marie'

    b. ?**het geven aan Marie van een boek*

Given the principle of serialization based on inherence and given X'-syntax conventions, we may derive that the IO is less inherently tied to the verb than the DO. At a pinch, we might even derive that the IO entertains a relation to V + DO (see Bos 1972: 10). I will return to the point in section 7, where I will show that this supposition is probably correct. In a recent article, Van den Berg (1978) provides arguments also suggesting that the IO entertains a less close relationship with the verb than the DO. For example, when the DO is omitted in (15a), *de hond* 'the dog', the IO in the a-sentence, must be interpreted as the DO:

(15) a. *Marie gaf de hond een floramop*
          'Marie gave the dog a dog biscuit.'

      b. *Marie gaf de hond*
          'Marie gave the dog.'

Moreover, the IO can be split off, resulting in:

(16) *Marie gaf   een   flora mop,   en   wel   aan   de   hond*
       Marie gave a   dog biscuit and   **well** to   the   dog
       'Marie gave a dog biscuit to the dog (not to the cat).'

Van den Berg (1978: 166) notes the following: "Concerning the position that the separable and non-separable members take up in relation to each other in the *deep structure* of the VP (italics mine, *T.H.*), it should be pointed out that non-separable items are closer to the verb than the separable ones." Here too, the idea is that in deep structure the DO is closer to the verb than the IO. Kirkwood (1969) arrives at a similar conclusion for German.

   Based on these and similar considerations, Van den Berg construes VP-structures which in an X'-format would look as follows:

(17)   V''
          /   \
        IO   V'
                  /   \
               DO   V
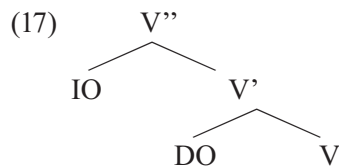
When we make a further comparison of English to Dutch, the structure in (17) would look like (18) for English:

(18)   V''
          /   \
        V'   IO
      /   \
    V   DO
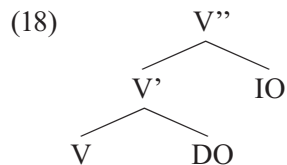
We may now also conclude that proposals for dative movement made for English cannot be correct for Dutch since the underlying order is different: the rule in Dutch operates in precisely the opposite direction than the rule in English.

   The structure in (17) makes no distinction between the IO in its PP or NP realization. I will return to this in the next section.

The structures in (17) and (18) violate the base rules proposed in Jackendoff (1977b: 62). In his view, the IO and DO are generated by one and the same rule, i.e. the rule expanding V'. A clear objection to this rule would be that the inherence differences pointed out above cannot be accounted for. The fact that Jackendoff generates DO and IO under V' is a consequence of his 'three level hypothesis' which allows no more than three levels for any major category, which is already one too many for A(djective) and P(reposition), making it imperative to be wary about the three levels. The highest level in V (V''') is necessary for the attachment of sentence adverbials while V'' serves for predicate adverbials. In Van den Hoek (1971) a distinction is made on syntactic grounds between four types of adverbial adjuncts. If this turns out to be correct, one would be forced to allow for more levels in the V-projection.

Leaving the discussion for what it is, I now turn to the question of what the categorical status of the IO is. The conclusion of this section is that any description of the IO needs to be able to account for the differences in inherence with respect to the verb that we have observed.

4. The categorical status of the IO

On the grounds of what we have discussed sofar, we are in a position to reject (1c) as a candidate underlying structure from which the others can be derived. This leaves us with two possibilities: the IO is an NP or it is a PP. In principle, both options seem possible: an insertion rule could derive a PP from an underlying NP, or a deletion rule an NP from an underlying PP. It needs to be decided which of these alternatives allows for the largest number of generalizations.

Daalder and Blom (1976) (D&B from now on) put up a structure corresponding to (17), in which NP is chosen to represent the IO:

(19)   V''
         /   \
      NP   V'
     (IO)   / \
           NP   V
          (DO)
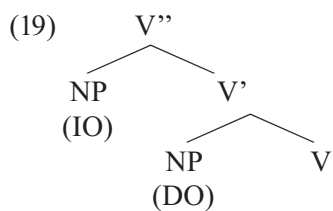
The antecedent relations of reciprocal *elkaar* 'each other' and reflexive pronouns are argued to support the structure in (19). D&B assume that at the

level of deep structure an interpretive rule assigns an antecedent to these pronouns. According to D&B, antecedent assignment, in addition to general conditions like the specified subject condition and the tensed sentence condition (Chomsky 1973), is subject to a structural relationship of asymmetric superiority between antecedent and pronoun, defined as:
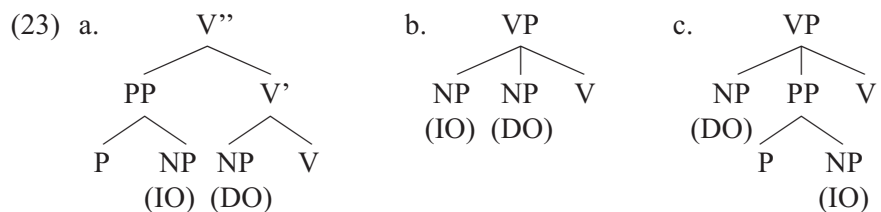
(20) *Asymmetric superiority*
"… the category A is 'superior' to category B in the phrase marker if every major category dominating A dominates B as well but not conversely".   (Chomsky 1973: 246)

Chomsky counts A(djective), V(erb) and N(oun) and the categories dominating them as 'major categories'. D&B add the category P(reposition) to the list (D&B, note 2). The sentences in (21) and (22) support the structure D&B provide in (19):

(21) *Ik gaf die mensen elkaars adres*
'I gave these people each other's addresses.'

(22) *Ik gun   die   mensen elkaar*
  I   grant these people   each other
'I think these people deserve each other.'

Admittedly, in these sentences the IO is the antecedent of the DO in (22), or of a reciprocal pronoun contained in the DO in (21), so that the IO must be 'superior', which it is (19). On the assumption that the superiority relation is correct, the structures in (23) must be rejected:

(23) a.   V"   b.   VP   c.   VP
      ╱╲   ╱│╲   ╱│╲
     PP   V'   NP NP V   NP   PP   V
    ╱╲   ╱╲   (IO)(DO)   (DO) ╱╲
   P   NP NP   V   P   NP
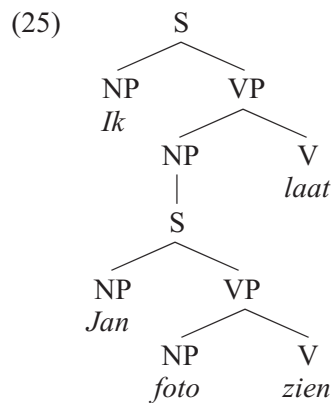   (IO)(DO)   (IO)

In (23a) the first major category dominating the antecedent is PP, and PP does not dominate the DO as well, resulting in rejection. The same holds for (23c). (23b) is rejected since the first major category dominating the IO also dominates the DO, but the converse also holds.

I have grounds, however, to assume that D&B's analysis is incorrect. Firstly, deep structure cannot be the level at which antecedent assignment takes place. There are convincing arguments (see also the next section) to show that in a sentence such as:

(24) *Ik laat Jan een foto   zien*
     I   let   Jan   a   photograph see
    'I show Jan a photograph'

a bisentential structure may be suggested which looks as follows:

(25)

```
                 S
            ┌────┴────┐
          NP          VP
          Ik      ┌────┴────┐
                NP           V
                │           laat
                S
           ┌────┴────┐
         NP          VP
         Jan     ┌────┴────┐
               NP           V
              foto        zien
```

In this structure *Jan* as subject is superior to the DO *foto*. Note, however, that the sentence in (26) would have to be given the same underlying structure as (24), in which *kinderen* is superior to *elkaars foto's*, so that D&B's hypothesis predicts that (26) is grammatical, contrary to fact:

(26) **Ik laat elkaars   foto's   aan de kinderen zien*
      I   let   each other's photographs to   the children   see

So, deep structure cannot be the level at which antecedent assignment takes place.[4] Apart from that, dative movement will have to precede antecedent assignment (a point D&B concede in their footnote 9), in view of:

(21') **Ik geef elkaars adres aan die mensen*
      (I give each other's address to these people)

(22') **Ik gun   elkaar   aan die   mensen*
      I   grant each other to   those people

D&B propose (27) as the underlying structure for these sentences:

(27)

```
              V'
           ___|___
          /   |    \
        NP    PP    V
       (DO)   /\
             /  \
            P    NP
                (IO)
```
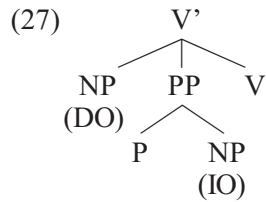
Whether or not there should be a transformational relation between (19) and (27) D&B leave undecided. A certain astonishment at structure (27) is in order, however; it is suggested that the extent of inherence of IO and V is greater if IO = PP than if IO = NP. I cannot see any grounds for this suggestion, nor do D&B provide any. Moreover, the principle of the functional interpretation of underlying node relations is obfuscated in this way, and may easily lead to wrong results. Inside V' a PP position can be motivated for inherently directional adjuncts and prepositional objects; the IO is neither of these two. As regards the antecedenthood relations, however, the underlying structure squares with the premise of the superiority relation, as shown by (28):

(28)   *Hij vertrouwt de kinderen aan elkaars   ouders toe*
         He trusts   the children to   each other's parents **toe**
        'He entrusts the children to each other's parents'

To account for the structural relations in the sentence, it is necessary for the DO to be superior to the IO, which is the case here: the first major category dominating the NP which fills the DO node, i.e. V', is also the first major category dominating the NP filling the IO, but not conversely.

At this point I must raise a second objection. It is not absolutely necessary for the IO to be an NP in order to be a suitable antecedent for a reciprocal pronoun contained in the DO or functioning as the DO; it is more important for the IO to precede:

(29)   *Ik geef aan de kinderen elkaars tekeningen*
        'I give to the children each other's drawings.'

There may be those who think that (29) has an odd flavor; they will probably also have doubts about (1c) and may consequently derive from all this that the oddity is not due to the antecedent relationship. In addition, (29) will be perfectly fine for them with a contrastive accent on the IO.

D&B's hypothesis might perhaps be saved by assuming that (29) does have an underlying structure along the lines of (19), and is derived from it by an *aan* 'to'-insertion transformation. The weakness then is that it predicted that also in (28) the preposition has been introduced by the *aan*-insertion rule, but this cannot be assumed by D&B as the PP node is crucial for them. Otherwise, the structure for (28) would look like (23b), with the superiority relation no longer being asymmetric.

These problems not only suggest that D&B's analysis cannot be correct, but also that it is rather the surface structure that serves as the level of antecedent assignment, which is quite conceivable for a language like Dutch with a relatively free word order. The structural relation required between antecedent and pronoun might then be couched in terms of 'precede and command' (Jackendoff 1972). Jackendoff defines the notion 'command' as follows:

(30) A node X commands another node Y if neither X nor Y dominates the other and node Y is dominated by the first cyclic node over X.

If we assume that PP is not a cyclic node,[5] it does not really matter which of the structures in (23) or (19) we adopt. Regretfully, we cannot derive clinching arguments from D&B that would allow us to choose between NP or PP.[6]

However, there are a number of arguments that do allow us to adopt the point of view that the IO is a PP in underlying structure:

(a)   *PP-over-V*

Taking the underlying order to have the verb in final position, we note that prepositional phrases may follow a final verb(al group):

(31) a. *Ik heb   het boek aan een meisje gegeven*
          I   have the book to   a   girl   given
          'I have given the book to a girl.'

      b. *Ik heb het boek gegeven aan een meisje*

In order to be able to relate these sentences to each other Koster (1973) proposes the PP-over-V transformation. He argues that the rule is cyclic and iterative. If we assume an NP in underlying structure, a potential *aan*-insertion rule would also have to be given a place in the cycle. Intuitively, this does not seem to be quite satisfactory: why generate an NP that turns into a PP early in the derivation? If we assume that PP-over-V is a cyclic rule,

it would suggest that a solution in terms of an underlying PP is preferable (see section 10, however). Moreover, *aan*-insertion would be a structure-building rule, or rules like PP-over-V should be reformulated so as to be able to refer to P-NP without creating a PP-structure over these constituents.[7]

(b)   *postposing of adverbial PPs*
Dutch has pairs of sentences which show a difference of word order of the DO and an adverbial PP:

(32) a. *dat Jan met   vuile handen de   jurk   beetgreep*
             that Jan with dirty hands   the dress seized
          '… that Jan took hold of the dress with dirty hands.'

     b. *dat Jan de jurk met vuile handen beetgreep*

If we take there to be a PP in the underlying order, the alternative word order in (1a) might be derived with the help of the same rule that relates the sentences in (32):

(1)   c. *Jan geeft aan Marie een boek*
       a. *Jan geeft een boek aan Marie*

Booij (1974: 637) formulates the rule *postposing* for (32), which has the following format:

(33) *Postposing*, cyclic, iterative
     X – ADV/PP – NP – Y   →   1 – 3 – 2 – 4
     1   2   3   4   OPT
     CONDITION: obligatory if 3 = Pro

I think it is not quite felicitous to regard the shift in word order exclusively as the postposing of the adverbial PP (see also Kooij 1978) since it is often the properties of the DO that motivate the change in word order. We need not reformulate the rule since postposing is not implied in it: only the name of the rule suggests this. On the other hand, I do not believe that it would be correct to use the same rule to determine the position of the pronominal object (see also note 2).

(c)   '*true' nominalizations*

PPs retain their original prepositions in nominalizations. The IO gets the preposition *aan* 'to' also in nominalizations. The rule inserting *van* 'of' in front of the DO in nominalizations (cf. Jackendoff 1977b: 70) can be formulated most simply if we assume that the IO is a PP, so that only the DO is an NP. There is also a possibility, however, to have the IO preceded by *van* when the 'real' object is not mentioned:
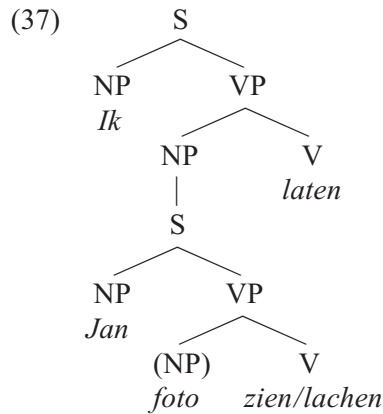
(34) a.   *De   directeur betaalt een hoog loon   aan de arbeiders*
          The manager pays   a   high wage to   the workers
          'The manager pays the workers high wages.'

     b. *het betalen van een hoog loon   aan   de arbeiders*
          the paying of   high wages to   the workers

     c. *het betalen van de arbeiders*
          the paying of   the workers

These facts show that the argument for taking the IO to be a PP is none too strong. Indeed, all three arguments ([a], [b] and [c]) cannot be said to be compelling. They do suggest, however, that there should be a PP present at some level in order for the rules PP-over-V and PP-postposing to be able to operate in a generalizing fashion.

5. Causative constructions and the IO

In addition to the IOs we have sofar come across in simple sentences, we also see IOs in causative constructions, for which a more complex structure can be given. Following Shibatani (1975), I define a causative construction as a proposition in which a 'causing event' and a 'caused event' are mentioned. The caused event can itself have the form of a proposition mentioning a state or event of which the first item is the instigator or causer. Both on semantic and syntactic grounds it is entirely plausible therefore to postulate the underlying structure in (37) for the causative sentences in (35) and (36):

(35)   *Ik laat Jan lachen*
      'I make Jan laugh.'

(36)   *Ik laat Jan een foto   zien*
      I   let   Jan   a   photograph see
      'I show Jan a photograph.'

(37)

```
              S
          ┌───┴───┐
         NP       VP
         Ik    ┌───┴───┐
              NP        V
              │       laten
              S
          ┌───┴───┐
         NP       VP
         Jan    ┌──┴──┐
              (NP)    V
              foto  zien/lachen
```

This underlying structure is supported by several arguments.

(a) A simple account can be given of the fact that there is a predication relation between *Jan* en *zien/lachen* (compare *Ik maak dat Jan een foto ziet/lacht* 'I cause that Jan sees a photograph/laughs.'). As extra evidence a sentence such as (38) is frequently referred to:

(38) *Ik laat door de   slager   mijn koe   slachten*
      I let   by   the butcher my   cow slaughter
      'I let my cow be slaughtered by the butcher.'

To account for the *door* 'by'-phrase it is assumed that passivization has operated in the embedded sentence in (38). That this may be problematical becomes clear if one considers that there is no passive morphology in the verb phrase. Radford (1978) points out the complex problem behind this (on p. 62 he provides an elegant solution).

(b) *selection restrictions*
The selection restrictions normally imposed by *zien* on its subject and object hold for *Jan* and *foto*[8] in (36), as shown in (39) and (40):

(39) ?*De   steen ziet   geloof*
       The brick sees faith

(40) ?*Ik laat de   steen geloof zien*
       I   let   the brick faith   see
      'I make the brick see faith.'

(c) *subcategorization*

If *laten* (let) is taken to be an auxiliary, as is customary in traditional grammar (Van der Toorn 1977), it is difficult to explain that the verb (the main verb, on this view) always has one more argument than would be the case if the auxiliary *laten* is absent in the sentence. For example, *zien* (see) is a two-place predicate, but there are three places in (36). For a sentence containing *geven* (give) and the auxiliary *laten* (let) we would need an extra rewrite rule to introduce three arguments in the VP, and this rule would be necessary only if the verb *geven* is accompanied by *laten*. Regular auxiliaries are markedly different, moreover. In a construction such as (41):

(41) $NP - V_{FIN} - X - V_{NON\text{-}FIN}$

the NP is the person carrying out the action, etc. expressed by the nonfinite verb when the finite verb is an auxiliary, as is also shown by (42):

(42) *Ik   heb   een   foto   gezien*
       I   have   a   photograph   seen
      'I have seen a photograph.'

If *laten* is used as V_{FIN} in such a structure, this is not the case. I refer to Evers (1975) and Aissen (1974) for further arguments.

   The bisentential structure is converted into a simplex surface structure. I refer again to Evers and Aissen, and also to Harbert (1977), for arguments in favor of the simplex nature of surface structures. One argument I would like to highlight here: what is object in underlying structure does not behave as a single constituent in surface structure, as can be derived from the fact that parts of the embedded object clause behave as separate constituents in derived structure:

(36') a. *Jan   laat   ik   een   foto   zien*
           Jan   let   I   a   photograph   see
          'It's Jan I'm showing a photograph.'

      b. *Die   foto   laat   ik   aan   Jan   zien*
           That photograph   let   I   to   Jan   see
          'That photograph I'm showing Jan.'

The operation that converts the bisentential structure into the simplex surface structure is V-raising (Evers 1975; Aissen 1974). What it does is move the verb from the tenseless embedded clause to the verb in the matrix clause

and Chomsky-adjoin it to it. As a consequence, the S-node of the embedded clause is pruned by a general pruning principle, as is the VP-node (if this is assumed at all).

We now face the question as to how we should view the transition of an underlying subject to a surface IO. The issue is dealt with in Seuren (1973, 1975) for French. As in Dutch, the subject of the clause embedded under the causative verb (henceforth SU2) becomes the DO in derived structure if the verb in the embedded sentence (henceforth V2) is intransitive:

(43) *Je ferai entrer Jean*

See (35) for a comparable Dutch sentence. When V2 is transitive, SU2 becomes a PP headed by the preposition *à*:

(44) *Je ferai voir la lettre à Jean*

To account for the case in (44) Seuren proposes two obligatory rules, *à*-insertion and dative movement. He formulates them as follows:

(45) *à*-insertion (obligatory)
      X – *faire* – V – NP – NP – Y   → $1 - 2 - 3 - à{+}4 - 5 - 6$
      1   2   3   4   5   6

(46) Dative movement
      output (45)   → $1 - 2 - 3 - 5 - à{+}4 - 6$

These rules are descriptively adequate for French. The situation is more complex in Dutch, however, because it is not always possible for SU2 to become a PP, or, put differently, because SU2 does not always become IO:

(47) *Ik laat* (*aan) *de   slager   mijn koe slachten*
       I   let   to   the butcher my   cow slaughter

(48) *Ik laat* (*aan) *Jan een liedje zingen*
       I   let   to   Jan a   song   sing

It is obvious that such sentences also constitute a problem for traditional grammar as there appear to be two potential direct objects here. It is striking that grammars do not provide examples of this type of structure when auxiliaries of causality are discussed.

The difference in derived structure of the SU2 (i.e. sometimes IO, some-times *not* IO in any case) is hard to account for. One possibility to consider is offered by the verb *laten*. Two verbs *laten* might be distinguished, one of which with an IO in its own S, and one without such an IO. We might employ the former *laten* in those cases in which SU2 becomes an IO; after V-raising, we could apply equi-NP deletion of SU2 under identity with the IO in the matrix clause. The underlying structure of (36) would then look like (36'):

(36')

```
                    S
              _____|_____
            NP            VP
                      _____|_____
                    IO   NP    V
                   Jan_i  |   laten
                          S
                    _____|_____
                  NP            VP
                 Jan_i      _____|_____
                          NP         V
                         foto      zien
```
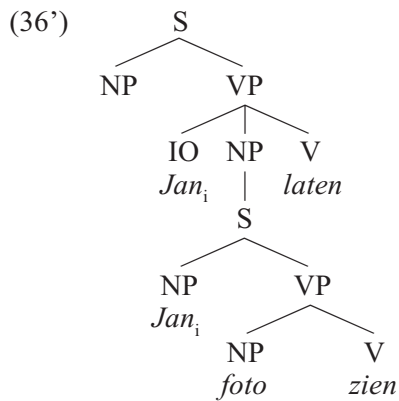
There are quite a few problems here. Firstly, apart from accounting for an IO in this way, I cannot find any argument to conceive of *laten* as a verb with an IO. More importantly, it might be objected that one now expects this *laten* to occur with an object clause in which an intransitive verb is found. We would then be presented with the following structure:

(49) NP – *laten* – IO – $V_{intrans}$

We are unlikely to find constructions of this type; in other words, when an IO occurs in a causative construction, a DO must be there as well. We would then be forced to stipulate a rather odd restriction on the object clause depending on this verb *laten*, which is subcategorized for an IO: the object clause may only contain transitive predicates. In other words, if the verb in the embedded clause is intransitive, there would never be a differ-ence in the derived status of SU2, which we would expect there to be if that difference is attributed to a difference in the matrix verb.

   The situation will be looked at more closely in the framework of rela-tional grammar in the next section.

6. Causative constructions and relational grammar

The situation sketched in the previous section regarding causative constructions in Dutch and related problems is identical to what we find in modern Hebrew, as described in Cole (1977). Causative verbs are related to their non-causative counterparts with the help of a morphological process that is still productive today. Cole describes the underlying structure of causative constructions in the same way as the previous section: they have a bisentential structure in which, however, the matrix verb is an abstract formative CAUSE.

The SU2 in this structure turns into a DO in derived structure if the verb in the embedded clause is intransitive, just as in Dutch and French. However, if V2 is transitive, two different situations may arise.

Situation A: the SU2 becomes IO in derived structure:

(50)   *Hismati   lo   et   hataklit*
        I-let-hear   him-DAT   ACC   the record
        'I let him listen to the record.' (cf. [36])

Situation B: the SU2 becomes DO in derived structure:

(51)   *Hirkadeti et   hataldim   et   harikud/barikud   haxadas*
        I-let-dance ACC the students ACC the dance/OBL the dance the new
        'I let the students dance a new dance' (cf. [47], [48])

It is not easy to decide in Dutch which of the two constituents in the underlying structure is the DO in (47)–(48); the only decisive feature is passivization, which is impossible with *laten*. It is easy to decide in Hebrew, however: *et hataldim* in (51) has all the features of a DO, which the original DO constituent of the embedded clause (*the dance*) does not have, even if it is in the ACC case.

The question now is when do we find situation A, and when B. Cole shows that properties of the embedded verb are relevant here, including features of the subject of that verb. The explanation involves a relational hierarchy generally given as:

(52)   SU > DO > IO > BEN > Other obliques

I refer to Keenan and Comrie (1977) for the motivation of this hierarchy. What happens when there is 'clause union'? The first thing is that a second subject crops up in the matrix clause, which results in a non-admissible situation (Comrie 1975). The SU2 is demoted as a consequence. Two different principles may now come into operation: the principle of 'place holder' or the 'principle of rank':

(53) *The 'accessibility' or 'place holder' principle*
      A constituent that is pushed out of its relation takes up the first available lower position in the hierarchy.

(54) *The principle of rank*
      If the SU is driven out, it drives out the DO in turn and becomes DO itself. The original DO constituent now becomes a 'chômeur'.

It should be obvious that these principles predict that a SU2 becomes a DO when V2 is intransitive: the DO relation is still free. With a transitive V2 it remains to be decided which of the two principles will operate. The choice appears to be related to properties of the subject. If the verb has the features [+control] and [-stative], i.e. if it expresses an action of which the agentive subject is the 'controller' in the sense of Dik (1975), the principle of rank will operate. The subject is as it were strong enough to push the DO out of its relation. If the verb is [-control] and [+stative], the accessibility principle will operate: the subject is not strong enough to drive out the DO, and sinks to a lower position on the hierarchy.

To account for the difference between Dutch and Hebrew on the one hand, and French (which seems to resemble Turkish in this respect) on the other, it might be assumed that either the latter two languages do not have principle (54), or that the feature 'agent' plays a less prominent role in these languages.

Summarising, we may posit the following relations:

(55) a. V2 + control → SU2 +agent → principle (54) →
          sentences (47)–(48)

      b. V2 – control → SU2 –agent → principle (53) →
          sentences (36)

To give an example: *horen* 'hear' is the [-control] counterpart of *beluisteren* 'listen to':

(56) a. *Ik   laat   aan   Piet   mijn   nieuwe   plaat   horen*
         I   let   to   Piet   my   new   record   hear
         'I let Piet listen to my new record.'

   b. *Ik   laat   (*aan) Piet   mijn   nieuwe   plaat   beluisteren*
       I   let   (*to) Piet   my   new   record   listen to

Cole invokes lexical innovation to show that we are not dealing here with features that have to be learned for each verb, but with predictive principles, which is a huge step forward compared to a rule system employing rule features. But even this solution is only partly satisfactory: we do get an insight in deriving relations, but on the other hand it is still not clear how IO as an NP is to be related to IO as a PP.

7. Extending the causative analysis by semantic decomposition

Seuren (1973, 1975) proposes to extend the causative analysis to cases in which the surface structure does not show the verb *laten* 'let' by assigning to double-object verbs a lexical structure in which there is an abstract causative component which figures in underlying structure as a matrix verb. *Geven* 'give' could be decomposed into CAUSE HEBBEN (CAUSE HAVE). The sentences in (1) could then be given an underlying structure as in (57):

(57)
```
                    S
              ┌─────┴─────┐
             NP           VP
             Jan      ┌───┴───┐
                     NP       V
                     │       CAUSE
                     S
               ┌─────┴─────┐
              NP           VP
              Marie     ┌──┴──┐
                       NP     V
                       boek  HEBBEN
```
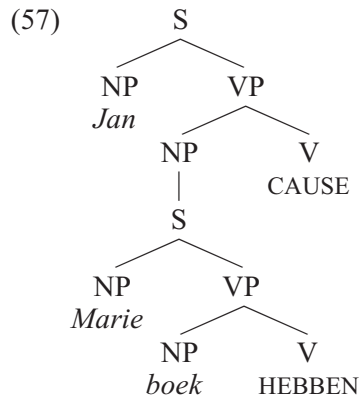
A simplex surface structure is derived from this underlying structure by means of V-raising, resulting in a complex V-node in which HEBBEN is connected to CAUSE by Chomsky-adjunction. V-raising can be regarded as a

pre-lexical rule: only after the complex node is created do we lexicalize it as *geven* 'give'. This procedure relates the following sentences in an elegant manner:

(36) a. *Ik laat Jan een foto   zien*
      I let Jan a   photograph see
      'I show Jan a photograph.'

   b. *Ik toon Jan een boek*
      'I show Jan a book.'

An analysis of this type makes extra rules superfluous since V-raising has been argued to be necessary on other grounds. The relation between *laten zien* (let see) and *tonen* (show) is not established in the lexicon only, but also derivationally. We are now in a position to describe Dutch with one rewrite rule less: a rewrite rule expanding two NPs in the VP is no longer necessary.

    Seuren (1973), to which I refer, gives a great many more arguments for the wider application of the causative analysis. I would like to point out that the principles discussed in the preceding section, in combination with an analysis in the generative semantics framework, shed a clear light on the origin of *all* indirect objects in the construction under discussion, i.e. with an accompanying DO and with the possibility of adding *aan* (to). As we have seen, the V2 in decomposition cases (the abstract verb HEBBEN (HAVE) in [57]) has the property [-control].[9]

    A comparison of the sentences in (59) provides further support:

(59) a. *De direkteur betaalt een hoog loon aan de werknemers*
      the manager pays   a high wage to   the workers
      'The manager pays the workers high wages.'

   b. *De direkteur betaalt de werknemers*
      'The manager pays the workers.'

   c. **De werknemers worden een hoog loon door de direkteur*
      the workers   are   a   high wage by   the manager
      betaald
      paid

   d. *De werknemers worden door de direkteur betaald*
      the workers   are   by   the manager paid
      'The workers are paid by the manager.'

Passivization is excluded in (59c) but is fine in (59d) where the original DO has vanished. Seuren (1973: 34 sqq) proposes a rule for this, which he refers to as 'object attraction', which incorporates an unspecified object into the verbal node. The regular, specific object of *betalen* 'pay' is something like *geld* 'money'; if the object has no further modifiers, it may be omitted just as well. So *betalen* 'pay' in (59 b,d) means 'geld betalen' ('pay money'). In the same way, *iemand schrijven* 'write somebody' really means 'iemand een brief schrijven' ('write somebody a letter') (see Kraak and Klooster 1968: 190 sqq). By assuming that the rule of 'object attraction' is pre-lexical, so that the DO gets incorporated into the verb at lexical insertion, we predict with the help of the accessibility principle in (53) that *de werknemers* 'the workers' in (59b) is a direct object, which accounts for the possibility of passivization in (59d). The original DO has been incorporated, leaving the relation DO open for the SU2 when it is demoted after 'clause union'. Also compare the nominalizations in (60) in this context:

(60) a. *het betalen van het loon aan de werknemers*
      the paying of the wage to the workers

    b. *het betalen van de werknemers*
       the paying of the workers

    c. **het betalen van het loon van de werknemers*
       the paying of the wage of the workers

In view of what was stated earlier Van der Toorn's (1977: 31) formulation is very striking: "Wanneer in een zin slechts één objekt voorkomt, is dit gewoonlijk een LV; zodra er een tweede objekt bij komt, kan dat een LV zijn, waarbij het eerst aanwezige objekt 'opschuift' tot MV". [When in a sentence only one object occurs, this is usually a DO; as soon as a second object is added, this may be a DO, where the first object then 'moves up' to IO.] The order of things is precisely the opposite here, but the formulation in terms of *opschuiven* (move up) is striking.

    Returning for a moment to the observation we made in section 3, i.e. that the degree of inherence of IO and V is less than of DO and V, we note that this follows straightforwardly from our analysis: in underlying structure the DO is already tied in with one of the components of the V, whereas the IO is related to the V as its subject. Given the distinction between subject and predicate, which at the same time implies that the subject as a relation is outside the predicate, it follows directly not only that the inherence of the IO is less strong, but also the idea Bos (1972: 10) proposes, i.e. that the

IO is in a relation with the V + DO, is supported. For the same reasons, the idea in Van den Berg (1978), i.e. that inherence distinctions should be represented in deep structure, seems correct to me.

8. Passivization and IO

In section 4 a number of arguments were adduced that make it reasonable to assign PP-status to the IO early in the derivation. There we were concerned with movement possibilities of other types of PPs. On the other hand, the causative analysis forced us to take a nominal phrase as our point of departure in underlying structure. I wish to point out once again that in this article IO constructions which also contain a DO are dealt with. We also find an IO in sentences like the following:

(61) a. *Deze situatie   bevalt   **me** niet*
           this   situation pleases me   not
           'I don't like this siuation.'

    b. *Dat behaagt **mij** nauwelijks*
           that pleases me   hardly
           'I'm hardly pleased with that.'

It is striking that with these IOs it is not – or hardly – possible to add *aan* 'to'. Balk-Smit Duyzentkust's criticism that everything understood to be the IO was assigned dative case in Latin is probably to a large extent correct, albeit that in a nominalized (61) *aan* 'to' would emerge, cf *het aan mij bevallen van de situatie* (literally: 'the to me pleasing of the situation'). Although it is likely that sentences like these can also be given a more abstract analysis, I will leave them out of consideration in the rest of this article.

    Let me first marshal the facts once more. Our focus is on three types of sentences:

(62) *Ik geef Marie een boek*
       'I give Marie a book.'

(63) *Ik laat Jan een foto   zien*
        I   let Jan a   photograph see
       'I'm showing Jan a photograph.'

(64) *Ik laat de slager   mijn koe   slachten*
       I let   the butcher my   cow   slaughter
       'I have the butcher slaughter my cow.'

The first of these three was related to the other two by lexical decomposition of *geven* (give) and other verbs selecting two objects to yield a complex verbal structure with an abstract verb CAUSE. Basing ourselves on this, we can assign a similar underlying bisentential structure to all three. The three sentences show a further similarity in that in all three cases there is a variant sentence in which a prepositional phrase alternates with on of the nominal phrases:

(62') *Ik geef aan Marie een boek*
        I give to   Marie a   book
        'I give a book to Marie.'

(63') *Ik laat aan Jan een foto   zien*
        I   let   to   Jan a   photograph   see
        'I'm showing a photograph to Jan.'

(64') *Ik laat door de slager   mijn koe   slachten*
        I   let   by   the butcher my   cow   slaughter
        'I have my cow slaughtered by the butcher.'

The difference between the preposition chosen in (62') and (63') on the one hand, and (64') on the other, corresponds to a traditional difference in parsing that we can represent as follows: *aan Jan/Marie* 'to Jan/Marie' is indirect object, *door de slager* 'by the butcher' is an adverbial adjunct. *Jan/Marie* in (62)–(63) are also indirect objects, while the syntactic relation of *de slager* 'the butcher' in (64) is left in the dark in traditional grammar.

In our analysis the syntactic relation of all three is identical at underlying level: all three are subjects. A further similarity is that in underlying structure the matrix part is identical for all three, albeit that the causative verb for the latter two is a real verb, but an abstract verb in the first sentence. The embedded clauses are also identical from a structural point of view, but differ in the type of verb: in the first two cases the verb is [+stative] while in the last one the verb is [-stative] and [+control]. There is a corresponding difference in passivization possibilities. The embedded clauses are, respectively:

(62) a. *Marie heeft een boek*
          Marie has   a   book

(63) a. *Jan ziet een foto*
      Jan sees a   photograph

(64) a. *De slager slacht   mijn koe*
      the butcher slaughters my   cow

Only the final sentence allows passivization:

(62') a. **Een boek wordt door Marie gehad*
      a   book was   by   Marie had

(63') a. **Een foto   wordt door Jan gezien*
      a   photograph was   by   Jan seen

(64') a. *Mijn koe wordt door de   slager   geslacht*
      my   cow is   by   the butcher   slaughtered

In section 5 the phenomenon was pointed out that passive morphology was absent in the verbal group where one would normally expect it:

(64) b. *Ik liet mijn koe door de   slager   slachten*
      I   let my   cow by   the butcher   slaughter
      'I had my cow slaughtered by the butcher'

It is commonly assumed that passivization has operated on the embedded S-complement of *laten* (let), but the absence of passive morphology is difficult to explain (Radford 1978)

Now that we have lined up what we have done sofar, the conclusion seems inescapable that we need to relate the genesis of prepositional phrases out of nominal phrases that have the same underlying relation to each other. What I propose is this: all three types of sentences are assigned the same underlying bisentential structure in which the object of a causative matrix verb is a tenseless complement. The normal passivization operation that has S as its domain is not allowed to apply. How this can be prevented I leave open for the moment. The abstract CAUSE is an obligatory raising verb, so that after V-raising the derived VP-structure is identical for all three:

(65)

```
                    VP
                 ／    ＼
           NP   NP    V'
                     ／  ＼
                  V       CAUSE_V
```
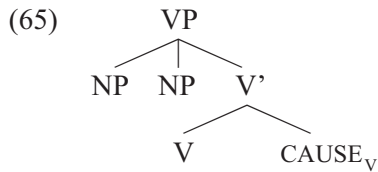
In this partial structure the complex V' may be lexicalized as one single lexical element, or as two, where CAUSE = *laten* 'let'. Although the explanation escapes me at the moment, I assume that it is not a coincidence that, when the complex V' is lexicalized by a single lexical element, the original complement verb is always a [-control] verb.

   Following V-raising an optional rule may operate on the VP-structure. It will create a PP and will be motivated by factors to be discussed in the next section. We may formulate this rule as a kind of passivization having VP as its domain:

(66) VP-passivization[10]

$$[_{VP}NP - X - NP - V + \text{CAUSE}] \quad \rightarrow \quad \text{prep} + 1 - 2 - 3 - 4 + 5$$
$$\quad\; 1 \quad 2 \quad 3 \quad 4 \qquad 5 \qquad\qquad \text{OPT}$$
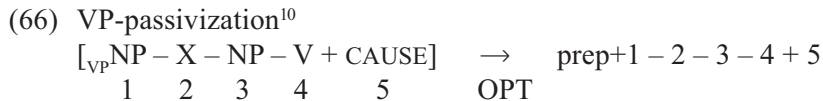
The preposition is selected depending on the verb in term 4: if the verb is [+control], *door* 'by' is selected; if the verb is [-control], *aan* 'to' is selected.[11] The *door* 'by'-attribute in (64b) is therefore not the result of passivization in the embedded clause, but of the same process creating *aan*+NP for the IO. This solves Radford's problem – the absence of passive morphology – in a simple way: the passivization rule operating on the S-domain not only creates the *door* 'by'-adjunct but also passive morphology.

   It is clear that rule (66) is not structure-preserving. If a structure-preserving formulation of the rule should be desirable, one might follow Jackendoff (1977b), who generates an empty *by*-phrase, and likewise generate an optional empty PP under the highest V-node into which the first NP in the VP (i.e. the original SU2-NP) is moved in a structure-preserving manner. The empty P would then be realized as either *aan* 'to' or *door* 'by', again depending on the nature of the verb.

   Although this kind of rule-writing is standard practice in EST-syntax, principled objections can be raised against it. To make this clear, let us consider Jackendoff's (1977b: 64) V'-rewrite rule. It has the following format:

(67) V' → V (NP) (Prt) (AP/NP) (AdvP/QP) (PP) (PP) (S')

The rule is a first approximation, but it is the principle that is at stake here. Firstly, it is a drawback that the brackets convention implies that in principle all possibilities could occur simultaneously, which is clearly not the case: the generative capacity of the rule in (67) is excessively large. Moreover, it is not a coincidence that across languages there are no verbs with so many functional arguments. The fact that all available options in the rule cannot occur simultaneously is an entirely different matter from the non-occurrence of, for example, three embeddings, which one might account for in a theory of performance.

A second objection, which I noted before, is that the principle of the functional interpretation of node relationships gets into a squeeze in underlying structure. An example will make this clear. The fourth and fifth positions on the right-hand side of the arrow in (67) are the DO and predicative constituents, respectively. Strictly speaking, the fourth position is unnecessary as the second NP-position will also be interpreted as DO. What Jackendoff (1977b: 69) does is collapse the fourth and the fifth positions into one position with a particular syntactic feature notation. An NP generated in the collapsed position can be given two functional interpretations in this way. Apart from all that, the idea of collapsing can hardly be said to square with the trouble Jackendoff goes to establish to motivate the positions separately.[12]

A third objection would be that generating empty nodes, which is what it amounts to, not only puts paid to the functional interpretation of underlying node relationships, but also effectively erodes the function of transformations. Given rule (67), what would be the use of a transformation linking *John phoned the boy up* with *John phoned up the boy*?

It should be clear that motivating an empty node is never based on the construction found in the data but on the possibility of formulating transformations in a structure-preserving format. In the VP or V'-domain a PP can be motivated, but this is not possible if the head of the VP is *laten* 'let': the functional interpretation of such a PP is either as inherently directional adjunct or prepositional object.

Finally, one might wonder whether the structure-preserving hypothesis is worth all these problems, given the fact that the two well-motivated transformations proposed for Dutch, V-raising (Evers 1975) and PP-over-V (1973a), are clearly not structure-preserving.

Rule (66) links an adverbial adjunct with an IO. In the next section the consequences of this for a theory of grammatical relations will be investigated.

9. The IO as a derived relation

In Balk-Smit Duyzentkust (1968) and Janssen (1974) it is argued that the two manifestations of the IO, i.e. the prepositional phrase and the noun phrase, do not have the same grammatical relation. In what is defended here there is no room for the idea that a different grammatical relation is expressed by the NP-filler from the PP-filler since both are traced to the subject of a clause embedded under a causative verb. That both can be traced to the same relation does not mean to say that sentences in which these different realizations are used are equivalent, as will appear eventually.

Supporters of a relational difference usually come up with examples like the following:

(68) *iemand   een klap, zoen, knipoog, trap geven*
      somebody a   blow, kiss, wink,   kick give
    'strike somebody a blow, give somebody a kiss, give somebody a wink, kick somebody'

(69) *de planten water geven*
      the plants   water give
    'water the plants'

Adding *aan* 'to' to these expressions is impossible or very difficult, which is one of the considerations for espousing the point of view mentioned above. In cases like (68) we might adduce first of all that we are dealing here with more or less idiomatic meanings, which results in syntactic frozenness. Moreover, the DO is always non-specific (compare section 10), which co-occurs with its strong preference for the position behind the IO (consider in this context the expression *de pijp aan Maarten geven,* literally: 'the pipe to Maarten give', i.e. 'opt out', in which the DO is specific.). Thirdly, it is not unreasonable to suppose that in cases like *een knipoogje geven* 'give a person a wink', we are concerned with a complex verb rather than a V+DO combination. Compare (70) and (71) with what we would expect as their only possible counterparts in (70') and (71'):

(70) *Ik werd de deur opengedaan*
     I   was   the door   opened
    'The door was opened for me.'

(71)   *Ik   werd   een   knipoogje   gegeven*
     I   was   a   wink   given
     'I was given a wink.'

(70')   *Mij   werd   de   deur   opengedaan*
     me   was   the   door   opened
     'The door was opened for me.'

(71')   *Mij   werd   een   knipoogje   gegeven*
     me   was   a   wink   given
     'I was given a wink.'

Again, Seuren's object-attraction rule could be put to use here, incorporating the object into the verb and leaving the position of DO free as a result (see section 7). More support for this idea comes from the occurrence of verbs like *knipogen* 'wink', *trappen* 'kick', *zoenen* 'kiss', etc. side by side with *een knipoogje etc. geven* ('a wink etc. give'; 'wink').

All other things being equal, the same holds for (69): in *planten water geven*, the paradigm of *water* is virtually closed. It is easier to say *water aan de ziek geven* 'water to the sick give' than *water aan de planten geven* 'water to the plants give', but this might be due to the fact that a sick person can be given a variety of things where plants are usually only given water besides fertilizer and soil. It should be noted, however, that *aan* 'to' is possible in *water aan de planten geven*.

The differences of meaning that Balk-Smit Duyzentkust and Janssen claim to have discovered are more like stylistic differences than real differences of meaning. Such differences are often the result of alternative word orders.

10. Conditioning factors for word order variants

One of the factors generally adduced to motivate a difference in word order is the topic-comment relationship in the sentence. Kooij (1973b) has formulated rules for the order of the two objects that pay attention to information pertaining to thematic structure. He formulates these features using the terms presupposition and topic, where presupposition represents "plus or minus specific (or generic)" and topic stands for "already known, identified in the discourse". As for the rules for the ordering of objects, Kooij states that the object with a minus value follows the object with a plus value.

Recent research by Smyth, Prideaux and Hogan (1979) shows that these rules are plausible indeed. Smyth, Prideaux and Hogan make a distinction between motivated and non-motivated contexts. A motivated context is the result of one of the two objects having been made topical in the preceding context, while the other has not. Experimental subjects were asked whether they noted a difference when the order of objects was switched: they noted the difference in motivated, but not in non-motivated, contexts. Janssen's (1974) criticism of Kooij, i.e. that his rules do not predict anything in case there is no difference in the value for either object, is supported by these findings.

Kooij (1973b) observes correctly that his rules provide a specific formulation of a more general phenomenon. Already in Weil (1844) it was pointed out that there is a universal tendency in languages to put the old information, the topic, in the front part of the sentence, and to close the sentence with the new information. The Prague school, Firbas in particular, has put considerable effort into developing a theory on these points, which has become known as Functional Sentence Perspective (FSP). Jansen (1978) shows that FSP theories do not only have something to say about IO-PPs but about all PPS.

The positions where the IO can be found are:

As NP: the first position in the sentence:

(71)   *Marie geef ik het boek*
        Marie give I   the book
        'To Mary I give the book.'

This placement can be accounted for by the usual topicalization rule, although its formulation in terms of *wh*-movement runs into difficulties as moving the object-NP to the left does not necessarily mean that the object ends up in first position (See Kooij 1978, Kooij and Wiers 1977):

(72) a. *Ik heb gisteren **Marie** een boek gegeven*
          I   have yesterday Marie a   book given
         'I gave Marie a book yesterday.'

     b. *Ik heb **Marie** gisteren een boek gegeven*

     c. ***Marie** heb ik gisteren een boek gegeven*

Rightward movement of the IO-NP is impossible; it can only be done if the IO is a PP:

(73) a. *Ik heb   gisteren   **aan Marie**   een   boek   gegeven*
      I   have   yesterday   to   Marie   a   book   given
      'I gave a book to Marie yesterday.'

    b. *Ik heb gisteren een boek **aan Marie** gegeven*

    c. *Ik heb gisteren een boek gegeven **aan Marie***

The possibilities for moving IO-PPs are similar to those of other PPs. Jansen (1978) does not observe any difference in moving the PP by PP-over-V to a position behind the verbal group that could be explained by a difference in function of the PP:

(74) a. *Ik heb   gisteren   **met vuile handen**   de   jurk   beetgepakt*
      I   have   yesterday   with   dirty   hands   the   dress   seized
      'I seized the dress yesterday with dirty hands.'

    b. *Ik heb gisteren de jurk **met vuile handen** beetgepakt*

    c. *Ik heb gisteren de jurk beetgepakt **met vuile handen***

The similarity in positional possibilities of IOs and other PPs is not so astonishing, all things considered. Underlying relational connections must be encoded in surface structure. For what we call the IO, this can be done in two ways: by a fixed position or by an explicit lexical element, *aan* 'to'. It is obvious that , if the IO is preceded by *aan* 'to', a fixed position is no longer necessary. This is why the IO – DO order, with the preposition in front of the IO, has something redundant about it since coding takes place in two ways. The relative oddity of (1c) could be explained in this way. So, word order can have two functions: encoding underlying grammatical relations and indicating topic-comment relations. If the IO is comment, or focus, a tension exists between these two functions of word order, a tension that is relieved by inserting a preposition guaranteeing wider positional mobility.

11. Conclusions

In this article the IO cooccurring in constructions with a DO has been traced back to the subject of a complement clause of a causative verb. It was observed that verbs taking two objects can be decomposed into a structure with a [-control] verb and a causative verb. A first advantage is that semantically and syntactically closely related sentences like *Ik laat Jan een foto*

zien 'I let Jan see a photograph' and *Ik toon Jan een foto* 'I show Jan a photograph' can be related to each other in a simple manner. A further advantage of the causative analysis is that it allows us to restrict the rewrite rules, or put differently, to do away with a syntactic relation. In an underlying relational structure the nuclei of all sentences now have the form given in (75) or (76):

(75)   S   (76)   S
       /   \   /   \
    NP   VP   NP   VP
    (su) | (su)   /   \
                 V   NP   V
                                              (do)
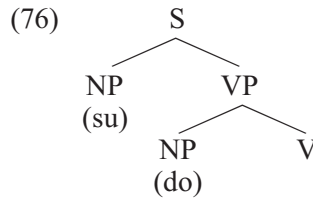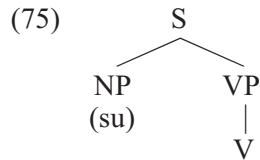
In other words, the relation IO does not exist. In surface structure the underlying SU2-relation is encoded in a fixed position or marked by a preposition, i.e. *aan* 'to'. The selection of the preposition is dependent on the verb of the embedded object clause. If the verb is [-control], *aan* 'to' is chosen, while *door* 'by' is chosen if the verb is [+control], connecting the creation of an IO-PP to a kind of *door* 'by'-phrase of the passive. Since the coding of an underlying subject is what matters in either case, it does not seem unreasonable to relate them to each other. The rule proposed in (66) to effect this not only expresses that one single process is at issue here but also that the occurrence of two NPs side by side within the VP-domain is a prerequisite. In addition, by making a distinction between two types of rules that create a passive *door* 'by'-phrase, we can account for the fact that the rule, which has VP as its domain, does not produce passive morphology in the verb group.

   On this view, there is no room for a relational difference between the NP and the PP traditionally called IO. The difference in categorical status of the IO (i.e. of the derived subject of the embedded clause) is made dependent on a coding function: the underlying relation may be coded by a fixed position or marked by the element *aan* 'to'. If coded by a preposition, the place of the IO is vacated, providing an explanation for the fact that the positional possibilities of PPs with different functions are identical. Factors motivating positions deviating from base positions are probably similar to those holding for these other types of PPs. One of these, i.e. the topic-comment relationship, has been shown by experimental research to be operative in determining the mutual order of the two objects (Smyth, Prideaux and Hogan 1979), which confirms Kooij's (1973a) hypothesis of motivated contexts.

Editor's note

The original title of this chapter is: "De status en plaats van het indirekt objekt". It was published in 1978 in *Aspecten van woordvolgorde in het Nederlands*, edited by Jan Kooij (p. 40-69), distributed by the Department of Dutch Language and Literature, Leiden. Translated into English by Frits Beukema.

Notes

1. My indebtedness to Michael Moortgat in the preparation of this article is gratefully acknowledged. I also wish to thank Harry van der Hulst for his criticism of an earlier version.

2. This word order (i.e. DO-IO) appears to be possible when the IO does not occur in a PP and the DO is a pronoun: *Ik geef 't die jongen* 'I give it that boy'. I will leave this phenomenon undiscussed in this article: in many languages pronouns can occupy positions which deviate from positions normal for specific functional categories. Compare, for instance, French (which is an SVO language) *Je le lui donne*. I am inclined to think that separate rules apply to the placement of pronouns.

3. I have found one single case in Dutch:

    (i)   *Zij   betaalden grof   geld   voor het schilderij*
          They paid   coarse money for   the painting
          'They paid a lot of money for the painting.'

    (ii) *Zij   betaalden het schilderij met   grof   geld*
          They paid   the painting   with coarse   money

    I do think, however, that this case is more or less fortuitous. The normal procedure is for the verb to acquire the prefix *be-* in cases of this sort, as in:

    (iii) *Ik smeer verf   op   de   muur*
          I   smear paint   on   the   wall

    (iv) *Ik besmeer   de   muur met   verf*
          I   be-smear the wall   with paint

    Note that in (i) the verb *betalen* happens to have the prefix *be-*, by mere coincidence. Apart from all this, it would seem that the process we are concerned with here can be adequately described as a case of promotion of the object.

4. B&D do not mention causative constructions. It may be possible that they have a different analysis in mind than the one proposed in section 5, in which (26) would not be a counterexample. I am convinced, however, that a bisentential underlying structure for causative constructions can be defended on the basis of solid arguments.

5. Van Riemsdijk (1978) maintains that besides S and NP we also have PP as a cyclic domain. This would explain the difference in grammaticality between:

    (i)   *Van die klas heb ik de leerlingen nog geen cijfer gegeven*
            Of   that form have I   the pupils   yet not a mark given
            'I have not given the pupils of that form a mark yet.'

    (ii)   **Van die klas heb ik aan de leerlingen nog geen cijfer gegeven*
            Of   that form have I to   the pupils   yet not a mark given

    Given the subjacency condition (Chomsky 1973) and given the cyclic character of PP the ungrammaticality of (ii) is explained since in this sentence a PP is extracted from under two cyclic domains. The A-over-A principle provides another, though equally possible, explanation since a PP has been extracted from a PP. Both explanations presuppose the existence of a higher layer of PP-structure.

6. I do not wish to claim, however, that this would provide a solution for all the problems B&D discuss.

7. Given the conclusion in note 5 that the ungrammaticality of (ii) in note 5 pre-supposes a higher layer of PP-structure, *aan*-insertion cannot but be structure-building.

8. I think it is incorrect to deal with selection restrictions along the same lines as factors that influence grammaticality. Haas (1973) distinguishes clearly between 'ungrammatical' and 'semantically deviant'. An ungrammatical sentence can only be saved by internal adjustment while a semantically deviant sentence requires a change or expansion of context. 'Semantically deviant' can thus be read as "deviating from specific semantic tendencies", which probably reflect whatever is 'normal' in extralinguistic reality. I agree with Dik (1978) that a linguistic theory that has nothing to say about selection restrictions says too little: according to Dik selection restrictions can be seen as indicators of an interpretation which is neutral or not.

9. Den Hertog (1973) characterises the indirect object as the person carrying out an action to make the action of the subject possible, so a complementary action: *Piet geeft Jan een boek* 'Piet gives Jan a book', *Jan ontvangt een boek* 'Jan receives a book'. Van der Toorn (1971) notes that the word 'action' should receive a broad interpretation: *ontvangen* 'receive' can hardly be seen as an action. The idea, however, that the operation/action of the IO is complementary with respect to the action of the subject adequately expresses the notion that the IO itself also carries out an 'action' while on the other hand the subject of the sentence is in control of that action .

10. In formulating it in this way I pass over whether the rule creates a PP-structure. If this should not be so, various phenomena are going to be difficult to account for (see also note 5). For example, the movements of other prepositional phrases are formulated as PP-movements. They could be reformulated, how-ever, in such a way that they operate on P+NP strings. In Jansen (1978) it is

argued that PP-over-V is not, or only minimally, sensitive to the functional status of the PP, and that it is probably correct to regard this rule not as a cyclic transformation but as a post-cyclic 'leaking' rule.

11. French provides support for relating passivization and IO-formation in the way done in this article: besides the prepositions *par* and *à*, de can *be* selected in some instances, depending on the verb:

(i) *Je ferai suivre Jean de Pierre*

It would not be attractive to have three different derivations when we are dealing with one and the same process, i.e. demoting the subject NP to a prepositional phrase after clause-union has taken place.

12. Considerable discussion is devoted to the question as to whether a partial structure such as NP1-Prt-NP2, with NP2 as a predicative NP, is at all possible. As a case in point Jackendoff (1977a: 67) mentions *John grew up a Catholic*.

Categories and arguments

1. A gap in the typology of verbs

Verbs can take various types of complements, e.g. DP, CP, double object, small clause or none. Within each of these categories we find verbs with or without an external argument. So, in (1) we have the alternating verb *break*, with or without an external argument, as well as an external argument taking verb such as *hit* and the ergative *arrive*. Similarly for the other examples in (1)–(5). In my thesis (Hoekstra 1984b: 250 ff.) I noted one gap in this system: if a verb has no complement but only an external argument, as in (5a), there are no counterparts lacking the external argument.[1] This is illustrated in (5b).

(1)   NP-complement:
      a. *John broke the vase.*
      b. *The vase broke.*
      c. *John hit Bill.*
      d. *Bill arrived.*

(2)   CP-complement:
      a. *John believes that the earth is round.*
      b. *It seems* (*to John*) *that the earth is round.*
      c. *John believes hot dogs to be dangerous.*
      d. *Hot dogs seem* (*to John*) *to be dangerous.*

(3)   double object:
      a. *John gave Bill a book on logic.*
      b. *The book on logic appealed to John.*[2]

(4)   small clause complement:
      a. *John considered this plan dangerous.*
      b. *This plan proved dangerous.*

(5)   unergative:
      a. *John laughed.*
      b. ?(possible candidates: weather verbs)

As for weather verbs, as possible candidates of (5b), I shall assume that they have a (quasi)-external argument (cf. Hoekstra 1984b, note 201 and Bennis 1986, ch. 2).

Assuming that there is indeed this gap, the question is why. In this paper I shall first review Hale and Keyser's (1992, 1993, 1997) theory of argument structure, which gives a particular rationale for the gap (although not intended). Then I shall develop a new theory of the notion transitivity from which the gap follows in a more principled fashion.

2. Hale and Keyser's theory of argument structure

Hale and Keyser develop a lexical theory of argument structure which represents argument structure in the lexicon in terms of a syntax which is defined in the same structural terms as what they call 'big syntax'. Specifically, the theory makes use of the notions head, specifier and complement, and of the lexical categories N, A, V and P, as well as syntactic principles such as the head movement constraint, or the more general ECP. Without going into the details of their theory, I would like to single out a number of features of their system which are relevant to the present discussion.

The first concerns their classification of categories, given in (6)

(6)   A is a predicate
       P takes a complement and forms a predicate.
       V takes a complement and denotes an event
       N denotes a thing

These characterizations lead to the following combinations, each with their own interpretation:

(7)   Verbs take complements
       a. V AP/PP: change of state or position
       b. V NP: verbs of creation
       c. V VP: causative
       d. V ∅:   not allowed

Hale and Keyser reject Stowell's (1981) approach in which each category may have a subject, projected in its specifier. Rather, AP and PP, though being predicates, do not take subjects themselves, but rather combine with V (henceforth V_2) to form VP with its subject. The combination yields, as specified in (7a), a change of state or position predicate. VP and NP are not

predicates: they denote events and things, respectively. Hence they combine with V (henceforth V_1) to form a VP which does not inherit a subject on account of the predicatve nature of their complement. Rather, their subject is supplied in big syntax, triggered by the syntactic principle of predication à la Rothstein (1983). At the level of argument structure, then, $[V_1$ NP/VP] structures are incomplete.

(8) a. $[_{VP}$ NP V_2 AP/PP]
     b. $[_{VP}$ V_1 NP/VP]
     c. $[_{VP}$ V_1 $[_{VP}$ NP V_2 AP/PP]

VPs of type (8a), in contrast, are complete as they have a subject at the level of argument structure. Therefore only those of the (8a) type may occupy the VP-complement position in (8b), giving (8c). As VPs of the type (8b) are themselves incomplete, they may not be embedded at the level of argument structure. The consequence of this is a drastic limitation of possible VP types permitted at the level of argument structure, which is held to account for the limited amount of verb types found in natural languages.

   In this system, candidates for (5b) would be verbs in the category (8b), as those in (8a) lexically have a subject. Those in (8b) could potentially have a formal subject that could satisfy the EPP in its predication guise. Yet, given the interpretation of V VP as causative, a genuine (as opposed to formal) subject is required. The same is true for V NP which is interpreted as creation of N. Unergatives in this system are of the V NP type, on the assumption that a verb such as *laugh* is to be analyzed as 'do/create a laugh'.

   It is evident that all verbs will thus have a subject, either internal by virtue of the inherent predicative nature of the complement (in the case of V_2), or external by virtue of the semantic interpretation of V_1. So, along these lines Hale and Keyser's theory provides an answer to our problem, i.e. by stipulating that verbs must have a complement. But why would this be true? My answer to this involves the assumption in (9).

(9)   the category V does not exist as a primitive category.

If V is a derivative category, the fact that it takes a complement will hence have to be explained on the basis of how verbs arise. This issue is discussed in the following sections. In many ways the program I develop remains close to Hale and Keyser's program, but there is one important difference: while they construct a lexical theory of argument structure, I see no particular motivation for this lexical conception, and therefore assume that the derivation of verbs is a syntactic matter.

3. The strict separation hypothesis

Disregarding the category verb, for the moment, we are left with three of the standard L-categories: N, A and P. In Hale and Keyser's system, these differ in that the latter takes a complement. In this respect, P is like F-categories, and also like transitive verbs. This property makes P into a relator concept, unlike A and N which denote properties and things respectively. There are also pure relator verbs, but these differ from P in the types of F-categories they combine with, in particular with Tense. Actually, it is this relationship with functional categories that defines the notion of verb, rather than some common property of meaning. A typical, and perhaps most neutral, verbal relator is BE, and 'ergative' GET, which may be regarded as pure bearers of functional or inflectional features. Other, so-called lexical verbs incorporate a nominal category. As we will see, both lexical and functional verbs may incorporate a prepositional relator. The category verb therefore is not primitive, but derivative. This may be regarded as a consequence of my central hypothesis in (10):

(10) *The strict separation hypothesis*
      L-categories are characterized by features that denote ontological classes of individuals; F-categories are characterized by grammatical features.

The only basic L-categories are nominals, therefore. In addition we have the relator category of P. The category V might itself be taken as a functional category, which may incorporate a lexical base, which is itself not verbal. Let us now turn to how such lexical verbs arise.

4. The derivation of verbs

As a first illustration, consider the verb *clear* as in (11):

(11) *The screen cleared.*

In this case it would seem rather evident that the verb derives through incorporation of the adjective, as Hale and Keyser also assume. They assume the structure in (8a), in comformity with the assumptions mentioned in section 2 above. In this structure, *the screen* is the subject of V_2, an abstract verb into which the head A of the complement is incorporated. I rather

assume the structure in (12), in conformity with Stowell's analysis of subjects, as well as with the general assumption made in Hoekstra (1984b) that 'theta-marking' by a head is confined to the domain of the head.[3] F in this representation stands for 'functional', comprising at this point all of the various F-categories (Agr, T etc.) relevant to this construction. This functional structure may either be lexicalized through the purely functional verb *get*, as in (12a), or, as in Hale and Keyser's analysis, through incorporation of *clear* into F, turning the adjectival head into a verbal one, as in (12b):

(12)   F $[_{AP}$ [*the screen*]   *clear*]
      a.   *the screen$_i$ got* $[_{AP}$ t$_i$ *clear*]
      b.   *the screen$_i$ clear$_j$-ed* $[_{AP}$ t$_i$ t$_i$]

For concreteness's sake I will assume here that the word *cleared* is not built up in the syntax, but rather is selected from the lexicon, imposing requirements on the structure, which must be able to check all of its specified features, as in Chomsky (1993). Hence, if the word *cleared* is selected, head movement to F is required. When *clear* is selected, the relator verb *got* supplements it to compose with the same syntax. The point here is that the lexical V arises through the conflation of an L-element and F-material, and is hence not a primitive element.

    The analysis in (12) is forced upon us by (10): the verb *clear* harbours both L-features (denoting the class of things which have the property 'clear'), as well as the grammatical features of ingression. It is a property of English that the verb *clear* harbours this ingressive component. In a language such as Yoruba, sentence (11) might mean what in English is expressed by *the screen was clear*, i.e. a non-dynamic state of affairs. One would expect that some parameter sets these systems apart, but this is a matter that requires further investigation. For now, we may conclude that Hale and Keyser's assumption about the nature of subjects of A and the interpretation of V AP as dynamic are empirically inadequate in view of stative adjectival predications (the same is true for P, as we will see), but also theoretically excluded under (10) and the consequences that flow from it.

    Where BE is a purely verbal functional category, i.e. a carrier of merely verbal inflectional features such as tense and agreement, HAVE is a more complex relator concept, to be regarded as the composition of BE's grammatical features and those of a prepositional relator (or oblique marker), as in Benveniste's (1960) hypothesis, and Kayne's (1993) more recent implementation of this central idea. Here too we find reason to reject Hale and Keyser's claim that subjects are never subjects of A or P. Like BE-

predications, HAVE-predications are, in what we take to be the canonical case (but see Belvin 1993 and Déchaine, Hoekstra and Rooryck 1994), stative. I assume, therefore, that the structure of a sentence such as (13) is as in (14):

(13)   *The table has four legs.*

(14)   F [$_{PP}$ [*four legs*] P [*the table*]]

where F, unlike in (12) does not have a dynamic feature of ingression. In BE-type languages, the structure in (14) may give rise *to to the table are four legs*, but in English, P incorporates into F, yielding HAVE. We need not wonder at this point what the exact P would be to fill the relevant position in the tree at deep structure.[4] Under Chomsky's lexicalist theory in his minimalist program, the element selected from the lexicon is HAVE (or rather, for this example, *has*). The precise structure of (14) includes the projection of F, AgrO, T and AgrS, as in (15).

(15)   AgrS — T — AgrO — F [$_{PP}$ [$_{DP1}$ *four legs*] P$_{have}$ [$_{DP2}$ *the table*]]

HAVE raises up to F, making SpecF and SpecPP equidistant, thereby allowing DP$_2$ to move to SpecF. DP$_1$ in turn may move to SpecAgrO to check its accusative case as a result of HAVE's further movement. Note that if instead of HAVE, a non-incorporating element were chosen for the P position, DP$_2$ would not be allowed to move up. Nor would there be any reason to postulate an AgrO projection, F not inheriting case assigning potential through the incorporation of P-features. DP$_1$ could therefore only be licit with nominative case. The point here is that the potential to license accusative derives from the incorporated preposition. (cl. also Mahajan 1994).

5. Transitivity

Turning to transitive verbs, now, it will be clear that they too must be compositional. If we limit our attention to dynamic transitives first, they must have F-features to account for their dynamism, as well as an incorporated P-relator, to account for their case assigning potential, in addition, of course, to their L-features, inherited from an incorporated N or A. Let us now see whether an analysis can be provided that meets all these requirements. An easy illustration is available if we look at the transitive counterpart of (11):

(16)   *John cleared the screen.*

Our assumptions so far lead us to the structure in (17), where F, as in (12), represents the verbal features, including the ingressive component:

(17) F [[$_{AP}$ [$_{DP1}$ *the screen*] *clear*] P [$_{DP2}$ *John*]]

P incorporates into F, as does clear. As a result, F includes accusative case licensing potential, so that the superstructure, as well as the derivation, is as in (15). This analysis finds strong support when we consider the perfect tense counterpart of (16) in (18):

(18) *John has cleared the screen.*

We would obviously like to have a uniform analysis of HAVE as resulting from BE plus an incorporated prepositional set of features. Without going into the structure of the participial part at this point, the structure in (17), with AP replaced by a participial structure, immediately yields the requirement that HAVE is (17)'s F plus P, again yielding the required derivation in which DP$_2$ is able to reach T-related AgrS so as to be licensed with nominative case, while DP$_1$ benefits from HAVE's accusative case licensing potential, which it inherits from the incorporated P.

The passive counterpart of (18) is derived in a straightforward fashion: again, the subject of the PP is a participial structure. As P does not incorporate, F has no accusative licensing potential, and F is lexicalized with the functional verb BE. DP$_1$ is licensed with nominative case, while DP$_2$ is case licensed by P itself.

Just like there are non-dynamic counterparts to ingressive structures in the ergative case *the screen is clear* vs. *the screen clears/the screen gets clear*), the same holds for transitives. This constitutes a similar argument for the Stowell version of predicate internal subjects, and against Hale and Keyser's view that AP/PP transmit their predication requirement to a V. The relevant cases concern stative verbs such as *know*, as in (19):

(19) *John knows the answer.*

The functional structure lacks a dynamic component, while the transitivity points at the presence of a prepositional element incorporated into F. The structure relevant for constructions like (19) is as in (20):

(20) F [$_{PP}$ [[*the answer*] *know*] P [*John*]]

with as closest paraphrase *knowledge of the answer is to John*. Indeed, the meaning of (19) is rendered in precisely this fashion in various languages.

As in the case of (17) the P incorporates into F, allowing *John* to move out and receive nominative case, and contributing accusative case licensing potential to F.

6. X-bar representation of subjects

Although the proposal I make here about the structure of transitives and their passive counterparts may appear to diverge quite substantially from traditional conceptions, this is merely apparent. Under a rather standard view, *by*-phrases in passives are regarded as adjuncts, let us say as in (21):

(21)
```
        VP
       /  \
     PP    VP
```
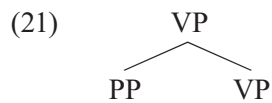
Sportiche (1987) introduced an approach to modification which attempts to bring it under something like the projection principle. Indeed, there is a subject-predicate relationship between the modifier and the modified, but unlike other such relations, this particular relationship is not configurationally expressed in term of the X-bar relation of specifier, X'. Yet, in Sportiche's (1994) paper, movement of the lower VP into the specifier of PP is allowed, yielding (22):

(22)
```
            VP
           /  \
         PP     VP
        /  \     |
     VP_i   P'   t_i
```
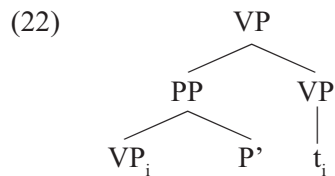
It will be clear that this derived structure, minus the adjunction on VP and hence the trace of VP, is basically the structure I start out with. In this structure the subject-predicate relationship between VP and the 'adjunct' PP is directly expressed in the standard way.

7. Verb typology

Let us sum up the above discussion. We have postulated two types of verbal construction: transitives (including unergatives) and (ergative) intransitives. The former are uniformly analyzed as involving an external argument that is not part of the argument structure of the lexical head itself, but rather results from an oblique prepositional element which is incorporated into the verb. Verbs are dynamic if the functional structure dominating the lexical projection (or thematic complex) includes a dynamic component. The schema in (23) summarizes this:

(23) intransitives   transitives
    F   XP   F   [$_{PP}$ XP P DP]
    [±dyn]   [±dyn]

In comparison to Hale and Keyser's analysis in (8), the structure of intransitives is similar to their analysis of (ergative) intransitives. There are two differences. First, in my approach the dominating element is a (verb creating) functional component, while Hale and Keyser take V to be a lexical category on a par with A and N. The second difference is in the origin of the subject: while it is the subject of V_2 of their analysis, it originates in the specifier of XP. Similarly for transitives. The V_1 component of their (8b,c) is decomposed under my analysis: in part it corresponds to the same functional information as relevant to ergative intransitive, and in part it corresponds to the P of the external argument in my proposal.

    The stipulation in Hale and Keyser's framework that the subject of their V_1 is not present in the lexical structure, is superfluous in my approach, as these subjects are analyzed as complements of P. Hence, the externality of the external argument, required in their approach to delimit the variation of verb types, is a feature of my analysis as well. Burzio's generalization also finds an automatic account, as accusative case potential derives from the incorporation of the oblique marker of the external argument. Hence, where accusative case is available, an external argument is available, and vice versa.

    Verbs, then, form a mixed set of elements. In fact, we may distinguish several types of verbs, depending on the components of which they are made up. The general schema for verbs is as in (24):

(24) F + ({N,A}) + (P)

If no P incorporates, we are dealing with an 'ergative' verb. This may be either a 'lexical' verb, if an A or N is incorporated, or a 'functional' verb, if no such incorporation takes place. The common property of verbs is their functional component. The gap noted in section 1, i.e. the lack of zero argument verbs is true only in as far as lexical verbs are concerned. These necessarily have an argument, inherited from the incorporated lexical source.

Obviously, many questions still have to be addressed, e.g. which types of 'lexical' verbs can be distinguished etc. This is a research program, which sofar looks promising to me, given the progress in the wake of Hale and Keyser's work.

I am aware that the work reported here is strongly reminiscent of the generative semantics tradition. Such an impression is not incorrect, but there is an important difference. We here attempt to reduce both the set of primitives and the calculus. The calculus is head movement, constrained by the ECP. This paper proposes a drastic reduction on possible primitives, formulated in the strict separation hypothesis. The problem with generative semantics was not so much that the proposals were wrong, but rather that the set of possible primitives as well as the calculus was so unconstrained that any perspective on explanatory adequacy was lost. By formulating a narrow theory of possible primitives and the ways in which they may combine, we may hope to attain a higher level of explanation.

Editors' note

Notes

1. The same is true for verbs with only a prepositional object.
2. English has no clear cases of ergative counterparts to double object verbs, un-like e.g. Dutch and Italian, which have a class of dative experiencer verbs, cf. Hoekstra (1984b) for Dutch and Belletti and Rizzi (1988) for Italian.
3. It will be evident that there is no place in this framework (just as in Hale and Keyser's) for a theory of theta roles. There are no primitive elements with several arguments, which need to be internally diffrentiated (from each other, e.g. in terms of agent vs. patient) and externally identified (as similar to arguments of other primitive elements, e.g. agents).
4. Although irrelevant at this point, I think that English does not have a suitable overt counterpart to the P which is required in this case, which may be the reason why English necessarily uses HAVE, i.e. why there is no suitable BE plus overt PP counterpart. English *to*, unlike e.g. French *à*, is not a stative preposition (cf. *This train is to London* and *A train to London* vs. French *Ce train est à Paris*).

The active-passive configuration

1. Categories

In this paper I propose an alternative view on the relationship between actives and passives. More generally, I offer a different approach to the inventory of categories and concomitantly on possible argument structures.

Let us start with the inventory of categories. It is by now common to distinguish between F(unctional)-categories and L(exical)-categories. The latter comprise N, A, V and P, while the former is an as yet open-ended but rapidly growing list of mixed sort, but in the set of verb related F-categories quite usually T and two Agrs are assumed. A fundamental criterion as to what belongs to F-categories is basically lacking, so that arguments in favor for the postulation of a particular F-category are usually driven by the heuristics of structure preservation (where a head occurs, there must be a head position), or by particular chunks of morphology and an appeal to the mirror principle (Baker 1985) to postulate particular head positions taken by these morphemes or, under the lexicalist approach, abstract positions corresponding these morphemes and checking them in the course of the derivation. The particular labeling of postulated positions is not always clear, as the literature abundantly shows. What we need, in my view, is a clear perspective on what counts as a primitive in each domain, and what is composite. So, the word *brought*, though a morpho-phonological unit, is nevertheless regarded as a composite, minimally comprising an L-part (let's say BRING) and an F-part (let's say PAST). No one would allow PAST, which is clearly based on its meaning, to count as a lexical primitive, but there is no principle that tells us so. I would like to propose a hypothesis to this effect, given in (1):

(1)   *Strict separation hypothesis*
      L-primitives are exhaustively characterized in terms of features corresponding to ontological classes of individuals.
      F-primitives have no features that denote ontological classes of individuals.

To exemplify, the pronoun *she* in English is to be regarded as a composite element, as it requires reference to females (an L-feature, to be represented

by N), but also contains deixis/anaphora, an F-feature. The pronoun *this*, on the other hand, while probably also complex, consists of F-features exclusively. It should be borne in mind that there is a fundamental difference between a word and a primitive. What I am trying to develop is a theory of possible words, by studying what is the set of primitives and what is the calculus that may combine these primitives to form words. (1), then, does not apply to words.

Under this view, the difference between the adjective *clear* and the verbs *clear* (both ergative and transitive) is not just a matter of a category difference. While the adjective *clear* can be an L-primitive, the verb *clear* comprises both the relevant L-features of the adjective as well as a feature such as ingression, which is not an L-feature and therefore is an F-feature. This leads me to the second hypothesis:

(2)   The category V is a derivative category.

As a matter of fact, there are verbs which are exclusively functional verbs, i.e. made up of F-features entirely, the most obvious candidates being BE and its ingressive counterpart GET. Other verbs, like our example *clear*, are 'lexical' in that they incorporate a lexical primitive. One will note a certain resemblance with the theory of Hale and Keyser (1993, 1997), although there are substantial differences that I shall not go into at this point.

We are now left with three L-categories: N, A and P. The former two, while differentiated again by the different F-categories that they associate with, are much closer to each other than to P. Indeed, in Hale and Keyser's system P is defined as a category that takes a complement to form a predicate, while A is a predicate itself. P thus is a relator concept.[1] The word *in* does not denote an ontological class of individuals, but rather establishes a connection. I shall not pay much attention to the behavior of prepositions, but concentrate in this paper on the notion of transitivity and the related notion of voice.

Traditionally these are thought of as two separate categories: transitivity is a property of verbs, while voice is a property referring to the way in which a verb is inflected. Under my view that verbs do not constitute a lexical category, the concepts of voice and transitivity are directly related, as we shall see. As a first step in my argument, I shall discuss how having an external argument, the most relevant property of transitive verbs, can be regarded as a derived property itself. To this end, I first discuss the relationship between HAVE and BE, which themselves can be regarded as transitive and intransitive functional verbs (viz. the notion of auxiliary). The very

notion of a transitive functional verb is at odds with the traditional concept of transitivity as a property involving the argument structure of lexical verbs.

2. HAVE and BE

As is well-known, both within and across languages we encounter HAVE/BE alternations. This is true for various types of possessive and existential constructions. The following Dutch and French examples illustrate this.

(3) a. *Er is een glijbaan in deze speeltuin.*
'There is a slide in this playground.'   BE

   b. *Deze speeltuin heeft een glijbaan.*
'This playground has a slide.'   HAVE

(4) a. *Ce livre est à moi.*
'This book is to me (mine).'   BE

   b. *J'ai ce livre.*
'I have this book.'   HAVE

The choice of HAVE or BE determines the case patterns (case in a broad sense) of the arguments (again in a broad sense). The general picture is as in (5):

(5) DP_1 BE DP_2 $\longleftrightarrow$ DP_1 HAVE DP_2
    [OBL]   [NOM]   [NOM]   [ACC]

Kayne (1993) proposes that the oblique DP_1 (he restricts the discussion to dative DP_1) in the BE-pattern becomes nominative in the HAVE-pattern as its obliqueness is incorporated into BE, yielding HAVE. DP_2, bearing nominative in the BE-pattern, receives accusative in the HAVE-pattern. There is an asymmetry between nominative and accusative in that, at least in nominative-accusative languages (but see below), the availability of nominative is a sentential property, whereas the availability of accusative is a verb dependent property. This asymmetry can be understood if nominative is dependent on T, as is more or less standardly assumed: any tensed clause will therefore allow or require a nominative DP. The next question is where accusative comes from. Is it just a lexical property of verbs? Note that this

question is independent of the way in which accusative is checked, i.e. independent of the postulation of an object agreement projection. As in Chomsky's (1993) discussion, AgrO can only check an accusative case if the verb supplies this feature, just as much as nominative is checked in AgrS if T supplies the relevant value. I want to propose that the answer to this question is that the accusative feature results from the incorporated oblique case (cf. Hoekstra 1993). This is schematically represented in (6):

(6)   DP$_1$ T…V…P   DP$_2$ $\longleftrightarrow$ DP$_2$ T   DP$_1$…   [P+V]…
       ⌞[NOM]⌟   ⌞[OBL]⌝   ⌞[NOM]⌟   ⌞[ACC]⌟

So, the verb HAVE not only derives through the incorporation of a P-element, it also inherits its syntactic transitivity, i.e. its case licensing potential, from this P.

3. Lexical transitive verbs

We now extend this perspective to transitive verbs. Under the VP-internal subject hypothesis, both the active subject and the passive subject are 'derived' subjects. Yet, it is standardly assumed that passive is derived through the demotion of the external argument, with a concomitant absorption of the accusative case (Burzio's generalization). This perspective may be reversed if we generalize the hypothesis that accusative is the result of the incorporation of an oblique feature, initially related to the DP which surfaces in the nominative. This makes the relationship in (7) parallel to (5) (we shall return below to the use of *by* in this structure):

(7)   DP$_2$ *is destroyed by* DP$_1$ $\longleftrightarrow$ DP$_1$ *has destroyed* DP$_2$
       [NOM]   [OBL]   [NOM]   [ACC]

As in the example above, nominative is available through the presence of T, while accusative is made available through the incorporation of the obliqueness of the external argument. The choice of BE/HAVE in (7) is determined in the same way as in (5): HAVE equals BE plus an incorporated preposition.

    If we pursue this line, there is no immediate reason why it should be limited to perfect tense constructions. Simple transitive constructions may be derived in the same way. To illustrate this, consider the analyses of (8a) and (8b) that we are led to by the assumptions made so far.

(8)   a. *The screen clears.*
       b. *John clears the screen.*

Representing the functional superstructure, now including the verb-creating ingressive component, by F, the structure of (8a) is as in (9).

(9)   F [$_{AP}$ [$_{DP}$ *the screen*] *clear*]

The structure in (9) yields (8a) through head incorporation of the adjective into F, or may alternatively be lexicalized through a purely functional verb such as *get*, yielding *the screen got clear*. The structure of (8b) is more complex. It involves, in addition to the structure represented in (9), an external argument. Again taking F to represent the relevant functional super-structure, the structure of (8b) is given in (10):

(10)

```
                     F'
              _____/_____
             F              PP
                      _____/_____
                    AP              P'
                 __/\__          __/\__
               DP      A        P      DP
               /\      |        |      /\
          the screen  clear     ?     John
```

The AP *the screen clear* is represented here as the subject of a PP, headed by a preposition close in meaning to 'by'. Here too, some purely functional verb may lexicalize F, yielding something like *the screen got clear by/ through/because of John*, an intransitive structure. Alternatively, the P-head of the PP may incorporate into F, which makes it into a transitive super-structure, lexicalizable with a verb like *make*: *John made the screen clear*. However, through the incorporation of the adjective, we may equally create the lexical verb *clear* with transitive syntax, giving (8b).

   In the above, I have represented the obliqueness of the external argument with *by*, to bring out the close resemblance between actives and passives in this system. However, I think that the proper characterization of the external argument should not be *by*, but an element which has no overt manifestation in English, which might be why there is no choice other than to derive an active construction if this element is chosen. For the same reason, there is no good BE counterpart to English HAVE-constructions; *the screen got clear* P *John* is not felicitous with any choice of P in English. To be sure, English

to is different from e.g. French *à* in that it is a dynamic preposition, whereas *à* is stative (cf. Déchaine, Hoekstra and Rooryck 1994). Similarly, English does not have a preposition that fully corresponds to French *de* or Dutch *van*, which in addition to the meaning of English *of* also have a meaning closer to *from*, i.e. source or cause. English *by* has a dynamic meaning itself, while we take the dynamic nature of verbs to be part of their functional structure.

It is perhaps worthwhile at this point to go somewhat more deeply into the technical details of the analysis, and focus on a number of the relevant properties.

First, as will be clear, the external argument of a transitive verb is truly external in the sense that only through composition of F-material and the P-relator concept is transitivity obtained. The asymmetry between a verb's internal argument and its external one is evident in a number of ways. There are various processes which affect the external argument proposed in the literature, up to the removal of the external argument. These now take a different shape, as it is not removal, but rather addition of the external argument in certain environments.[2]

Secondly, what we mean by transitive syntax is in fact voice: the active voice is a transitive voice. A slight complication involves unergative intransitives, but these are quite generally now analyzed as involving NP complementation (cf. Hale and Keyser 1992, Kayne 1993 and others). Transitive voice, now, comes about as a result of incorporation of the obliqueness of the external argument, i.e. P in the structure in (10). This incorporation has two effects:

1. It supplies case licensing potential to the functional superstructure, which hence has two cases: the T-supplied nominative, and the P-supplied accusative. In ergative systems, where no oblique incorporation from the external argument takes place, only the nominative case (= absolutive) is available, licensing the internal argument. The external argument maintains its obliqueness, so genuine transitivity is not available (cf. Mahajan 1994).[3]

2. It removes the case assigner from the external argument, which hence must be licensed with a different case, i.e. nominative. In order to have its nominative case checked, it has to be able to move out to reach the T-related AgrS in Chomsky's (1993) system. The proposal I make is entirely compatible with the assumptions of the minimalist program with respect to possible movements. To see this, let us inspect a derivation in detail:

(11) DP_i AgrS+T DP_j AgrO+V $[t_j$ F $[_{PP} [_{AP} t_j$ A] P $t_i]]$
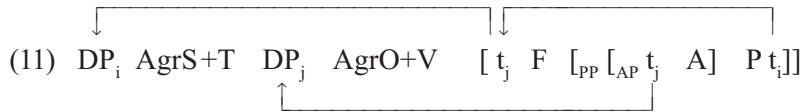
The minimal link condition of Chomsky (1993) prevents XP-movement across a local specifier, i.e. the first available specifier. A next higher specifier may be made accessible to XP if the head Y which selects XP moves up to the next higher head position Z. Through this domain extension, the specifier of Y and that of Z are equidistant to XP. In (11), therefore, the DP_i may only move to the specifier of F if the P head itself has moved to F, making the specifier of F and the specifier of PP equidistant to DP_i. This movement is to the specifier of F. A lexical verb is created in F through incorporation of the A-head (let's say *clear*). Nothing prevents either the head movement of P or of A. The head-complex thus created moves up to AgrO, making the specifier of AgrO equidistant to the specifier of F. This allows DP_j to reach Spec of AgrO where its accusative case may be checked. DP_i may in turn move on to the specifier of AgrS as a result of further head movements, precisely as in the derivation proposed by Chomsky (1993).

This analysis might appear very different from the traditional conception, but this is largely just at first glance. It has long been customary to treat the *by*-phrase in passives as an adjunct, yielding a representation of the type in (12):

(12)

```
              VP
            /    \
          PP      VP
         /  \
        P    DP
```
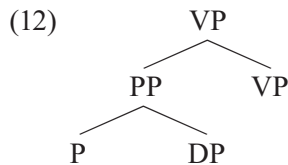
The VP semantically is the subject of the PP, and indeed, Barbiers (1995a), building on ideas of Sportiche (1994), proposes that the VP may move into the specifier of PP. The resulting configuration expresses in the standard X-bar theoretic way the subject-predicate relation that exists between PP and VP. This is precisely the structure I advocate, modulo the categorial identification.

The idea of deriving the external argument from an oblique source is similar to Pesetsky's (1994) proposal for the class of causative psych predicates, even though the syntax assumed here is more standard than Pesetsky's cascade theory. A further difference is that Pesetsky considers the causative argument as resulting from a modifier.

4. Passives

The structure of (participial) passives is more complex than that of (non-compound tense) actives, because it involves the participial construct. Passives are structurally closer to actives in the perfect tense, differing mainly in whether or not the 'external' argument, i.e. the agent, has retained an oblique marking, or whether its oblique marker is incorporated into the functional superstructure, giving rise to HAVE. So, the structure is as in (13):

(13)   F [Part-P P DP_i]

In (13) DP_i is the agent. This results in DP_i HAVE if P incorporates, yielding an active structure. Otherwise BE or GET lexicalizes F. It is not possible for F to end up being a lexical verb in this structure. Recall that a lexical verb arises through the incorporation of a lexical head into F, either the head of the complement (as with simple ergatives), or the head of the (complex) specifier of the complement (as with simple transitives). In order to see why no lexical verb could arise in F in (13), we must look at the nature of Part-P in (13) to establish that no lexical head could raise out of Part-P to F. A full discussion of all the details is not possible at this point. Note that Part-P is just a mnemonic label, not a category. In Hoekstra (1993), I maintain that participles involve their own functional superstructure, up to and including AgrS. Here I would like to extend this, and claim that participial phrases are CPs. The more detailed structure of (13), then, is as in (14):

(14)   F [$_{PP}$ [$_{CP}$ Comp AgrS T V DP_j] P DP_i]

F again comprises all the F-categories relevant for the matrix domain. As the participle's functional features are all checked internal to the CP which it is the head of, it cannot be used again to satisfy the F-specifications outside CP. Since no lexical head can be supplied to F in this structure, F requires a functional verb such as BE or GET. If P is incorporated, we have HAVE instead.

    The view developed here concurs with the claim I made in my thesis (Hoekstra 1984b), viz. that participles are inherently passive, with the transitivity of active participle constructions coming about through HAVE. I have now reanalysed this by arguing that the transitivity comes about through the incorporation of the obliqueness of the 'external' argument.

    The motivation to assume that the participial construct is a CP is not merely one of parsimony. The assumption may yield insight into the varia-

tion in choice of the 'passive' auxiliary. This variation is a complex matter, which cannot be dealt with without also taking into account the variation in choice of the auxiliary in ergative perfect tense constructions, clearly an enterprise which falls well outside the limited scope of this paper. I would like to draw attention to the fact that while English allows GET passives, it does not allow passives with *become*, even though *become* in copular constructions is very close in meaning to GET, and its Dutch counterpart *worden* is used both in copular constructions and in passive constructions to form simple tenses. Though different with respect to passives, Dutch *worden* shares with English *become* the resistance against PP complements:

(15) a. *John was/got/became ill.*
      b. *John was/got/*became into the garden*.

(16) a. *Jan was/werd ziek.*
      b. *Jan was/*werd in de tuin.*

The reason why *become* cannot take a PP complement is unclear, but we might speculate that it is related to its morphology, which features the prefix *be-*. This prefix, while unproductive in modern English but not in other Germanic languages, can be assigned the status of an incorporated preposition. This may be illustrated with the Dutch example in (17):

(17) a. *Jan spreekt over het probleem*.
          'John speaks about the problem.'

      b. *Jan   bespreekt   het   probleem.*
           John BE-speaks   the   problem
          'John discusses the problem.'

Let us assume, then, that *become* cannot combine with a PP, because it already has a P in it. We might then capture the distributional similarity with *worden* by assuming that *worden* likewise incorporates a P.

  This reasoning provides some – admittedly rather slender – support for the idea that passive participial structures supply a P-element to yield *worden*, which I now identify as a prepositional complementizer, probably one close in meaning to English *to*. As noted, English passives are different in that their present tense is construed simply with BE, a difference which is probably related to the overall tense/aspect system of English.

  In order to appreciate the relevance of this reasoning, we should realize that the deep object originates inside the participial construct, which it must

be able to leave to be case-licensed in the matrix domain (by the matrix nominative position in the case of passives, and by the matrix accusative position in the case of perfect tense actives). In order for this to be possible in the presence of CP, it must move to the specifier of Comp, and from there move on further. However, movement through this position would create an improper chain, involving movement from an A'-position (SpecCP) to an A-position (the specifier position where its case is checked). To avoid this conclusion, we take recourse to Kayne's (1993) idea that this A-specifier position changes into an A-position if the head of the A projection (CP) is incorporated. Incorporation of this prepositional complementizer yields *worden*.

English is different in this regard, apparently, as movement through the specifier of CP is licit more generally, viz. in *believe*-type constructions, where the embedded subject is able to find its way up to the matrix AgrO specifier to be licensed with accusative case. An appeal to a notion of CP-deletion can hardly be considered explanatory, so we must assume that the chain involves a link in the specifier of the CP complement of *believe* without incurring an improper movement violation. Perhaps the mechanism operative here is the one suggested by Rizzi (1990) in the context of subject extraction, i.e., that Comp in English may take on agreement (if not filled by *that*), and that the specifier of an agreeing head counts as an A-position. Under this assumption, there is no P-incorporation in English passives, but rather a circumvention of an improper movement violation through an agreeing Comp position. If the relevant parameter indeed involves such a mechanism, we may understand why English and Dutch are different here, but I leave this point for further research.

5. Summary

In this paper I have argued that the category V is derivative, in that it combines L-features and F-features, understood as in (1). I have furthermore argued that syntactic transitivity is equally derivative, resulting from the incorporation of the oblique marker of the 'external' argument into the functional complex of the verb. This analysis gives a straightforward explanation for Burzio's generalization that accusative case is available only if there is an external argument. Obviously, cases where Burzio's generalization appears not to hold require further study, to see how they can be accommodated within this framework. As for participial passives, I have argued that they involve a CP complement containing the participle, and

provided some motivation for this assumption, suggesting that variation in choices of auxiliaries might be explained in terms of prepositional comple-mentizer elements heading these CPs.

Editors' note

Notes

1. The category P is far from homogeneous, and I think much study is required into the class of elements called P. Many Ps are complex. What I say about P in this paper may not be relevant to those elements.
2. Obviously, various questions come to mind that should be addressed. This paper is meant to represent a basic proposal, and not all of its consequences can at this point be addressed, let alone be satisfactorily dealt with. One of these questions involves the relationship between syntactic and morphological complexity. For instance, transitive change of state verbs are, under this pro-posal, universally syntactically more complex than their corresponding ergative counterparts. Morphologically, however, we find in different languages that either can be more complex. Does this imply that these morphological differ-ences result from differences in underlying syntax? Similarly, passives are usually morphologically marked vis-à-vis their active counterparts. I will not dwell on these issues here.
3. As is well known, ergative 'subjects' in an ergative language are not 'oblique' in the way of passive *by*-phrases, but rather have subject properties in terms of binding and (if distinct) secondary predication. I take it that this is due to the same factor that is responsible for oblique subjects in Icelandic, which equally have 'subject' behavior.

Verbal affixation

1. The projection principle and the analysis of participles

Consider the formulation of the passive transformation in (1), taken from Chomsky (1957: 43).[1]

(1) Passive (optional)
     SA: NP – AUX – V – NP
     SC: 1   2   3   4 $\rightarrow$ $4 - 2 + be + en - 3 - by + 1$

This is what we now call a construction specific rule. It is well-known that this complex rule has undergone quite some changes over the years: it has been broken up into several more elementary operations, the properties of which are determined by general principles such as binding, ECP etc. The introduction of *be+en*, however, remains unaccounted for: the appearance of the participle is still regarded as a kind of by-product, without it being clear what the real product is. The particular morphological form of the verb in passive constructions is thus regarded as coincidental.[2] It is therefore not surprising to find a distinction being made between a perfect participle and a passive participle: there is no unity in these forms. They happen to be selected by the construction or by an auxiliary verb and the formal identity is again coincidental. I shall try to explain why these forms are identical and why this particular morphological form occurs where it occurs.

There is another leftover from the classical analysis of passives. The transformation in (1) moves the subject NP to the right, placing it in a PP with *by*. This phrase could be deleted if the NP was unspecified, but the interpretation of the deep structure subject was clear. What happens to the deep structure subject in passives under more recent analyses within the framework of government and binding is less clear. I shall refer to the active deep structure subject as the external argument, borrowing a term, but not its content, from Williams (1981a). Consider the so-called Burzio generalization as formulated in slightly different terminology in (2).

(2) The verb does not project the external argument role on [NP,S] iff it assigns no structural case.

Apart from the fact that (2) is a generalization and not an explanation,[3] the formulation raises a fundamental question regarding the projection principle and/or the thematic criterion. If the external role is not projected onto [NP,S], what happens to this role? Suppose that it is not assigned at all: then, if the role is still part of the verb's argument structure or thematic grid, a violation of the thematic criterion results. Hence, we should assume that the role is no longer part of the thematic grid, possibly as a result of some lexical rule of passive. However, this result is empirically untenable, since passives contrast with e.g. ergatives and middles in ways that suggest that the external argument is present in passives in a way in which it is not present in the other constructions. Arguments that illustrate this for English can be found in Roberts (1985). Parallel arguments can be based on the following examples from Dutch.

(3) a. *De tuin   werd weloverwogen uitgebreid.*
         the garden was   deliberately   extended

     b. **De tuin   breidde zich   weloverwogen uit.*
         the garden extended itself deliberately

(4) a. *De boter   werd   opzettelijk   gesmolten.*
         the butter was   intentionally melted

     b. **De boter   smolt   opzettelijk.*
         the butter melted intentionally

(5) a. *De boeken werden verkocht om ruimte te maken.*
         the books were   sold   for room   to make

     b. **De boeken verkochten goed om ruimte te maken.*
         the books sold   well for room   to make

In the a-examples of (3)–(5) we find a passive which contrasts with the b-examples in licensing an agent-oriented adverb or a rationale clause. This is impossible in a reflexive middle (see [3b]), an ergative construction (see [4b]) and in middles (see [5b]). These examples indicate that the external argument is grammatically represented in passives, but not in e.g. middles, which, just as much as passives, imply the participation of an agent. Hence, the external role remains part of the thematic grid in passives and, by the thematic criterion, it must be borne by a legitimate argument expression, i.e. an argument expression which is visible to the thematic criterion.

We are then in a position to explain why the correlation that is stated in (2) holds in the case of passives: the case which is normally assigned to some NP governed by V is used to make the external argument visible to the thematic criterion, i.e. the external role and the internal case are not absorbed as it has been called, but the internal case is assigned to the external argument. The argument expression, i.e. the expression which bears the external role and which is assigned case is the Participial Morphology, henceforth referred to as PM. This hypothesis, which is similar to the central hypothesis of Roberts (1985), is formulated in (6).

(6)   PM bears the external argument role iff it has case.

Unlike Roberts I do not regard PM to be a subject clitic, i.e. I do not assume that the external argument role is ever projected onto [NP,S]. First of all such a projection is irretraceable at S-structure after the internal NP has been moved into its position. Secondly, PM does not exhibit any person and/or number distinctions, as one would expect from a regular clitic. Consider the following Indonesian examples.

(7)   a. *Ali mem-baca   buku itu.*
           Ali TRANS-read   book that

       b. *Buku   itu   di-baca.*
           book   that PASS-read

       c. *Buku   itu   di-baca   oleh Ali.*
           book   that PASS-read by   Ali

       d. *Buku   itu   ku-baca.*
           Book   that I-read

       e. *Buku   itu   di-baca   oleh saja.*
           Book   that PASS-read by   me

In (7a) we find a regular transitive active clause, which is signaled by the presence of the prefix *mem-*. The prefix *di-* is usually glossed as PASS (cf. Chung 1976 and references cited there). This gloss seems to be correct, as we can see in (7c), where the passive character is brought out by the occurrence of the Indonesian analogue of the *by*-phrase. However, *di-* might also be considered a subject clitic: it would then be the clitic counterpart of the third person singular pronoun *dia* and can be replaced by other subject clitics, like *ku-* in (7d), the clitic counterpart of the first person singular

pronoun *aku*. However, the clitic *di-* clearly has developed into a general passive morpheme as is evidenced by (7e), where the *oleh*-phrase has *saja* rather than a full NP. Historically, then, the morpheme of passive may develop from a subject clitic. This does not mean that it still is a subject clitic.

2. The passive participle

Let us now examine whether the hypothesis in (6) can be supported with further evidence. Participles are used in three different types of construction: a. as prenominal modifiers (cf. [8a]); b. in passives (cf. [8b]); c. in perfect constructions (cf. [8c]). Usually, the participle is assigned to three different categories: a. an adjective (cf. Wasow 1977, 1980, Bresnan 1982 and Williams 1981a); b. a passive participle, and c. a perfective participle.

(8)   a.   *een geschreven manuscript*
             'a written manuscript'

       b.   *het manuscript werd geschreven*
             'The manuscript was written.'

       c.   *hij heeft het manuscript geschreven*
             'He has written the manuscript.'

In Hoekstra (1984b) I have argued that there is no motivation to call the participle an adjective in (8a). The arguments offered by Wasow and Williams to distinguish between a lexical and a transformational analysis of passives were shown to be either untenable or insufficient or superfluous (for further criticism of these arguments I refer to Levin and Rappaport 1984 and Dryer 1985). In fact, the properties of the participles in (8a) and (8b) do not differ in any way, except that the participle has a more restricted occurrence in prenominal position. These limitations are accounted for by independent principles which have nothing to do with the participle or its categorial status.[4] In accordance with the hypothesis in (6), then, these participles would be analyzed as in (9).

(9)

```
            V'
        ╱       ╲
     NP_i         V'
             ╱        ╲
           V            PM_e
        [θ_e, θ_i]   ↗
         [+case]
```
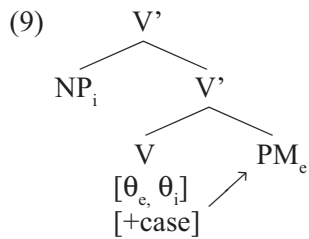
The verb *write* has two thematic roles, θ_e and θ_i, the former of which is assigned to PM in accordance with (6), and the latter to the NP object. Where NP_i will end up depends on its environment. In (8b), the NP ultimately moves to the matrix subject position of the verb *be*, which takes the passive V-projection as its small clause complement. The precise internal structure of the prenominal modifier in (8a) depends on the analysis of prenominal modifiers in general. I shall assume that the structure of this modifier is a V-projection with a PRO subject, binding a trace in object position, i.e. a structure that has (9) as a subpart. In both cases, PM is an argument, and, as such, visible to the thematic criterion because it is assigned the case of the verb. In this respect, the participle of a verb like *perish* differs from that of *write*: PM is not theta-marked by the verb since *perish* does not have an external role, i.e. it is an ergative verb. This is harmless since ergative verbs also fail to have a case property.

3. The perfect participle

Turning now to the participle in (8c), we note that this use of the participle is an innovation in the development of the Indo-European family. Classical Greek and Latin had a synthetic perfect. To be sure, there was a verb *habere* in Latin that could be combined with a participle, as in (10a), but the interpretation of (10a) differs from the interpretation of the synthetic perfect in (10b).
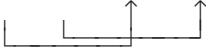
(10) a. *habemus oppidum obsessum*
          have-we town   besieged

     b. *obsedimus   oppidum*
          besiege-PERF-we   town

The interpretation of (10a) is stative and does not necessarily imply that we are the besiegers. In fact, the sentence may very well mean that some other

party has besieged our town. (10b), on the other hand, can only mean what the English sentence *we have besieged the town* means: we are the besiegers. A similar difference can be made in present-day English, as is illustrated by the pair in (11).

(11) a. *We have fugitives hidden.*
      b. *We have hidden fugitives.*

(10a), then, would be analyzed as (11a) would: *have/habere* is a main verb taking a small clause complement, the analysis of which differs in no essential way from the analysis in (9). Interestingly, and quite expected from the present perspective, *habere* could not be combined with participles of one-place verbs. Only after the construction in (10a) gradually replaced the construction in (10b) and started functioning as a perfective auxiliary, the verb could enter into this combination. What, then, is the essential difference between *habere* as a main verb and *habere* as a perfective auxiliary? I would like to argue that *habere* functions as an auxiliary when it provides case for PM. In these terms, then, the examples in (11) can be analyzed as in (12).

(12) a. *We have* [$_{SC}$ *fugitives hide*+PM]

                      C   ↑   C   ↑
                      |_____| |____|

      b. *We have hide*+PM *fugitives*

                      |____|____|___↑_____↑

In both cases, PM receives case and is therefore an argument according to (6). In the S(mall) C(lause)-structure, this case is provided by the verb, whereas it is provided by the auxiliary in the perfect construction. This difference explains why *habere* can only be combined with participles of intransitives after it has become possible for *habere* to assign case to PM: it is impossible to have a SC complement which solely exists of a predicate, cf. **I want laughed*, **I want off my ship* etc. The shift in case marking has a further consequence, as we saw above: the external argument of the participle is necessarily identical to the subject of the auxiliary. I shall assume that these two properties constitute the essence of the notion auxiliary:

(13) If a verb assigns case to PM, its subject and PM constitute an argument chain.

I assume that the auxiliary verb does not itself assign a thematic role to its syntactic subject, i.e. the auxiliary is regarded as a monadic function.[5] We shall consider (13) in more detail below. It explains why a construction such as *I have laughed* cannot mean, analogous to (10a), that persons other than me laughed.

4. Auxiliary selection

A further confirmation of this analysis comes from Dutch and other languages that make a distinction between two perfective auxiliaries, one a cognate of *habere*, the other a cognate of *esse* 'be'. In these languages, the participles behave as they should, given (6). As I have argued in Hoekstra (1984b), the verbs selecting the *esse*-cognate *zijn* in Dutch are ergative verbs, i.e. verbs that do not have an external argument as a lexical property. Participles of such verbs distribute like participles of transitive verbs (cf. 8) and do not combine with the perfective auxiliary *hebben*. Thus, (14) is ungrammatical.

(14) **de soldaten hebben gesneuveld*
      the   soldiers   have   perished

The ungrammaticality of (14) is expected since PM would receive case from *hebben* and would, by (6), be an external argument, which is impossible as *sneuvelen* is ergative.

    Although this confirms the hypothesis in (6), it raises a problem at the same time, because, as we can see in the translation of (14), the English counterpart of *sneuvelen* freely combines with *have* and is therefore in a case marked position. This is true for ergative verbs in general, i.e. the distinction between *have* and *be* as perfective auxiliaries no longer exists in modern English. It is interesting that such paradigmatic levelling is always to the advantage of the *habere* cognate.[6] Why, then, is the English translation of (14) grammatical?

    One answer would be that English makes no distinction between intransitive verbs, i.e. that all intransitive verbs have an external argument, possibly lexically derived from an internal argument. This is the position taken by Keyser and Roeper (1984). However, although this position would make it possible to explain why all intransitives in English combine with *have*, it makes it impossible to explain the difference in the use of the participle in prenominal position. As in Dutch, some intransitive verbs allow

their participle to occur in prenominal position, while others do not. It is precisely the set of counterparts to Dutch ergative verbs that allow this distribution.[7]

(15) a. ergatives   b. unergatives
          the escaped prisoners   *a worked housewife*
          the fallen leaf   *a laughed pupil*
          a descended testicle   *a yawned student*
          the degenerated society   *the walked children*
          curdled milk   *the shouted fishermen*
          our departed ancestors   *the slept baby*
          a stranded boat   *a jumped contestant*
          a diseased person   *a sung choir*

If we adopt the hypothesis in (6), we can straightforwardly account for the ungrammaticality of the examples in (15b). Since these verbs take an external argument, PM of these verbs is in a position where it receives a thematic role. Hence, by (6), it must receive case, but there is no case assigning category available. The same property explains why these verbs select *hebben* as their perfective auxiliary in Dutch: *hebben* is required to assign case to PM, which bears the external role.
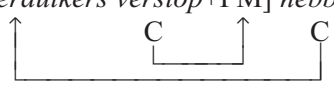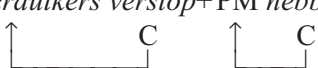
Returning to our original question concerning the status of PM in the English translation of (14), then, we note that we have a category which may bear a thematic role, which is case-marked, but which fails to have a thematic role assigned to it. These properties together are a definition of a dummy argument, i.e. an expletive. The paradigmatic levelling can thus be regarded as a consequence of allowing expletives. Notice that this account straightforwardly explains why paradigmatic levelling could never favour the *esse* cognate without resulting in a split ergative system (cf. note 6). The existence of an expression that is case-marked but not theta-marked is harmless. If, however, the *esse* cognate won, this would result in theta-marked expressions (PM) which would fail to be visible.

Before turning to further evidence corroborating (6), I want to demonstrate that there is a distinction between a main verb and an auxiliary use of the Dutch verb *hebben* too. Parallel to (10) and (11) we have a Dutch example like (16). (16) is ambiguous between the readings of (11a) and (11b). There are two ways in which we can disambiguate (16): either we add yet another form of *hebben* as in (17a). This results in a perfect of the stative interpretation of (16), i.e. it is the perfect of the structure with the main verb *hebben* taking a small clause complement. The other way of dis-

ambiguating is to shift the order of *hebben* and the participle, as in (17b). This only leaves the perfective interpretation, i.e. parallel to (11b).

(16) *dat we onderduikers verstopt hebben*
     that we fugitives   hidden   have

(17) a. *dat we onderduikers verstopt hebben gehad*
         that we fugitives   hidden   have   had
         '… that we have had fugitives hidden.'

     b. *dat we onderduikers hebben verstopt*
        '… that we have hidden fugitives.'

The results in (17), especially in (17b), are as expected. The structure in (16) can be analyzed as either (18a) or (18b), parallel to (12). Clearly, the analysis in (18a) is not applicable to (17b), due to the order of *hebben* and the participle, and given the independent observation that small clause predicates do not occur to the right of the governing verb. Our analysis predicts these results.

(18) a. *dat we [*$_{SC}$ *onderduikers verstop*+PM] *hebben*
                  ↑   C   ↑   C

     b. *dat we onderduikers verstop*+PM *hebben*
                  ↑   C   ↑   C

5. Impersonal passives

Let us now turn to a second piece of evidence supporting (6), bearing in mind our conclusion above that English differs from Dutch in allowing expletives. Consider the well-known contrast between English and Dutch relating to the possibility of impersonal passivization, illustrated in (19).

(19) a. *dat er gelachen wordt*
     b. **that it is laughed*

The ungrammaticality of (19b) follows immediately from the hypothesis in (6): the verb *lachen*/*laugh* has an external thematic role, as is evidenced by

the impossibility of using its participle in prenominal position (cf. [15b]). Hence, PM is in a theta position and should therefore receive case. Since the verb is intransitive, however, no accusative case is available and (19b) is out by the thematic criterion. Why, then, is (19a) grammatical? Given our reasoning, PM should receive case. As in (19b), this cannot be a case assigned by V. There is another possibility, the nominative case assigned by INFL. This possibility does not exist in English, since *it* already requires and receives nominative case. The Dutch expression *er* does not require case: it is an adverb and not a pronominal element like *it*. As we saw, English does allow expletives. In Dutch, then, nominative case is not always assigned to a specific structural position. In (19a) it is assigned to PM. This is certainly not the only instance of INFL assigning case within VP. Various people have argued that nominative case assignment in Dutch and German inside VP is possible, e.g. Den Besten (1981a), who proposes a notion of chain-government.[8]

The difference between languages with respect to impersonal passivization seems to be related to yet a further difference. It was demonstrated above that the external argument appears to be grammatically present in passive sentences because it can control the subject of certain adjuncts, specifically rationale clauses. This result is to a certain extent surprising from the point of view of the so-called Visser generalization (cf. Bach 1980). This generalization accounts for the patterns of grammaticality in the examples in (20)–(22), which generally are taken to show that the controlling argument must be present. In passives this would seem not to be the case if the external argument is taken to be the controller.

(20) a. *John tried* [PRO *to open the door*]
      b. **It was tried* [PRO *to open the door*]

(21) a. *John promised Mary* [PRO *to open the door*]
      b. **Mary was promised* [PRO *to open the door*]

(22) a. *John forced Mary* [PRO *to open the door*]
      b. *Mary was forced* [PRO *to open the door*]

The ungrammaticality of the (20b) and (21b) is thus explained by appealing to the theory of control. This analysis does not provide a basis for the difference in grammaticality with the Dutch counterparts of these examples, shown in (23)–(24).

(23) *Er   werd geprobeerd* [PRO *de deur open te doen*]
     There was   tried   PRO the door open to do

(24) *Er   werd beloofd* [PRO *de deur open te doen*]
     There was   promised PRO the door open to do

The explanation we just gave to account for the grammaticality of imper-
sonal passives carries over straightforwardly to these cases: in Dutch, the
designated argument that functions as the controller is visible, because it
can be assigned nominative case, but in English it is not since nominative
case goes to the expletive *it*.[9]

6. Further confirmation

A further piece of independent support can be derived from the following
situation in Icelandic, discussed in Zaenen and Maling (1984). As is well
known, Icelandic allows for quirky case-marked subjects in passives, i.e.
inherently case-marked complements retain their case if moved to subject
position, as is shown by the following examples.

(25) a. *Skipstjórinn   sökkti skipinu.*
        the-captain-NOM   sank   the-ship-DAT

     b. *Skipinu   var sökkt af skipstjóranum.*
        the-ship-DAT was sunk   by the captain

(26) a. *Ég   mun sakna hans.*
        I-NOM will miss   him-GEN

     b. *Hans   var saknað.*
        Him-GEN was missed

Within the framework of our assumptions we have to analyze these pas-
sives in the following way: a. PM may not be assigned dative or genitive;
b. PM receives nominative case. The possibility of PM being assigned
nominative case has to be allowed in Icelandic independent of these quirky
case constructions, in view of the possibility of impersonal passives. The
assumption that PM may not receive an inherent case also seems independ-
ently motivated in view of sentences such as (27) from German, which
contrast with sentences such as (28).

(27) *Er   versuchte* [PRO *geholfen   zu   werden*]
    He   tried   PRO   helped   to   become

(28) *Er   versuchte* [PRO *entlassen zu   werden*]
    He   tried   PRO   fired   to   become

The verb *helfen* assigns dative, whereas *entlassen* assigns accusative case. The contrast between (27) and (28) now follows under the assumption that PM may not be assigned dative case, as argued above.[10]

The problem presented by Icelandic involves a discrepancy between passives and unaccusatives with respect to the inherent accusative.[11] Whereas the inherent accusative is retained in unaccusatives, it is never retained in passives, unlike the inherent dative and genitive. The problem is illustrated by the following examples.

(29) a. *Stormurinn   blés   strompinn   af   húsinu.*
        the-storm-NOM blew the-chimney-ACC off   the-house

     b. *Strompinn   blés   af   húsinu.*
        the-chimney-ACC   blew off   the-house

     c. *Strompurinn   var   blásinn   af   húsinu.*
        the-chimney-NOM was   blown   off   the-house

This discrepancy can be explained along the following lines. First, we shall assume that inherent case must be assigned. This accounts for the fact that the inherent accusative is retained in the unaccusative (29b). The example also shows that it is possible, at least in Icelandic, not to assign nominative case. In (29c), then, the inherent accusative case is assigned to PM, thus satisfying the requirement that inherent case be assigned. The only additional assumption we need to make is that PM may not receive inherent genitive and dative, but may receive inherent accusative. This is probably due to the fact that the inherent accusative has a structural counterpart, unlike the other inherent cases.

A final piece of evidence in favour both of our analysis of participles and of perfective auxiliaries derives from French. Drijkoningen (1986) notes that the present participle of the perfective auxiliary *être* in (30) is optional, as it is with plain adjectives, whereas the present participle of the perfective auxiliary *avoir* in (30d) is not. He explains this by assuming that *-ant* instantiates INFL and that INFL is a necessary ingredient for the assignment of the external role. The latter assumption strikes me as unmotivated and would seem to run into problems with infinitival complements of per-

ception verbs. The difference between *étant* and *ayant* is hard to explain if the two perfective auxiliaries are regarded as variants which are lexically selected by the main verb. The analysis defended here explains the difference in a straightforward fashion. PM in (30a) bears the external argument role and receives case from the verb, which is transitive. In (30b), PM receives neither a thematic role, nor case since the verb *arriver* is ergative. In (30d), however, we have an intransitive unergative verb, i.e. a verb that assigns an external thematic role. Hence, PM is in a theta-position and therefore requires case. Since the verb is intransitive, case cannot be provided by the verb itself. Hence, some case assigning category is called for and *ayant* functions as such. Thus our account not only explains the difference in choice of the perfective auxiliary, it also explains why *ayant* may not be left out.

(30) a. (*le soldat), étant/∅ tué*
    b. *(le roi), étant/∅ arrivé*
    c. *(le professeur), étant/∅ malade*
    d. *le professeur, ayant/*∅ parlé*
    e. *le bateau, ayant/∅ coulé*

It is well-known that the selection of the perfective auxiliary in French does not bring out the difference between ergative and non-ergative verbs as clearly as the choice between *hebben* and *zijn* in Dutch or *avere* and *essere* in Italian i.e. some ergative verbs in French select *avoir*. In this respect, the process of paradigmatic levelling, which has taken place in e.g. English and Spanish is operative in French to a limited extent as well. So, the verb *couler* is ergative, but selects *avoir* nonetheless. However, as *avoir* is not required to case-mark PM, we predict that *ayant* can he left out. This prediction is borne out, as is evidenced by (30e).

7. Extending the analysis: infinitives

If the participial affix plays the role of an argument and its distribution can be explained in terms of this fact, we may ask whether the same can be said of other verbal affixes, e.g. the infinitival affix (henceforth IM) and the inflected forms. I shall restrict myself to IM, since a discussion of the inflected forms would take us into problems related to the status, position etc. of INFL and the null subject parameter (cf. Jelinek 1986 for related ideas on inflected forms).

If we consider infinitives from the perspective developed in the previous section, it would appear that the same reasoning holds as we applied to participles. In infinitival constructions, at least in the unmarked case (i.e. barring ECM constructions), there appears to be no overt argument expression that bears the external role. Nevertheless, its grammatical presence can hardly be questioned and hence, by the thematic criterion, it must somehow be represented. It has become customary to postulate an invisible NP to serve that purpose, i.e. PRO. However, PRO is a unique element of the system. One of its exceptional properties is that it would appear to escape the visibility requirement of argument expressions, which is to say that PRO is inherently visible. This exceptional quality of PRO is apparent from the disjunction in a formulation such as (31).

(31)   A head of a chain either has case or is PRO (Brody 1985: 533).[12]

Not only is it customary to posit a category PRO, it is also customary to assume that PRO has positional features, i.e. that the element PRO occupies a specific position, not only hierarchically, but also linearly. However, if it is correct to assume that the (linear) position of NPs is determined by the direction in which its case assigner assigns case, there is really no reason to assume that e.g. in English PRO precedes INFL or VP rather than follows it, or to assume that it has any position at all.

   On the other hand, various proposals can be found in the literature (e.g. Fabb 1984) to the effect that verbs require case. Again restricting ourselves to infinitives,[13] this requirement seems to be largely correct. There are several rather complex cases, but again, in the normal case, infinitives are preceded by *to*. In spite of proposals which hold that *to* instantiates INFL, there is no good reason to assume that *to* is any different from a preposition. The same holds for the equivalents of *to* that accompany infinitives in other languages, such as Dutch *te*, German *zu*, French *à* etc. which are all homophonous with clear prepositions and which clearly functioned as such in older stages of these languages, assigning dative case to the infinitive. We may well ask, however, why verbs would require case, especially from the present perspective on case, i.e. as a property that licenses arguments.

   If we add these two things up, it would not appear unreasonable to hypothesize that IM bears an argument role (i.e. replaces PRO) and hence requires case, which is provided by *to* or a different case assigner. Assuming this hypothesis, we face the question in which way a participle differs from an infinitive, as under this assumption both PM and IM bear an argument role. Again putting complexities aside, it is immediately clear

what this difference is: participles are in principle 'passive' whereas infinitives are 'active'. Passive and active are used here in an intuitive sense. Making these notions more explicit, we can state that the passive nature of participles is determined by what I shall call internal case assignment. Infinitives, on the other hand, receive external case, or, more precisely, the affix which bears a thematic role receives case from an external case assigner. That this difference in case assignment is indeed relevant is quite clear when we return to perfective participles. These are active in the relevant sense, which is a consequence of external case assignment, i.e. by the auxiliary *habere.*

The hypothesis concerning IM and PM yields an interesting perspective on a puzzling phenomenon found in Dutch and German, called *infinitivus pro participio* or *Ersatzinfinitiv*. It is illustrated by the examples in (32).

(32) a. *Jan   wil   een   auto kopen.*
        John wants a   car   buy-INF

    b. *Jan   heeft   een   auto *gewild/willen   kopen.*
        John has   a   car   wanted/want-INF buy-INF

As we see in (32b), the main verb *willen* (want) does not show up in the participial form which we expect in the perfect, but rather takes the form of an infinitive. Although the reason for this choice of the infinitive escapes me, it should be noted that the phenomenon of selecting an infinitive instead of a participle only occurs in the perfect and not e.g. in a passive. According to our analysis, the participle and the infinitive are identical in precisely these circumstances, i.e. in a perfect construction PM receives external case, as does IM in other constructions.

8. Norwegian causatives

A situation which shows certain similarities is found in Norwegian, where we find the two different constructions of the causative, given in (33a) and (33b):

(33) a. *Vi   lot   oversette   boken.*
        we   let   translate   the-book
      'We had someone translate the book.'

    b. *Vi   lot   boken   oversette.*
        we   let   the-book   translate
      'We had the book translated.'

Let us assume that case in Norwegian is assigned under adjacency and that both the causative verb *la* and the transitive verb *oversette* may assign case. Then, in (33a), we would be forced to assume that *la* assigns case to IM in *oversette*, thus licensing the external argument of this verb, whereas *oversette* case-marks its direct object complement, given the fact that Norwegian is a VO language. But how about (33b)? Given the linear position of *boken* we have to conclude that it receives case from *la* under adjacency. Hence it occupies the subject position of the complement (cf. below). We shall furthermore assume that it is base-generated in the object position, from where it has moved. Why has movement taken place? What happens to IM and to the internal case of *oversette*? Let us assume that IM receives case from *oversette,* i.e. internal case. Then, according to what we stated above, the clause is passive, which accords with its interpretation.

This analysis is fundamentally different from proposals made by Taraldsen (1983). It would take us too far to go into a detailed comparison, but a few words on Taraldsen's analysis are in order. He proposes that in (33a) reanalysis has taken place. This reanalysis is subject to a condition of featural non-distinctness. This non-distinctness in feature content is not limited to categorial features, but is assumed to he sensitive to such features as ergativity, transitivity and passive to account for the ungrammaticality of (34a) and (34b).

(34) a. **Vi   lot   utkomme   boken.*
          we   let   appear   the-book

    b. **Det   ble   latt   oversette   boken.*
          it   was   let.PART   translate   the-book

Reanalysis or projection compounding in (34a) is forbidden because the matrix verb is transitive and the embedded verb is ergative; in (34b) it is forbidden because the matrix verb is passive and the embedded verb is transitive. Although it is conceivable that such detailed conditions of feature combinations are independently motivated, no such motivation is familiar to me. The ungrammaticality of the examples in (34) follows straightforwardly from my proposal: *boken* in (34a) must receive case. Since *utkomme* is ergative, *boken* must move to a position where it may receive case from *la,* resulting in (35).

(35)   *vi lot **boken**$_i$ utkomme **t**$_i$*

(34b) is also out for reasons of case if we assume that the external argument of *oversette* must be licensed by case. IM may not receive case from *oversette* itself, since this would leave *boken* without case. It also fails to receive case from the matrix verb because this is passivized.

Taraldsen provides independent evidence to show that *boken* in (33b) occupies the subject position, based on the distribution of the reflexive possessive *sin* (his, her, their), which can only be bound by a subject, either base generated, as in (36a) or a derived subject in passives, as in (36b), but not by an NP in object position, as in (36c).

(36) a. *Han$_i$ arresterte oss før   sin$_i$ avreise   til Trondhjem.*
          he   arrested   us before his departure to Trondhjem

      b. *Han$_i$ ble   arrestert før   sin$_i$ avreise   til Trondhjem.*
          he   was arrested before his departure to Trondhjem

      c. **Vi   arresterte ham$_i$ før   sin$_i$ avreise   til Trondhjem.*
          we arrested   him before his departure to Trondhjem

The contrast between (37a) and (37b) then shows that the preinfinitival position of the understood object of the infinitive qualifies as a subject position, unlike the postinfinitival position.

(37) a. **Vi   lot arrestere banditten$_i$ før   sin$_i$ avreise   til Trondhjem.*
          we let arrest   the-bandit before his departure to Trondhjem

      b. *Vi lot banditten$_i$ arrestere før   sin$_i$ avreise   til Trondhjem.*
          we let the-bandit arrest   before his departure to Trondhjem

Similar evidence can be obtained from control of infinitival adjunct clauses (cf. Taraldsen 1983: 222 ff.). Under Taraldsen's analysis, it is difficult to explain how this movement to subject position is possible. For (33a) he argues that the embedded infinitive does not assign an external role, because it is part of a complex predicate which results from reanalysis. He furthermore argues that the embedded infinitive does not assign case to the object, something which he explains by appealing to the Burzio generalization: since the infinitive does not assign an external role, it also fails to assign case. Recall our earlier remark that the Burzio generalization is in itself not an explanation. Taraldsen concludes that in (33a) the causative verb takes a bare VP complement.[14] In order to accommodate (33b), however, where the understood object clearly occupies the subject position, Taraldsen cannot escape the conclusion that the complement of *la* is an S. In order to allow

for the movement to subject position, however, reanalysis must be assumed to have taken place also in the case of an S complement, i.e. in (33b). Even if we were to accept this analysis as involving reanalysis and hence lack of both case-marking of the object and theta-marking of the subject, there should still be an alternative S complement structure to *la* in order to accommodate such examples as (38) with an external argument in subject position.[15]

(38) a. *Vi lot Jon synge i   dusjen.*   (Christensen 1984: 50)
          we let John sing   in the-shower

     b. *Vi lot fangevoktoren løslate fangene.*   (Taraldsen 1984: 46)
          we let the-warden   release the-prisoners

Let us return to the contrast between (33a) and (33b) under our analysis. Recall that we claim that in (33b) the external argument, realized in IM, receives internal case, thus yielding a 'passive' structure, whereas (33a) involves an 'active' structure in the sense that the external argument receives external case, i.e. from the matrix verb *la*. This claim is further supported by the behavior of the reflexive *seg*. It would take us too far to go into the complex matter of the distribution of *seg* versus *segselv*. I therefore limit myself to the contrast in (39), which is automatically explained under our analysis, since according to this analysis (39a) is like (40a) and (39b) like (40b).

(39) a. *Hun_i lot overtale seg_i.
          she   let persuade herself

     b. *Hun_i lot seg_i overtale.*
          she   let herself persuade

(40) a. *she let* x *persuade herself*
     b. *she let herself be persuaded*

To conclude this discussion, we have shown that the notions active and passive can be reconstructed in terms of external versus internal case-marking of the external argument. Normally, the participle is passive in this sense, although there are contexts in which it is involved in an active structure, due to case-marking of PM from outside. Similarly, the infinitive is normally active, but here too there are constructions in which it is involved in a passive structure, due to case-marking of IM from inside.

9. Control infinitives

The notion that IM can be regarded as an argument leads us to the postulation of chains in which IM participates. Turning our attention again to (32) we note that the infinitive is not preceded by *te.* Such bare infinitives have basically two different distributions, one of which is in positions normally filled with NPs. We may regard these infinitival constructions as NPs therefore, although this conclusion is certainly not forced upon us. The second relevant distribution, to which I want to limit myself, is in the so-called V-raising construction, i.e. the famous verb clustering construction found in Dutch and German. This clustering can be observed in the subordinate clause variant of (32a) which is given in (41).

(41)   *dat Jan een auto wil kopen*

If we want to analyse all infinitives uniformly, *kopen* should be analyzed as consisting of the verb stem *koop* plus IM, with IM bearing the external argument role of *koop.* Hence, IM must be case-marked. We conclude that *willen* provides this case to IM. It should be noted that this analysis is less awkward than the common analysis in government and binding theory, which assimilates these constructions to regular control structures, i.e. which assigns a structure to (41) as in (42). The problem with (42) is that no S' deletion can be assumed to apply here since this would lead to PRO being governed, or phrased differently, it has to be guaranteed that the complement is opaque to government from outside. On the other hand, the complement must be assumed to be transparent for various reasons which led Evers (1975) to assume that the S node was pruned as a consequence of V-raising, a process which extracts the head of the complement and Chomsky-adjoins it to the governing verb. These conflicting demands constitute an a priori problem for the analysis in (42), then.

(42)   *dat Jan* [$_{S'}$ [$_{S'}$ PRO [*een auto*] *kopen*]] *wil*

In order to cope with this problem it has been suggested that the subject of the complement in these constructions might be governed PRO, which would be anaphoric (cf. Hoekstra 1983 and Koster 1984). However, these suggestions run into problems with accusativus cum infinitivo constructions such as (43a), since it would be reasonable to assume that the non-phonetically realized NP subject would be governed PRO there as well, but it cannot be an anaphoric element because it lacks an antecedent. The problem with

(43a) is even increased by the possibility of (43b), where the understood subject is phonetically realized and hence would need to be case-marked and therefore governed.

(43) a. *dat wij* [NP *een liedje zingen*] *hoorden*
     dat we   een liedje hoorden zingen
   '… that we heard a song sung.'

  b. *dat we* [*Jan een liedje zingen*] *hoorden*
     dat we Jan een liedje hoorden zingen
   '… that we heard John sing a song.'

Let us maintain the position that IM is uniformly an argument and needs case. Then, as we stated above, IM in (41) forms a one-membered argument chain (IM) bearing a thematic role assigned by *koop* and a case assigned by *willen.* From the point of view of the thematic criterion this is perfectly sound. Similarly, IM in (43a) would constitute an argument chain which is both theta-marked (by *zing*) and case-marked (also by *zing*, whence the passive interpretation of the infinitive)*.* This then brings us to (43b). Clearly, it is impossible for IM and the NP *Jan* to each form a separate argument chain, since then one of them would be without an argument role. Therefore, they have to be in one chain, i.e. the chain (Jan, IM) to which the external argument role of *zing* is assigned. This chain only has a single case which we may assume is assigned to either the NP or the affix.[16] For uniformity reasons we may perhaps best assume that it is the position of the affix which licenses the chain by getting case, but I do not have any arguments to settle this issue. We thus have an argument chain of two positions with a single case.

   It should be noted that this situation arises in many languages, in spite of the generally accepted claim attributed to Kayne that clitic doubling is possible only if the doubling NP has its own case assigner, usually a preposition, a generalization which seems to hold in some of the Romance and Semitic languages, but not in languages in general. To give just one example of clitic doubling without a separate case assigner for the doubling NP, consider the Swahili examples in (44).

(44) a. *Ahmed   a-li-m-piga   (Badru).*
     Ahmed   he-PAST-him-hit   Badru
   'Ahmed hit him/Badru.'

b. *Ahmed   a-li-fungua   mlango.*
   Ahmed   he-PAST-open   door
   'Ahmed opened the door.'

c. *Ahmed   a-li-u-fungua   (mlango).*
   Ahmed   he-PAST-it-open   door

Hence, linguistic theory should permit both the situation of a two element chain with a single case and with two cases. Apparently, in Dutch, a two member chain with a single case is permitted if one of the members is IM. Other data suggest that such a chain may also have a case in each element (see Hoekstra 1984a).

10. Reanalysis

The analysis of the infinitive provided in this section does not imply that the structure of these infinitival complement constructions is biclausal or that we a priori reject any reanalysis proposal. As a matter of fact, the analysis of the infinitive solves a problem that is raised by reanalysis proposals such as those found in Taraldsen (1983) for Norwegian causative constructions and in Guéron (1986) for French causative constructions. According to these proposals, the embedded verb (phrase) may not assign an external argument role. Both Taraldsen and Guéron are silent about the way in which this elimination of the external argument role can be brought in line with the thematic criterion.[17]

It is clear that it depends on the matrix verb whether or not reanalysis will take place, although certain cross-linguistic similarities can be observed that one would hope to be able to explain (e.g. if a language has any verbs that induce reanalysis, usually the causative verb is among them, quite often the perception verbs as well). In French, reanalysis appears to be obligatory with *faire*, but optional with *laisser*, as is the case with *la* in Norwegian. Similarly, whether or not a particular verb in Dutch induces reanalysis is lexically determined, although some regularities can be observed. Interestingly, verbs that select a bare infinitive all induce reanalysis, whereas we find lexical variation with respect to those verbs that select an infinitive preceded by *te*. How should we characterize those verbs that induce reanalysis and what precisely do we mean by the notion of reanalysis?

The fact that reanalysis is induced by all verbs that select a bare infinitive suggests that the relevant lexical marking of these verbs concerns this

property. If our analysis of infinitives is correct, the relevant property could thus be characterized as a case property, i.e. as the possibility or necessity of assigning case to an embedded infinitive. Not all verbs that can form a verbal cluster may also combine with a NP, suggesting that the property of assigning case to IM is not necessarily identical to the property of assigning case to a NP. Let us call this property [IC] (for infinitival case). In English, only the auxiliaries and the preposition to appear to have this property, whereas in Dutch and German its distribution is less restricted. If we further assume that case-marking is subject to an adjacency requirement also in the case of case-marking IM, the fact that matrix verb and infinitive are usually adjacent in reanalysis constructions is an automatic consequence of this proposal.

The question now is whether reanalysis involves more than case assignment of an embedded infinitive by a matrix verb. A survey of the relevant literature (esp. Evers 1975 and Rizzi 1982) would suggest that more is involved. Reanalysis or clause union structures seem to differ from regular clausal complement structures in ways that suggests a monoclausal versus a biclausal structure. The relevant observations concern the opacity of the embedded domain for binding relations and the possibility of functioning as an independent scopal domain for certain adverbial operators. I shall not discuss these complex matters as they fall outside the scope of the present article. And while it is obvious that many questions remain to be answered, to a large extent these are questions that either have never been raised before or have never received satisfactory answers in the past.

11. Conclusion

The hypothesis in (6), which states that PM, and by extension IM, bears the external argument role iff it has case, is well-supported. This made it possible for us to explain why the verb in passives shows up in participial form and what the unity of participles is. It furthermore allowed an account of both active and passive infinitives such as they are found in Norwegian and Dutch. The verbal affix functions as an argument under the same conditions as normal arguments, i.e. it may be assigned a thematic role and must therefore be case-marked. Internal case-marking (by the verb) yields a passive interpretation, whereas external case-marking (by an auxiliary or a matrix verb) yields an active interpretation. In certain languages the affix may be case-marked without receiving a thematic role. Under these circumstances the participial affix is in fact a dummy argument. It was argued

that this fact accounts for the *have-be* distinction in those languages that have it, as well as for the paradigmatic levelling towards *have* in a language like English.

Editors' note

This chapter is an edited version of an unpublished manuscript (plm. September 1986), entitled "Verbal affixation". Teun must have submitted the paper to *The Linguistic Review*, as two anonymous review reports for that journal were found with the manuscript, which both advised a thorough rewrite of the paper before it could be published. Apparently, Teun never got round to rewriting it. He may have been little motivated to do so because sections 1-6 of the paper, on the passive and the perfect participle, had previously been published (in a slightly modified form) as Hoekstra (1986b). The second part of the unpublished manuscript extends the analysis to infinitival morphology (IM). The present chapter integrates elements from the published version (Hoekstra 1986b) and the unpublished manuscript. The first part of the unpublished manuscript contained a few additional paragraphs as compared with the published version: one on chain-government, which we eliminated, and one on Icelandic, which is included here, although we shortened and reformulated it a little. The published version also contains more section headings, which we adopted; we furthermore added section headings to the unpublished second part. The notes were completely different in the unpublished manuscript and the published paper. Where they made the same point, we integrated the notes or had one replace the other. Where they did not show any overlap, we included the notes from both versions. In the second part, we deleted a section on *krijgen* 'get, receive' because it seemed too densely formulated, and because this topic is dealt with more extensively in Hoekstra (1984a). We deleted one paragraph from the final section on reanalysis. The relevant parts of Hoekstra (1986b) are republished here with permission from the AVT. This chapter was edited by Guido Vanden Wyngaerd.

Notes

1. The research for this article was part of the Leiden University research project 'Word order and paradigmatic and syntagmatic structure'.

2. It has been argued (cf. Rouveret and Vergnaud 1980) that the participle in passives is an adjective or a [+V] category and that the lack of case marking on the object NP can he derived from the lack of a [-N] feature. To the extent that this can be motivated, the use of a participle is non-arbitrary. I shall argue, however, that participles in passives are not to be analyzed as adjectives. Moreover, it seems dubious whether the assumption that adjectives do not assign case is correct (cf. Chomsky 1986b). Even if we accept the adjectival status and the lack of case assignment that is said to follow from it, the essential problem with the projection principle that is discussed below remains, i.e. it does not explain what has happened to the external argument role. This said, I do not exclude the possibility of lexicalized adjectives derived from verbal participles. It is unclear whether the hypothesis concerning participles developed in this paper applies to these adjectives as well.

3. This simple point seems to be overlooked quite often in the literature where the Burzio generalization is offered as an explanation. It should be noted that we are not dealing with a conspiracy result, i.e. that two independently motivated subtheories interact in such a way as to produce a particular result. The interaction between the two subtheories is stipulated in order to achieve the result that is stated in (2).

4. Specifically, the distribution of participles in prenominal position is restricted by the head final filter (cf. Williams 1981a, Hoekstra 1984b) or whichever theory from which the head final filter effects can be derived. As for prenominal participle constructions, this filter requires both in Dutch and in English that the head (i.e. the participle) is in final position. Given the fact that Dutch verb constructions are basically head-final and English verb constructions are head-initial, the head final filter makes different predictions for these languages concerning the types of participial constructions that are acceptable in prenominal position. In Hoekstra (1984b) I have shown in detail that the predictions that Wasow and Williams derive from the assumed adjectival/lexical nature of prenominal participle constructions can be traced back to the head final filter.

5. Guéron (1986) argues that perfect constructions are clause union constructions, resulting from reanalysis through co-superscripting of the matrix verb (the auxiliary) and the embedded verb (the participle). She then argues that the complement of the auxiliary may not assign an external role, something which is a general property of clause union constructions according to her analysis. She then claims that no special property has to be assigned to the auxiliary, contrary to the analysis in Hoekstra (1984b). The auxiliary, now part of a complex together with the embedded verb, assigns the external role of the embedded verb to the syntactic subject of the complex. There are various problems

with this analysis, but I only want to draw attention to one problem, viz. that of lack of generality. In the same paper Guéron argues that *faire* constructions too are clause union constructions. It is clear, however, that the complex *faire + infinitive* does not assign the external argument role of the infinitive, which is what Guéron claims to hold in the case of *avoir + participle*. Hence, somehow a distinction must be made between *faire* and *avoir*, which is to say that some special status will have to he assigned to auxiliary verbs, i.e. something analogous to (13).

6. It is conceivable that there is only a single perfective auxiliary in a language which has the properties of the *esse* rather than the *habere* variant. From the analysis given here it follows that such a language will exhibit what is known as an ergative split, i.e. although it may have NOM-ACC in the imperfect, it will only have NOM in the perfect tense, which is assigned to the internal argument, i.e. the perfect tense will always be passive. One might be tempted to analyze NOM in this case as absolute, with the *by*-phrase as the ergative case.

7. Some of the participles of ergative verbs sound a little awkward in prenominal position, but this awkwardness disappears if an adverb is added, as is shown by the examples in (i). In this respect these participles do not differ from the participles of transitive verbs which predicate over a noun corresponding to their object (cf. (ii)).

   (i)   *a (recently) arrived shipment*
         the (generally) slackened zeal
         the (lately) expired treaty
         the (recently) perished soldiers

   (ii) *a (widely) read book*
         a (recently) erected pavilion
         a (much) debated issue
         a (well) loved comedian

8. It can be demonstrated that it is indeed the presence of nominative marking which is relevant for the occurrence of impersonal passives. Impersonal passives can not occur in nominalizations or in infinitival constructions, as is shown by the examples in (i) (cf. Hoekstra and Wehrmann 1985).

   (i)   a. **gelachen   worden   is   storend*
            laughed   being   is   distracting

         b. **Het is storend   om   gelachen   te   worden.*
            it   is distracting for laughed   to   be

9. This explanation applies to control structures that are known as obligatory control structures, i.e. the structures of which the Visser generalization has been argued to hold. Control is also possible by implicit arguments. The status of such implicit arguments vis-à-vis the projection principle and the theta criterion is as yet unclear.

10. Apparently, judgments on sentences like (27) vary among native speakers of German. This should not come as a surprise in view of the fact that the verb *helfen,* as well as other dyadic verbs that traditionally assigned dative case, tends to lose this inherent case. Some speakers accept (ii) instead of (i), as Marchand (1974: 98) reports.

   (i)   *Mir*   *wurde*   *geholfen.*
         Me-DAT   was   helped

   (ii) *Ich*   *wurde*   *geholfen.*
         I-NOM   was   helped

   No doubt, this change is part of the general decay of the morphological case system. In Dutch, where a morphological distinction is no longer made between dative and accusative, only a passive with a nominative subject is allowed with a verb such as *helpen*.

11. The class of unaccusatives that have a transitive counterpart falls into two sub-classes, one in which the inherent case is retained, leading to constructions with quirky case-marked subjects, and another class where the inherent case is lost and the single argument receives nominative case (cf. Zaenen and Maling 1984: 323). The latter subclass not only differs from their related transitives with respect to inherent case, but also in their inflectional paradigms. Zaenen and Maling suggest that unaccusative and related transitive should therefore be considered separate lexical entries, whereas the inherent case retaining unaccusatives form a single lexical entry. I have nothing to add to their contention.

12. Brody eliminates this disjunction through the introduction of a concept called case linking. However, the disjunction is actually retained in Brody's analysis: case linked NPs are either NPs which are assigned case or which are PRO.

13. Fabb discusses more contexts in which verbs are required to receive case than those considered in the present article. The notion that verbs need case in Fabb's analysis only brings out a seeming parallel with case-marking on NPs. For this reason, Fabb speaks of verbal case and nominal case, which are conceptually similar in his analysis in that both are regarded as licensing properties. Fabb does not make a distinction between verb stems and infinitives, probably because these are formally non-distinct in English. I assume, contrary to Fabb, that infinitives must be analyzed as consisting of a verb stem and an infinitival affix (IM), which happens not to have a phonological matrix in English. In my analysis, then, it is not the verb stem per se that needs case, but the infinitive has this requirement as a function of IM. From my perspective, then, Fabb makes a misgeneralization.

14. Taraldsen argues that in Norwegian V is the head of S. It is difficult to see how a verb can be prohibited from projecting up to its maximal level. I therefore fail to see what the status of this notion of VP complement in Taraldsen's analysis is.

15. Taraldsen seems to suggest that the structure with a external argument in subject position is allowed only in non-causative constructions where *la* is interpreted as permissive 'let' (cf. Taraldsen 1983: 230). This cannot be correct, however, as

he is forced to analyze (35) as not involving reanalysis, because of the featural non-distinctness condition. Similarly, (38b) may also be interpreted as a causative construction. Hence, in spite of their surface similarity and the fact that both involve movement from post-infinitival to pre-infinitival position, (35) and (33b) differ in that the latter, but not the former involves reanalysis. There is no independent evidence to support this difference of analysis.

16. Notice that the same situation holds in the sentences in (38), where the external argument of the embedded verb is realized, according to our analysis, by both IM and the preinfinitival NP. Here too, we would postulate an argument chain that receives a single case from the matrix verb. In the French *faire* construction, the situation is slightly different. Applying our analysis of the infinitive to this construction implies that the matrix verb *faire* assigns case to IM of the embedded infinitive. The external argument of a transitive verb is optionally realized by a lexical NP, as in Norwegian and Dutch, but in French, this doubling requires the presence of a separate case assigner, i.e. the preposition *à*. A question that remains is why the realization of the external argument of an intransitive verb by means of a full NP is obligatory in each of these languages. The fact that in French this full NP does not take the preposition *à* suggests that this has something to do with case assignment. To my knowledge there is no satisfactory answer to this question available in the literature.

17. Guéron (1986) is not quite clear in this respect. She proposes that not only the *faire*-construction, but also the perfect auxiliary involves reanalysis (clause union in Guéron's terminology). Hence, *Mary has seen John* is analyzed as in (i), where boldface is used to indicate the reanalysis of *have* and *seen*. Guéron states: "*have* assigns the external theta role of *have + see* to *Mary* by predication, while *see* assigns the internal theta role of the joint verb to John under government".

(i)   *Mary **has** [$_{VP}$ **seen** John]*

(ii) *Nous **ferons** [$_{VP}$ **lire** cet article]*

Virtually the same analysis is provided for *Nous ferons lire cet article*, given in (ii). Applying the statements in the above quote to this construction means that *nous* is assigned a thematic role by *faire + lire*, but this role is not identical to the external argument role of *lire*. It is also not immediately evident how the role of *faire lire* is determined.

II. T-chains

Why Kaatje was not heard sing a song

with Hans Bennis

1. Introduction

The analysis of the complement structure of perception verbs has developed concurrently with the general development of the theory of generative grammar. However, many questions are still open. Under the NP-S plus Equi analysis (Rosenbaum 1967) as well as under the analysis of perception verb complements as *it*-S/bare S plus subject raising (Kiparsky and Kiparsky 1970 and De Geest 1972) it remained mysterious why *Kaatje*, the (derived) object in (1a), could not become the subject under matrix passivization as in (1b). More recently, the bare S analysis without raising to object has gained quite general acceptance. In this analysis *Kaatje* is not a (derived) object, but a subject at all levels of representation. This does not lead to a solution of the ungrammaticality of (1b), either. The construction in (1a) is considered either as an instance of exceptional case marking constructions of which the infinitival complement structure of verbs like *believe* is representative, or as an instance of a Small Clause (SC) (cf. Stowell 1981). In either case, the ungrammaticality of (1b) is surprising, given the grammaticality of a passive construction such as (2b), or as (3b):

(1)   a. *I heard Kaatje sing a song.*
      b. **Kaatje was heard sing a song.*

(2)   a. *I believe Kaatje to have sung a song.*
      b. *Kaatje was believed to have sung a song.*

(3)   a. *I consider Kaatje a good singer.*
      b. *Kaatje was considered a good singer.*

Clearly, the reason for the ungrammaticality of (1b) cannot reside in the semantic nature of the matrix verb, since perception verbs allow passivization with complement types other than bare infinitives, as is illustrated in (4):

(4)   a. *The moon was seen rising over the mountain.*
      b. *This song was never heard on the radio before.*
      c. *It was felt that a positive decision would be appropriate.*

Given the limited distribution of the bare infinitive construction, one might be tempted to treat the ungrammaticality of matrix passivization as an idiosyncrasy. However, the fact that not only in English but also in other languages this construction resists matrix passivization calls for an explanation.

In this paper we shall provide such an explanation. This is embedded in a more comprehensive theory of infinitival complementation, but we shall focus here on those aspects of our theory that are relevant to the analysis of perception verb complements.

In section 2 we introduce the basic explanatory concept of our theory, viz. the requirement of T(ense)-linking. In section 3 we discuss briefly the relation between tense and time, capitalizing on the interpretive dependence between embedded tense and matrix tense. We are then in a position to provide an analysis of the complement structure of perception verbs in section 4, and explain why the embedded verb in such constructions has to undergo Verb Raising (VR) in section 5. A remarkable property of VR constructions is the phenomenon of infinitivus pro participio. This property is discussed in section 6. We then have all the ingredients to explain the observation above, i.e. the constraint on matrix passivization which does not permit sentences of the form in our title.

2. Tense and verbs

In recent work, Pollock (1988) has argued for a more articulate structure of clauses. Specifically, he argues that the standard assumption that Infl dominates both Tense and Agr should be revised such that both these elements form their own projection. Taking the Comp position into account as well, this gives us the following structure of a full clause:[1]

(5) $[_{CP} C [_{TP} T [_{AgrP} Agr [_{VP} V]]]]$ (order irrelevant)
           1   2   3   4

The four different head positions are motivated by different positions that are accessible to verbs at S-structure. The underlying assumption is that a zero-level category may only move to a zero-level category, either through adjunction, or by substitution (cf. Chomsky 1986a: 71). Consider the following examples:

(6) a. (*Jean a décidé de*) *ne* *pas* *souvent lire* *un livre.*
   b. (*Jean a décidé de*) *ne* *pas lire* *souvent* *un livre.*
   c. *(*Jean a décidé de*) *ne lire* *pas* *souvent* *un livre.*
   d. (*Jean voulait*) *n'avoir* *pas* *souvent lu* *un livre.*
   e. (*Jean voulait*) *n'avoir* *pas lu* *souvent* *un livre.*
   f. *Jean* *ne lit* *pas* *souvent* *un livre.*
   g. *Lit-il* *souvent* *un livre?*

In (6a) the verb *lire* is in its base position (position 4 in [5]), taking its NP object as its sister. In (6b), the adverb *souvent* intervenes between V and NP, thus constituting a violation of the adjacency requirement (strict c-command requirement) on case assignment. Assuming, however, that the adverb is adjoined to VP, we can account for (6b) by moving the verb across the adverb. Given the condition on head movement, its landing site must be a head position. This motivates position 3 in (5). (6c) shows that the lexical verb may not occur in between the two parts of negation in French, at least when the verb is infinitival. (6e) and (6f) demonstrate that this position is accessible to auxiliaries as well as finite lexical verbs, which motivates position 2 in (5). Finally, (6g) shows that under certain circumstances, the verb may even move further to the left of the subject. This is the well-known verb second phenomenon, which involves movement to the Comp position. This motivates position 1 in (5).

   Many issues are raised by the structure in (5) that we cannot go into in this paper. Clearly, languages vary with respect to which positions are accessible to which verbal elements, and with respect to which movements are obligatory and which are optional. In Italian, for instance, not only infinitival auxiliaries, but also infinitival lexical verbs move to postion 2, as is illustrated by the contrast in (7). In English, on the other hand, lexical verbs may only occur in position 4 ([8]), whereas infinitival auxiliaries may occur either in position 3 or position 2, as is shown by the examples in (9).

(7) a. (*Jean a décidé de*) *ne* *plus aller* *a l'école.*
   b. *(*Jean a décidé de*) *n'aller* *plus* *a l'école.*
   c. *(*Gianni ha deciso di*) *non* *più andare* *a scuola.*
   d. (*Gianni ha deciso di*) *non andare* *più* *a scuola.*

(8) a. (*John wants*) *to* *not/often go* *to school.*
   b. *(*John wants*) *to go* *not/often* *to school.*

(9) a. (*John claimed*) *to*   *not have*   *gone to school.*
     b. (*John claimed*) *to have*   *not*   *gone to school.*
     c. (*John claimed*) *to*   *often have*   *read this book.*
     d. (*John claimed*) *to have*   *often*   *read this book.*

Not only finite verbs, but also infinitival ones are subject to rules of verb movement. This movement moves the verb to Agr, T or C. The application of verb movement is sometimes blocked (cf. [7a,b]), sometimes optional (cf. [9a,b]) and sometimes obligatory (cf. [7c,d]). The question arises, of course, which factors are responsible for the application of the rule of verb movement in specific circumstances. In our view the main reason for the occurrence of verb movement rules is the condition in (10).

(10) T-linking
      A verb must be identified by tense

The notion tense in the hypothesis in (10) applies to both finite and infinitival tense. The condition in (10) might be a consequence of the theta criterion if we assume that each verb contains an event position in its theta grid. In order to satisfy the theta criterion the event position must be saturated. One might then invoke the mechanism of theta binding proposed by Higginbotham (1985). We will not develop this idea any further here. We shall conceive of tense as an operator that takes a verb as its scope-bearing element (cf. Evers 1981). What we want to propose is that the tense and the verb are related by means of a chain that involves the positions in (5), i.e. these positions are part of what we shall henceforth call a T-chain (cf. Guéron and Hoekstra 1988). Just like A-chains and A'-chains, T-chains have to meet the ECP, i.e. each link in the chain must antecedent-govern the next link, or, phrased differently, intervening heads may not be skipped (cf. Baker 1988 and Chomsky 1986a). A T-chain thus has the form in (11), where each P is locally connected to the next:

(11) (tense, P_1, …, P_n, V)

      T-chains may vary across languages on two parameters:
      a.   the base position of tense
      b.   the way in which the chain is established:
           by verb movement or by percolation

Following Den Besten (1981b), we shall assume that the base position of tense in verb second languages is Comp, whereas in a language such as

English, tense is base generated in position 2 in (5). The second parameter is similar to the *wh*-movement parameter: either the scope-bearing element (the *wh*-phrase) moves to the operator position in the syntax, or a percolation relation is established between the operator and its scope-bearing element. Both relations are subject to the Empty Category Principle (ECP), as is the formation of a T-chain. To illustrate the second parameter, consider the contrast between Icelandic and Swedish in (12).

(12) a. *að   hann keypti   ekki   bókina*   (Icelandic)
          that he   bought   not   the-book
      b. *att han   inte   köpte   boken*   (Swedish)
          that he   not   bought   the-book

There are in principle various ways in which the different order of finite verb and negation can be accounted for. However, examination of the position of negation across languages would suggest that negation is not to be considered a modifier of VP, but rather a modifier of Infl. The simplest way to account for the difference between Icelandic and Swedish would therefore seem to be that both languages have the base structure in (13), the difference being a consequence of verb movement to P_2, via P_3, in Icelandic, but not in Swedish.

(13)   C $[_{TP}$ P_2 Neg $[_{P_3}$ $[_{VP}$ V NP]]

The only way the verb in Swedish can satisfy the condition on T-linking in (10) is by percolation of tense from P_2 to P_3, followed by either percolation from P_3 to V or by movement from V to P_3.

  We have now set out the basic assumptions that are required for an account of the contrast in (1). It should be borne in mind that the empirical scope of this theory is much wider than presented here. A complete account of the theory and its consequences will be published elsewhere. In this article we present our theory in as far it is relevant for the explanation for the contrast in (1). To summarize: verbs must be linked to tense by means of a T-chain, consisting of T as the head of the chain, and V as its foot, and several intermediate head positions, such that each link of the chain is locally related to the next, as a consequence of the ECP. Tense may either percolate down to its scope bearing element along the T-chain, or the scope bearing element may move upwards.

3. Tense and time

Up to this point we have not paid any attention to the semantics of tense. Although a full discussion of this intractable matter is clearly beyond the scope of this paper, there are a few things we should say. In the normal case, the tense of a simplex sentence anchors the temporal reference of the event on the time of the utterance. This is not the case for the tense of embedded clauses: their temporal anchoring is dependent on the temporal anchoring of the matrix tense, among other things (cf. Enç 1987). In our theory this interpretative dependence has a syntactic correlate in the sense that the T-chain of an embedded clause must be locally connected to the T-chain of its governing domain. We refer to this as T-chain composition, which is formulated in (14).

(14) T-(chain) composition
      If C_1 is the chain of a dependent T and C_2 is the chain of the governing T, then C_1 and C_2 can be composed iff some link of C_1 is a sister to some link of C_2.

Let us illustrate this condition with a simple example from Dutch. In Dutch, T-linking is established by verb movement, as can be seen in (15). The obligatory nature of this movement rule derives from the fact that no percolation to the V position is possible. This implies that the deep structure position of V is not a link in a T-chain: tense lowers to T, which is thus the foot of the T-chain, to which the verb has to move in order to be linked. If V has a sentential complement, the following situation obtains: the embedded clause in (16a), generated in preverbal position in accordance with the verb final nature of Dutch, cannot remain in situ at S-structure, but has to be extraposed to the position following the finite matrix verb, as in (16b). The reason for the obligatory nature of this extraposition is (14), given that the matrix verb in its deep structure position is not a link in the matrix T-chain. The embedded CP, though a sister of the verb, is not a sister of a link in the matrix T-chain, and therefore has to move up. The result is that the T-chain in the embedded CP can be composed with the T-chain in the matrix CP. This situation is depicted in (17).

(15) a. **Jan   belooft   [om [naar huis gaan] te]*

      b. *Jan   belooft   [om [naar huis   ] te gaan]*
         John   promises   for   home   to go

(16) a. *dat we [*dat Jan ook zou komen*] *dachten*

b. *dat we   dachten* [*dat   Jan   ook   zou   komen*]
    thatwe   thought   that   John   also   wouldcome

(17)

V-to-Agr + Agr to T
'extraposition'
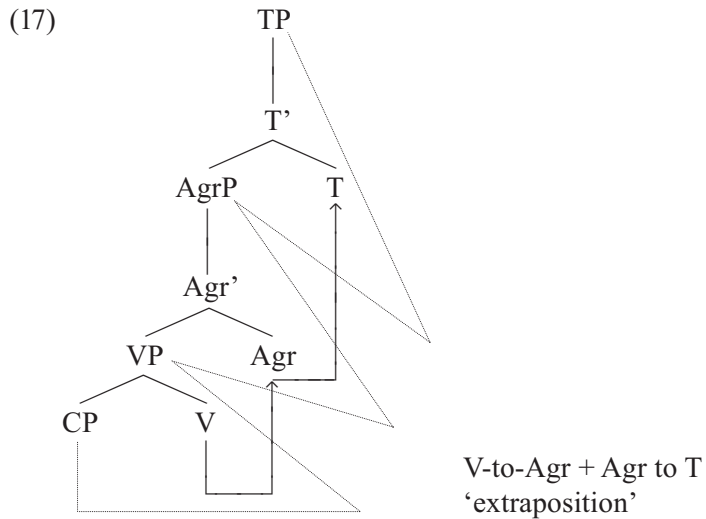
In English, on the other hand, the T-chain is established through percolation to the verb in its deep structure position, which is therefore a link in the T-chain. Hence, no extraposition is forced in the English counterpart of (16). This difference between Dutch and English will turn out to be very important, as we shall see below.

4. Agr-phrases

The separation of Tense and Agr proposed by Pollock makes it possible to provide a solution of a problem concerning SCs. Ever since the introduction of the concept of SCs, i.e. the hypothesis that the bracketed parts in examples such as (18) form constituents, there has been discussion as to the precise nature of this constituent. Either the constituent is regarded as a projection of the head of the predicative expression, i.e. X is AP in (18a), but PP in (18b), or it is conceived of as a reduced S, i.e. an IP.

(18) a. *I consider* [$_X$ *John foolish*]
      b. *I want* [$_X$ *John off my ship*]

The former assumption (cf. Stowell 1981) meets with serious problems:

– it requires a cross categorial definition of 'subject', which gives a problem in cases such as *I consider John Peter's best friend,* where the NP would have two subjects;
– it is inconsistent with the principle that only heads and maximal projections are visible for move-α. For a construction such as *On which ship do you want Bill?* it has to allow for the movement of intermediate projections;
– it wrongly predicts that SCs have no PRO subjects, at least according to the Aoun/Sportiche (1983) definition of government, since the subject position would be governed from inside.[2]

The reduced S or IP analysis (cf. Chomsky 1981) can maintain the standard subject definition (i.e. SpecIP), but it also faces difficulties:

– if the reduced S is a barrier, there are no specific problems with the occurrence of PRO-subjects.[3] However, SCs with lexical subjects then constitute a problem;
– the latter problem can be solved if it is assumed that IP is transparent to government from outside, for instance on the basis of the stipulation that IP is defective with respect to barrierhood. However, under that assumption, SCs with PRO subjects constitute a problem;
– a further drawback is that SCs, although showing agreement in many languages, do not seem to have any tense.

The advantages of a clausal analysis can be kept, however, under Pollock's proposal if we assume that SCs are AgrPs: clauses that lack tense. The distribution of PRO vs. lexical/trace subjects in SCs simply follows from L-marking: if the AgrP is a complement (theta-marked), it will not be a barrier, hence government is allowed, whereas if AgrP is an adjunct, it will be a barrier by virtue of not being L-marked. From here on we will assume that all subject-predicate relations have the form of an AgrP, with the complement of Agr as the predicate and the specifier of Agr as the subject. This AgrP can occur in the complement of a T position, in which case we find a regular case of predication. It may also appear in the complement of a verb or as an adjunct. In these cases we have instances of secondary predication.

(19) a. *I consider* [*John foolish*]
      b. *I kicked* [*him off the street*]
      c. *I heard* [*John sing a song*]

> d.   *I made* [*John angry*]
> e.   *I made* [*John leave the building*]

(20)   a.   *John was considered* [t *foolish*]
      b.   *He was kicked* [t *off the street*]
      c. *John was heard [t *sing a song*]
      d.   *John was made* [t *angry*]
      e. *John was made [t *leave the building*]

In (19) examples are given with SC complements, to which we shall hence-forth refer as AgrP complements, in accordance with the claim that tense-less complements are clauses without the T position. Such AgrPs may have complements of various categories: in (19a,d) an AP, in (19b) a PP and in (19c,e) a VP. The claim that such complements lack a T projection explains a number of the properties of these complements that have often been noted in the literature.

– it accounts for the specific temporal interpretation of SCs. In (19), the state or event expressed in the AgrP holds at the moment at which the matrix event holds. This is a property found with all non-finite complements of perception verbs (cf. De Geest 1972).

– De Geest (1972: ch. 4) notes that infinitival complements of perception verbs cannot contain a clausal negation, nor any other sentence-level adverb, such as speaker-oriented or modal adverbs. With respect to (13) we argued that negation should be generated outside AgrP. Also, it is well-known that a test for this category of adverbs is that they allow a paraphrase of the type in (21b), in which the tense of the matrix is inde-pendent of the tense of the embedded verb:

(21)   a.   *John probably goes/went home.*
      b.   *It is probably the case that John goes/went home.*

This paraphrase property can be made sense of if it is assumed that these adverbs are modifiers of the T projection. If that is correct, the fact that these adverbs cannot be found in the infinitival complement of perception verbs supports our claim that these complements lack a T position entirely.[4] Adopting the AgrP status of the infinitival complement in (19c,e), on a par with the other complement structures in (19), we are confronted with a prob-lematic asymmetry in passivization of the matrix in (20). Whereas passi-vization is allowed in case Agr has an AP or a PP complement, it yields an ungrammatical result in (20c,e), where the complement is verbal (VP).

If the complement of V is not AgrP but TP, which is the case in *to*-infinitivals with a lexical subject, i.e., verbs of the *believe*-type, passivization does not lead to ungrammaticality. This is shown in (22).

(22) a. *Ben believes* [$_{TP}$ *Joe to win the race*]
     b. *Joe was believed* [$_{TP}$ t *to win the race*]

From (19) and (22) it follows that the impossibility of passivization in (20c,e) cannot be due to a general impossibility of NP-movement of the subject of an embedded clause, either an infinitival clause (TP) as in (22) or a SC (AgrP) as in (20a,b,d). It thus appears that we cannot restrict NP-movement in a non ad hoc manner from applying in (20c,e). We will indeed argue that the ungrammaticality of (20c,e) does not reside in the impossibility of NP-movement.

    When we turn to Dutch, we note that the facts are almost identical. The verb *vinden* ('find', 'consider') may take an AgrP complement containing an AP in (23a), an NP in (23b) or a VP in (23c). Note, however, that in the latter case VR applies, shifting the head of the complement to the right of the governing verb. As in English, matrix passivization is possible in the first two cases, but not when the AgrP has a VP complement, as is shown by the examples in (24).

(23) a. *dat ik* [*Jan   vervelend*] *vind*
          that I   John boring   find

     b. *dat ik* [*Jan   een   idioot*] *vind*
          that I   John an   idiot   find

     c. *dat ik* [*Jan* t$_i$] *vind zeuren*
          that I   John   find nag

(24) a. *dat Jan   vervelend werd gevonden*
          that John boring   was   found

     b. *dat Jan   een   idioot werd gevonden*
          that John an   idiot was   found

     c. ***dat Jan   werd gevonden zeuren*
          that John was   found   nag

Before explaining this asymmetry in matrix passivization, we shall first develop an analysis of VR.

5. Verb Raising

Descriptively the basic facts about VR in Dutch (and German[5]) are as follows:

– VR leads to a situation in which the verb of an embedded sentential complement is adjoined to its matrix verb: (25a,b);
– VR applies only if the embedded complement is infinitival: (25c);
– VR applies only if no extraposition takes place: (25d);
– VR applies only if the infinitival complement has no lexical complementizer: (25e);
– if no extraposition takes place, VR as in (25b) is obligatory;
– if the matrix verb is a modal verb or a perception/causative verb (i.e. if the matrix verbs selects a *te*-less infinitival clause), only VR is possible: (26)–(27);
– if the complement has *te*, VR is optional in most cases: (28).

(25) a. **dat Jan [(*om*) *een appel te eten belooft*   DS
      that John   an apple to eat   promises

    b. *dat Jan* [*een appel* t] *belooft*   **te eten**   VR
      that John an apple   promises to eat

    c. **dat Jan [*dat hij een appel* t] *belooft*   **zal eten**
      that John that he an apple   promises will eat

    d. **dat Jan belooft   **te eten** [(*om*) *een appel* t]
      that John promises to eat   an apple

    e. **dat Jan [*om een appel* t] *belooft*   **te eten**
      that John for an apple   promises to eat

    f. *dat Jan belooft* [(*om*) *een appel te eten*]   extrap.
      that John promises for an apple to eat

(26) a. **dat Jan [*een appel eten*] *moet*   DS
      that John an apple eat   must

    b. *dat Jan* [*een appel* t] *moet **eten***   VR

    c. **dat Jan moet [*een appel eten*]   extrap.

(27) a. **dat Jan [*Marie een appel eten*] *hoort/ziet/laat*   DS
      that John Mary an apple eat   hears/sees/let

    b. *dat Jan* [*Marie een appel* t] *hoort/ziet/laat **eten***   VR

    c. ***dat Jan hoort/ziet/laat* [*Marie een appel eten*]   extrap.

(28) a. * *dat Jan* [*een appel te eten*] *probeert/belooft/zegt*   DS
　　　　　that John an   apple to eat tries/promises/tells

　　　b. *dat Jan* [*een appel* t] *probeert/belooft/zegt* **te eten**　　VR

　　　c. *dat Jan probeert/belooft zegt* [*een appel te eten*]　　extrap.

In section 4 we argued that extraposition of finite complements is required in order to establish a connection between the tense of the embedded clause and the tense of the matrix clause. We considered this to be the syntactic correlate of the interpretative dependence of the embedded temporal specification on that of the matrix. In our theory of Tense the finiteness of a verb is irrelevant. The ungrammaticality of the sentences with infinitival complements without extraposition or VR (i.e. [25a], [26a], [27a] and [28a]) can thus be accounted for in the same way, in that the T-chain in the embedded clause cannot be composed with the T-chain in the matrix clause (cf. [14]). Given the acceptability of (28b) and (28c), it must be concluded that succesful T-composition can be established by either extraposition or VR in the case of an infinitival complement. Thus, the requirement to apply VR or extraposition in Dutch follows from the same principle. The fact that English does not require VR and optionally allows extraposition follows from the claim that T-composition can be established without movement.[6]

　　Now that we know why VR applies, we should provide a more detailed analysis of how it applies. From the facts in (25)–(28) it is clear that VR implies movement of the verbal head of a complement (in most cases together with *te*). As argued above, it follows from the ECP that head movement is strictly local. No intervening heads can be skipped. Movement of a verb to a position outside the CP in which it originates thus involves movement from V to Agr, from Agr to T, from T to C and from there to the first head-positions outside CP (i.e. the V position of the matrix clause). From the well-known discussion on the verb second phenomenon it is clear that movement to C is an instance of substitution. The complementary distribution between finite verb and complementizer can be explained along these lines. The impossibility to apply VR in finite complements (25c) or in infinitival complements with a lexical complementizer (25e) follows for the same reason. Finite complements have to be introduced by a lexical complementizer in Dutch. The complementizer blocks the application of movement to C. In those cases extraposition is obligatory.

The ungrammaticality of VR from an extraposed complement (25d) also follows from the theory of head movement. First, the application of extraposition removes the motivation for the application of VR, since the embedded T-chain is already composed with the matrix T-chain via extraposition. Second, extraposition involves adjunction of CP to the matrix TP. If the verb has been moved to C within the extraposed CP, there is no longer any possibility to move up to a head position without violating the locality condition of the ECP. This also holds for base generated adjunct clauses, which for this reason do not allow VR either.

The same line of reasoning explains why VR is restricted to complements of V, i.e. why it does not apply to complements of categories other than V. In the case of complements of P, N or A, the verb after being moved to C, either raises to a non-T-link, or passes a head. In the former case, no T-linking is established, while in the latter case an ECP violation results as a consequence of the intervening head, i.e. the head which is skipped. We thus have a principled explanation for the limited distribution of bare infinitive clauses, i.e. these can occur only in the complement position of verbs.

We saw that T-composition can be established either by movement of the whole complement to a position in which the head of the embedded T-chain can be locally composed with the T-chain of the matrix clause (extraposition), or by movement from the foot of the embedded T-chain into the matrix clause (VR). We now have to answer the question why VR is obligatory in *te*-less complements. We will concentrate on perception verbs only. The answer is quite straightforward. As argued in section 4, perception verbs take an AgrP as their complement, with VP as the complement of the Agr head. Among other things, this accounts for the fact that no lexical complementizer and no lexical realization of T (i.e. *te*) are possible in an infinitival complement to a perception verb. If the infinitival complement is AgrP, the complement has no internal Tense position. It thus follows that no well-formed T-chain can be established within the infinitival complement. For the embedded verb to satisfy the condition on T-linking in (10) the verb should be moved into the matrix clause. Only then can the embedded verb be related to Tense. In this case VR is necessary to establish T-linking. No extraposition is possible, since the complement has no internal T-chain satisfying (10). We see that VR applies either to satisfy T-linking (if the complement has no internal tense) or T-composition (if the complement has an internal tense), whereas extraposition can only take place in case of T-composition.

Summarizing, the theory of Tense which includes Tense-linking and Tense-connection allows an explanation of why, how and when VR applies in Dutch. For our purposes here the most important conclusion is that in perception verb complements the embedded verb has to be moved into the matrix clause in order to satisfy the condition on Tense-linking.

6. Past participles and the IPP-effect

A very interesting phenomenon in Dutch is what is generally referred to as Infinitivus Pro Participio (IPP). This refers to the fact that VR constructions an infinitive is used where a participle is expected. An illustration is given in (29).

(29) a. *dat Jan deze kaas heeft geprobeerd/*proberen*
          that John this cheese has   tried/try

     b. *dat Jan heeft geprobeerd/*proberen* [*deze kaas te eten*]
          that John has   tried/try   this cheese to eat

     c. *dat Jan* [*deze kaas*   t] *heeft proberen* ***te eten***
          that John this cheese   has   try   to eat

The IPP effect, shown in (29c), appears in VR contexts only ([29b] shows its ungrammaticality in an extraposition construction). This effect is obligatory in those cases in which VR is obligatory as well, as is demonstrated in (30).[7]

(30) a. *dat Jan mij heeft gehoord/*horen*
          that John me   has   heard/hear

     b. *dat Jan* [*mij een liedje* t] *heeft* **gehoord/horen* ***zingen***
          that John me a   song   has   heard/hear   sing

     c. *dat Jan die auto altijd al heeft gewild/*willen*
          that John that car   always has   wanted/want

     d. *dat Jan* [*die auto* t] *heeft* **gewild/willen* ***kopen***
          that John that car   has   wanted/want buy

The data in (30) demonstrate two things. First, VR results in a cluster of the lower verb and the matrix verb, and, second, VR cannot move the verb to a participle.

The fact that (30b,d) represent the only possible outcome indicates that VR must apply. The reason is that the embedded verb (*zingen*, *kopen*) must be T-linked. The occurrence of the IPP effect then illustrates that the embedded verb can be T-linked only by movement to a V position which does not contain a participle. Apparently, participles cannot be links in a T-chain.[8] The ungrammaticality of (30b,d) with a participle follows from the fact that movement from the C position to the first available position in the matrix clause (Agr) violates the condition on locality of head-to-head movement. The only way to get a grammatical result for sentences such as (30) is to keep the matrix verb in its infinitival form. Infinitival verbs can be links in a T-chain. Consequently, the embedded verb can be adjoined to the matrix verb and together they can be adjoined to the auxiliary verb in T, thereby creating a T-link for both verbs.

7. Passive participles and T-linking

After this discussion we can provide an explanation for the impossibility of passivization of the subject of AgrP if the complement of Agr is VP. This situation is illustrated for English in (31a) and for Dutch in (31b).

(31)   a. *$Kaatje_i$ was heard   [$_{AgrP}$ t_i [$_{VP}$ *sing a song*]]
       b. *$Kaatje_i$ werd   [$_{AgrP}$ t_i [$_{VP}$ *een liedje* t]]   *gehoord **zingen***
                                                                                *horen **zingen***
                                                                                ***zingen** gehoord*
                                                                                ***zingen** horen*

We will start with the explanation of the Dutch examples in (31b). We can distinguish between the construction in which the matrix verb is a passive participle and in which it is an infinitive. If the matrix contains a passive participle the explanation for the ungrammaticality in (31b) is similar to the explanation given in the previous section with respect to incompatability of VR with a matrix past participle. The embedded verb (*zingen*) should be linked to tense. The AgrP has no internal tense. For the embedded verb to become linked to tense, it has to be related to the tense of the matrix clause. Given the fact that T-linking of verbs in Dutch is established through movement, the verb should move to a position in which it can be related to the matrix tense. This is the matrix T-position. However, movement to this position has to go via the matrix V-position. A V-position occupied by a (passive) participle is not a possible link in a T-chain. It thus follows that movement of the embedded verb to the matrix T-position leads to ungram-

matical results. With past participles the participle could be replaced by an infinitive. As we can observe in (31b), this is not a possible solution with passive participles. We may consider the IPP effects as a marked rule of deletion of participial morphology. In the case of past participles no irrecoverable material is deleted by leaving out the participial morphology. In the case of passive participles we may consider the participial morphology to be the bearer of the external thematic role (cf. Roberts 1987 and Hoekstra 1986b). Deletion would violate the principle of recoverability of deletion. We thus explain the ungrammaticality of (31b) completely in terms of T-linking. For (31a) a similar explanation can be presented. The embedded AgrP has no internal tense. The embedded verb has to be linked through a T-chain with the matrix tense. In English T-linking is established through percolation. We argued that percolation creates a T-chain. This implies that T-percolation is subject to the same locality restrictions as verb movement. If the passive participle is not a possible T-link,[9] percolation cannot reach into the AgrP. The consequence is that V in the embedded AgrP violates the condition that each verb should be linked to tense. We thus see that the occurrence of the passive participle blocks both verb movement in Dutch and T-percolation in English. The result is that both languages do not allow passivization of the subject of an infinitival complement to a perception verb as a result of the condition on T-linking in (10).[10] This is our answer to the central question of this article.

A striking confirmation of the correctness of a theory in which the presence of a participle is crucial in explaining the facts in (31) can be found in Swedish. In Swedish there are two types of passivization. The first type makes use of a passive inflection on the main verb and the second type is similar to the passive in Dutch and English in using an auxiliary verb and a passive participle. Interestingly, passivization of the type in (31) is possible only in the first case, as shown by (32b) and not in the second, as illustrated in (32c). This pattern follows directly from our theory. In (32b) T-percolation (or verb movement) is not blocked and the embedded verb can be linked to tense. In (32c) the passive participle in the matrix V position blocks T-linking.

(32) a. *Jag hör Peter sjunga en sang.*
          I   hear Peter sing   a   song

    b. *Peter hördes   sjunga en sang.*
          Peter was heard sing   a   song

    c. * *Peter blev hörd sjunga en sang.*

Editors' note

This chapter first appeared in 1989 in *Sentential complementation and the lexicon*, edited by Dany Jaspers, Wim Kloosters, Yvan Putseys & Pieter Seuren, published by Foris Publications, Dordrecht, 21–40.

Notes

1. Belletti (1988) adopts a similar complex structure for IP, which differs from Pollock's proposal in an essential way. Whereas Pollock assumes that T dominates Agr, Belletti holds the opposite position that Agr dominates T. The analysis that we provide in section 3 is consistent with Pollock's proposal. See note 4.

2. In order to solve this problem, Stowell proposes that heads govern in one direction only. This directional theory of government thus implies that the subject of a SC is not governed by its head. However, this does not solve the problem, because Stowell also assumes that heads may govern into other projections, up to the point where the governing capacity of the head of that projection starts. Hence, the PRO subject of an adjunct SC would still be governed, not by the head of the SC, but by whatever dominates the SC. Apart from this, Stowell's directionality proposal only works in a language such as English where specifier and complement are on different sides of the head, but not for languages, such as Dutch, in which these occur on the same side of the head.

3. There is of course the general problem that the occurrence of PRO subject presents for a theory that adopts both the Aoun/Sportiche definition of government and the PRO-theorem that PRO must be ungoverned. This result can be obtained only if it is furthermore assumed that I, the head of IP, does not act as governor when tense is absent, i.e. in *to*-infinitives. This assumption itself, apart from being rather unnatural, runs into problems with VP deletion as in (i).

    (i)   … *and John decided to* [$_{VP}$ e] *as well*

    If the head of IP is not a governor in this case, the empty VP would be ungoverned as well.

4. Note that these consequences of the analysis of SCs as AgrPs cannot be obtained in a straightforward fashion under Belletti's proposal mentioned in note 1.

5. It is often assumed that Dutch and German are entirely similar with respect to infinitival complementation, the only difference being that the embedded infinitive shifts to the right of the matrix verb in Dutch, whereas it remains to the left of the matrix verb in German. Closer examination reveals, however, that both extraposition and VR are optional in German, i.e. German seems to allow preverbal complement clauses. It would take us too far afield to illus-

trate this in some detail here. We shall discuss these matters further in Bennis and Hoekstra (1988).

6. Not only is VR not required in English, it is also impossible, a fact that also has to be explained. The reason for this impossibility is the same as for the general impossibility of English verbs to leave VP. It is interesting to note that VR in the development of English became impossible at approximately the same time as the rise of the modals and the introduction of *do*-support.

7. An interesting question is whether the IPP effect is obligatory in all VR constructions. Although (i) seems to point to optionality (cf. [29c]), this is only apparent. It can be shown that in sentences as (i) the rule moving the verb to the left is different from VR.

(i) a. *dat Jan* [*een boek* t] *heeft geprobeerd/proberen te lezen*
          that John a   book   has   tried   to read

     b. *dat Jan Piet* [*dat boek* t] *heeft gedwongen/dwingen te lezen*
          that John Pete that book   has   forced   to read

These sentences seem to show VR with a participle in the matrix clause. These sentences do not involve cluster formation between participle and embedded verb, as can be seen in (ii).

(ii) a. *dat Jan* [*een boek* t] *geprobeerd heeft te lezen*   (cf. [ia])
      b. *dat Jan Piet* [*dat boek* t] *gedwongen heeft te lezen*   (cf. [ib])

A separation of matrix verb and embedded verb is not possible in clear cases of VR, nor in sentences of the type in (30), as is shown in (iii).

(iii) a. *dat Jan [*een boek* t] *proberen wil te lezen*
           that John a   book   try   want to read
           (cf. *dat Jan een boek wil proberen te lezen*)

      b. *dat Jan [*mij een liedje* t] *horen/gehoord heeft zingen*
           that John me a   song   hear/heard   has   sing
           (cf. *dat Jan mij een liedje heeft horen zingen*)

Moreover, sentences such as (i) appear only with matrix verbs which allow extraposition of the complement. Just as Den Besten et al. (1988) we will assume that (i) is not an instance of VR, but rather a special case of VP extraposition.

8. We stipulate here that participles are not possible T-links. Optimally, this notion should be made to follow from more general principles. These should also be capable of distinguishing between past participles in Dutch and those in e.g. English. Following ideas of Pollock (1988) we might relate this difference between Dutch and English to the different ways in which participles are generated by the grammar: in Dutch by means of adjunction of the verbal stem to the participial affix, in English by affix hopping (lowering). Pollock suggests that the head of the morphological complex created in these ways differ: the affix is the head in Dutch, but either the verb or the affix in English.

9. It is necessary to make a distinction in English between past participles, which are possible T-links (cf. note 8) and passive participles, which are not. Such a

difference is independently motivated, e.g. by the possibility of *that*-deletion, where past participles function as verbs in allowing *that*-deletion, while passive participles function as non-verbal governors in not allowing it. We would like to claim that passive participles have nominal properties, contrary to past participles. This nominal character must be due to the participial affix, which we take to instantiate an argument of the verbal base. Given that the category of a morphological complex is determined by the head, it must be concluded that in passive participles, the affix is the head.

10. Note that both languages do allow passivization of the subject of a TP complement, as in (i).

(i)   a.   *John$_i$ was believed* [t$_i$ *to have left*]
      b.   *Jan$_i$ werd   verondersteld* [t$_i$ *naar huis   te gaan*]
           John was   supposed   home   to go

In those cases the infinitival complement has an internal T position. Therefore, the embedded verb satisfies the condition on T-linking within the complement. The condition on T-composition can be satisfied through extraposition. This makes the status of the passive participle irrelevant. Much more can be said about the construction in (i). For a discussion we have to refer to Bennis and Hoekstra (1988).

T-chains and auxiliaries

with Jacqueline Guéron

1. Introduction

It is generally assumed that verbs such as *croire*, *pouvoir* and *faire* are lexically subcategorized for a complement CP. Thus, in (1), the complement of *croire* contains a complementizer, a subject and an inflectional tense marker:

(1)   *Je crois* [$_{CP}$ *que* [$_{IP}$ *Jean* [$_{I'}$ INFL *est heureux*]]]
       'I think that Jean is happy.'

This model is adopted even in cases where certain characteristic elements of CPs are not spelled out phonologically. In (2), the complement of *pouvoir* contains a complementizer, a subject, and an inflectional marker, all of which are phonologically null:

(2)   *Je peux* [$_{CP}$ [$_{C'}$ $\varnothing$ [$_{IP}$ PRO [$_{I'}$ $\varnothing$ [$_{VP}$ *lire ce livre*]]]]]
       'I can read this book.'

According to Kayne (1975), the causative surface structure in (3) contains an embedded CP, the VP of which has been extracted and adjoined to the higher VP:

(3)   a.   *Je fais lire un livre à Marie.*
            'I make Mary read a book.'

      b.   *Je* [$_{VP}$ *fais* [$_{VP}$ *lire un livre*]$_i$ [$_{CP}$ *à Marie* t$_i$]]

Next to this type of complementation, there exists a second type: auxiliary verbs are subcategorized for a complement VP. As opposed to CPs, VPs lack both inflection and a complementizer. Moreover, the subject position, which is obligatorily present in IPs and thus also in CPs, is optional in the VP. The complement VPs in the French sentences (4a,b) below do not contain a subject position, while the one in the English example (4c) does:

(4)   a.   *J'ai*   [$_{VP}$ *vu*   *Charles*]
          I have   seen   Charles
          'I saw Charles.'

      b.   *Il est* [$_{VP}$ *venu   quelqu'un*]
          it is   come   someone
          'Someone came.'

      c.   *There were* [$_{VP}$*people reading*]

In this paper, we will put forward arguments in favor of the hypothesis according to which French and Italian causative verbs take VP as their complement rather than CP. Moreover, we claim that VP complements are optionally selected by Italian modals.

    As we have shown, VP differs from both CP and IP by not necessarily containing a subject position. The presence of a subject can be tested independently by the Specified Subject Constraint (SSC) as defined in (5) and illustrated in (6):

(5)   *Specified Subject Constraint*
      NP_i cannot bind an anaphor NP_j if a structural subject intervenes
      between NP_i and NP_j.

(6)   a.   *$Jean_i$ n'aime que $lui-même_i$.*
          'Jean only loves himself.'

      b. *$Jean_i$ veut* [$_{CP}$ *que Marie n'aime que $lui-même_i$*]
          'Jean wants that Marie loves only himself.'

If we take the trace of a clitic to be an anaphor, the contrast in (7) can be explained in the same way as the one in (6):

(7)   a.   *Jean peut lire   le   livre.*
          Jean can   read the book

      b. *$Jean$ le_i $peut$* [$_{CP}$PRO *lire* e_i]
          Jean it   can   read

On the basis of the SSC we can conclude from the data in (7) that the complement of *pouvoir* obligatorily contains a subject and as such can be identified as an IP or a CP.

The complement of an auxiliary such as *avoir* is a VP. As VPs do not have an obligatory subject position, nothing blocks the object of its complement from raising to a position in the matrix clause, as in (8):

(8)   a.   *J'ai*   [$_{VP}$ *lu   le   livre*]
          I-have   read   the   book

      b.   *Je l$_i$'ai* [$_{VP}$ *lu* e$_i$]

The grammaticality of a sentence in which the object of the embedded verb cliticizes on a higher verb, as in (8), or raises to the subject position of a higher clause, as in (9), can then be taken to be a diagnostic for the presence of a VP complement:

(9)   *Le   livre   fut*   [$_{VP}$ *lu* e$_i$]
      the   book   was   read

In French, the object of a verb embedded under *faire* obligatorily cliticizes on the causative verb:

(10)   a.   *Je ferai*   [$_{XP}$ *lire   le   livre*]
            I will-make   read-INF   the   book
            'I will have the book read'

       b.   *Je le$_i$ ferai* [$_{XP}$ *lire* e$_i$]

       c.   **Je ferai* [$_{XP}$ *le$_i$ lire* e$_i$][1]

In Italian, 'long' movement of clitics, or 'clitic climbing', is obligatory when the matrix verb is a causative verb and optional when it is a modal:

(11)   a.   *Farò*   [$_{XP}$ *leggere   il   libro*]
            I-will-make   read-INF   the   book
            'I will have the book read.'

       b.   *Lo$_i$ farò* [$_{XP}$ *leggere* e$_i$]

       c.   **Farò* [$_{XP}$ *leggerlo*]

(12)   a.   *Voglio*   [$_{XP}$ *leggere   il   libro*]
            I-want   read   the   book
            'I want to read the book.'

       b.   *Lo$_i$ voglio* [$_{XP}$ *leggere* e$_i$]

       c.   *Voglio* [$_{XP}$ *leggerlo*]

The grammaticality of clitic climbing in (10b), (11b) and (12b) suggests that the constituent dominating the trace of the clitic does not contain a subject position. From this we can conclude that XP equals VP in all of these sentences.

Using clitic climbing and long NP raising as tests for the presence of a VP complement, we can conclude that the class of verbs taking VP complements contains not only the temporal and aspectual auxiliaries *être* and *avoir* (and their counterparts in other languages) but also causative verbs and, in certain languages, modals.[2]

2.   The definition of auxiliaries

2.1. Auxiliaries versus full verbs

We distinguish between auxiliary verbs and full verbs on the basis of the syntactic property in (13):

(13)   An auxiliary verb governs a VP. A full verb governs CP, IP, NP or $\varnothing$.

As we have shown, clitic climbing and NP raising allow us to identify the matrix verb, as well as all other verbs that intervene between the landing site of the NP and its trace, as auxiliaries in the sense of (13). On the basis of the data in (10) to (12), we have identified French *avoir* and *faire* and Italian *fare* and *volere* as auxiliaries.

A second test that allows us to distinguish verbs that take a VP complement comes from auxiliary selection. Past participles take either HAVE or BE as their auxiliary. In French and Italian, the past participle of inaccusative verbs of motion, such as *venir*(*e*), take the auxiliary BE:

(14)   a.   *Pierre*$_i$ ***est***   *venu* e$_i$

     b.   *Mario*$_i$ ***è***   *venuto* e$_i$
       P/M   is   come
      'Pierre/Mario came.'

Modal verbs select the auxiliary HAVE:

(15)   a.   *Marie*   ***a***   *voulu*   *un livre.*

     b.   *Maria*   ***ha***   *voluto*   *un libro.*
       M/M   has wanted a   book
      'Marie/Maria wanted a book.'

The contrast in (16) shows that a CP is a barrier for auxiliary selection: the embedded verb cannot select the auxiliary of the matrix verb:

(16) a. *Jean **a**   su   que Pierre est venu.*

　　b. **Jean **est**   su   que Pierre est venu.*
　　　 Jean   has/is known that Pierre is   come
　　　 'Jean knew that Pierre came.'

However, in Italian, a verb such as *venire* can select the auxiliary *essere* in a matrix clause when it is itself embedded under one or several modal verbs. The two sentences in (17) are acceptable:

(17) a. *Maria **ha**   voluto   venire.*

　　b. *Maria **è**   voluta   venire.*
　　　 Maria   has/is wanted come
　　　 'Maria wanted to come.'

The hypothesis that the choice of auxiliary takes place within the CP allows us to associate to (17a) the biclausal structure given in (18a) and to (17b) the monoclausal structure in (18b):

(18) a. *Maria ha voluto* $[_{CP}$ PRO$_i$ venire e$_i$]
　　b. *Maria$_i$ **è** voluta* $[_{VP}$ venire e$_i$]

A third test for VP complements is based on government of the embedded subject by the higher verb. An NP in the subject position of an IP is governed either by the inflectional head of IP or by the complementizer that heads the CP. Given Chomsky's (1986a) minimality principle, the subject of IP cannot be governed by a verb outside of the CP domain. The impossibility of a government relation between a verb and the subject of a CP dominated by this verb accounts for the ungrammaticality of the sentences in (19):

(19) a. **Je veux* $[_{CP}$ *que Jean venir*]
　　　　I   want   that Jean come

　　b. **Jean$_i$ a   été   cru* $[_{CP}$ *que* e$_i$ INFL *partait*]
　　　 Jean   has been thought that   left

(19a) violates the case filter: given that *venir* is an infinitive, the NP *Jean* is minimally governed by COMP$_i$, which cannot assign case. (19b) violates the

ECP: the empty category e_i is minimally governed by INFL, which is not a proper governor.

It has been proposed in the literature to posit an operation of S' deletion (S'= CP). This operation would apply to the CP complement of certain verbs. This would allow them to govern the subject of their complement and to assign it a case, as in (20a), or to properly govern its trace, as in (20b) and (21b).

(20) a. *We believe [$_\alpha$ John to be intelligent*]
      b. *John$_i$ was believed [$_\alpha$ e$_i$ to be intelligent*]

(21) a. *Jean semble aimer Marie*
      b. *Jean$_i$ semble [$_\alpha$ e$_i$ aimer Marie*]
          'Jean seems to love Marie.'

As the S'deletion rule is not independently motivated, it would be preferable to account for the phenomena in (20b) and (21b) in a different way. We propose to interpret government of an embedded subject by a higher verb uniformly as a result of the presence of a small clause of the form XP, where X is V, A, N or P.

In (21), α would be a VP with a deep subject. The complement of *believe* in (20) would be a PP interpreted as a VP as a result of the reanalysis of the preposition *to* and the governing verb. This type of reanalysis, which we will not treat in any detail here, is independently needed in order to account for raising properties of complex verb clusters in Dutch.

In the unmarked case, IP has a subject that agrees with its head INFL.[3] As the SC does not have an INFL position, the subject position is not necessarily present. An XP without a subject allows for clitic climbing as illustrated in (10) to (12) while an XP with a subject does not. The SSC makes long movement of the clitic impossible in (22b), in the same way it excludes binding in (23b):

(22) a. * *Jean la semble aimer*
      b. * *Jean$_i$ la$_j$ semble [$_{VP}$ e$_i$ aimer e$_j$*]
          'Jean seems to love her'

(23) a. *Mary had John [$_{VP}$ sing to himself*]
      b. * *Mary had [$_{VP}$ John sing to herself*]

2.2. Reducing the number of structural representations

Including causative verbs, modal verbs and raising verbs in the class of auxiliaries simplifies the grammar. It allows us to eliminate a number of rules of node deletion, restructuring and reanalysis that have been proposed in the literature, as well as the notion of parallel syntactic structures.

The only reason we would need these rules is to account for the fact that certain types of verbs function in a way that is similar to the auxiliaries HAVE and BE with respect to certain grammatical phenomena such as the SSC and auxiliary selection.

Rules that introduce a reanalysis or parallel structures weaken the grammar. They permit structures with crossing branches by allowing a single constituent to be dominated by two distinct nodes in the tree. As crossing branches have been excluded from grammar precisely in order to limit the number of possible syntactic structures, this is an undesirable result.

In a system that makes use of several simultaneous structural levels, syntactic constraints are distributed in an arbitrary way over the levels of representation. For example, in order to account for clitic climbing with causative verbs we could assume, following Williams (1979), Zubizarreta (1985) and Coopmans (1985), the simultaneous existence of the biclausal structure in (24a) and the monoclausal structure in (24b):

(24) a. *Je les*$_i$ *fais* [$_{CP}$ PRO *lire* e$_i$]
      b. *Je les*$_i$ [$_{VP}$ *fais*   *lire* e$_i$]
         I   them   make   read-INF
         'I have them read.'

In this case, we have to assume that binding theory only applies to the structure in (24b). If it applied to (24a) as well, the binding relation between the clitic and its trace would violate the SSC. On the other hand, the projection principle, stating that each theta role associated to a verb should be assigned to an argument position, can only apply to structure (24a); in (24b) the verb *faire* does not have the clausal complement that is required by the projection principle.

This arbitrary distribution of the constraints over the different syntactic representations has no independent justification in grammar.

There is no empirical justification for it either. The hypothesis that binding conditions function uniquely on the monoclausal structure, which is crucial in order to account for the grammaticality of (24b), is incompatible with the existence of sentences such as (25), cited in Morin (1978):

(25) *Il$_j$ me le lui$_j$ fait   donner.*
    he me it to-him makes give
    'He makes me give it to him.'

According to binding theory, a pronoun should be free in the phrase containing it. This would force us to assign to (25) a biclausal structure such as (26) at the level at which binding theory applies:

(26) *Il$_j$ me$_k$ le$_i$ lui$_j$ fait* [$_{XP}$ e$_k$ *donner* e$_i$ e$_j$]

In the analysis we argue for, every sentence is associated with exactly one surface structure, to which all constraints on representations apply.[4]

    By means of reanalysis one creates a complex verb at surface structure and at LF without changing the corresponding biclausal syntactic structure. This type of analysis does not account for the fact that, in all of the cases that have been studied so far, every verb functions in an independent way with respect to syntactic and interpretive rules. In causative structures, only the matrix verb raises to COMP in interrogative sentences:

(27) a. *Jean fait   lire   les livres.*
        Jean makes read-INF the books
        'John has the books read.'

     b. *Fait-il   lire les livres?*
        makes-he read the books

     c. **Fait lire-il les livres?*

Moreover, between two reanalyzed verbs, we find operators with VP scope, such as *pas* or *tout*. As we can see in (29), these logical operators can never be found inside a word:

(28) a. *Jean ne fera   **pas** lire des livres.*
        Jean NE will-make not read books

     b. *Jean fera   **tout**   lire.*
        Jean will-make everything read

(29) a. *Jean sursaute   / *Jean pas-saute*
        Jean up-jumps / Jean not-jumps

     b. *Pierre lit   tout   / *Pierre toutlit*
        Pierre reads everything / Pierre everything-reads

The hypothesis that two CPs can be reduced to one does not allow us to account for clitic climbing in a sentence in which the matrix verb is an auxiliary such as *avoir* or *être*, as these verbs do not take a CP complement in the first place.

2.3. Object NP raising

We adopt the analysis of object NP raising proposed by Kayne (1985a), in his paper on past participle agreement in French. The analysis is illustrated in (30):

(30) a. *La   ville   a   été   prise.*
          the city   has   been   taken

  b. *La ville*$_i$ [$_{VP_1}$ *a* [$_{VP_2}$ e$_i$ *été* [$_{VP_3}$ e$_i$ *prise* e$_i$]]]

According to Kayne, an NP object can only leave a VP that dominates it, when passing through the subject position of the small clause. The existence of this intermediate landing site follows from locality conditions. Consider the configuration in (31):

(31)   NP$_i$ V$_1$ [$_{VP_2}$ V$_2$ e$_i$]

If we assume, in the spirit of Chomsky (1986a), that every empty category has to be governed by its antecedent, and that every maximal category is a barrier for government, we predict that (31) is an unacceptable structure: VP$_2$, a maximal category and hence a barrier, intervenes between the antecedent NP$_i$ and its trace. Government is blocked, even if we assume that V$_1$ L-marks VP$_2$ in the sense of Chomsky (1986a), as V$_2$ minimally governs e$_i$ in VP$_2$ without being coindexed with the trace.

   Suppose now that the object of VP$_2$ adjoins to VP$_2$ before raising to the subject position of the matrix clause, creating the configuration in (32):

(32)   NP$_i$ V$_1$ [$_{VP_2}$ e$_i$ [$_{VP_2}$ V$_2$ e$_i$]]

Adjunction of NP$_i$ to VP$_2$ creates a subject position of the small clause. Agreement between the NP in this subject position and V$_2$ makes it possible for V$_2$ to qualify as an antecedent of e$_i$, and as such to function as a proper governor of the trace. Within this proposal, agreement of the past participle

with its object can be seen as a sign of object raising to the subject position of VP.

The presence of object agreement on the past participle in structures with an aspectual auxiliary (33), a causative verb (34) and a modal verb (35) suggests that the object has been moved to the subject position of VP in all of these structures. Thus we can identify *essere*, *fare*, and *volere* as auxiliary verbs:

(33) *Maria*$_i$ [$_{VP_1}$ *è* [$_{VP_2}$ e$_i$ ***stata*** [$_{VP_3}$ e$_i$ ***invitata*** e$_i$]]]

(34) *Maria*$_i$ [$_{VP_1}$ *fu* [$_{VP_2}$ e$_i$ ***fatta*** [$_{VP_3}$ e$_i$ *invitare* e$_i$]]]

(35) *Maria*$_i$ [$_{VP_1}$ *è* [$_{VP_2}$ e$_i$ ***voluta*** [$_{VP_3}$ e$_i$ *tornare* e$_i$ *a casa*]]]

The analysis faces a potential problem concerning multiple raising from a complement VP. If, in a sentence such as (36a), the direct object raises to the matrix subject position, passing through the subject positions of VP$_2$ and VP$_3$, the indirect object cannot pass through these same intermediate positions as well. The theta criterion does not allow two different constituents to occupy one single argument position. Moreover, in French, a dative or oblique argument never occupies the subject position.

(36) a. *Les livres lui   ont   été   donnés.*
          the books to-him have been given
          'The books were given to him.'

  b. *Les livres*$_i$ [$_{VP_1}$ *lui*$_j$ *ont* [$_{VP_2}$ e$_i$ *été* [$_{VP_3}$ e$_i$ *donnés*   e$_i$ e$_j$]]]
                                                              θ1 θ2 θ3

We propose that in (36) the indirect object moves cyclically to the right under the successive VPs, as shown in (37):

(37)

```
                        IP
              ┌─────────┴─────────┐
             NP                  VP₁
          ┌───┴───┐           ┌───┴───┐
        les    livresᵢ       V'       PP
                          ┌───┴───┐    │
                         V        VP₂   eⱼ
                      ┌──┴──┐  ┌───┴────┐
                    luiⱼ  ont eᵢ  VP₂    PP
                               ┌──┴──┐    │
                              V    VP₃   eⱼ
                              │  ┌──┴──┐
                            été eᵢ VP₃   PP
                                 ┌──┴──┐  │
                                V  NP PP  eⱼ
                                │   │  │
                             donnés eᵢ eⱼ
                               θ1  θ2 θ3
```
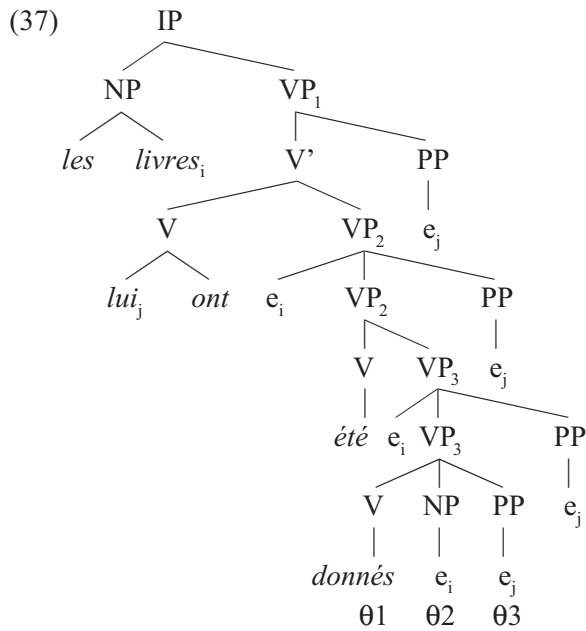
The cyclic movement of the PP ensures that the dative NP properly governs its trace. As the complement of an auxiliary verb is 'T-marked', as we will argue in the next section, neither VP₂ nor VP₃ count as a barrier for government of the empty category eⱼ.

3. Properties of auxiliary verbs

3.1. Auxiliaries and the theta-criterion

We defined auxiliary verbs on a syntactic basis in (13), repeated in (38):[5]

(38) An auxiliary verb governs VP. A full verb governs CP, IP, NP, or ∅.

If we assume that theta roles are assigned to nominal projections and that CP, IP and NP are all projections with a nominal head, the definition in (38) follows from the lexical semantic generalization in (39):

(39) An auxiliary verb does not assign any theta role.

We attribute the property in (39) to a lack of referential value. A VP headed by an auxiliary does not denote an activity, a process or a state. If we assume that the matrix VP needs a referential value, it follows that every VP headed by an auxiliary is associated to a full lexical verb. This explains the existence of complex VPs containing a series of auxiliary verbs followed by a full verb.

PPs do not function in a unified way syntactically. We distinguish *independent* PPs from *dependent* PPs. If PP is independent, P governs a nominal projection NP or CP. If it is dependent, P is reanalyzed with the verb that governs it, and interpreted as an extension of this verb. Dependent or reanalyzed Ps govern a nominal projection when they depend on a full verb and a verbal projection when they depend on an auxiliary. In Dutch the two types of PPs can be clearly distinguished on the basis of their syntactic behavior. Independent PPs undergo extraposition, as do CPs, while in the case of dependent PPs, P raises to the higher VP along with the verb of which it is an extension.

3.2.   T-chains

3.2.1. The T-index

We have attributed the fact that auxiliaries do not govern CPs to the absence of a referential value. However, we have not accounted for the fact that auxiliaries obligatorily govern VPs.

We propose, following Zagona (1982, 1988) that a temporal marker in INFL attributes a Temporal index (T-index) to a VP it governs, in a similar way that full verbs L-mark, in the sense of Chomsky (1986a), the CP or the NP they govern. The T-index that has been assigned to the VP percolates to V and contributes to the reference of VP. The auxiliary passes on the T-index to the VP it governs, and so on until the index reaches a VP headed by a V having a referential value. This process creates T-chains of the form (40), where the notation *k* represents the T-index:

(40) $T^k - (aux^k)^* - [_{VP}{}^k V^k \ldots]$

Every CP has its own T-index. The index originates in COMP, as suggested by Den Besten. COMP passes on the T-index to INFL, the head of its complement. In turn, INFL assigns the index to the VP it governs. The fact that each Comp defines a new T-index while an auxiliary shares a T-index with

the VP it governs explains the barrier status of COMP with respect to auxiliary selection of *être* in (16b).

In English and Dutch, an embedded CP contains a complementizer and a temporal marker or an independent P *to/ te* in INFL. The absence of a visible inflectional element identifies the complement as a VP. Its T-index depends then on the one of the matrix inflection. Consequently, the embedded CP cannot be interpreted unless it is governed by INFL. The contrast in (41) suggests, on the other hand, that in French CPs can lack a visible inflectional marker:

(41)   a. **Visit Venice, there's a good idea.*
       b. *Visiter Venise, voilà une bonne idée.*

We propose that a T-index identifies an X'' as a VP. Any XP lacking a T-index syntactically functions as an NP, even if it is headed by a verb.

Consider, for instance, VP topicalization in Dutch (42) and in English (43):

(42)   a. *Een   boek   gelezen   dat   heeft   hij   niet.*
          a   book   read.PAST PART   that   has   he   not

       b. [$_{XP}$ *een boek gelezen*]$_i$ [$_{CP}$ *dat*$_i$ [$_{C'}$ *heeft* [$_{IP}$ *hij niet* e$_i$]]]

(43)   a. *and read a book he has*
       b. [$_{XP}$ *read a book*]$_i$ [∅$_i$ [$_{IP}$ *he has* e$_i$]]

We assume that in English as well as in Dutch, a topicalized constituent binds a pronominal operator in COMP. The hypothesis that binder and bindee are of the same syntactic category implies that the topic in (42) and (43) is an NP. This is predicted by our theory: the topicalized VP is not governed by INFL, it lacks a T-index and hence cannot be identified as a VP.

As noted by Zagona (1988) for English, the empty category in topicalization is bound by an operator in COMP and functions as a variable. It satisfies the complex NP constraint, as illustrated in (44):

(44)   a. **en   een   boek   lezen*$_i$ *dat   ontmoette   ik   een   man   die*
          and   a   book   read.INF   that   met   I   a   man   who
          niet e$_i$ *wil*
          not   wants

       b. *and read a book$_i$ *I met a man who will* e$_i$

In the absence of a topic constituent, an empty VP is interpreted as a pronoun. It is not bound in the sentence, but in discourse, as shown in Williams (1977):

(45) *John just read that book and I met someone at the party*
      who did __ also.

In this type of contexts where English uses an empty VP, French inserts a lexical pronoun:

(46) a. *Jean   vient de lire ce   livre   et   j'ai rencontré quelqu'un*
          Jean just-read   this book and I met   someone
          à la soirée   qui   l$_i$' a   fait e$_i$ *aussi.*
          at the party   who   it has   done   as well

      b. *Jean a   été **battu** par Paul et   Pierre l$_i$' a   été* e$_i$
          Jean has been beaten by Paul and Pierre it has been
          par   Max.
          by   Max

The fact that a full NP never binds an anaphoric VP within a sentence suggests that the T-index identifies a verbal projection while binding only applies to nominal projections.

3.2.2. Feature percolation along the T-chain

A T-chain constitutes a path for percolation of syntactic features. For example, the nominative case feature can percolate down along the T-chain from INFL to the verb. As a result, the verb can assign nominative case to its object. This process is illustrated in (47) for English and in (48) for Dutch:

(47) *There* [T^k [*be^k* [***a problem***]]]
                                NOM

(48) *dat* [$_{VP}$ [*mijn broer*] [***jouw boek***] *niet bevalt^k*] T^k
                  DAT   NOM
      that   my   brother your book not pleases
      '… that your book does not please to my brother.'

If we assume that percolation of nominative takes place only within a T-chain, then we predict that *have to* in (49a) and *seem* in (49b) have to be interpreted as auxiliaries that belong to the same T-chain as the VP they govern:

(49) a. *There* $[\text{T}^k \, [_{\text{VP}}{}^k$ ***have***$^k \, [_{\text{VP}}{}^k$ ***to***^{k} ***be***^{k} ***some changes*** *around here*$]]]$
     b. *There* $[\text{T}^k \, [_{\text{VP}}{}^k$ ***seem***$^k \, [_{\text{VP}}{}^k$ ***to***^{k} ***be***^{k} ***problems***$]]]$

Thematic features can also make use of the T-chain. In unmarked cases, the external theta role percolates up from VP to INFL, where it can be assigned to the subject in SpecIP via specifier head agreement. In (50), an auxiliary verb constitutes an intermediate step for the transmission of the theta role:

(50) a. *Jean   a   vu   Marie*
           Jean   has   seen   Marie

     b. Jean^i $[_\text{agr}{}^i \, \text{T}^k \, [_{\text{VP}}{}^k$ a$^k \, [_{\text{VP}}{}^k$ vu^k Marie$]]]$
                                                                      θ1

In (51), the theta role goal percolates down from V to a reanalyzed P:

(51) a. *Je parle à Jean.*
           I   talk   to Jean

     b. *Je* $\text{T}^k \, [_{\text{VP}}{}^k$ *parle*$^k \, [_{\text{PP}}{}^k$ *à*$^k \, [_{\text{NP}}$ *Jean*$]]$
                                           θ3

4. Classes of auxiliary verbs

4.1. The temporal and aspectual auxiliaries *avoir* and *être*

Avoir can function as a temporal verb, defining in combination with the past participle it governs the tense of a matrix sentence. It can also function as an aspectual verb containing a tense in itself and governing a complement VP without an internal temporal value.

   Être can also function as a temporal or as an aspectual verb. Contrary to *avoir*, *être* selects a VP of a particular semantic type: its complement has to denote an action. The interpretation of an auxiliary plus its complement

depends on the choice of auxiliary. The combination '*avoir* + past participle' denotes a process, while '*être* + past participle' denotes a state. As a result, a VP containing *avoir* can be modified by a durative adverbial while the auxiliary *être* is incompatible with this type of adverbial:

(52) a. *J' ai   lu   pendant des heures.*
      I have read for   hours

   b. **Jean est venu pendant des heures*[6]
      Jean is come for   hours

Moreover, a verb that is compatible with either *avoir* or *être* selects the former whenever the complement denotes a process and the latter when it denotes a state accomplished by means of an activity, as illustrated in (53) on the basis of (in)compatibility with durative adverbials:

(53) a. *Nous avons monté (pendant des heures).*
      we   have climbed for   hours

   b. *Nous sommes montés (*pendant des heures).*
      we   are   climbed for   hours
      'We went up (for hours)'

In what precedes, we have attributed the selection of a complement VP of a particular semantic type to the assignment of a temporal role or T-role. A T-role is assigned to a verbal projection while a theta role is assigned to a nominal projection. With respect to the constraint in (54) the two types of roles are analogous:

(54)   An XP which is assigned a T/theta role is a Complete Thematic Constituent (CTC): all theta roles associated to X, the head of XP, are assigned internal to XP.

As *être* assigns a T-role, it has to govern a CTC. The passive structure in (55) satisfies this constraint. The verb *voir* assigns its internal theta role to its object. As for the external theta role, we assume, following Roberts (1985), that the verb assigns it to its affix:

(55) $John_i$ [$_{VP}$ *fut* [$_{VP}$ *vu* e_i]]
                   θ1 θ2

We assume moreover (56):

(56)   A verbal affix is pronominal if it has case.

The verb *voir* would assign accusative case to its affix in (55).
    In order to account for sentences such as (57), we state that in French, the T-marker can assign an accusative case feature to the VP it governs. This case feature percolates down along the T-chain until it gets to V:

(57) a. *Il a   été   mangé des pommes.*
           it has been   eaten   apples
          'Apples have been eaten.'

     b. *Il T^k a^k [$_{VP}$^{k} été^k [$_{VP}$^{k} mangé^k des pommes]]*
                                                      ACC
          ACC ——————————————   θ1 θ2

In (57), *manger* would assign its lexical case to its affix, in accordance with Robert's proposal, and the case feature that has percolated down from inflection to its object.
    In (58a) and (58b), a verb without lexical case feature assigns to its object an accusative case feature that percolated down from Tense:[7]

(58) a. *Il est venu **quelqu'un**.*
           it is   come someone
          'Someone came.'

     b. *Il a   dormi **des enfants**.*
           it has slept   children
          'Children have slept.'

Avoir, contrary to *être*, does not assign a T-role. Consequently, (54) does not apply to the complement of *avoir*. The external theta role of the embedded VP can be assigned internal to VP as in (58b). Alternatively, it can percolate up to the subject position of the matrix clause as in (59):

(59) *Les enfants   ont [dormi]*
                                  θ1
       the children have slept

The grammaticality of (58b) shows that percolation of the agent role of the embedded verb up to the matrix subject is optional. This is in accordance

with the idea we formulated above about the nature of percolation: percolation is a property of T-chains, not of the verb *avoir*. It applies freely, as long as there is no conflict with other principles, such as (54).

As we have argued above, the use of *être* is subject to the two constraints repeated in (60):

(60) i.   its VP complement is a – thematically saturated – CTC;
      ii.   its complement denotes an action.

In Italian, ii. is optional. It seems as if there are two verbs *essere* in Italian: one is an aspectual auxiliary similar to French *être* and requires a complement denoting an action; the other is a temporal auxiliary in complementary distribution with *avere*. *Essere* is used when the embedded VP is a CTC, while *avere* is used when the external theta role has to percolate up to the subject position of the matrix verb. The complementary distribution of *avere* and *essere* is assured by the constraint in (60i), which applies in both French and Italian.

The fact that Italian, but not French, has a temporal verb *essere* which does not select a semantic complement explains the contrasts in (61)–(64). In each of these cases, the embedded VP denotes a process or a state rather than an activity:

(61) a. *Il   burro$_i$ è   [fuso e$_i$]*
      b. *Le   beurre$_i$ a   [fondu e$_i$]*
          the butter   is/has   melted

(62) a.   *È   piovuto*
      b. *Il   a   plu*
          (it) is/has rained

(63) a.   *È   sembrato che S*
      b. *Il   a   semblé   que S*
          (it) is/has seemed   that S

(64) a. *La musica$_i$ è   sempre   [piaciuta e$_i$ a   Gianni]*[8]
      b. *La musique$_i$ a   toujours [plu   e$_i$ à   Jean]*
          the music   is/has always   pleased   to Gianni/Jean

Similarly, the temporal verb *essere* can be followed by other auxiliary verbs such as *essere*, *fare*, or *volere*. In French, on the other hand, (65a) and

(65b) are grammatical only with *avoir*, and (65c) is excluded independently
of the choice of auxiliary:

(65) a. *Maria **è stata** invitata.*
      Maria is been invited

    b. *Maria **è voluta** tornare a casa.*
       Maria is wanted to go home

    c. *I libri **furono fatti** leggere.*
       the books were made read-INF

4.2. Causative structures

We analyze causative verbs as auxiliaries on the basis of the syntactic phe-
nomena illustrated in (66): (i) 'long' raising of the object of the embedded
verb in (66a); we have seen that this type of raising is possible only from a
complement VP, given the locality constraints on movement; (ii) the pres-
ence of past participle agreement in (66b), which indicates, according to
Kayne, that the object NP has moved to the subject position of the SC; (iii)
the absence of a temporal marker or of the P *to* in an INFL position of the
complement, as illustrated in (66c).

(66) a. *Je le$_i$ fais* [$_{VP}$ e$_i$ voir e$_i$]
    b. *I libri$_i$ furono* [$_{VP}$ e$_i$ ***fatti*** [$_{VP}$ e$_i$ *leggere* e$_i$]]
    c. *I made* [$_{VP}$ *John leave*]

Causative verbs belong to the class of aspectual verbs, on a par with *être*.
As such, they assign a T-role to their complement. As we can see in (67) and
(68), the complement of a causative verb has to denote an activity or a
process, not a state:

(67) a. *I made* [*John leave*]
    b. *Praying will make* [*it rain*]
    c. **Praying will make* [*John be intelligent*]

(68) a. *J'ai fait* [*partir Jean*]
    b. *La prière fera* [*pleuvoir*]
    c. **La prière fera* [*être intelligent*]

Every XP denoting an activity assigns an external theta role. Causative structures differ from one another only in the way the external theta role of the embedded verb is assigned. The internal theta role is always assigned to a structural object.

Whenever the causative verb can assign structural case, the embedded VP can have a subject. This is the case for English *make*, Norwegian *lå* and French *laisser*. This first type of causative structure is illustrated by the three synonymous sentences in (69) for English, French and Norwegian:

(69) a. *We made* [*the warden hang the prisoners*]
      b. *Nous avons laissé* [*le gardien pendre les prisonniers*]
      c. *Vi lar* [*vokteren henge fangene*]

In (69), the causative verb assigns accusative case to the subject of the embedded VP and an external theta role to the subject of the matrix clause. The embedded verb assigns accusative case and an internal theta role to its object and an external theta role to its subject, as shown in (69'):

(69') *Nous avons laissé* [*le gardien pendre les prisonniers*]
         $\theta 1$ $\theta 2$ $\theta 3$

The hypothesis that causative verbs assign a theta role to the subject of the matrix clause seems to be incompatible with the principle in (39) above, according to which auxiliaries do not assign a theta role. However, the schema in (69') is compatible with the principle in (39) if we take seriously the hypothesis that the external theta role is assigned compositionally by VP and not lexically by V. This hypothesis implies that the lexical entry of a causative verb does not contain a feature for an external theta role.

If the causative verb does not assign structural case, as in the case of *faire*, there exist three alternative strategies for satisfying the constraint in (54), resulting in three additional causative structures.

In the causative structure in (70), the verb assigns the external theta role to its own infinitival affix:

(70) a. *Je ferai   lire   ces   livres.*
          I   will-make read-INF these books
          'I will have these books read.'

      b. *Je ferai* [_{VP} *lire ces livres*]
                         $\theta 1$ $\theta 2$

We have proposed above that an affix needs a case in order to function as a pronominal argument. As the embedded infinitive in (70) is interpreted in an active way, we assume that this case comes from outside the VP (cf. Hoekstra 1986c). However, it turns out that *faire*, on a par with *être*, does not assign structural case, as shown by the ungrammaticality of the examples in (71). We will assume that these verbs can absorb a case feature assigned by Tense and pass it on to their complement, which in turn will assign it to the verbal affix, as illustrated in (72):

(71) a. **Je fai*s [*Marie lire le livre*]

 b. **Il   a   été   [des livres*$_i$ *lu*$_i$]
 it has been books   read

(72) *Je* T^k [$_{VP}$^{k} *ferai*^{k} [$_{VP}$^{k} *lire*^{k} *ces livres*]]

ACC ———————   ACC
                θ1 θ2

Once the external theta role has been assigned to the verbal affix, the embedded object can take the subject position of VP as intermediate landing site on its way to the matrix clause. Thus the causative structure in (73b) is parallel to the passive structure in (73a):

(73) a. *Il en*$_i$ *fut* [e$_i$ *lu*   [*plusieurs* e$_i$]]
      it of-them was   read several
      'Several of them were read.'

 b. *Je les*$_i$ *fais* [e$_i$ *lire* e$_i$]

A causative construction of the form (70) also exists in Swedish and Norwegian:

(74) *Vi   lar* [$_{VP}$ *henge fangene*]
                    θ1 θ2
 we let   hang   the-prisonners

However, in Danish, as noted by Taraldsen (1983), the causative structure containing the verb *la* always has the form in (75). We propose that Danish *la* assigns case to the object of the embedded verb that has raised to the subject position of the SC, while the verbal affix receives its case from the embedded verb:

(75) *Vi lar* [*fangene*$_i$ *henge*   e$_i$]
           ACC   ACC
        we let   the-prisoners   hang

Norwegian accepts both (74) and (75) while in Swedish (75) is excluded.

The difference between these Scandinavian languages can be explained by the hypothesis that *la/lå* has to assign structural case in Danish, may assign it in Norwegian and cannot assign it in Swedish.

The hypothesis that case is never assigned to an infinitival affix in English accounts for the ungrammaticality of the sentences in (76):

(76) a. * *We let* [*hang the prisoners*]
       b. * *We let* [*the prisoners*$_i$ *hang* e$_i$]

This property of English could be attributed to the inexistence of a morphological affix on the infinitive of this language.

The external theta role assigned to an affix can be doubled by an adjoined PP (cf. Zubizarreta 1985):

(77) a. *Nous ferons   lire   ce   livre par les enfants*
            we   will-make read this book by   the children
           'We will have this book read by the children.'

       b. *Nous ferons* [$_{VP}$ *lire   ce livre par les enfants*$_i$]
                                  θ1$_i$ θ2

In the third type of causative structure, the embedded verb is adjoined to the VP that contains it, as in (78b):

(78) a. *Nous faisons* [$_{VP}$ *Jean pleurer*]
            we   make   Jean   cry

       b. *Nous faisons* [$_{VP}$ *pleurer*$_i$ [$_{VP}$ *Jean* t$_i$]]

The verb *pleurer* is intransitive: it assigns neither a theta role nor accusative case to its object. In (78b), the case feature assigned by Tense percolates via *faire* to the verb *pleurer*, as a result of which the latter can assign case to the NP subject of VP.

If we assume that only those verbs that do not assign structural case can pass on a case feature originating in INFL to their complement, we can account for the difference between French, where (78b) is grammatical, and (71a) ungrammatical, and English and the Scandinavian languages, where the situation is the opposite.

The fourth causative structure is illustrated in (79). This structure makes use of a property of T-chains that we have already examined: percolation of the theta role feature. The grammaticality of clitic climbing in (79) implies the presence of a trace in the subject position of VP_2:

(79) a. *Je le fais   lire   aux   enfants.*
              I   it   make   read   to-the   children
              'I make the children read it.'

      b. *Je le$_i$ [$_{VP_1}$ fais [$_{VP_2}$ e$_i$ lire e$_i$] aux enfants]*

However, the dative NP in (79) behaves in several respects as a subject as well. As shown by Kayne, the dative NP binds an anaphoric object in (80b), as does the subject of (80a) and contrary to the complement of *par* in (81):

(80) a. *Pierre   lève   la   main.*
              Pierre   raises   the   hand
              'Pierre raises his hand'

      b. *Je fais lever la main à Pierre.*

(81) a. **La main a été levée par Pierre.*
      b. **Je fais lever la main par Pierre.*

We propose, contrary to Kayne (1975) and Rouveret and Vergnaud (1980), that the dative NP in (79) is not in the subject position of the embedded sentence, but in the indirect object position of the matrix verb.[9] The contrast between (80b) and the sentences in (81) would be due to structural factors only (c-command). We associate with (79) the structure in (82), where the feature corresponding to the external theta role of *lire* percolates along the T-chain in order to be assigned by *faire* to the dative NP in VP_1. (The bold line indicates the path of percolation of the external theta role of *lire*.)

(82)

```
                    IP
              ／          ＼
          NP                VP₁
          |          ／      |      ＼
         je       V        VP₂       PP
               ／  ＼       |      ／    ＼
            leᵢ   fais    VP₂   aux    enfants
                   θ1   ／    ＼
                     NP   V    NP
                     |    |    |
                    eᵢ   lire  eᵢ
                         θ1    θ2
```
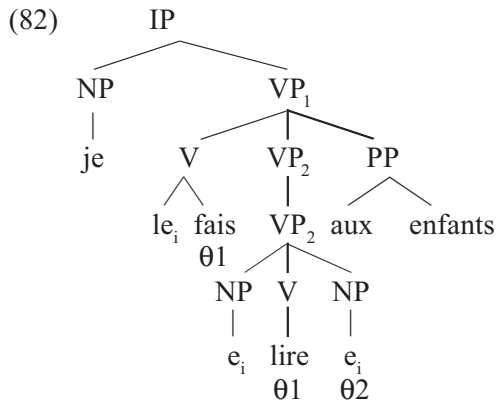
One could ask what blocks percolation of the external theta role of *lire* to the subject position of the matrix clause, while that of *faire* does percolate to the dative NP.[10] This distribution of theta role features is blocked by the constraint in (83):

(83) The argument bearing the theta role agent of X is structurally superior to the other arguments of X.

(83) is independently necessary in order to exclude an interpretation of (84b) which is equivalent to that of (84a), while allowing for sentences such as (58b), where θ_1 is assigned to the object of V:[11,12]

(84) a. *Jean   voit   Marie.*
          Jean   sees   Marie

     b. *Marie   voit   Jean.*
          Marie   sees   Jean

Italian, contrary to French, allows for passivized causative structures:

(85) a. *I   libri   furono   fatti   leggere.*
          the   books   were   made   read-INF
          'Someone made others read the books.'

     b. *I libri*ᵢ [$_{VP_1}$ *furono* [$_{VP_2}$ eᵢ *fatti* [$_{VP_3}$ eᵢ *leggere* eᵢ]]]

(86) a. **Les livres furent fait lire.*
     b. *Les livres*ᵢ [$_{VP_1}$ *furent* [$_{VP_2}$ eᵢ *fait* [$_{VP_3}$ eᵢ *lire* eᵢ]]]

(86) is well-formed syntactically, but ill-formed from the point of view of the interpretation. *Faire / fare* selects a complement that denotes an activity or a process. The French auxiliary *être* needs a complement that denotes an activity. In (86), the selectional restrictions of *faire* are satisfied by VP$_3$, but the ones of *être* are not satisfied by VP$_2$. This is so, because VP$_2$, being a passive VP, does not denote an activity but a state.

In (85), the selectional restrictions of *fare* are again satisfied by VP$_3$. The temporal auxiliary *essere*, contrary to the aspectual auxiliaries *essere* and French *être*, does not impose any selectional restrictions. As a result, all selectional requirements are met in this sentence. In the framework presented here, the contrast between (85) and (86) is parallel to the one between (87) and (88):

(87) a. *I   libri   sono   stati   letti* e$_i$.
        the books   are   been   read-PAST PART
        'The books have been read.'

   b. *I libri* [$_{VP_1}$ *sono* [$_{VP_2}$ *stati* [$_{VP_3}$ *letti* e$_i$]]]

(88) a. **Les   livres   sont   été   lus* e$_i$.
         the   books   are   been   read-PAST PART

   b. *Les livres* [$_{VP_1}$ *sont* [$_{VP_2}$ *été* [$_{VP_3}$ *lus* e$_i$]]]

4.3. Modal verbs

We analyze modal verbs in Italian as auxiliaries on the basis of clitic climbing, long object movement, past participle agreement and selection of *essere* as temporal auxiliary. The last three properties are illustrated in (89), which has been derived by raising of the embedded object:

(89) a. *Maria   è   voluta   tornare   a   casa.*
        Maria   is   wanted-F   return   to   house
        'Maria wanted to go back home.'

   b. *Maria*$_i$ [$_{VP_1}$ *è* [$_{VP_2}$ e$_i$ *voluta* [$_{VP_3}$ e$_i$ *tornare* e$_i$ *a casa*]]]

Rizzi (1982) accounts for the properties of (89) by a restructuring rule that reanalyzes the modal verb and the embedded verb as a single verbal complex. Rizzi rejects the hypothesis that the embedded constituent is a VP on the basis of the contrast in (90):

(90) a. *Mario le   vuole presentare Piero.*
          Mario to-him wants present   Piero
          'Mario wants to present Piero to him.'

    b. *Piero le   vuole essere presentato da Mario.*
          Piero to-him wants be   presented by Mario
          'Piero wants to be presented to him by Mario.'

In (90a) Mario is both the one who wants and the on who presents. In (90b) it is *Piero* who wants, and *Mario* who presents. If *volere* triggers restructuring, this interpretive difference follows from the deep structures in (91):

(91) a. *Mario vuole* [PRO *presentare Piero a lei*]
    b. *Piero vuole* [*Mario presentare* PRO *a lei*]

However, if *volere* is an auxiliary at deep structure, we might expect (90a) and (90b) to be synonymous.

    Turning to English, we come across the same interpretive problem, as shown in (92):

(92) a. *John must/ought to examine his patients more often.*
    b. *John must/ought to be examined more often by the doctor.*

The sentence in (92a) has an interpretation in which John is both the one who has a moral obligation and the one who examines the patients, while in (92b) John has a moral obligation and the doctor examines the patients.

    Nevertheless, modal verbs are generated in INFL in English. From this position they govern VP, not CP. Modals precede the negative operator *not*, which is always the first element of the VP, and, contrary to full verbs, cannot be preceded by the auxiliary *do*:

(93) a. *John must/ought **not** to be examined.*
    b. **John does **not** must/ought to be examined.*

Rizzi's solution to the problem raised by (90), based on the biclausal deep structures in (91), cannot account for the sentences in (92) that raise the same interpretive problem, as it is not possible to associate the latter sentences to biclausal structures. On the other hand, if we analyze modal verbs in Italian as auxiliaries, the independently necessary solution to the interpretive problem raised by the examples in (92) applies to (90) as well.

Our analysis of Italian modal verbs with a root interpretation resembles the one we proposed for causative verbs. In (92a), the structure of which is given in (94), *ought* assigns the external theta role to the subject of the matrix clause and selects a complement denoting an activity. Selection of a particular type of VP, which we qualified as T-role assignment, requires a thematically saturated complement. In order to satisfy this requirement, the embedded verb assigns its external theta role to its affix, as in the causative structures discussed above.

(94) *John ought* [$_{VP}$ to *examine his patients*]
        └── θ1   θ1   θ2

We have argued that a verbal affix can only be interpreted as a pronoun if it receives case. However, the infinitival affix in English does not receive case. If it did, we would expect to find sentences similar to (70) and (74) in English, contrary to fact. Thus we propose that modal verbs, both in English and in Italian, do not assign either a structural case (as does the English causative verb) nor a case feature (as does French *faire*). As a result, the affix of an embedded infinitive under a modal verb, having a theta role but lacking case, is not interpreted as pro, but as PRO.

According to Manzini (1983), PRO functions as an anaphor when its domain is governed. From this follows that root modals define obligatory control structures. The subject, or, in its absence, the external argument of the embedded verb, is controlled by an argument of the higher verb. In (92a), the subject of the matrix clause controls the affixal argument of the complement, as indicated in (95):

(95) *John*$_i$ *ought* [$_{VP}$ *to examine his patients*]
                          θ1$_i$

On the other hand, in (92b), the affix on the past participle has case and consequently it is interpreted as pro. The matrix subject binds the trace in the subject position of VP$_2$, as shown in (96):

(96) *John*$_i$ [$_{VP_1}$ *ought* [$_{VP_2}$ e$_i$ *to be* [$_{VP_3}$ e$_i$ *examined*   e$_i$ *more often*]]]
                                                        θ1   θ2

When the sentences in (92) receive an epistemic interpretation, the modal verb does not assign an external theta role. We assume that it does assign a T-role to the complement VP, thus blocking percolation of the external

theta role to the subject position of the matrix verb. In (97a), which corresponds to the epistemic interpretation of (92a), the subject of the embedded VP raises to the subject position of the matrix clause. In (97b), the external theta role of the verb *examine* is assigned to the affix of the past participle, which makes object raising possible:

(97) a. *John$_i$ ought* [$_{VP}$ e$_i$ *to examine   his patients soon*]
                                  $\theta1$ $\theta2$

     b. *John$_i$ ought* [$_{VP}$ *to be* [$_{VP}$ e$_i$ *examined   e$_i$ more often*]]
                                            $\theta1$ $\theta2$

This means that root modals behave syntactically on a par with *faire*, with a supplementary constraint on the control of the subject or the external argument of the embedded V. Epistemic modals behave like *sembler*.

The Italian examples in (90) can be analyzed in the same way as the English ones in (92). Under the root interpretation of (90a), which is the only felicitous reading from a pragmatic point of view, the modal verb assigns the external theta role to its subject. The affix of the verb embedded under *volere* does not receive case. It is interpreted as PRO and controlled by the subject *Mario*, as in (98):

(98) *Mario$_i$* [*le$_j$ vuole* [$_{VP}$*presentare Piero*] e$_j$]
                            $\theta1$ $\theta1_i$ $\theta2$ $\theta3$

While the affix of a verb embedded under a root modal is interpreted as PRO and has to be bound by an argument of the higher verb, the affix of a verb embedded under a causative verb is case marked and therefore analyzed as pro. Pro, contrary to PRO, has to be free with respect to the arguments of the higher verb. This difference between PRO and pro accounts for the contrast between (99) and (100). In (100), the affix of the embedded verb is identified with two distinct arguments, one via control, and the other via argument doubling, resulting in ungrammaticality:

(99) a. *Mario le   fa   presentare Piero da Gianni.*
          Mario to-him makes present   Piero by Gianni
          'Mario makes Gianni present Piero to him.'

     b. *Mario$_j$* [$_{VP}$ *le$_i$ fa* [$_{VP}$ *presentare Piero* e$_i$ *da Gianni$_k$*]]
                                        $\theta1_k$

(100) a. **Mario le vuole presentare Piero da Gianni.*
　　 b. 　*Mario*$_j$ [$_{VP}$ *le*$_i$ *vuole* [$_{VP}$*presentare Piero* e$_i$ *da Gianni*$_k$]]
　　　　　　　　　　θ1　　　　　　　θ1$_{jk}$

The derivation of (90b) under the root interpretation, illustrated in (101), is similar to that of (92b), illustrated in (96) above:

(101) a. 　*Piero le vuole essere presentato da Mario.*
　　 b. 　*Piero*$_i$ [$_{VP_1}$ *le*$_j$ *vuole* [$_{VP_2}$ e$_i$ *essere* [$_{VP_3}$ e$_i$ *presentato* e$_i$]] e$_j$ *da Mario*]
　　　　　　　　　　　　　　　　　　　　　θ1 θ2 θ3

In French, modal verbs do not allow for clitic climbing and are incompatible with the auxiliary *être*, independently of the embedded verb. This syntactic behavior allows us to identify their complement as a CP. Italian modals can also function in this way. We can account for the non auxiliary derivation of these sentences if we assume that in the unmarked case a modal verb assigns structural case to its complement. CP, a nominal projection, can receive this case, while VP, a verbal projection, cannot (cf. Stowell 1981).

　If the complement of the modal verb is CP, object raising is blocked. If the embedded verb assigns an external theta role to its subject, the object will not be able to use the subject position as an intermediate landing site on its way to the matrix subject position. In case the embedded verb assigns the external theta role to its affix, the object will be able to raise to the subject position of the embedded IP, but not any further. More specifically, it will not be able to use SpecCP as an intermediate landing site: this position qualifies as an A'-position and consequently a trace in this position is interpreted as a variable. After raising via SpecCP to the matrix clause, the object would not bind a trace in an A-position, as we can see in (102b):

(102) a. 　*Jean　veut　　voir　Marie.*
　　　　　Jean　wants　see　Marie

　　 b. **Jean la veut voir.*
　　　　Jean$_j$ *la*$_i$ *veut* [$_{CP}$ e$_i$ [e$_i$ *voir* e$_i$]]
　　　　　　　　　　　　　　θ1　θ2

In Italian, a passive modal can take an unaccusative complement, as shown in (103) (cf. [89b]):

(103) a. 　*Maria è voluta tornare a casa.*
　　 b. 　*Maria*$_i$ [$_{VP_1}$ *è* [$_{VP_2}$ e$_i$ *voluta* [$_{VP_3}$ e$_i$ *tornare* e$_i$ *a casa*]]]
　　　　　　　　　　　　　　　　θ1$_i$　　　　　　　　　　θ1

We have analyzed *volere* as a root modal assigning an external theta role to its subject. However, if *volere* assigned a theta role to the matrix subject in (103), object raising from a position in the embedded VP to the subject position of the matrix clause would violate the theta criterion. Moreover, the auxiliary verb *essere* takes as a complement a CTC, which excludes percolation of a theta role of the embedded verb up to the matrix verb. Thus we analyze *voluta* in (103) as a passive participle, which assigns its external theta role to its own affix, and not as an active participle, which assigns the external theta role to the subject of the matrix clause. The absence of a deep subject makes it possible for the object to use the subject position of VP as intermediate landing site on its way to the matrix clause. We assume as well that *volere* does not assign case. Its affix, interpreted as PRO, is controlled by *Maria*, the subject of the matrix clause. In turn, the affix binds e_i in the subject position of VP_3.

In (104), the passive participle of a causative verb governs a passive infinitive in a raising construction. Both *fare* and *leggere* assign case and an external theta role to their affix, which functions as a pronominal argument. The two affixes have disjoint reference:

(104) a. *I   libri furono   fatti leggere.*
         the books   were made read-INF
         'Someone made others read the books'

   b. *I libri$_i$ [$_{VP_1}$ furono [$_{VP_2}$ e$_i$ fatti [$_{VP_3}$ e$_i$ leggere   e$_i$]]]*
                                      θ1   θ1   θ2

(105), where the passive participle of a modal verb governs a passive infinitive, is ungrammatical:

(105) a. **Maria   è   voluta   vedere.*
          Maria   is   wanted   see

   b. *Maria$_i$ [$_{VP_1}$ è [$_{VP_2}$ e$_i$ voluta [$_{VP_3}$ e$_i$ vedere   e$_i$]]]*
                              θ1$_i$ θ1$_i$ θ2

In (105), *volere* assigns the agent role to its affix, which, as it lacks case, is interpreted as PRO and controlled by the subject of the matrix clause. But contrary to what we see in (103), VP_3 in (105) itself contains an affix without case which has to be controlled. If the affix of *voluta* controls the external argument of VP_3 while being controlled itself by the internal argument of VP_3, we obtain the situation illustrated in (105b), where two theta roles

are assigned to the same argumental chain. We may conclude that (105) is excluded for the same reason as (106):

(106) **Maria$_i$ vede* e$_i$
         Maria   sees

If the affix of *voluta* does not control the PRO affix of *vedere*, the sentence contains an anaphoric PRO without antecedent, violating binding theory.

Editors' note

This chapter first appeared in 1988 in *Lexique* 7, 61–85 as "Les chaînes-T et les verbes auxiliaires". Republished here with kind permission from *Lexique*. Translated into English by Jenny Doetjes. The editors wish to thank Jacqueline Guéron, who helped us in various ways.

Notes

1. A reflexive clitic can remain in the embedded VP, which explains the contrast in (i):

    (i) **Cela fait   [le   laver Jean]*
    (ii) *Cela   fait   [se   laver Jean]*
         that   makes him / himself wash   Jean

    If we assume that clitics are attached to INFL, the ungrammaticality of (i) favors the hypothesis that the complement of a causative verb does not contain an INFL position. The grammaticality of (ii) suggests that in the absence of INFL, reflexive *se* can be analyzed as a morphological affix rather than as a syntactic constituent.

2. This conclusion is too strong. Kayne (1989a) presents arguments in favor of the hypothesis that clitic climbing can take place out of a CP. This would be the case in modal structures in Italian and Middle French. In (ii), representing the structure of (i), a sentence which would be acceptable in Middle French, the object of the embedded verb moves to the INFL position of the matrix clause passing through the intermediate positions INFL and COMP:

    (i) *Jean me veut   photographier.*
          Jean   me wants to photograph
         'Jean wants to take a picture of me.'

    (ii) *Jean* [$_{I'}$ *me*$_i$ [$_{VP1}$ *veut* [$_{CP}$ e$_i$ [$_{IP}$ PRO [$_{I'}$ e$_i$ [$_{VP2}$ *photographier* e$_i$]]]]]]

The hypothesis that the embedded sentence contains an INFL node is supported by the fact that Middle French would have accepted the sentence in (iii), where the adverb *bien* 'well' intervenes between the clitic and the embedded verb, alongside sentences such as (i):

(iii) *Jean veut* [*me bien photographier*]

The hypothesis that a modal verb can take a CP complement in Italian is motivated by the existence of sentences such as (iv), given by Rizzi (1982), where the complement contains a preposed interrogative expression. According to Kayne, (iv) would have the structure in (v):

(iv) *non   ti   saprei   che   dire.*
      not to-you I-would-know what say
      'I would not know what to say to you.'

(v) *non* [$_{I'}$ *ti*$_i$ [$_{VP1}$ *saprei* [$_{CP}$ *che*$_j$ [$_{C'}$ e$_i$ [$_{IP}$ PRO [$_{I'}$ e$_i$ [$_{VP2}$ *dire* e$_j$ e$_i$]]]]]]]]

Thus there are reasons to believe that clitic climbing is possible from a CP complement. That does not mean that it always takes place from a CP.

On the one hand, Rizzi notes that sentences such as (iv) are marginal in Italian.

On the other hand, the CP complement hypothesis does not seem to extend to structures with an auxiliary verb or a causative verb: these do not allow sentences similar to (iii) and (iv). It does not explain either the choice of the auxiliary *essere* in (17b). Finally, it can not be extended to cases such as (9) and (18b), as a full NP could not pass through the nodes INFL and COMP of the embedded CP. According to Chomsky's (1986a) head movement constraint, a constituent has to be a head in order to move to a head position. As INFL and COMP are head positions, this constraint excludes movement of a full NP to the higher clause.

Therefore we maintain that clitic climbing is a diagnostic for the presence of a VP complement, while being aware of the fact that other criteria, such as long movement of a full NP and the choice of auxiliary, remain necessary in case the matrix verb is a modal.

3. See Bennis (1986) for cases of IPs without subject.

4. For further criticism of parallel structures based on binding theory, see Hulk (1985).

5. Emonds (1985) gives another criterion to distinguish auxiliaries, which he calls 'grammatical' verbs: these verbs constitute a closed class.

6. An exception that we do not yet understand is formed by cases where the embedded verb is reflexive, as in (i):

    (i) *Jean s'est   rasé   pendant des heures.*
        Jean himself-is shaved for   hours
        'Jean shaved for hours.'

7. For a discussion of (58a), see Pollock (1983), for (58b), see Hulk and Vermeulen (1987).

8. Experiencer verbs are discussed in Belletti and Rizzi (1988) and in Guéron (1985a).

9. This hypothesis was proposed in Milner (1982).

9. This question was raised by Richard Kayne (p.c.).

10. We have associated the theta role 'goal' to the PP in (51) and an agent role to the PP in (82). This implies that there is no biunique relation between a structural position and a type of theta role. This conclusion is independently reached on the basis of the existence of sentences such as (58b), where the direct object position of V, normally associated with the theme role, is associated with the agent role.

11. The sentence in (25), repeated here in (i), is problematic in this respect:

(i)   *Il$_j$ me le lui$_j$ a fait donner.*

In order for the indirect object *lui$_j$* to be coreferent with the matrix subject, it needs to be in a different binding domain than the one of *il$_j$*. Consequently, the clitic *me* has to be interpreted as the subject of the embedded VP. The coreference relation between *il* and *lui* is in fact difficult or impossible in the absence of the clitic *me*, as in (ii), or if *me* in (i) is interpreted as an 'ethical' dative:

(ii)   ?**Il$_j$ le lui$_j$ a fait donner.*

At the same time, *me* cannot bind a subject position of VP: a structural subject would block long movement of the direct object in (iii), as it does in (iv):

(iii)   *Il$_j$ me$_k$ le$_i$ lui$_j$ a fait [$_{VP}$ e$_k$ donner e$_i$ e$_j$]*

(iv) **Marie lui$_i$ laisse [Jean téléphoner e$_i$]*
       Marie to him/her lets   Jean   call

Me cannot bind an intermediate indirect object position either, as this position is associated with the indirect object *lui*, which has moved to the matrix clause. This is illustrated in (v):

(v)   *Il$_j$ me$_k$ le$_i$ lui$_j$ a [$_{VP_2}$ e$_i$ fait [$_{VP3}$ e$_i$ donner   e$_i$ e$_j$] e$_j$]*
                                                        θ1   θ2   θ3

This leads to the following paradox: we have to identify *me* as the subject of VP$_3$, but it cannot bind a structural subject position. We can resolve this paradox in two different ways: we could eliminate opacity from the theory of syntactic movement in favor of the locality constraints on proper movement (cf. the analysis of [30] above), or we could define binding domains in thematic terms. We propose (vi), in the spirit of Giorgi (1987), and (vii):

(vi)   A pronominal/ anaphor is free/bound in the minimal CTC containing it.

(vii) XP is a CTC if all of the arguments of X are identified within the XP, while respecting the Empty Category Principle (ECP).

The grammaticality of (v) implies that e$_j$ is identified as a pronominal. Therefore, VP$_3$ has to be a CTC. We propose that the direct object e$_i$ is identified in VP$_3$ by the verb *donner* as it is coindexed with the subject of VP$_3$. e$_j$ is identi-

fied by the trace in VP_2. As V_2 T-marks VP_3, this identification is compatible with the ECP.

In turn, the pronominal affix on the embedded infinitive would be identified at a distance by the clitic *me* in VP_1. This identification is compatible with the ECP if we assume that the identification of pro by a dative of the first or second person is not constrained by locality conditions.

XP being a CTC, e_j can function as a pronominal while being coreferential with *lui$_j$* in the matrix clause. The inacceptability of (ii) follows from the fact that in the absence of the clitic *me*, the affix on the verb is not identified. The minimal CTC containing e_j would then be the matrix clause, in which the chain containing *lui* and e_j would have to be free.

Clitics in Romance and the study of head-movement

1. Introduction

There are two different theories of long clitic movement in sentences such as (1). Either the clitic moves directly to *avoir* or it moves stepwise, first to *lu* and then to *avoir*.

(1) a. *Jean l' a   lu*
         Jean it has read

     b. *Jean a le lu*
         I   *avoir   lire*   clitic

The first option is consistent with the Head Movement Constraint (HMC) in (2) (cf. Travis 1984) but inconsistent with the freezing principle in (3) (cf. Ross 1967; Culicover and Wexler 1980), while the reverse is true for the second option.

(2) *Head movement constraint*
     A head may only be moved to the head that governs it.

(3) *Freezing principle*
     If α is adjoined to β, it may not move independently from β.

So, we have a question here: is the HMC correct or the freezing principle? I shall reject the HMC and argue that clitics move in one swoop to their final position (contra Kayne 1989c). For one thing, in the absence of the freezing principle, the HMC cannot account for the impossibility of sentences where the clitic climbs out of a tensed clause:

(4) **Li   voglio che Gianni ha   letti*
      them I-want that Gianni has   read

Also, without the freezing principle, we do not expect that the presence of *che* blocks stepwise movement of the clitic out of the tensed clause. What

we need is a theory of clitic climbing based on the freezing principle and the notion of barrier (Chomsky 1986a): the trace of the clitic has to be properly governed by the clitic, where government between α and β holds if they are not separated by a barrier.

The following sections constitute an attempt to provide an account of the facts presented above, in which no use is made of successive cyclic movement. As in Guéron and Hoekstra (1988), the analysis is based on the notion of auxiliary and involves direct movement of the clitic to the matrix INFL. However, the theory of Guéron and Hoekstra is further developed in such a way that it can account for the correlation between the following three differences between Italian and French in a principled way:

I.   Italian allows for clitic climbing with modal verbs and certain verbs of motion, while French does not, as shown in (5a,b);
II.   clitics follow the infinitive in Italian, while they precede the infinitive in French, see (5c,d); and
III.   Italian is a null subject language while French is not, as illustrated in (5c,e).

(5)   a. *lo voglio   leggere*
          it I-want   read
       b. **je le veux   lire*
          I   it want read
       c. *voglio leggerlo*
       d. *je veux le lire*
       e. **veux le lire*

2. Auxiliary verbs

The key to my explanation is the notion of auxiliary verb. The idea is that Italian verbs allowing clitic climbing can either be main verbs or auxiliary verbs. In the former case, clitic climbing is impossible, in the latter it is required, i.e. in (6a) we have a main verb, in (6b) an auxiliary.

(6)   a. *Piero   verrà   a parlar**ti** di   Gianni*
          Piero   will-come   to speak-you about Gianni

       b. *Piero   **ti** verrà   a parlare di   Gianni*
          Pierio   you   will-come to speak   about Gianni
          'Piero will come to speak to you about Gianni.'

This notional difference between AUX and verb doesn't mean anything, unless we develop some content for it. The essential property of an auxiliary verb is that it does not denote an event in itself, but rather modifies an event. In order to formally express this, we will represent main verbs with an *e*-role, where *e* stands for event. We may think of it along the following lines: a verb, e.g. *kill* denotes a particular relation between two individuals. The referent of an expression like *John kill Bill* is an event of John killing Bill. Tense anchors this event to a specific point on the time axis. This gives us the representation (7b) of (7a):

(7)   a.   *John killed Bill*
        b.   PAST [*kill* (*John*, *Bill*)]
               |_____ *<e>*
               |____|

We make two further assumptions: a. Tense must be linked to a unique *e*; and b. linking is local, i.e. there may be no barrier between T and *e*.

An auxiliary verb then is a verb without an *e*-role. From this it follows that the auxiliary verb must always be accompanied by a main verb. So, a sentence like *voglio leggere il libro* has the following two representations:

(8)   a.   PRES [*volere*, (*io*, (*leggere* (*io*, *il libro*)))]
            |_____ <e>
            |____|

        b.   PRES [*volere*, (*io*, (*leggere*(*io*, *il libro*)))]
              |_____ <e>
              |_____|

where in (8b) the e-role is the role of *leggere*, not of *volere*, i.e. the matrix tense is satisfied by the e-role of the embedded verb. In (8a), on the other hand *volere* has a main verb status, so that the matrix tense is satisfied by the *e*-role of *volere*. This means that there must be an independent tense in the complement to satisfy the e-role of *leggere*, i.e. even if there is not a morphologically realized tense, there is an abstract tense, which, like the subject of *leggere* is controlled by the matrix subject, is controlled by the matrix tense. Hence, even though the two structures in (8) are not different at the surface level, they are different in a fundamental way. The structures also have slightly different meanings, which I may go into if time permits.[1]

3. Clitic placement

Having established this notion of auxiliary, we may now move on to stipulate the position of clitics. This is done in (9).

(9)   Attach a clitic to the Tense that licenses its governor.

So, if in (8) the object of *leggere* is a clitic instead of a full NP as *il libro*, it will attach in the embedded clause in (8a), but in the matrix clause in (8b). This is what we wanted: clitic climbing is obligatory where it is possible. There is in fact no ambiguity in this respect in the grammar, although there is one in the surface string.

Three properties of clitic climbing are immediately explained. In the first place, clitic separation cannot occur, as there is no optionality with respect to climbing. If we are dealing with an auxiliary, all clitics must climb, while if we are dealing with a main verb, none of them can. This is illustrated in (10):

(10) a. *Gianni ve-li   vuole   mostrare*
          Gianni to-you-them wants   show

      b. *Gianni vuole mostrarve-li*

      c. * *Gianni li vuole mostrarvi*

      d. * *Gianni vi vuole mostrarli*
          'Gianni wants to show them to you.'

In the second place, clitic climbing could never occur with a tensed complement, as the overt presence of tense in the complement in conjunction with (9) requires to clitics to be attached in the embedded clause, i.e. no auxiliary could ever take a tensed complement (see [4] above). In the third place, if subject control is mediated by tense control, the restriction on which verbs can allow clitic climbing follows. I cannot possible motivate this part of the analysis in the short amount of time. A further property that can be explained is the blocking effect of negation, as illustrated in (11):

(11) a. *Gianni non li   vuole   vedere*
          Gianni NEG them wants   see

      b. *Gianni vuole non vederli*

      c. * *Gianni li vuole non vedere*

I return to the blocking effect of negation later.

4. Verb raising

At this point it may seem that I am not going to deliver what I set out to: that the difference between Italian type systems and French type systems is located in a difference in functional categories. I might stop here and say that in French *vouloir* etc. can only be used as main verbs, but clearly, that would be very undesirable: why would that be true, and how is this related to the phenomena that we earlier argued to correlate with clitic climbing, viz. pro-drop and different clitic position with infinitives? So I should argue now that French could not have verbs like *volere* that are ambiguous with respect to the main/auxiliary distinction.

I now want to argue that the crucial factor distinguishing these systems has to do with verb raising, i.e. attraction of the verb by a functional position external to the verb phrase. Consider the following examples:

(12) a. **non più/ancora/mai **viaggiare** (è un cattivo segno)*
          *ne   plus   **voyager**   (est un mauvais signe)*
          not   more/still   travel   (is a bad sign)

    b. *non **viaggiare** più/ancora (è un cattivo segno)*

    c. **ne **voyager** plus (est un mauvais signe)*

(13) a. (*i   bambini hanno promesso di*) **partire** *tutti*
          (*les   enfants ont   promis   de*) **partir**   *tous*
          (the   kids   have   promised to)   leave   all

    b. **(i bambini hanno promesso di) tutti **partire***
          (*les enfants ont promis de*) *tous **partir***

In order to interpret these phenomena I will start with the frame in (14). In this frame we distinguish between two VP external positions, P_1 and P_2. This more elaborate structure is motivated in a paper by Pollock (1989).

(14) (NP) non/ne P_1 più/plus P_2 ADV/Q [$_{VP}$ Verb …
          └——————┘└——————┘
              a   b

The verb may move to P_2, indicated by b, or further to P_1, indicated by a. We see that in (12), non-movement to P_1 (i.e. absence of a) yields un-grammaticality, while it is permitted in French. Further movement to P_i, is ok in Italian, but ungrammatical in French. So, we conclude that step a is

obligatory in Italian, but impossible in French. In cases where it is unclear whether a has in fact been taken as in (13a), we therefore will assume that it has been taken in Italian, but not in French. This explains why not taking b, permitted in French, but not in Italian, as (13b) shows, gives the pattern of grammaticality in (13).

What are the positions P_2 and P_1? If we look at a verb form like:

(15)   *consider-av-ono*
        'They considered.'

we can distinguish three morphemes: the verbal stem, the tense suffix and the agreement affix. We will assume that this complex form is the result of moving the verbal stem to affixes that are independently generated. Assuming further that the order of affixes mirrors the hierarchical relations, as is advocated by Baker (1985), we have reason to assume that P_1 is the position of AGR, while P_2 is the position of Tense, so that (14) can be replaced by:

(16)   (NP) NEG AGR NEG Tense ADV [$_{VP}$ V ...]

So, in Italian verbs always move up to AGR, whereas in French they may not if there is no overt AGR. This movement will be called verb raising. We can now state the following difference between French and Italian:

(17)   verb raising
        Italian always   French only with overt agreement

Simplifying somewhat, the difference can be depicted as in (18), where we now will say that XP is a barrier for verb raising in French, but not in Italian.

(18)   I   [$_{XP}$ V ...]
                                    Obligatory in Italian
                                    Excluded in French

5. Tense-linking with French auxiliaries

We are now in a position to show that French couldn't possibly have *vouloir* etc. with an auxiliary status like their Italian cognates. Recall that we assumed that tense linking was subject to the requirement that no barrier intervenes between the tense and the verb whose *e*-role must be bound by it. We repeat this in (19):

(19)   Tense is linked to e under government

Next imagine that *vouloir* was an auxiliary, in the sense that it does not have an *e*-position, and consider a representation like the one in (20):

(20)   Tense [*vouloir* [$_{IP}$ I [$_{XP}$ V…]]]
       └─────────────── <e>

We earlier assumed that Tense cannot be vacuous, i.e. it must be related to an *e*-position. *Vouloir* having no *e*-position, the only available *e*-position is the one in the embedded verb. However, the government condition on tense-linking is not met in (20), XP being a barrier. Hence, even if French had an auxiliary *vouloir*, it could never yield a well formed sentence. So, in order for the embedded verb's *e*-position to be licensed in French, there must be an independent tense in the complement of *vouloir*, giving a representation like (21):

(21)   Tense [*vouloir* [$_{IP}$ I [$_{XP}$ Tense [V…]]]]
       └──── <e>   └── <e>

In Italian, on the other hand, due to verb raising, the embedded verb is no longer separated from the matrix T by an intervening barrier, as shown in (22):

(22)   Tense [*volere* [$_{IP}$ V [$_{XP}$ t$_V$ …]]]
       └────────── <e>

Hence, the option of verb raising provides for the structural condition on tense linking through an auxiliary verb in Italian, but not in French. Still assuming (9) to be the correct statement for clitic attachment, the absence of *climbing in French follows from the absence of verb raising*. The only way in which a clitic could raise in French is if an auxiliary verb selects a

VP complement. This is the case for *avoir*, which then indeed triggers clitic climbing, as we saw in (1), and for French *faire*. It would take us too far to go into a discussion of *faire* at this point.

6. INF-clitic vs. clitic-INF

We now focus our attention on the question of how to correlate the difference in order of infinitive and clitic to the verb raising difference. In effect, that is rather easy now that we have seen the relevant structural difference. In Italian, the order INF-clitic is found if there is no clitic climbing. In that case, the infinitive is licensed by an independent tense. Still assuming (9) as the correct description of the clitic position, we get the result in (23):

(23) $[_{IP}$ AGR [Tense [V clitic …]]]

In Italian V moves to I, yielding the order V-clitic, whereas in French it doesn't, giving clitic-V, as required. There is no need, therefore, to assume that clitics right adjoin to V in Italian but left in French, as the position of the clitics follows from an independent difference, viz. absence vs. presence of verb raising.

7. Pro-drop

Finally, we address the next correlation: pro-drop. The standard view is that the pronominal subject drops in a configuration like in (24):

(24) NP   AGR   Tense   VP
      α pers   α pers
      β number   β number

The features under NP must be borne by a lexical pronoun if AGR is weak, but may be left empty if AGR is strong.

   As a non-overt category is not visible, its position is hard to determine directly. It seems reasonable, however, that subjects start out in VP, i.e. they are arguments of lexical verbs. Let us further assume that dropped pronouns are just instances of empty categories, like traces of movement, that must have an antecedent that governs it. We may then think of AGR as

the 'antecedent' or identifier of an empty subject. Now consider the structure in (25):

(25) $[_{IP}$ AGR $[_{XP}$ *ec* V …

Now, even if AGR qualifies as a suitable identifier for the *ec* in (25), it would fail to meet the locality condition on identification, i.e. the requirement that no governor intervenes between the identifier and the *ec*, unless XP is not a barrier. Assuming now that the barrier XP is voided by verb raising, then AGR does govern pro, and hence, if it is specific enough, it may antecedent-govern, and hence license pro. The generalization that pro-drop is found in verb raising languages only, is at least descriptively correct, as far as I know. If this is the correct view, the possibility of pro-drop reduces to verb raising again.

8. Blocking negation

We saw earlier (cf. [11]) that the presence of negation in the complement of verbs that allow clitic climbing in principle, blocks clitic climbing. It was suggested that negation imposes a barrier which prevents the clitic from climbing. Note that there is a straightforward alternative to this account, if we assume that negation requires the presence of an independent tense. Note that something along those lines is required to exclude sentences like (26b). We shall assume therefore that negation selects a tensed domain. The presence of a tense in the complement excludes clitic climbing, as we already saw, differently, it modifies a tense.

(26) a. *je   ne   l'ai   pas   vu*
       I   NE   it-have   not   seen

   b. **je l'ai ne pas vu*

In the same vein, the ungrammaticality of (27b) is accounted for. Note that *avere* is a temporal auxiliary, i.e. it forms part of a complex tense, or put differently, it modifies tense. As we see in (27a), a single sentence can have two occurrences of auxiliary *avere*, which bears out our claim that the complement of *dovere* etc. may take an independent tense, each of which is modified by *avere* in (27a). The clitic object of *finire* remains in the embedded domain, which is consistent with what we said earlier (cf. [9]). As (27b) shows, under these circumstances clitic climbing is forbidden, again

as expected. (27c) shows that clitic climbing is possible from the comple-
ment of *dovere* if only a matrix *avere* is present.

(27) a. *Mario avrebbe   dovuto averlo finito*
          Mario   should-have   had   have-it finished

      b. **Mario lo avrebbe dovuto aver finito*

      c. *Mario lo avrebbe   dovuto finire*
          Mario   it   should-have   had   finish
          'Mario should have had it finished.'

All this follows from our analysis.

9. Summary

There are in effect more properties that follow from this analysis, but it is
time to round up what we have so far. We wanted to seek an explanation for
the correlation between pro-drop, clitic climbing and INF-clitic order. Italian
type systems have these properties, while French type systems don't. We
have argued that the correlation can be explained in terms of yet a further
difference that correlates with this, the absence vs. presence of verb raising.

The properties of clitic climbing follow from the assumption that in
Italian-type systems like *volere* can function as auxiliary verbs in a specific
sense, namely that they do not denote an independent event, and hence
allow the tense of their clause to license a complement verb which does
denote an event. The notion of tense-linking accounted for the properties of
clitic climbing that we have observed: the incompatibility with embedded
negation, as well as embedded temporal auxiliaries, the ban on clitic sepa-
ration, the requirement that the complement be infinitival, as well as the
restriction to particular kinds of matrix verbs.

The fact that French and Italian differ at this point is the result of a con-
spiracy: the rule of verb raising creates the structural possibility for having
verbs with the properties of *volere*. The rule of verb raising itself does not
have anything to do with the lexical system. As a matter of fact, we may
assume that French-type and Italian type languages do not differ with
respect to their lexicon, i.e. that the variation that we discussed is indeed
totally related to the system of functional projections.

Apart from supporting this claim about the role of functional categories
in the account of linguistic variation, this talk was also intended to show

the fruitfulness of detailed comparison of closely related languages with respect to the formulation of general principles of grammar. Our discussion has shown that the phenomena can be analyzed in a way consistent with the freezing principle and the ECP, but that the HMC must be rejected. The main difference between my account and Kayne's at this very general level is that while his makes extensive use of successive cyclic movement, i.e. a succession of short steps to bridge a long distance, my analysis involves a long movement under the condition that intermediate barriers are absent.

Editors' note

This chapter is based on a lecture which Hoekstra gave in Oslo in 1989. The sections 2–9 correspond to sections 9–16 of the original. The introduction is our summary, here and there using Hoekstra's own words, of the first eight sections which constitute for the most part a very general introduction into the relevant domains of government-binding theory. Editors of this chapter: Jenny Doetjes and Rint Sybesma.

Note

1. Editor's note: This point is not further developed in the written version of the lecture. See, for instance, Napoli (1981) for examples.

ECP, tense and islands

1. Standard ECP on *wh*-islands

Wh-islands display the familiar ECP-range: extraction of subjects and adjuncts are ungrammatical, while object extractions are okay, yielding at best a subjacency violation.[1] Apart from these *wh*-islands, there are other so-called weak islands[2] which have been studied more recently, viz. factive islands and negative islands. Judgments on these are rather unstable, to judge from the literature, but broadly speaking, factive islands pattern with *wh*-islands, while negative islands pattern slightly differently in that subjects and objects behave identical, while adjunct extraction yields a strong, ECP-type ungrammaticality.

Let us inspect *wh*-islands first, to see briefly how these are standardly handled in the Barriers framework:

(1)   a. ?*What do you wonder whether John bought* t?
       b. **Who do you wonder whether* t *bought this novel*?
       c. **How do you wonder whether John solved the problem* t?

The pattern in (1) motivates a disjunction in the ECP: a trace must be identified either through head government or through antecedent government. As subject and adjunct are not head governed, they must be antecedent governed, which is not the case in (1) as CP constitutes a barrier. CP can be taken to be a barrier either in Chomsky's (1986a) sense of inheriting barrier status from IP, or in terms of Rizzi's (1990) relativized minimality. The object trace is not antecedent governed, but it is properly head governed. This line of explanation still holds under Rizzi's (1990) revision of Chomsky's barriers model, be it in slightly different terms: Rizzi formulates a conjunctive ECP, consisting of a head government requirement as a formal condition on the licensing of empty categories, and an identification requirement. The latter also consists of a disjunction, as empty categories may be identified either by antecedent government or by theta government. Under this version, subject extraction is explained in terms of lack of head government, while adjunct extraction is barred by lack of antecedent government. In this way, Rizzi can account for the distinction between subject extraction and adjunct extraction in (2):

(2)   a.   *What do you think that John bought* t?
      b.   **Who do you think that bought this novel?*
      c.   *How do you think that John solved the problem* t?

If (1b)–(1c) were both out because of lack of antecedent government, an additional factor should be involved to explain the difference between (2b) and (2c), where subjects display the *that*-trace phenomenon, but adjuncts do not.

2. *That*-trace phenomena at S-structure and at LF

The *that*-trace phenomenon has long been puzzling several linguists, because of the strange variation found in languages. First, in several languages subject extraction across an overt complementizer does not yield any violation. Different cases should be distinguished:

(3)   a.   *Wie denk   je   dat* t *het boek gekocht heeft?*   Dutch
           who think   you that   the book bought has

      b.   *Qui crois-tu   qui a   acheté ce   livre?*   French
           who think-you   QUI has bought this book

      c.   *Chi pensi   che verrá?*   Italian
           who think-you that he-will-see

(4)   a. **Je n' ai   exigé   que personne soit   arrêté.*
           I   NE have demanded QUE no-one   is.SUBJ arrested

      b. **non pretendo che nessuno ti   arresti.*   (wide scope *)
           not I-claim   that no-one   you   arrests.SUBJ

      c.   *I don't think that anyone will be arrested.*

      d. **Who thinks that who is in love with him.*

(3) shows how *that*-trace violations at S-structure occur in Dutch, French and Italian, be it with slightly different properties: in Dutch there appear to be no restrictions (but see section 5); in French, the *que→qui* rule must apply, while extraction in Italian takes place from postverbal position, as Rizzi (1982) has shown. In English, no S-structure *that*-trace violations are permitted, if we leave relative clauses out of consideration. Surprising, then, is the picture shown in (4), where French and Italian LF-created *that*-trace

yields an ungrammatical result, where English apparently does not meet with any difficulty. The contrast between (2b) and (4c) is therefore somewhat embarrassing, certainly if we want to maintain that there may be no specific S-structure conditions, unless they derive from conditions on the interfaces (cf. Chomsky 1993). It is then totally obscure why S-structure presence of *that* in English should have an effect on S-structure movement, but not on LF-movement. Such a conclusion would even not be sufficient from an empirical point of view, as shown by the ungrammaticality of (4d), which shows that LF *wh*-movement in a case of multiple interrogation in English is sensitive to the presence of *that*.

3. Negative and factive islands[3]

The grammaticality of (4c) brings us to the discrepancy between negative islands and factive islands mentioned at the beginning. Let me start by illustrating these:

(5)   the negative island
  a. ? *Which book don't you believe that I bought* t?
  b. ? *Who don't you believe* t *would buy this book?*
  c. * *How don't you believe* (*that*) *John solved this problem* t?

(6)   the factive island
  a. ? *Which book do you regret that I bought* t?
  b. * *Who do you regret (that)* t *bought this book?*
  c. * *How do you regret that John solved this problem* t?

The fact that factive islands yield an ungrammatical result in the case of subject extraction should not come as a surprise, at least not in English, as deletion of *that* is impossible with factive verbs, but appears to be a condition on subject extraction. However, as we saw in (3), French and Dutch do allow *that*-trace occurrences, but they nevertheless observe the factive island condition, in French even when the necessary *que→qui* rule applies:

(7) a. * *Wie betreur je   dat het boek gekocht heeft?*
         who regret   you   that the book bought   has

  b. * *Qui regrettes-tu qui soit   venu?*
        who   regret-you   QUI is.SUBJ   come

Equally surprising is the fact that subject extraction in English Negative islands is grammatical. To see this, let us start considering the French contrast in (8):

(8)   a. *l'homme que je crois qu' aime Marie.*
         the man that I think that loves Marie
         'The man who I think that Marie loves.'

      b. ?*l'homme que je ne crois pas que Marie aime* t?
         the man that I NE think not that Marie loves

      c. *l'homme que je ne crois pas qu' aime Marie?*
         the man that I NE think not that loves Marie

      d. *l'homme que je ne crois pas qu'/qui est/soit arrivé.*
         the man that I NE think not QUE/QUI is/is.SUBJ arrived

(8a) shows stylistic inversion, possible if the local COMP features a *wh*-trace, as Kayne and Pollock (1978) have shown. (8b) illustrates the negative island effect on object extraction, yielding a particular type of weak ill-formedness to which we return in section 9. The interesting case is (8c), which shows that no stylistic inversion is allowed in the case of extraction across a negative island. One way to interpret this, for which we will see the reason as we proceed, is that there is no movement through the local COMP, thus not creating the environment to license stylistic inversion. We might be led to the expectation, then, that subject extraction in French across a negative island is likewise impossible, in accordance with the facts, as (8d) shows. Let us formulate this by saying that in a negative island context, SpecCP is unavailable: therefore, object extraction cannot proceed through this position, hence (8c), and subject extraction does not create the environment for *que→qui*, hence (8d).

If this reasoning is correct, (5b) becomes a problem for Rizzi's account of English subject extraction. Let us consider his proposal, which in effect is modeled after French: French *qui* is analyzed as containing Agr, and it is this Agr that satisfies the head government requirement on the subject trace. Agr itself receives its features under spec-head agreement with an element in the specifier of C. The difference between French and English is that C+Agr in English is phonologically empty, i.e. incompatible with *that*. However, if our conclusion about (8d) is correct, there should be no step through the SpecCP in English either, and Agr would not be identified, and hence not be able to head govern the subject trace. The blockage in

French doesn't seem to be a language particular fact of French, as the following data from West Flemish illustrate:[4]

(9) a. *de man dat Pol peinst dat/die zou   komen*
         the man QUE Pol thinks QUE/QUI would come

     b. *de man dat Pol niet peinst dat/*die   zou   komen*
         the man QUE Pol not   thinks QUE/*QUI would come

In West Flemish we find a phenomenon which is in many respects similar to the French *que*/*qui*-phenomenon, i.e. we optionally have a local agreeing COMP if the subject is extracted. We shall come back to the reason why this is optional in West Flemish, but obligatory in French. What (9b) shows is the same as we found in (8c) and (8d): in the presence of a negative island, we do not find an agreeing COMP.

4. Head government

As Law (1991) observes, Rizzi's hypothesis concerning Agr as head licenser is conceptually unattractive, as it leads us to accept the idea that functional categories may function as such, on a par with lexical categories. Such a position is highly unattractive, as it appears to be the case that most lexical phrases may not leave their functional environment: NPs stay with their D, IPs stay with their C etc. This would readily be explained if we assume that functional categories may not formally license their complements.

   This more restricted view on head government meets with two problems: the first concerns VP-preposing and deletion in English, the second involves Rizzi's claim concerning Agr. In this section I will argue that the VP-phenomena in English do not warrant the conclusion that I (a functional category) may act as proper head governor. If I succeed in that, Rizzi's claim concerning Agr becomes rather isolated, and unattractive from a theoretical point of view.

   The relevant phenomenon with respect to I is illustrated in (10):

(10) a. *and* [*win the race*] *I wonder whether he will* t
      b. *(John wanted to buy this book and) I think that he may* e

The leading assumption, which I want to call into question, is that the modals in English are to be categorized as I, rather than V. If they are V,

then the empty categories in (10) are head governed by a lexical category, in accordance with the more narrow view on head government. On the basis of a crosslinguistic comparison, the assumption seems ill-motivated: the counterparts of the English modals in other languages, like Dutch and French, do not appear to belong to a category different from V. There are two reasons why one seems to be lead to the conclusion that the situation in English is different: the complement of the modals is a VP, and the modals behave differently with respect to V-placement. Neither characterization seems correct, though. First, why should the complement of English modals not be more than VP? The fact that the verb appears in its bare stem form can hardly be used as an argument: the infinitival morpheme of other languages happens to not have a formal manifestation. The fact that modals appear in a different position from other verbs relates to the fact that the modal verbs happen to lack other than finite forms. Given this, their position is identical to the finite forms of the auxiliaries *have*, *be* and *do*. In this respect, the situation regarding the modals and auxiliaries in English is not different from the situation in French, as Pollock (1989) shows. The residual property, then, is that English modals only have finite forms, but that fact in itself is not explained by calling them INFL elements. The conclusion that English modals originate in VP is consonant with the claim made in Kayne (1989b). Kayne also discusses the example in (11), about which he suggests that *not* might be considered an adverb, like French *pas*, and not a negative head.

(11)   *he couldn't not go*

However, on closer inspection it would appear that such a position leads to the wrong expectation that we might find English sentences of the type in (12), with *not* as adverb on VP, like *never*, and hence not triggering do-support:

(12)   **John not goes*   (cf. *John never goes*)

An alternative conclusion suggests itself, viz. that *not* is a negative head, and hence that the complement of *could* in (11) involves more than just a bare VP, but rather some functional structure dominating a VP, e.g. IP, or maybe even CP. If that is correct, there is little motivation for the idea that modals are INFL-elements. I therefore conclude that they are of the category V, and hence, that the constructions in (10) do not support the conclusion that functional categories may act as head governors.

Law (1991) draws the same conclusion, and provides an alternative to the licensing of empty subjects by C and Agr. In short his claim is that traces of extracted subjects are licensed at LF by movement of the verb to the C-position, which he refers to as abstract Verb Second (V2). He reasons that complementizers do not constitute legitimate LF-objects; rather, they are expletives that must be removed at LF in order to avoid a violation of the principle of full interpretation. Agreement on COMP is then a trigger for abstract V2, as these Agr-features may not disappear. Abstract V2 substitutes for the deleted expletive.

   Although quite attractive, the proposal cannot be maintained without further qualification, as otherwise no *that*-trace violations are ever expected. Why, we should ask, does the *that*-trace phenomenon hold in English? Law appeals to the principle of last resort of Chomsky (1993), which says that operations only apply when they are necessary to yield a legitimate LF-object. This is still insufficient, as abstract V2 would help create a possible outcome for English *that*-trace sentences. We have to further add Chomsky's other functional principle, i.e. the principle of greed, which says that X never moves so as to help Y. Abstract V2 in English would only take place to license the subject trace, but the verb's greed refuses to come to the subject's rescue. The same holds for French, if we have the complementizer *que*. *Qui*, on the other hand, legitimizes abstract V2. In Dutch and other V2 languages *that*-trace constructions are permitted, even in the absence of overt COMP-agreement. In order to explain this, Law postulates that in these languages abstract V2 applies for the same reason why overt V2 applies in root contexts.

   Although these assumptions do not increase the appeal of Law's proposal, it has the advantage that it makes us aware of potential linguistic variation in the domain of abstract V2 in function of differences seen in overt syntax. I shall demonstrate that such is indeed required. Before proceeding to that, I would like to point out that Law does not comment on the absence of a violation if there is no overt *that*: LF apparently must be able to distinguish between S-structure absence of *that*, and absence of *that* at LF as a result of expletive removal. We already had reason to expect such a difference.

   Strong motivation for Law's approach derives from the fact that the rule of Embedded Verb Second (EV2) which he postulates at LF, occurs overtly in the syntax in various Germanic languages, a fact which Law apparently did not see the significance of. Such EV2 phenomena found in German are of the type illustrated in (13b):

(13) a. *ich denke dass Johan es getan hat*
          I   think   that   John   it   done   has

     b. *ich denke Johan hat   es getan*
          I   think   John   has   it   done

Two aspects of this phenomenon are particularly revealing: first, EV2 is not always allowed; secondly, where it is not allowed, the *that*-trace constellation yields strongly degraded results. The correlation constitutes very strong evidence for the partial correctness of Law's theory of abstract V2. Before investigating this matter in greater detail, I would like to end this section with the conclusion that the abstract V2 analysis removes the last piece of evidence in favor of the idea that functional categories may function as proper head governors.

5. Embedded verb second in Germanic

Vikner (1990) draws attention to the fact that the distribution of EV2 may depend on the semantics of the matrix predicate. Penner and Bader (1991) report on an extensive study they have done of the distribution of EV2 in the Bernese dialect of German. They classify verbs taking sentential complements in terms of two features, [factive] and [assertive]. Simplifying their exposition somewhat, the chart in (14) gives an overview of the results:

(14) | | factive | assertive | EV2 | example verbs |
|---|---|---|---|---|
| a. | + | − | − | *regret, teach* |
| b. | − | + | + | *believe, say, agree* |
| c. | − | − | ± | *doubt, permit, forbid* |
| d. | ± | + | +* | *understand, know* |

Categories (14a), henceforth *regret*-type, and (14b), henceforth *say*-type, are straightforward. The two other categories are subject to further comments: category (14c) allows EV2 only if the complement is in the subjunctive; category (14d) allows EV2 under the condition that there is no matrix negation, and that the embedded clause in not in the subjunctive.

They further note that EV2 is excluded if there is a *wh*-phrase in the complement SpecCP, as is illustrated in (15):

(15) a. *I ha-n- im   gseit, dass er   daas so   söu   mache.*
     I have- him   told   that   he   this   thus should do

b. *I ha-n- im   gseit, er   söu   daas so   mache.*
   I have him   told   he   should this   thus   do

c. **I ha-n- im   gseit wie söu   er   daas mache.*
   I have him   told   how should he   this   do

d. *I ha-n- im   gseit wie dass er   daas söu   mache.*
   I have him   told   how that   he   this   should do

e. * ......[_{CP} WH V-fin [_{IP} …

A further observation, to which we will return later, is that resumptive pro-
nouns are excluded if EV2 has taken place, even though resumptive pro-
nouns are normally admitted, as in (16) (Bernese, Penner & Bader 1991):

(16) a. *Wär hesch   gseit dass du   (ne)   geschter troffe hesch?*
     who   have-you said   that   you (him) yesterday met   have

b. *Wär hesch   gseit hesch   (*ne) geschter troffe hesch?*
   who   have-you said   have-you (him)   yesterday met   have

Leaving these more specific details aside for the moment, I would like to
interpret the above mentioned distribution in the following broad terms:
EV2 is excluded with *regret*-type verbs, and with matrix negations, but it
is generally possible with *say*-type verbs. There is a further class of verbs
which is more subtle, as the possibility depends on other aspects of the
sentence make-up.

   Although it would take me too far afield to go into these matters, I think
we can understand this variation by considering the notion of dominance,
as used by for instance Erteschik-Shir (1993): basically, with *say*-type verbs,
the embedded proposition dominates the embedding one. Whether this is
possible with other verbs depends on various properties of modality and so
on. Jacqueline Guéron points out that even *believe* can be used as factive,
i.e. as dominant. In that case, the meaning of the verb is slightly different,
as the complement CP denotes a presupposed statement. This difference
has the normal syntactic consequences, e.g. in not licensing a negative
polarity item in its complement. This is shown in (17):

(17) a. *I don't believe* (*it*) *that John will help us*.
    b. *I don't believe* (*it) *that John has the slightest interest in helping us.*

Cattell (1978) shows that factive-island effects are not limited to genuine factive predicates. He argues that the relevant classes of verbs can be characterized in terms of two factors:

I. Whether the complement expresses part of the undisputed background beliefs of the matrix subject and any interlocutors of the matrix subject
II. Whether the complement expresses a belief that is being offered or entertained by the matrix subject for acceptance as part of the body of undisputed background beliefs, and the subject volunteers a positive stance on endorsing that belief

Factive verbs are characterized by the first factor, but many (if not all) verbs may or must be used in a way consistent with the second factor.

These pragmatic considerations should not be taken as implying that such syntactic phenomena as EV2 are pragmatic in nature: they are, of course, syntactic, and a syntactic representation should be invoked to account for the distribution. The reason for this is that the same split, but with different effects, is found elsewhere in the syntax of natural language, as we will see. The above description makes clear that the EV2 distribution should be couched in the same terms as the negative and factive islands we are considering here.

Tying the results of the previous section on abstract EV2 together with the overt distribution of EV2, we may ask whether abstract EV2 is similar in its distribution. The answer would appear to be positive. In Dutch, no overt EV2 is found, but we may assume, following Law, that Dutch features abstract EV2. Indeed, as (7a) shows, *regret*-type verbs block the *that*-trace configuration which in other circumstances is allowed in Dutch. Broadly speaking, *that*-trace in Dutch is allowed in those environments where Bernese allows EV2. We hypothesized, therefore, that *that*-trace is allowed if the extracted subject becomes lexically governed at LF as a result of V2. Let us now turn to the question how (abstract) EV2 is blocked with *regret*-type verbs.

6. The factive island revisited

The literature on factive islands provides a rich array of proposals to distinguish between the *regret*-type verbs and the *say*-type verbs. Some of these adapt Kiparsky and Kiparsky's (1970) original proposal, that, while the complement of *say*-type verbs is a clause, the complement of *regret*-type verbs is a noun phrase (cf. Rizzi 1990: 112). Others assign a nominal status to C in the complement of factive verbs (cf. Rouveret 1980; Adams 1985),

which either forbids movement to C (Rouveret) or makes the C incapable of governing across its sister constituent IP (Adams). Rooryck (1992) argues that the factive verbs assigns a *wh*-feature to C, which is then shared with any element which passes through its specifier, and which yields an ungrammatical result because that *wh*-index clashes with the one assigned by the matrix *wh*-COMP.

Rizzi's proposal would appear to make the incorrect prediction that factive islands behave like complex NP islands, as Kiparsky and Kiparsky (1970) originally claimed: the Complex NP Constraint yields stronger violations as can be seen by comparing (18a) and (18b):

(18) a. ?*What did you regret that Peter bought?*
      b. **What did you regret it that Peter bought?*

The proposals which hypothesize a feature assigned to the embedded C do not readily explain how this feature could interact with EV2. Apart from that, the idea that the embedded C in the complement of *regret*-type verbs is somehow nominal seems well-founded. There are a number of differences between *regret*- and *say*-type verbs that are consistent with this idea:

(19)	*regret*	*say*	example
that-deletion	−	−	*John said/*regretted Bill had left*
gerund	+	−	*John regretted/*said Bill's leaving*
so-pronoun	−	+	*John thinks that Bill came home and I think so too*
			**John regrets that Bill came home and I regret so too*

The third property can be readily understood: with *regret*-type verbs, the CP is understood to denote a particular thing, a proposition with a fixed truth value, while with *say*-type verbs, the CP does not refer to a particular thing, but to a possible event, i.e. to a set of events. In that sense, the CP with say is a predicate, of states of affairs to a truth value, while with factive verbs, the CP is fully saturated. English makes a very clear distinction between these two: things are pronominalized with *it*, while predicates are pronominalized with *so*, unlike French and Dutch, where both predicates and arguments can be pronominalized with *le* and *het* respectively:

(20) a. *Mary is beautiful and so is Susan/*Susan is it too.*
      b. *Marie est belle et Suzie l'est aussi.*
      c. *Marie is mooi en Susan is het ook.*

This brings us to the first property, *that*-deletion, and to Law's claim that *that* is an expletive. Actually, Law does not provide any motivation for his claim that *that* is an expletive. While we may agree with him in the case of *say*-type verbs, the fact that *that* may not be absent in the case of *regret*-type verbs suggests that *that* is not an expletive in that case. Rather, it functions in much the same way as demonstrative *that* in nominal groups, viz. as an iota operator (cf. Melvold 1991). We may then identify Rouveret's and Adams' [+N]-feature of factive complementizers to refer to this property of *that*. If this property is present, EV2 is blocked, and hence the *that*-trace configuration yields ungrammaticality by lack of lexical government of the subject trace.

Two questions remain at this point: a. is *that* itself the iota operator, or is there an operator in SpecCP? b. if there is such an iota operator, what is bound by this operator?

A positive answer to the first question would immediately explain the factive island effect on adjunct extraction, as the factive island in effect becomes identical to the *wh*-island, and should hence behave in similar fashion. Alternatively, the bad results of adjunct extraction may be accounted for in terms of Guéron's (1980) name constraint. I shall leave this question open at this point.

As to the second question, the most obvious candidate to be bound by this iota operator is the verb's *e*-position, as postulated by Higginbotham (1985). However, this raises the question as to what the role of Tense is, as Tense is usually thought of as binding this position. We return to this in section 10.

7. Tense-marking of CP

Our conclusion so far is that in factive environments C is not an expletive, but rather an iota operator, binding the *e*-variable of the embedded verb. Does this mean that we accept the conclusion that all that needs to be said about *say*-environments is that the complementizer is an expletive? In order to answer this question, let us ask ourselves how a CP is licensed. In the case of factive verbs, we may assume that, as the CP denotes a thing, the CP is licensed in the same way as DPs, i.e. by being assigned a theta role and, potentially, a case feature. Theta roles are assigned to arguments, and only fully saturated expressions may function as arguments. If we are correct in saying that in non-factive environments CP is a predicate rather than an argument, these CPs cannot be licensed by theta marking either. What I

would like to suggest is that these CPs are not licensed by case marking, but rather by Tense marking by the governing verb.

The consequence of such T-marking is that now, the embedded C is like a matrix C, and that the occurrence of EV2 readily falls out from this. T-marking creates a chain between the Tense operator in C and its scope bearing element, ultimately the *e*-role of the verb in the simple case, as in (21):

(21) OP_i [T_i [V_i...]]]

There are various ways in which a simple T-chain such as (21) can be extended, e.g. by the inclusion of auxiliaries dominating the lexical verb. I shall not go into the formation of such extended chains at this point (cf. Guéron and Hoekstra 1988). What I am interested in here is the formation of a complex chain, in analogy with complex chains involved in parasitic gap constructions in Chomsky's (1986a) analysis. According to this analysis, a parasitic gap construction involves two separate chains, which are integrated into a complex chain through strong binding of the operator heading the second chain by the foot of the lower chain. Under this analysis, a parasitic gap construction such as (22a) receives a representation as in (22b):

(22) a. *Which food should you cook before you can eat?*
      b. OP_i ......*cook* t_i [OP_j *before* ... *eat* t_j]

          1   2   3

      c. 1 = Chain 1; 3 = Chain 2; 2 = strong binding link

Modeled after (22b), the analysis of a complex T-chain for *say*-type environments has an embedded C, to which a T-index is assigned by the foot of the matrix clause chain. By virtue of this, the embedded C will trigger EV2, at least it may, and does so overtly in certain Germanic languages, and covertly in others. It is this variation that we need to further understand.

Before turning to that, let me point out one prediction of this analysis of complex T-chain formation. If it is correct that a complex T-chain is created by having the foot of the dominating T-chain assign a T-index to the embedded COMP, we obtain the following two corollaries: a. complex T-chains may obtain only if the embedded CP is in a V-governed position; b. complex T-chains are impossible if the embedded CP hosts an independent operator.

With respect to a., consider the asymmetry between subject CPs and object CPs: it is predicted that only the latter can be part of a complex T-chain.

It thus follows that subject CPs cannot be licensed by T-marking, and should hence pattern with factive CPs, whether they are factive themselves or not. This prediction is correct: *that*-deletion is impossible with subject sentences; overt EV2 is never found with subject sentences; subject extraction from subject sentences is uniformly excluded, also in languages that otherwise allow the *that*-trace configuration; subject sentences are always replaceable by a gerund in English and by a nominal infinitive in Dutch and other languages; subject sentences can never be pronominalized by *so* in English.

A second corollary of a. involves the noun complement case. As Chomsky (1986a: 35) notes, the theory of L-marking and barriers defined in terms of them, predicts that extraction from CPs in the complement of N should be freely possible. This prediction is not fulfilled, and Chomsky uses this as a motivation for the minimality condition. As a matter of fact, English noun complement constructions appear to exhibit the character of factive islands: object extraction yields a mild form of ungrammaticality, subject and adjunct extraction are fully ungrammatical:

(23) a. ?*Which book did John announce a plan for you to read?*
      b. **How did John announce a plan that you should solve this problem?*
      c. **Which student did John announce a plan that could do this?*

The ungrammaticality of (23c) does not come as a surprise in English. However, one might expect that its counterpart in Dutch and German would pattern with object extraction as a result of abstract EV2. However, this expectation is not borne out:

(24) a. ?*Welk   boek stelden zij   een plan op dat de   studenten*
         which book made   they   a   plan up that the students
         moesten   lezen?
         had   to read

      b. **Welke studenten stelden zij   een plan op dat dit boek*
         which students   made   they a   plan up that this book
         moesten   lezen?
         should   read?

If nouns are unable to assign a T-index to the C they govern, EV2 will be impossible in (24b), and hence, no head government will obtain. It should be noted that these predictions do not automatically follow from Law's assumption that EV2 is generally possible, at least in V2-languages, as in

his proposal, the possibility of EV2 is not related to the external environment of the CP.

Turning to b., then, one instantiation of the effect involves the *wh*-island: the embedded SpecCP is filled with some *wh*-phrase which blocks the assignment of a T-index to the head of CP. Recall that in (15) we saw that in Bernese EV2 was excluded in the presence of a *wh*-phrase in CP. We can now interpret this as a consequence of the blocking of T-indexing of the embedded COMP by the presence of a *wh*-phrase in its specifier. Since C is not T-marked, EV2 is impossible.

Rather than just saying that the presence of a *wh*-phrase in SpecCP blocks the assignment of a T-index, we might say that the *wh*-phrase itself testifies of the presence of a C-operator, which therefore is inaccessible to complex T-chain formation. This, as we observed earlier, is not an easy matter to establish, as by virtue of the spec-head agreement relation, C and its specifier will always share features such as [wh]. Still, it appears that a construction with an operator C-head is not completely identical to a construction with a filled specifier. This is what we see in negative islands.

8. Negative islands revisited

As we saw in the contrast between (5) and (6), embedded negative islands differ from factive islands in English with respect to subject extraction: while subject extraction in factive environments in English is impossible, it yields a weak form of ungrammaticality, similar to object extraction, across a negative island. Although an account of the weak ungrammaticality of argument extraction raises questions in and of itself, to which we return in the next section, the fact that subject extraction does not trigger the sharp ungrammaticality of the ECP-type would suggest that head-government obtains with respect to the empty subject position.

Let us first repeat why it would seem implausible that it is antecedent government that obtains in these cases. Antecedent government might be obtained from a trace, provided that *that* is absent, as in Chomsky's (1986a: 47) account of subject extraction, in terms of failure of an empty C to invoke a minimality barrier. However, in the face of our discussion of French (8) and similar phenomena in West Flemish in (9), the assumption of successive cyclic extraction seems ill-founded, so that no intermediate trace is available. This conclusion is consonant with Rizzi's conjunctive version of the ECP, which requires head government in every case. Adopting that formulation, then, as well as Law's claim that only lexical heads may act as

proper head governors, we are forced to conclude that some lexical governor is present in this case, and the most likely candidate is V. Recall also the difference, illustrated in (4), between syntactic *that*-trace and *that*-trace at LF. How can we interpret these differences?

Progovac (1991) argues that licensing of negative polarity items in embedded clauses is not done directly by the negative element in the matrix clause, but rather by an operator in the embedded CP, which in turn is licensed by some element in the matrix (broadly speaking, by an affective element in the sense of Klima 1964). This claim is supported by the observation that some environments, while licensing a negative polarity item in an embedded clause, do not license such an item in their own domain. A case in point is the verb *forget*, which makes negative *any* possible in a complement clause, but not in its own direct object position:

(25)   a. *John forgot any names.*
       b.   *John forgot that he wrote any paper on the subject.*

Here again the question is whether the operator is situated in or rather in C itself. Laka (1992) argues for the latter, while Progovac's suggests that the former is the case. Again, as in previous cases, this question is not easily answered, as specifier and head share their features. I would nevertheless like to suggest that there is a feature in the embedded C position, which triggers V-to-C in English, thereby removing the complementizer if present in the syntax. Note that such embedded V2 does occur in English in sentences like those in (26):

(26)   a.   *John said that never in his life had he been insulted like this.*
       b.   *John said that only then would he buy anything from you.*

We can now give an account of the grammaticality of a negative polarity phrase in subject position in English, as in (4c), repeated here:

(4)   c.   *I don't think that anyone will be arrested.*

At LF, *would* raises to a negative operator, and the subject moves to its leaving a trace which is properly head governed by *would*. Note that this account predicts that long subject extraction should be possible in principle in sentences of the type in (26), even in the overt presence of *that*. This prediction is correct:[5]

(27)   *Who did John say that never in his life had **t** been insulted like this?*

What (27) very clearly shows is that V-to-C creates a head-government situation, in which subject extraction is possible, even across *that*.

This discussion of negative islands requires that the operator relevant for EV2 in cases like (4c) and (26) is distinct from the *wh*-operator which triggers *wh*-island configurations: while root questions trigger syntactic I-to-C movement, embedded questions should not trigger such I-to-C, as otherwise subject extraction as in (1b) should be possible. I leave this as a problem, noting however, that there is in this respect no difference between embedded *wh* at LF and at S-structure, just as there is none between embedding under a negative island, which show overt I-to-C as well as LF I-to-C, i.e. there are no counterparts to (26) involving embedded questions:

(28)   **John wondered what did Peter buy.*

Finally, the difference between (4c) and (4d) is now readily understood: while the subject is locally moved to a negative operator at LF in the case of (4c), LF-movement of the subject in (4d) must be a case of long movement, into the matrix clause. There is in fact no embedded operator to which the subject could be moved, hence there is also no such embedded operator which could ever motivate EV2. The trace of subject extraction in (4d) thus fails to be properly head governed, irrespective of whether *that* deletes or not. Antecedent government is not sufficient to license an empty category.

We are now also in a position to explain the ungrammaticality of subject extraction out of an negative island in French (cf. [8]), and the lack of an agreeing COMP in West Flemish (cf. [9]). If there is an operator in C, licensed by the matrix verb, only a negative element can move to its specifier position at LF. Successive movement of a *wh*-phrase from the subject position is impossible, as it would be coindexed with the negative operator in the local COMP. Because the subject cannot pass through this CP, then, it does not provide C with its agreement features so as to legitimize an agreeing C. I follow Law (1991) in assuming that Agr-features on C are a prerequisite for abstract EV2 in French and West Flemish.

9. On content licensing

Sofar we have said nothing about long extraction of objects across island constellations. We can now summarize the results of the previous discussion as follows:

(29) there is a fundamental argument/non-argument distinction with respect to S-structure movement if head-government obtains

We follow Rizzi (1990) in assuming that head government is a general condition on empty categories, which must be met on top of an identification requirement. The distinction between arguments and adjuncts if head government is obeyed, but an island configuration intervenes is clear: adjunct extraction is uniformly excluded, while argument extraction yields a weak form of ungrammaticality. Here we concentrate on the account of this weak form of ungrammaticality. In Chomsky (1986a) this effect is accounted for in terms of subjacency. More recent explorations suggest, however, that it is not subjacency what is at stake here.

   The judgment on such subjacency violations is a subtle matter. However, it is most easily clarified by considering (30):

(30) a. *There were many people at the party.*
      b. *Many people were at the party.*

(30b) allows a paraphrase of the type *Many people were such that they were at the party*, while (30a) does not allow such a paraphrase. I shall call this reading of *many people* the pronominal reading. Heim (1987) argues that this follows from the fact that in existential sentences, no individual variables are admitted in the complement of *there be*, which immediately accounts for the definiteness effect which holds in this construction. The relevant point to make is that in (31), the pronominal interpretation is the only one available for the interpretation of the object:

(31) a. ?*How many people did you regret that John visited?*
      b. ?*How many people did you wonder whether John visited?*
      c. ?*How many people didn't you say that John visited?*

The same holds for all cases of long subject extraction across an island, i.e. where it is allowed at all (cf. Frampton 1991; Dobrovie-Sorin 1992 for discussion). If there is no island configuration intervening, phrases of the type *how many X* have two interpretations. One way of explaining this ambiguity is modeled after *combien* extraction in French (cf. Obenauer 1984): while in the absence of an island configuration *combien* can either move independently or with its complement, it can only be moved with its complement across an island:

(32) a. *Combien   de films penses/?regrettes-tu que tu   n'as pas vu?*
     how many films   think/?regret-you   that you have not seen

   b. *Combien   penses/*regrettes-tu que tu   n'as pas vu de films?*
     How many think/*regret-you   that you have not seen films

The pronominal reading is obtained by having a DP extracted, as in (32a), while the non-pronominal reading obtains by reconstructing the DP back at LF, with the D extracted, much as in (32b). While the trace left by DP-raising is licit with respect to the ECP, being both head and theta-governed, but the trace of D is not.

    If this line of explanation were correct, we would expect that wide scope interpretations of quantifiers outside of an island could be derived by the application of QR at LF, as subjacency is not a property of LF. However, that prediction would appear to be false, if we inspect (33):

(33) *I didn't say that every doctor visited three patients.*

To be sure, *three* patients can have wide scope over *every doctor*, but it seems impossible to give it wide scope over the matrix negation.

    What I would like to suggest, much in the spirit of the original Obenhauer/Cinque hypothesis, is that the pronominal interpretation is not created by movement, i.e. is not represented by a chain. Indeed, this is the position advocated and motivated extensively in Cinque (1990). He proposes that the gap corresponding to the *wh*-quantifier should be conceived of as an empty pronoun, rather than as a trace, functioning as an individual variable.

    The important theoretical result of this analysis is that the ECP is a property of chains, not of all operator variable structures, and that all chains are subject to both the head-government and the antecedent government requirement. There is no alternative identification for traces than through antecedent government. The residue of the ECP, i.e. operator-variable pairs which do not obey the chain condition, constitutes the domain of a different licensing mechanism than the ECP, viz. theta-government, an identification condition of pronominal empty categories.

    Unlike the ECP, the possibilities of theta-government show variation between languages, in ways that are ill-understood, as are the conditions on overt resumptive pronouns. While Italian seems to impose very little conditions on such empty pronouns in object position, the conditions in French seem to be much stricter, for some speakers so strong that they completely reject all extractions from factive, negative and *wh*-islands. The same is true for many Dutch speakers. The language particular nature of resumptive

pronouns is also evident from the observation on Bernese by Penner and Bader (1991) (cf. [16]): if EV2 obtains, there is no island, and the resumptive pronoun strategy, a language particular and hence more costly last resort (cf. Chomsky 1989), is blocked. Cinque (1990: 156) likewise concludes that the movement strategy is the unmarked option, allowing the empty resumptive strategy only where the more marked option is unavailable.

10. Tense-operators and their variables

We now return to one of the questions that were raised in section 6. We argued that in factive environments, C functions like an iota operator. This raises the question as to what this operator binds, and we made the suggestion that it may bind the *e*-position of the verb. But, if C binds this *e*-position, what then is the role of Tense? The answer I would like to suggest is that Tense is not Tense, but rather Aspect, and that Aspect is a modifier of the event, rather than an element which saturates the event.

While this claim may be somewhat surprising for languages such as French and English, it will come much less as a surprise for other languages, such as Arabic, which are often claimed to be Aspect languages, missing Tense. In the domain of temporal notions in languages, a three-way distinction must be made. Firstly, there is aktionsart, or, as Smith (1991) calls it, situational aspect. It essentially relates to the temporal organization of an event, and is determined in large measure by the lexical head. Secondly, we may distinguish presentational or view point aspect, which depends on the way in which a certain event is presented. The fundamental distinction here is one between perfective and imperfective aspect. In the former, the event is presented as a single point, i.e. without reference to its internal structure, whereas imperfective aspect presents an event from the inside: it presents the internal temporal space created by the occurrence of an event (or a series of events, as in iterative, frequentative or durative imperfective aspect). Thirdly, there is deixis: the location of the presented event with respect to the speech time. In a language such as English, the so-called past forms are usually considered to be deictic in this sense: it locates the eventuality prior to the moment of speech. Traditional Semiticists, on the other hand, have argued that the Arabic imperfect does not have such a deictic meaning, and have therefore labeled it Aspect (cf. Fassi Fehri 1993 for extensive discussion).

Note, first of all, that the English past tense forms do not always have an absolute deictic force. This is evident most clearly in the case of so-called tense-sequencing environments, as in (34):

(34) *I heard that Mary was pregnant.*

There is one interpretation, in fact the most natural one, in which the eventuality of Mary's pregnancy still holds at the moment of speech. What this example shows, is that it is possible for a past tense form to receive its deictic value not directly, but rather indirectly, by being bound. A slightly different example is provided by a Dutch sentence like (35), which is ambiguous:

(35) *Jan   leest   de   krant   in   de   tuin.*
       John read+PRES the   newspaper   in   the   garden

There is one reading in which the present tense form locates the event of John's newspaper reading at the moment of the speech time, and a second reading in which there is in fact no location of any event, but rather a general statement about John's newspaper reading, viz. that events of that type occur in the garden. In this reading, present tense is aspectual, more precisely it is an imperfective habitual. Rather than saying that the morphological form is ambiguous between a deictic Tense form and a non-deictic aspectual form, we may conclude that the form per se is aspectual, with the two readings being derived from some other element. This other element, I wish to argue, is the Tense anchor of Enç (1988), situated in C. It has the status of an operator, either an existential or a quasi generic operator. The postulation of such an operator seems independently motivated in order to capture the generalization that NPs of the form *a N*, which also have two interpretations, in principle, viz. a generic interpretation and an existential interpretation, are disambiguated in parallel with that of the imperfective tense form: *a N* can only be interpreted existentially in an eventive reading of the tensed verb, and only generically in the habitual interpretation of the tensed verb. This follows immediately if we postulate an operator in C, which unselectively binds both the tensed verb form and the *a N* in its domain.

Let us disregard the generic operator for the sake of this discussion; we are then left with the existential operator, which we shall represent as S, as in Reichenbach's (1947) representational system. In addition to S, the Reichenbachian system exploits two other elements, R and E, for reference point and event point respectively. All tenses can be represented by imposing an ordering relation among these three elements in terms of associativity and linearity. So, S,R,E represents association of S, R and T, which is simple present; S<E,R represents that E and R are associated, and precede S, thus

representing simple past and so on. In these two examples, no distinction is made between E and R. If tense systems were limited to simple present and past, two elements would be enough: S and one other, situating E prior to or simultaneous with S. But, languages generally also have more complex tenses, like present and past perfect. In English, as in many other languages, these consist of a tensed form of an auxiliary and a participle. The participle itself does not denote tense, but rather aspect: the past participle shifts the position of the event to the past of the reference point, which itself may be in the present or the past. However, viewed from the current perspective, the simple past/present distinction is semantically not any different from the distinction between a past and a present participle: both oppositions may be said to shift. The distinction between tense and aspect is motivated by the morphological difference rather than a semantic opposition. It is precisely this morphological opposition which is lacking in Arabic. Yet, if we look at English, it is also less obvious that there is a morphological distinction:

(36) a. *John walked.*
      b. *John has walked.*

Also in Dutch, the difference between simple past morphology and past participial morphology is far from obvious. Consider the examples in (37):

(37) a. *Jan wandelde.*
      b. *Jan heeft gewandeld.*
      c. *Jan wandelt.*

The simple past form in (37a) can be analyzed as consisting of a stem, followed by a suffix D, taking the form *-d* or *-t* depending on the stem, followed by an agreement suffix of the singular. The past participle, likewise, can be analyzed as consisting of the stem, followed by the suffix D, and preceded by a prefix *ge-*. The status of this prefix is not entirely clear, but it seems reasonable to treat it as a separate morpheme. Postma (1996) analyses this prefix as more or less identical to the clitic *se* in French, both being involved in the licensing the verb's subject. I shall leave the status of the prefix as an open issue. We may, however, hypothesize that both (37a) and (37b) feature the same morpheme D, which we now analyze as an aspect marker. Under this view, a simplex sentence may receive the following analysis:

(38) S_i … ASP_1 … ASP_2 V

Let us next turn to a simple present tense form in Dutch, as in (37c). This form can be analyzed as consisting of the stem, followed by an agreement marker -*t*. It would appear that there is no overt marker of any aspect, i.e. there is no overt counterpart to the suffix D. Let us represent that precisely in that way, i.e. that ASP has two values, prior and simultaneous, being represented by D and zero respectively. The further question then is why the agreement marker is -*e* after D, but -*t* after zero with a third person singular subject.

The system set up sofar, can generate the following combinations:

(39)		ASP1	ASP2	Reich
	a.	0	0	S,R,E
	b.	0	D	S,R<E
	c.	D	0	S<R,E
	d.	D	D	S<R<E

Taking ASP1 to represent Reichenbach's point R, and ASP2 his point E, with 0 representing association, and D as representing linear ordering, we generate perfect and simple past and present.

I shall not try to analyze the particular morphosyntactic manifestation of the representations in (39), noting that there is an interesting amount of variation, even among the well-studied languages. The relevant point to make is that if we accept a system such as (38)-(39), with two aspectual positions, simple past and present are indeed not tense, but aspect, i.e. non-deictic or referential.

In a sense, this conclusion should not surprise us. The idea that tense is referential would be very hard to reconcile with the clear non-referentiality of tense in opaque domains. In *I believe that John won the race*, there is no reason to assume that there ever existed an event of John's winning the race. The fact that it is also impossible to say *I believe John's winning of the race* has the same reason.

If this is correct, there is no reason to take the position that tense (i.e. ASP) saturates the *e*-role of the verb's argument structure, as was proposed in Higginbotham (1985). This conclusion squares well with the fact that TPs themselves are incapable of functioning as arguments, as in principle, fully saturated expressions qualify as such. However, in order to be an argument, a TP has to be dominated by a CP. If C indeed provides the element saturating the verb's *e*-argument, we have a *raison d'être* for C. Aspectual nodes, then, are like modifying adverbs: they do not change the valency of the XP they combine with.

The pattern in (38) can be syntactically instantiated as in (40), with C replacing S, T replacing ASP1 and ASP replacing ASP2:

(40) C … T … ASP … V

Following Enç (1987), we assume that the matrix C harbors a deictic operator, binding T. Earlier we saw that the status of embedded C's is not uniform: some Cs are T-marked, while others are not. For factive complements I have suggested that C indeed independently binds T (and hence the verb's *e*-role). If C is Tense marked, on the other hand, the CP is not autonomous. It does not refer to a thing, but functions semantically as a function from a set of states of affairs, i.e. like a predicate. Rather than being an operator, C functions as a predicate variable.

   This dual behavior of C is reminiscent of DPs, which are either arguments, in which case the D may be regarded as a operator, or as a predicate, in which case D functions like a predicate variable. This semantic distinction tallies with case marking in the case of DPs: a DP argument must be case-marked, but a DP functioning as a predicate does not. It may, just like CPs, be T-marked, a conclusion which seems to be required if we assume that each T-chain must have an *e*-role bearing element in its foot.

Editors' note

This chapter is an unpublished paper, dated 1992.

Notes

 1. This paper is a report of work in progress, done in collaboration with Jacqueline Guéron of the University of Paris X. I have benefitted from discussions with Marcel den Dikken, Martin Honcoop and René Mulder.
 2. There is also a class of strong islands, which resist any form of extraction. These include the adjunct islands and the Complex NP Constraint (cf. Cinque 1991 for discussion).
 3. We will restrict our attention to negative islands with embedded clauses for reasons that will become clear in section 8.
 4. The difference between French and West Flemish, viz. that lack of an agreeing C in French yields ungrammaticality (cf. [8d]), while yielding an acceptable result in WF with *dat* in (9b) may be caused by the fact that West Flemish is like Dutch in allowing VP-internal nominatives (cf. note 2), particularly in the example in (9b), which involves an ergative verb.
 5. Law (1991: 282, note 13) mentions that there is dialectal variation with respect to extractions from such embedded CPs with EV2: while some accept both subject and object extraction, others reject both. This seems to pattern with the general judgment on subject and object extraction from island configurations (cf. section 9).

III. The morphosyntax of nominal and verbal constituents

Bracketing paradoxes do not exist

with Harry van der Hulst and Frans van der Putten

1. Introduction

A morphological issue that has been very popular in the last couple of years is the topic of bracketing paradoxes. Alongside the term 'bracketing paradoxes', one also finds labels such as 'relatedness paradoxes' and 'inheritance phenomena'. Though the phenomena discussed under this rubric do not form a homogeneous set, one thing that can be said with reference to all these cases is that some condition, principle or rule demands a left-branching structure as in (1a) while some other condition, principle or rule demands a rightbranching structure as in (1b).[1]

(1) a.   b.

       un   grammatical   ity   *un   grammatical   ity*
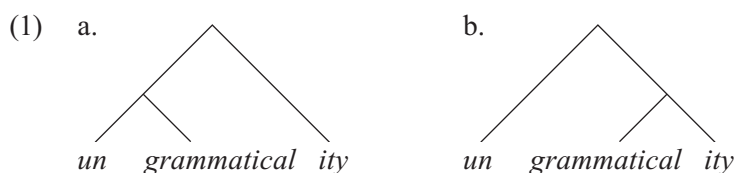
In the case of *ungrammaticality*, structure (1a) is dictated by a category restriction on *un*-prefixation which says that *un-* can only attach to adjectives, while structure (1b) would be the one assigned to *ungrammaticality* by the level ordering hypothesis. The level ordering hypothesis was developed in the '70s (Siegel 1974, Allen 1978) and claims that word formation factors out into several sequentially ordered blocks of processes. Thus, a distinction is made between level I and level II affixes on the basis of differences between affixes with respect to phonological properties, such as stress and the relative proximity or peripherality of the affixes vis-à-vis each other. In terms of the level ordering theory, *-ity* is a level I affix and *un-* a level II affix. Now, the level ordering theory claims that level I affixation occurs first, followed by level II affixation. It is commonly assumed that the level ordering hypothesis in addition requires that compounding takes place after level II affixation; occasionally inflection is included in the ordering as well (with views diverging on the question of whether inflection should be added inside or outside the lexicon). The classic level ordering hypothesis

confines itself to the ordering within one component of the grammar (the lexicon, in particular), but of course the hypothesis can be extended to include the rules of phrase structure, in tandem with the ordering of the various components of the grammar. This extended level ordering theory is illustrated in (2):

(2)   Class I affixation
      Class II affixation
      Compounding
      ————————————

      Inflection
      ————————————

      Phrase structure

Whenever, in what follows, we refer to the level ordering hypothesis, we mean the extended version in (2).

   We will start out by discussing the various types of bracketing paradoxes. We will show first of all that we are dealing with a heterogeneous set of cases, and secondly, that the paradoxes do not just manifest themselves at the level of the word but at the phrasal level as well. We subsequently take a closer look at a number of analyses proposed in the extant literature. Finally, we make some proposals of our own. Our starting point will be that the arguments on the basis of which the phenomena at hand are identified as paradoxes are flawed. Though we cannot discuss all cases in detail, and though we do not wish to deny that some cases are indeed problematic, we would like to claim that all phenomena known as bracketing paradoxes can be analyzed in some alternative fashion such that we are not, in fact, dealing with paradoxes at all.

2.   Typology

2.1. The lexical level

The typology we are introducing here merely serves the purpose of streamlining the discussion of bracketing paradoxes. It should not be taken to have any deeper theoretical status. We distinguish between three types of bracketing paradoxes:

Type I: *unhappier*

There are, in principle, two routes along which the word *unhappier* can be derived from the root *happy*, as illustrated in (3).

(3)

```
                    UNHAPPY  ——    phonological condition
               ╱                ╲      ╱
        HAPPY                      ╳
               ╲                ╱      ╲
                    HAPPIER  ——    level ordering theory,
                                    semantics
```

(3)   UNHAPPY ——— phonological condition

        HAPPY   UNHAPPIER

                    HAPPIER —— level ordering theory,
                                semantics
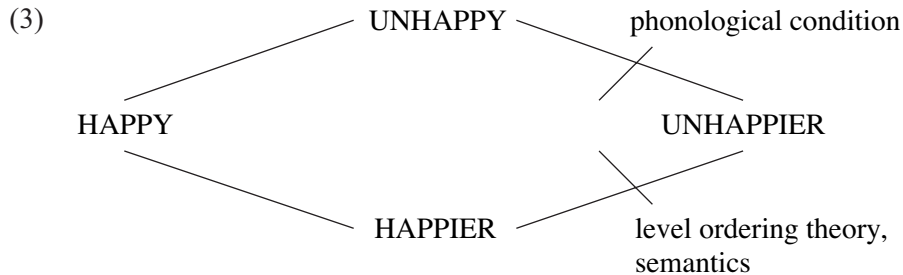
In (3) and in the representations to follow below the upper path systematically leads to a left-branching structure as in (1a) and the lower route to a right-branching one as in (1b). The smaller captions ('phonological condition', 'level ordering theory', etc.) indicate why the step in the derivation in question is excluded. In general, bracketing paradoxes are characterized by the fact that both derivational routes are blocked by some mechanism.

   In the case of *unhappier*, the upper route is blocked by a phonological condition that says that the English comparative is expressed in trisyllabic words with the aid of *more* and not with *-er*; so one would expect *more unhappy* instead of *unhappier* on those grounds. The suffix *-er* can attach itself to *happy*, a disyllabic word with a light closing syllable, as in the downstairs derivation. However, the lower route is excluded by the level ordering theory: on the assumption that comparative formation is inflectional, it should be performed after *un*-prefixation. Moreover, the semantic interpretation of *unhappier*, [*more* [*not happy*]] and not [*not* [*more happy*]], corresponds to the upper route (Pesetsky 1985). On phonological grounds, therefore, one is led to favour the lower path and exclude the upper one, while level ordering theory and semantics lead one to exclusively select the upper path.

Type II: modifier scope

Modifier scope de facto plays a role in the *unhappier* case as well, but the motivation for assuming a bracketing paradox is different here than in the cases we will discuss immediately below.

   For type II, we can distinguish three different instantiations, in the light of the nature of the motivation for blocking one of the two routes. As a first example, consider the oft-discussed case of *ungrammaticality*. Once again,

there are two derivational routes, taking *grammatical* as the base, as illustrated in (4a).

(4a)

```
                    UNGRAMMATICAL         level ordering theory
          /                    \      /
GRAMMATICAL                         UNGRAMMATICALITY
          \                    /      \
                    GRAMMATICALITY         subcategorization
                                           (semantics)
```
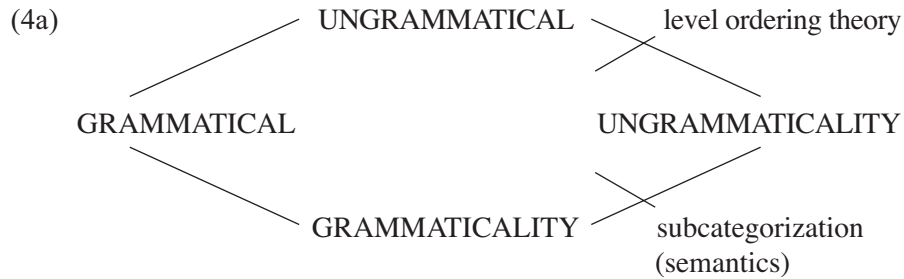
Here, the level ordering theory determines that the lower path is the right one and that the upper one is excluded, on the basis of the fact that *-ity* is a level I-affix and *un-* a level II-affix. In addition, however, there is a subcategorization restriction that says that *un-* can attach to adjectives, as is the case on the upstairs derivation, and not to nouns, as on the lower route. To this one might add that *un-* should have scope over *grammatical* and not over *grammaticality*.

This motivation is the only motivation to exclude the lower route in the second case instantiating type II: *model-theoretic* in (4b). This case is similar to Dutch *dienstplichtig* 'military.service-obligation-y', where *-ig* semantically must take scope over *dienstplicht* '(military) draft', a compound. The upstairs derivation is once again blocked, however, by the level ordering theory, which demands that affixation precede compounding.

(4b)

```
                    MODEL-THEORY          level ordering theory
          /                    \      /
THEORY                              MODEL-THEORETIC
          \                    /      \
                    THEORETIC              semantics
```
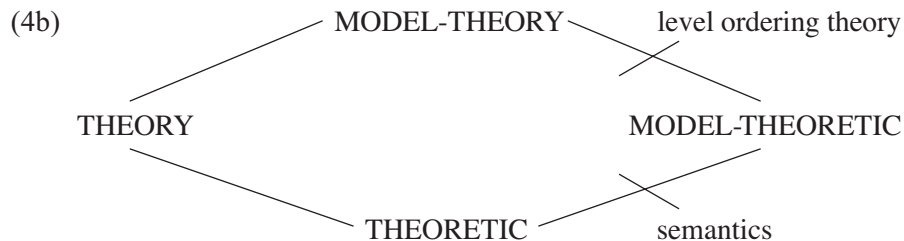
In the case of *model-theoretic*, excluding the upper route (or the level ordering theory) is motivated in addition by the allomorphy brought about by affixation. For this allomorphy is identical to the allomorphy we see in the derivation of *theory*. With this allomorphy tied to a locality restriction of the sisterhood type, the allomorphy observed in *model-theoretic* pleads in favour of the upper route.

A third subtype of type II is *blauwogig* 'blue-eye-y, i.e., blue-eyed'. The literature generally refers to such cases as 'synthetic compounds', assigning them a ternary-branching structure, the motivation for which is taken to lie in the observation that neither the construct *ogig* 'eye-y' nor the construct *blauwoog* are existing words. However, in a theory using *possible* rather than *actual* words as a basis for subsequent word formation, this argument is null and void. In principle, therefore, there are once again two derivational routes, because there definitely are A–N compounds in Dutch, such as *sneltrein* 'fast-train, i.e., express train', *zuurkool* 'sour-cabbage, i.e., sauer-kraut' and the bahuvrihi-compounds, so that *blauwoog* is certainly a possible morphological construct; and *ogig* is a possible morphological construct as well, given the many examples of the type 'N-*ig*' (cf. *harig* 'hair-y', *buikig* 'belly-y', etc.).[2]

(4c) (existing word?)   BLAUWOOG   level ordering theory

          OOG   BLAUWOGIG

    (existing word?)   OGIG   semantics
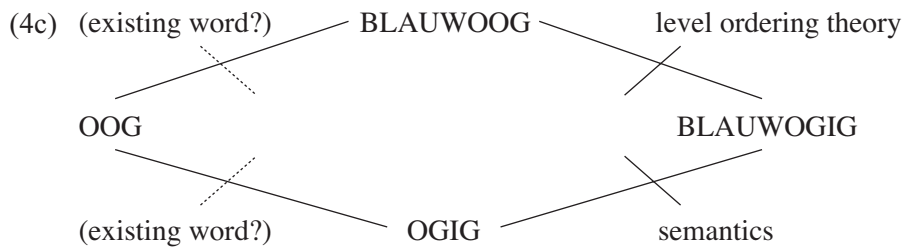
For the second part of the derivational process (the step from *blauwoog/ogig* to *blauwogig*), just as for the *model-theoretic* case, the upper route is blocked by the level ordering theory, while the lower route leads to a structure in which the scope of *blauw* 'blue' is not reflected appropriately. The argument to that effect is that *blauwogig* does not mean 'eyed in a blue sort of way', but 'with blue eyes', which suggests that -*ig* takes scope over the construct *blauwoog*.

Type III: argument inheritance (verbal compounds)[3]

An example of type III is *truck driver*. For the upper route in (5), the first step is ruled out right away. In Dutch, verbal compounds like *stofzuig* 'dust-suck, i.e., vacuum-clean' are exceptional to begin with. In English, forms such as *truck-drive* do not seem to be able to occur at all. Even if they *were* possible, however, the second step on the upper route would still be impossible since the level ordering theory excludes suffixation of -*er* subsequent to compounding. The semantics blocks the lower route. In the verbal structure *drive a truck*, *a truck* receives its theta role from the verb

drive. It seems plausible to have the same happen in the case of *truck-driver*. This then requires a derivation along the lower path.

(5)   non-existent   TRUCK-DRIVE   level ordering theory

      DRIVE   TRUCK DRIVER

                    DRIVER   semantics,
                                       θ-role assignment
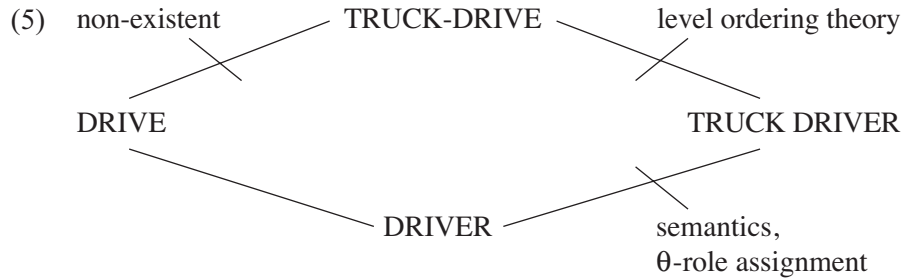
A solution which is often proposed in these kinds of cases is to resort to a so-called inheritance mechanism. This is tantamount to adopting a derivation along the lower path and allowing *truck* to receive its theta role by having the properties of the verb *drive* percolate up to the noun *driver*.

2.2. The phrasal level

The three types of bracketing paradoxes discussed in the foregoing manifest themselves not just at the lexical level but at the phrasal level as well. The problem is not strictly morphological, therefore.

I. An example of a phrasal counterpart to *unhappier* is the French sentence *j'aime Marie*, discussed in Sadock (1985):

(6)   J'AIME   syntactic considerations

    AIME   J'AIME MARIE

                    AIME MARIE   phonology
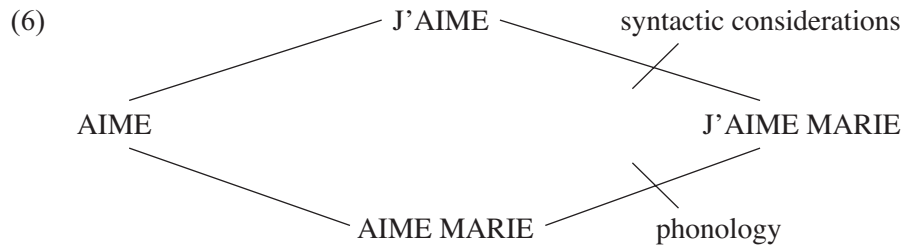
Syntactic considerations would exclude a structure in which *j'aime* is a constituent. Phonologically, however, such a structure seems precisely the most obvious one.[4]

II. Modifier scope. As in the case of bracketing paradoxes at the lexical level involving the scope of a modifier, several types of problems involving modifier scope can be differentiated at the phrasal level:

(7)   a.   *beautiful dancer*, *snelle beslisser* 'quick decider'

      b.   Greenlandic Eskimo:
Hansi	*ataatsinik*	*qamuteqarpoq*
Hansi-∅	ataaseq-nik	qamut-qar-poq
Hans-ABS	a-INST/PL	sled-haveIND/3SG

      c.   *ernstig gewonde* 'seriously injured (person)',
           verplicht verzekerde 'obligatorily insured (person)'

      d.   *transformational grammarian*, *zwartebander* 'black belt-er'

      e.   *nuclear stress rule, rode-bessentaart* 'red berry-cake'

In the first case, affixation of *-er* has to happen first, given the level ordering theory. Just as in the case of *blauwogig* 'blue-eye-y, i.e., blue-eyed', the semantics favours the upper path, however: *beautiful* modifies *dance* and not *dancer*, on the most salient reading of *beautiful dancer*.

(8)

                     BEAUTIFUL DANCE   level ordering theory

   DANCE   BEAUTIFUL DANCER

                DANCER   semantics
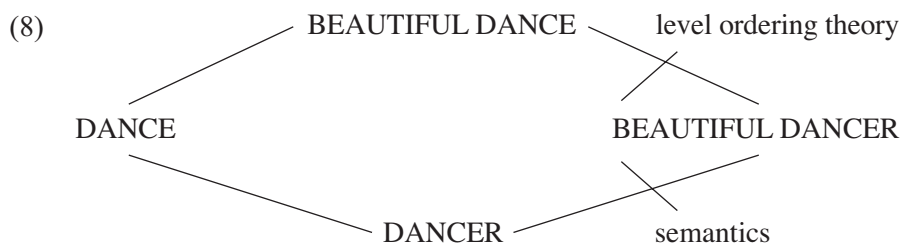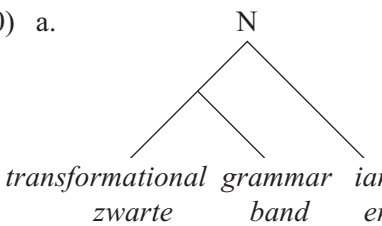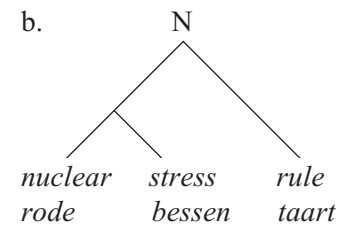
We will be brief about the other cases in (7). In (7b) we are dealing with a phenomenon known as *incorporation*. This phenomenon manifests itself in a variety of languages, including Greenlandic Eskimo. Here we find verbs having affixal status, such as *-qar* in (7b). They must combine with a stem to form a word. The modifier 'a' applies semantically to 'sled' and not to 'have sled', however. Without discussing this in any further detail in this article, we will assume an analysis for such cases that in principle corresponds to the analysis of *beautiful dancer* discussed below.

    For cases like *ernstig gewonde* 'seriously injured (person)', *verplicht verzekerde* 'obligatorily insured (person)', the modifiers *ernstig* and *verplicht* should specify the adjectives *gewond* and *verzekerd*, not the words *gewonde* and *verzekerde* – with these words looked upon as nouns, derived

via *-e* suffixation from the adjectives *gewond* 'injured' and *verzekerd* 'insured', respectively. We assume, however, that no syntactic approach should be adopted: we are dealing with an NP, just as in *een ernstig gewond persoon* 'a seriously injured person'; the head noun is an empty category in the examples in (7c):

(9)   [$_{NP}$ *een* [AP *ernstig gewonde*] [$_N$ **ec**]]

Finally, there are cases in which we apparently are dealing with a phrasal input for affixation or compounding. Examples of these types are *transformational grammarian* (or Dutch *zwartebander* 'black belt-er') featuring affixation, and *nuclear stress rule* (Dutch *rode-bessentaart* 'red berry-cake') involving compounding. These forms differ clearly from cases such as (7a). In an example such as *snelle beslisser* 'quick decider', the inflection of the adjective is determined by the head of the derived form. Such is not the case in forms such as *rode-bessentaart*, as is evident from the fact that its diminutive is *rode-bessentaartje* 'red berry-cake-DIM' (and not **rood-bessentaartje*), which has neuter gender unlike its common-gender non-diminutive and would be expected not to feature the inflectional schwa on the adjective *rode* if inflection were determined by *taart* 'cake'. We therefore assume a structure as in (10), in which the adjective forms a constituent with the noun that it modifies.[5]

(10) a.

               N

   transformational grammar ian
        zwarte   *band*   *er*

b.

               N

   nuclear   *stress*   *rule*
   rode   *bessen*   *taart*

In what follows, we will only address subtype (7a) (*beautiful dancer, snelle beslisser*).

III. Argument inheritance. The phrasal counterpart to *truck driver* is *driver of a truck*:

(11)

DRIVE A TRUCK   level ordering theory

DRIVE   DRIVER OF A TRUCK

DRIVER   semantics,
θ-role assignment
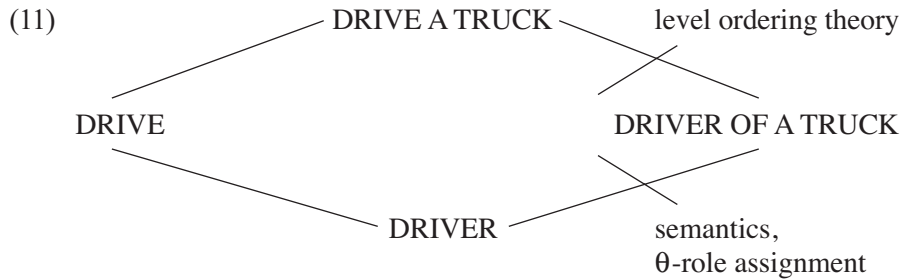
The level ordering theory rules out a scenario here where *-er* is connected to the phrase *drive a truck*. On the other hand, one would like to be able to say that *a truck* receives its theta role from the verb *drive* and not from the noun *driver*.

In this section, we have inventoried a large variety of different types of bracketing paradoxes, without claiming exhaustivity. This survey highlights two things. It is wrong, first of all, to view bracketing paradoxes strictly as problems in the morphological domain, because each type of morphological bracketing paradox has a counterpart at the phrasal level. And secondly, we have seen that there are rather diverging motives for taking a particular construct to be a bracketing paradox. In the next section, we address a number of proposals from the extant literature to handle bracketing paradoxes.

3. Other proposals

Taking the level ordering theory in (2) seriously leads one to predict that the constructs discussed above are ungrammatical. The literature features several proposals aimed at solving such bracketing paradoxes. Some seek to solve all paradoxes, others confine themselves to a subpart of the types discussed above. Here we present an overview of the most prominent proposals.

(12) a. level ordering theory as the starting point:
   – Pesetsky (1985)
   – Williams (1981b)
   – inheritance theories, e.g. Randall (1984)

b. rejection of (parts of) the level ordering theory:
   – Botha (1981)
   – Strauss (1982)

   c.   two autonomous structures:
        –   Sproat (1985)
        –   Sadock (1985)

In this section, we will briefly discuss the theories listed under (12a) and (12b). Sproat's and Sadock's proposals (12c) are addressed in section 4.[6]

a)   First of all, there are approaches that take the structure forced by the level ordering theory as their starting point, and relate the alternative structure to that. Pesetsky (1985) adopts a familiar stand from the point of view of generative grammar's approach to these kinds of cases. We actually find bracketing paradoxes throughout the grammar, especially in all those constructions in which movement transformations apply. The standard assumption with respect to such constructions is that the paradox can be solved by postulating two or more levels of representation, with some demands (e.g. local subcategorization) satisfied at one level and others (e.g. quantifier scope) at another. A (e.g. transformational) mapping mediates between the various levels. Pesetsky proposes using this strategy in the case of morphological bracketing paradoxes as well. The mapping operation he invokes is a variant of the quantifier raising operation called 'affix raising'. This approach allows him to start out, for a case such as *blauwogig* 'blue-eye-y, i.e., blue-eyed', from a rightbranching structure, in agreement with the level ordering theory. The S-structure thus generated is subsequently converted into a leftbranching LF-structure.

   Though this approach is correct in principle, the question arises as to what restrictions this strategy is supposed to be subject to. Without further restrictions on affix raising, it should be possible to relate morpheme salads to interpretable LFs. It should be possible, for instance, to form something like *resistanceing* with the interpretation 'the action of being resisting'. To avoid this, Pesetsky proposes a constraint banning string-vacuous affix raising. This manoeuvre, however, is too restrictive since it makes the application of affix raising dependent on accidental word order facts – thus, it makes affix raising possible in *beautiful dancer* but not in French *danseur très élégant*, and it enables affix raising in *truck driver* but not in *driver of a truck*.

   Another approach along the lines of (12a) is Williams (1981b). He gives a definition of relatedness which manages to relate, in a non-structural fashion, words having a structure dictated by the level ordering theory to other words. Thus, *blue-eyed* can be defined as related to *blue eye* by stripping away the head *-ed*. An objection to this proposal, noted by Williams

(1981b: 263) himself, is that it does not seem to work in cases such as *re-aircondition*, which can be related to *aircondition* neither via stripping of the head nor via stripping of the non-head. Botha (1983) rightly points out that Williams's use of the notion 'marked leak' is effectively tantamount to the admission that the theory does not work.

Then there are a number of theories that make use of an inheritance mechanism. Examples of such theories are Selkirk (1981) and Randall (1984). For a case like *truck driver*, Randall starts out from the structure dictated by the level ordering theory. This countenances the intuitive idea that *truck* is the theme of the verb *drive* by proposing a mechanism that allows the subcategorization properties of the verb *drive* to percolate up to *driver*. Such inheritance theories are of course only intended to address cases of type III. Thus, they would only help us out in a subset of cases. An additional drawback of such theories is that they lead both to overgeneralization and to undergeneralization, as is argued in Hoekstra and Van der Putten (1988).

b) A second type of approach is to reject one or more ingredients of the level ordering hypothesis. Botha's (1981) approach is a very drastic example. In his theory, a phrase such as *blauw oog* 'blue eye' may serve without any trouble as the input to the rule of *-ig* suffixation. Unfortunately, we now rule in all sorts of unwanted derivations as well. We will not address Botha's theory in any detail here. There are innumerable problems with this approach, as outlined, for instance, in Hoeksema (1984).[7]

Strauss (1982) rejects the level ordering theory insofar as the ordering of class I, class II and compounding is concerned. He observes that there exist violations of level ordering theory in which a prefix and a suffix are attached in the wrong order (e.g. *ungrammaticality*) but there are no such violations resulting from an illegitimate combination of two prefixes or two suffixes. He therefore argues that level ordering theory should be dropped and replaced with restrictions concerning string-adjacent morphemes. Kiparsky (1982) points out that the situation is more complex than Strauss has suggested: thus, Strauss wrongly predicts that things like **insuccessful*, featuring prefixation and suffixation in the wrong order, should be grammatical. It should be noted, in any event, that abandoning level ordering internal to the lexicon does not solve the full gamut of paradoxes, unless one is willing to abandon the ordering of the phrasal level and the lexicon, which is intrinsically guaranteed by the grammar as a whole, as well.

For all proposals from the literature discussed in the foregoing, we may therefore conclude that they are incomplete or inadequate, or both.

4. Our proposal

4.1. Type I (*unhappier*, *j'aime Marie*)

In section 2 we showed that bracketing paradoxes have the following things in common. They are forms for which one could in principle choose two derivational routes, and there are both arguments in favour the first route and ruling out the second, and ones in favour of the second and against the first. There are important differences as well, however. Looking at the reasons why the two routes are blocked, one finds that in cases of type I (*unhappier*, *j'aime Marie*) the level ordering theory and the semantics block one path and some phonological rule the other, while in cases of types II and III the first path is blocked by the level ordering theory and the second because of semantic scope or subcategorization properties.

It would be wrong to talk about a bracketing paradox in the case of type I. Recent research has shown that a grammar effectively consists of two grammars, a (morpho)syntactic grammar and a phonological grammar, which, though related, are autonomous. Whenever the phonological hierarchy fails to parallel the morpho-syntactic one, we are dealing with a lack of parallelism between two autonomous structures. It would be wrong to call this a paradox. We would be dealing with a paradox if within one particular grammar, e.g. the morpho-syntactic one, two conflicting structures would be assigned.

The situation in the case of *unhappier* can be represented as in (13).

(13) phonological grammar   morpho-syntactic grammar
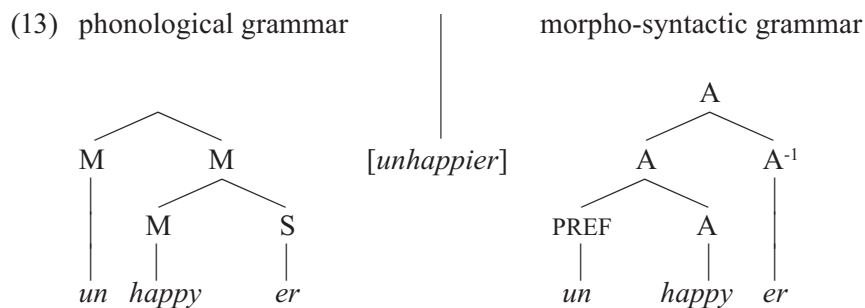
In the phonological grammar, a right-branching structure is used, in agreement with the phonological properties of *un-*, a phonologically independent element, and *-er*, a phonologically dependent element ('M' and 'S' stand for the phonological categories 'phonological word' and 'syllable'). In the morpho-syntactic grammar, by contrast, a left-branching structure is employed,

in line with the semantics of the construct. It is an interesting question as to how the phonological structure is related to the morpho-syntactic one. In generative grammar, Sproat and also Sadock have made proposals in this domain, as far as bracketing paradoxes are concerned. Sproat bases himself on a syntax-generated structure that is related via a mapping relationship to a set of alternative bracketings of the same string. From this set, the bracketing that meets the phonological constraints is selected. Sadock presents an analysis using conventions from autosegmental phonology to indicate the mapping between morpho-syntactic and phonological structure.

The other types of bracketing paradoxes we distinguished in the above arise as a result of a collision between the structure dictated by level ordering theory and a structure that is considered semantically adequate. A possible approach to these would be to assume, alongside autonomous prosodic and morphosyntactic structures, an autonomous semantic structure dictated by a semantic grammar. This would result in something like (14).

(14)   phonological grammar ⟶

       morpho-syntactic grammar ⟶ [.............]

       semantic grammar ⟶
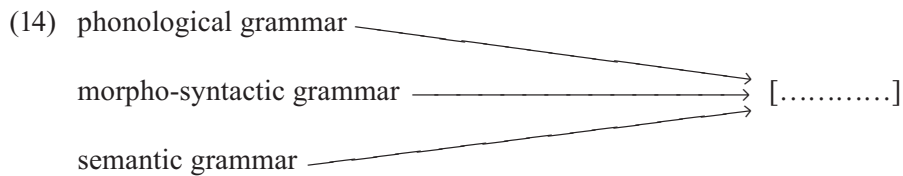
But we will not take this tack. We will continue to assume the standard generative perspective that structure aspects of meaning are handled by the same system that also takes care of other structural properties, such as word order. Following this line of thought, we are presented with a conflict of the type in (15):

(15)   level ordering theory

       A   B   C   or the mirror image (see [1])

                                           semantics
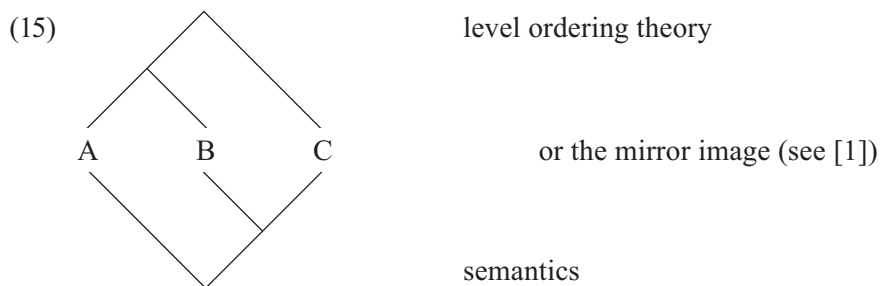
If we do not wish to exploit mechanisms such as Pesetsky's 'affix raising', we will be forced to assume that one of the two structures is not well-motivated. Two options then remain: we may either argue that level ordering

theory is false or we may show that the arguments for the semantic structure are inadequate. In what follows we will follow both routes: some cases will be analyzed as forms to which the wrong structure has been assigned as a consequence of incorrect assumptions within level ordering theory, and for which the semantically motivated structure is the correct one. For other cases, we will show that the arguments that have led to a semantic structure deviating from the one guaranteed by level ordering theory are untenable.

(16) – level ordering theory: *ungrammaticality* (type II)
                                    model-theoretic, dienstplichtig
                                    'service-obligation-y' (type II)

     – semantics: *blauwogig* 'blue-eye-y', *roodgevlekt*
                                    'red-spotted' (type II)
                                    beautiful dancer (type II)
                                    truck driver (type III)
                                    driver of a truck (type III)

4.2. Level ordering theory

In the foregoing, we discussed Strauss's proposal to replace level ordering theory with restrictions on combinations of adjacent morphemes. This would be a potentially fruitful move for those cases in which the relevant restrictions apply only to the combination of prefixes or the combination of suffixes. Then affixation would be able to occur subsequent to compounding, and the paradox in the case of *model-theoretic* (also Dutch *dienstplichtig* 'service-obligation-y, i.e. subject to (military) draft') would then evaporate. This proposal turned out to be overly simplistic since it would wrongly rule in things such as *insuccessful*. As an alternative to level ordering theory, Booij (1982) i.a. has proposed to explain the restrictions in terms of stratal features. Given a distinction between [+native] and [–native] morphemes, ill-formed combinations can be ruled out by saying that [–native] morphemes must not be peripheral to [+native] morphemes. The question that then arises is whether the feature harmony applies to string-adjacent morphemes or to morphemes adjacent in terms of hierarchical structure. The string-adjacency option fails to rule out *insuccessful*, while the standard hierarchical approach would rule out *ungrammaticality*. Hoekstra, Van der Hulst and Moortgat (1980) propose that, if stratal features are properties of 'heads', the well-formedness of *ungrammaticality* will follow from the

assumption that in *ungrammatical* it is not the prefix *un-* that is the head but the stem *grammatical*.[8] A stratal explanation of restrictions on morpheme combinations thus presents itself as an alternative to level ordering theory. And with such an explanation in place, cases such as *model-theoretic* and *ungrammaticality* are crossed off the list of bracketing paradoxes.

It should be clear that this approach does not get rid of all bracketing paradoxes, not even the word-level types. The *blauwogig* 'blue-eye-y, i.e., blue-eyed' type remains outstanding. Even if we were to allow *-ig* to attach to the compound *blauwoog*, there continue to be other reasons for blocking this derivation. That we are dealing here with suffixation to the second morpheme *oog* has been argued by various people (cf. Van Santen 1986, Meys 1981, Hoeksema 1983 and Moortgat 1986), among other things on the basis of parallel cases such as *zwartgerokt* 'black-GE-skirt-ed', for which the presence of the prefixal part of the participial circumfix *ge-* in between *zwart* 'black' and *rok* 'skirt' leaves no doubt that affixation takes place on the basis of *rok* and not on the basis of *zwartrok*.

4.3. Semantic arguments

The arguments leading to a particular semantic structure are often inadequate, as we will show.

Type II

a) The assignment of a particular semantic structure is often based on naïve paraphrases. Thus, in the case of (3c) it is often pointed out that the semantic structure of *blauwogig* is *blauwoog+ig* and not *blauw+ogig* because the paraphrase 'with blue eyes' makes sense while the paraphrase 'eyed in a blue sort of way' does not. What is presupposed in this line of thought is that compounds of the type A+A should be paraphrasable as 'Y in an X sort of way'. That this is incorrect, however, is clear from such compounds as *witheet* 'white-hot, i.e., extremely hot/angry'. The paraphrase 'hot in a white way' is just as ridiculous here as the paraphrase 'eyed in a blue way' for *blauwogig*. Such paraphrases are unsuitable, therefore, as a motivation for a particular semantic structure. A perhaps even clearer example is *roodgevlekt* 'red-GEspotted', for which the paraphrase 'with red spots' seems right and the paraphrase 'spotted in a red way' does not. Alongside *roodgevlekt*, however, we find the synonym *roodbont* 'red-motley', for which

an A+A analysis is the only feasible one, but for which a paraphrase 'motley in a red way' is just as nonsensical.

(17) a. $[_N$ *blauwoog*$] + [_A$ *ig*$]$ $\rightarrow [_A$ *blauwogig*$]$ 'with blue eyes'
       b. $[_A$ *blauw*$] + [_A$ *ogig*$]$ $\rightarrow [_A$ *blauwogig*$]$ *'eyed in a blue way'
       c. $[_A$ *wit*$] + [_A$ *heet*$]$ $\rightarrow [_A$ *witheet*$]$ *'hot in a white way'

(18) a. $[_N$ *roodvlek*$] + [_A$ *ge...t*$] \rightarrow [_A$ *roodgevlekt*$]$ 'with red spots'
       b. $[_A$ *rood*$] + [_A$ *gevlekt*$]$ $\rightarrow [_A$ *roodgevlekt*$]$ *'spotted in a red way'
       c. $[_A$ *rood*$] + [_A$ *bont*$]$ $\rightarrow [_A$ *roodbont*$]$ *'motley in a red way'

b) For the other cases of type II (with the exception of *ungrammaticality* and *model-theoretic*, discussed previously) we also find that naïve paraphrases have often been used to defend a particular semantic structure. But even when such a paraphrase seems right and points to an interpretation that does not tally with the morpho-syntactic structure very well, that still does not mean that this interpretation should be translated into a separate semantic structure. Thus, *beautiful dancer* is ambiguous. This ambiguity shows that we are dealing with structural complexity in semantic, or in any event cognitive, terms. It is questionable, however, whether the ambiguity in the case of *beautiful dancer* is to be taken care of structurally, in terms of syntax. The reason why this is dubious lies in the fact that precisely the same ambiguity manifests itself in constructions for which alternative structural parses cannot be held responsible. Examples of such noncomplex words with variable cognitive scope of modifiers are given in the right-hand column of (19), with semantically parallel cases with morphologically complex constructs being presented in the left-hand column.

(19) a. *een groot heerser*   *een groot strateeg*
         a great ruler   a great strategist

       b. *een langdradig schrijver*   *een langdradig auteur/boek*
         a long-winding writer   a long-winding author/book

       c. *een snelle rijder*   *een snelle sportwagen*
         a fast driver   a fast sportscar

       d. *een behendige klimmer*   *een behendig acrobaat*
         an agile climber   an agile acrobat

       e. *een enthousiast pianospeler* *een enthousiast pianist*
         an enthusiastic piano-player   an enthusiastic pianist

f. *een strenge leraar*   *een strenge vader/leermeester*
a stern teacher   a stern father/master

g. *een trouwe bezoeker*   *een trouw fan/lid*
a faithful visitor   a faithful fan/member

h. *een zware drinker*   *een zware alcoholist*
a heavy drinker   a heavy alcoholic

     een zwaar geval van alcoholisme
     a heavy case of alcoholism

i. *een handige prater*   *een handig advocaat*
a clever talker   a clever lawyer

j. *een verdienstelijk spreker*   *een verdienstelijke rede*
a meritorious speaker   a meritorious speech

In all these cases there is a so-called adverbial interpretation available, sometimes alongside an extensional interpretation. The availability of such an adverbial interpretation is not so much dependent on the presence, inside the noun, of a verbal part that refers to an action but instead on the question of whether the referent of the noun can be intrinsically associated with an action or property that is modifiable by the adjective. Things are even more complicated in cases such as *een luie stoel* 'a lazy chair', *een verdienstelijke zege* 'a meritorious victory' and *een wild plan* 'a wild plan', where the adjectives, semantically speaking, modify neither the referent of the noun nor an action associated with it, but rather something like the subject of that action. To resort to a special mechanism for the cases in the left-hand column in (19) would, when viewed from this perspective, imply the loss of a generalization.

Type III

For cases of the type *truck driver, driver of a truck*, featuring argument inheritance, the same argument applies. The fact that in a parallel verbal structure *(a) truck* receives its theta role from *drive* cannot be taken to be an argument for assuming a semantic structure like *truck drive + er* or *drive a truck + er* for the nominal cases — theme-like arguments are also found in combination with non-deverbal nouns:

(20) a. Dutch   *tasjesrover*   *tasjesdief*
                    bag-robber (i.e., pickpocket) bag-thief
                    voetballiefhebber   *voetbalfan*
                    soccer-lover   soccer-fan

      b. English   *oil trade*   *oil business*
                    toolholder   *toolbox*

(21) a. Dutch   *de schrijver van het boek*   *de auteur van het boek*
                    the writer of the book   the author of the book
                    de verzorger van het kind   *de vader van het kind*
                    the caretaker of the child   the father of the child

      b. English   *a causer of trouble*   *a source of trouble*
                    the leader of the company   *the boss of the company*

Conversely, in cases like *truck driver, driver of a truck* we find, in the position of (*a*) *truck*, not only theme arguments but also all sorts of other arguments and elements that cannot be arguments at all:

(22) a. Dutch   *tasjesrover*   *struik-, zee-, bankrover*
                    bag-robber (i.e. pickpocket) bush-, sea-, bank-robber
                    romanschrijver   *viltschrijver,*
                    novel-writer   felt-writer,
                                                          machineschrijver,
                                                          machine-writer
                                                          veelschrijver,
                                                          much-writer,
                                                          puikschrijver
                                                          fine-writer
                    bierdrinker   *probleemdrinker*
                    beer-drinker   problem-drinker

      b. English   *novel writer*   *ghost writer, typewriter*
                    bull fighter   *bush fighter,*
                                                          resistance fighter
                    scene painter   *word painter*

(23) a. Dutch   *de dichter van het sonnet*   *de dichter van het*
                    the rhyme-er (poet) of   *Leidseplein*
                    the sonnet   the poet of Leiden Square
                                                    de dichters van
                                                    tegenwoordig
                                                    the poets of today
                                                    de dichters van het
                                                    genoot schap
                                                    the poets of the society

    b. English   *the strangler of Mary*   *the strangler of Cornwall*

For a more detailed discussion of these formations we refer to Hoekstra and Van der Putten (1988).

So we see that both for forms of type II (with the exception of *ungrammaticality* and *model-theoretic*) and for those of type III, the non-isomorphic semantic structure that is often assumed is based on naïve paraphrases and superficial observations with respect to thematic structure. The arguments for a semantic structure that deviates from the morpho-syntactic structure turn out to be flawed. As soon as a semantic structure is assumed that matches the morpho-syntactic structure, we are no longer confronted with a paradox.

5. Conclusion

We have argued that so-called bracketing paradoxes come in three types. For all three types, we find both cases in which the paradox manifests itself at the lexical level and ones in which there is a conflict at the phrasal level.

We have shown that in none of these cases we are genuinely dealing with a paradox. Cases of the first type (*unhappier*, *j'aime Marie*) should be kept separate from the other cases. The conflict we find here is one between a PF representation fed by prosodic information and a morpho-syntactic (and semantic) structure determined by level ordering, subcategorization, etc. We are not denying that these two structures may be non-isomorphic. The fact that they differ from each other is perfectly natural, however. So there is no conflict or paradox here.

Bracketing paradoxes of the second and third types are parallel to the extent that in both cases the conflict is caused by morpho-syntactic factors, in particular the level ordering theory on the one hand, and factors of a

more semantic nature, such as scope, on the other. To argue that these are not genuine cases of paradoxes either, we needed to show that either the assumptions regarding level ordering or the observations concerning the semantic structure of the constructs in question are inadequate.

Cases such as *model-theoretic*, *dienstplichtig* 'service-obligation-y' and *ungrammaticality* can be accommodated by rejecting the restrictions imposed by level ordering theory, and to replace them, if necessary, by other restrictions (in the case of *ungrammaticality*, for instance, by stratal constraints on morpheme combinations).

In other cases, the argumentation with respect to the semantics of the constructions is unconvincing. One often finds that a particular semantic structure is assumed on the basis of incorrect paraphrases or without taking the full range of relevant cases into consideration. We do not have the illusion of having solved all relevant cases. On the contrary, the foregoing discussion shows that there are plenty of interesting problems crying out for solutions. What we do hope to have made clear, however, is that the category of bracketing paradoxes falls apart into a number of heterogeneous categories for which separate approaches are required.

Editors' note

This chapter first appeared in 1988 in *Spektator* 17/4, 300–316, as "Struktuur-paradoxen bestaan niet". Translated into English by Marcel den Dikken.

Notes

1. Of course it is equally possible for the mirror-image situation to present itself, with the level ordering theory prescribing a left-branching structure and sub-categorization a right-branching one. It is also possible that one of the two structures is not easily expressible in terms of a tree diagram. Such may be the case for *un danseur très élégant* 'a very elegant dancer' and *driver of a truck*, where the level ordering theory demands a left-branching structure (i) but where the semantics would lead one to connect *très élégant* 'very elegant' and *a truck* to the verbal forms *danse* 'dance' and *drive*, which would lead to a structure such as (ii).

(i)   (ii)

```
        dans   eur  très  élégant       dans   eur  très  élégant
        driv   er   of    a truck       driv   er   of    a truck
```
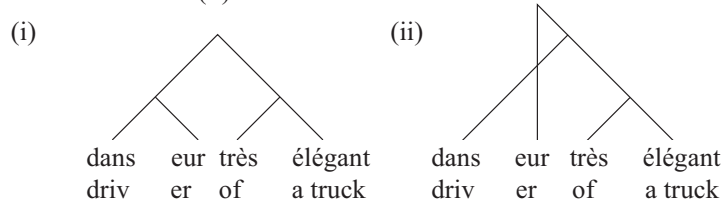
2. As an argument for the idea that word formation takes place on the basis of existing words one often finds the fact that idiosyncratic properties of an existing word are inherited under subsequent word formation. Thus, *handig* 'hand-y' does not mean 'with (many/big) hands' but 'agile/skilful (when it comes to the hands)'. This lexicalisation is inherited in *handigheid* 'hand-y-ness, i.e., agility, skilfulness'. The opposite is also found, however: the idiosyncratic interpretation linked to *harig* 'with lots of hair' we do not find in *langharig* 'long-hair-y, i.e., long-haired'. See also Aronoff (1976) and Meys (1981) for discussion.

3. The term '(argument) inheritance' is ambiguous. On a narrow interpretation, the term identifies a mechanism that registers that in a deverbal derived form such as *truck driver* the element *truck* bears the same relationship to *drive* as in the parallel verbal structure *drive a truck*. This mechanism is discussed in section 2.2. In the remainder of this article we use the term '(argument) inheritance' in another, broader sense, however. On this interpretation, '(argument) inheritance' is nothing more than a label for a particular group of deverbal derived forms – those that include a nominal element that corresponds to an identical element in a parallel verbal construction. So whenever we are talking about derivations with 'argument inheritance', we are referring to derivations for which an account in terms of an inheritance mechanism would in principle be possible, without implying, however, that we would actually like to choose such an account. On the contrary, we oppose such an analysis, and the arguments we will enumerate against a separate semantic structure for cases such as *truck driver* plead just as forcefully against an analysis in terms of an inheritance mechanism.

4. Sadock's is not the most felicitous example. First of all, on an IP-analysis of this sentence (with S fleshed out as a projection of INFL (I) whose specifier is

the subject NP) there is no major constituent boundary present between the finite verb and the subject. Secondly, it is not at all obvious for French subject-clitics that their cliticization is syntactically irrelevant (cf. Kayne 1984: ch. 10). Nonetheless, the general point that phonological phrasing does not parallel syntactic constituent structure is correct in and of itself. A simple example to show this is the phonological phrasing of an NP with a postnominal modifier. Phonologically, the postmodifier is realized as a sister to the head plus determiner, while syntactically the determiner is a sister to the combination of the head and the modifier.

5.   These cases call for an analysis basing itself on a phrasal input. This implies that they threaten the level ordering theory in (2). We will not discuss this further here because our main objective is not to reject the level ordering theory. See also note 7.

6.   A third theory exploiting two autonomous structures is Moortgat's (1986). His proposal will not be discussed in detail here, since he uses a theoretical framework differing from ours. Viewed from our perspective, his proposal is comparable to that of Sproat. His theory can generate the power-set of possible syntactic structures, but these all receive the same interpretation at LF. From the total set of syntactic structures, the theory selects the structure that corresponds to the demands of the phonological component.

7.   The criticism of Botha's theory presented in Hoeksema (1984) i.a. assumes, like Botha himself, a much richer theory of phrase structure rules than is currently in vogue. Both Botha's line of argument and the objections to it should be re-evaluated in the light of recent developments in X-bar theory. This is particularly the case in the light of claims like those made in Fabb (1984) and Sproat (1985) to the effect that the standard dividing line between the lexicon and syntax (co-inciding with the traditional dichotomy between word formation and sentence formation) is in need of revision. Examples such as *rode-bessen-taart* 'red berry-cake' and *zwartebander* 'black belt-er', mentioned earlier, seem to require an interaction between phrases and affixation that is impossible on standard assumptions about the place and function of the lexicon. It would take us too far afield, however, to dwell on this further.

8.   One wonders how idiosyncratic allomorphy should be dealt with. A variety of alternatives spring to mind – e.g., that allomorphy is subject only to a string-adjacency requirement, or that allomorphy is based on phonological structure, or that allomorphy applies to heads. We will not address the question of which of these approaches is to be preferred.

The nominal infinitive

with Pim Wehrmann

1. Introduction

This paper discusses the internal and external syntax of infinitival nominalizations in Dutch. Special attention is paid to the difference between infinitive nominalizations with and without the definite article *het* 'the', and the properties of infinitive nominalizations that can be derived from the theory. The theory that we base ourselves on is generative grammar. We are aware of the fact that there are many different factors that determine whether and in which way it is possible to nominalize an infinitive (e.g. thematic roles, aspectual distinctions). Here, however, we concentrate on those factors that can be isolated within the theoretical framework that we have chosen.

2. Types of infinitive nominalizations

There are several types of constructions with infinitives in Dutch. Two of these types we will not discuss in this paper: infinitival constructions in which the infinitive is preceded by *te* 'to', illustrated in (1), and infinitival complements of so-called verb raising predicates, as in (2).

(1) a. *Het is moeilijk (om) hier nog langer te blijven.*
        it   is difficult (for) here yet longer to stay-INF
        'It is difficult to stay here any longer.'

    b. *Het is noodzakelijk (om) eerst de aardappels te schillen.*
        it   is necessary   (for) first the potatoes   to peel-INF
        'It is necessary to peel the potatoes first.'

(2) a. *Ik wil   mijn moeder een cadeautje geven.*
        I want my   mother a   present   give-INF
        'I want to give my mother a present.'

    b. *Ik hoor Jan   een liedje zingen.*
        I hear John a   song sing-INF
        'I hear John sing a song.'

We assume that the infinitival constructions in (1) involve constructions that have the categorial status S'. According to current analyses, these constructions have a PRO subject. Below we will illustrate how the distribution of this construction differs from the distribution of the construction types that we do discuss. The bare infinitive constructions in (2) can be distinguished from infinitive nominalizations in that bare infinitives form a complex with the governing verb, as the subordinate clauses in (3) show.

(3) a. *dat ik mijn moeder een cadeautje wil   geven*
         that I   my   mother a   present   want give-INF
         '… that I want to give my mother a present.'

     b. *dat ik Jan een liedje hoor zingen*
         that I   john a   song   hear sing-INF
         '… that I hear John sing a song.'

The infinitival constructions that we do examine are illustrated in (4):

(4) a. *aardappels schillen* (*is leuk*)
         potatoes   peel-INF (is fun)
         'Peeling potatoes (is fun.)'

     b. *het aardappels schillen* (*is leuk*)
         the potatoes   peel-INF (is fun)
         'The peeling of potatoes (is fun.)'

     c. *Het schillen   van aardappels* (*is leuk*)
         the peel-INF of   potatoes   (is fun)
         'The peeling of potatoes (is fun.)'

(4a) and (4b) have in common that the object precedes the infinitive, (4b) and (4c) have in common that they start with the definite article *het* 'the'. This clearly marks the latter two as nominal. It is not immediately clear whether the construction in (4a) has a nominal status. Dik (1985) claims that this phrase is verbal and calls it INF, whereas the construction in (4c) would be nominal ('NOM1') just like the derivational deverbal construction of the type *de daling van de prijzen* 'the lowering of the prices' ('NOM2'). The construction type in (4b), however, does not really exist according to Dik, and he considers the example in (5) to be ungrammatical. He claims that, in general, to a certain extent even nominalizations of the NOM1 type allow a theme to precede the verb, without *van* 'of'. This is particularly the case when the theme is a generic NP (i.e., it is not a definite or specific NP).[1]

(5) *het voor de gezelligheid je hondje meenemen op*
 the for the cosiness   your doggy with-take on
 vakantie (*is riskant*)
 vacation (is risky)
'To take your doggy with you on holidays is risky.'

Although we agree with Dik that there are certain restrictions on the type
of NPs that may precede an infinitive with a definite article, we take issue
with his opinion that in fact there does not exist a type of nominalization in
which the infinitive is specified by *het* 'the' while the construction has a
number of properties of verbal constructions, such as the preverbal position
of NPs.

 All three types of nominalizations in (4) have the external syntax of NPs.
In this respect they, and in particular (4a), differ from *te* 'to' infinitive con-
structions, as (6) and (7) show.[2]

(6) a. *Ik vind het weerzinwekkend* [*ritueel te slachten*]
   I find it repulsive   [ritually to slaughter-INF]
   'I find it repulsive to slaughter ritually.'

  b. **Ik vind* [*ritueel te slachten*]   *weerzinwekkend*
   I find [ritually to slaughter-INF] repulsive

  c. **Ik vind het weerzinwekkend* [*ritueel slachten*]
   I find it repulsive   [ritually slaughter-INF]

  d. *Ik vind* [*ritueel slachten*]   *weerzinwekkend*
   I find [ritually slaughter-INF] repulsive

(7) a. **Jan houdt van* [*aardappels te schillen*]
   John likes of [potatoes to peel-INF]
   'John likes to peel potatoes.'

  b. *Jan houdt ervan* [*aardappels te schillen*]
   John likes there-of [potatoes to peel-INF]

  c. *Jan houdt van* [*aardappels schillen*]
   John likes of [potatoes peel-INF]

  d. **Jan houdt ervan* [*aardappels schillen*]
   John likes there-of [potatoes peel-INF]

(8)   a. **Jan   zei   dat* [*Marie te zoenen*]   *leuk is*
         John   said   that [Mary to kiss-INF] fun is
         'John said that it is fun to kiss Mary.'

      b. *Jan   zei   dat het leuk is* [*Marie te zoenen*]
         John   said   that it fun is [Mary to kiss-INF]

      c. *Jan   zei   dat* [*Marie zoenen*]   *leuk is*
         John   said   that [Mary kiss-INF] fun is

      d. **Jan   zei   dat het leuk is* [*Marie zoenen*]
         John   said   that it fun is [Mary   kiss-INF]

The *te* 'to' infinitives show the same distribution as *dat* 'that' clauses here, whereas the constructions without *te* have the same distribution as unsuspected NPs. The construction types in (4b) and (4c) behave exactly like the *te*-less constructions. This is sufficient support for our claim that in all three cases we are dealing with constructions that have the external syntax of NPs.

   We conclude from this that there are phrases with an infinitive as their core which differ from each other internally but not externally. Put differently, there are different types of hybrid constructions: hybrid in the sense that they have a verbal core but the external behavior of a nominal construction. In the next section we discuss the internal differences between these hybrids.

3.   The internal structure

3.1. *Het* 'the' nominalizations

Let us start with an investigation of the differences between the two *het* 'the' nominalizations. Dik (1985) shows rather extensively that the construction of the type in (4c) has a considerable number of nominal properties but also a number of verbal properties. The most salient nominal properties are the realization of the theme as a *van* 'of' phrase following the infinitive and the possibility of adjectival modification. The most important verbal property mentioned by Dik is the possibility of adverbial modification. These possibilities are illustrated in (9).

(9) a. *het hartstochtelijk-e   schieten van kleiduiven*
           the passionate-ADJ INFL shooting of   claysoil pigeons

      b. *het hartstochtelijk schieten van kleiduiven*
           the passionately   shooting of   claysoil pigeons

Another important verbal property of these phrases is the possibility for PPs to precede the core. This is excluded in unsuspected nominal phrases, as the contrast in (10) shows.

(10) a. *het over je   vrienden praten*
          the about your friends   talk-INF

      b. *het praten   over je   vrienden*
         the talk-INF about your friends

      c. * *het over je   vrienden gesprek*
         the about your friends   conversation

      d. *het gesprek   over je   vrienden*
         the conversation about your friends

This shows that the hybrid character of these *het* 'the' infinitive constructions is not restricted to the core. The constructions in (11) are a real cross between a nominal phrase (realization of the theme as a *van* 'of' phrase following the core) and a verbal phrase (the occurrence of a PP in a position preceding the infinitive).

(11) a. *het met een kwastje aanbrengen van een verflaag*
          the with a   brush   apply-INF   of   a   coat of paint
          'the applying of a coat of paint with a brush'

      b. *het tot een dieptepunt zakken van de dollarkoers*
         the to an   all-time low fall-INF of   the dollar rate
         'the falling of the dollar rate to an all-time low'

The groups of the type in (4b) have stronger verbal properties. In addition to the verbal properties that we also find in the constructions of the type in (4c), we find NPs preceding the infinitive here. Some examples are given in (12).

(12) a. *Het je   moeder een cadeautje geven   (is een goede*
        the your mother a   present give-INF (is a   good
        gewoonte)
        habit)
        'It is a good habit to give your mother a present.'

     b. *Het boeken lezen   voor een lijst (vergalt je   plezier*
        the book   read-INF for   a   list (spoils your pleasure
        in lezen)
        in read-INF)
        'To read books for a list spoils your pleasure in reading.'

     c. *Het gedurende een uur een wandeling maken (is gezond*)
        the during   an hour a   walk   make (is healthy)
        'It is healthy to walk for an hour.'

How can we account for the gradualness of this transition from verbal to nominal character? An answer to this question is given in Jackendoff (1977b), where he proposes his 'deverbalizing rule scheme'. This rule scheme, which has the form in (13), is intended to restrict the possible category changes within phrases, changes which in themselves are counterexamples to the core assumptions of X-bar theory.

(13) $X^i \rightarrow$ affix V^i

Jackendoff says about (13): "The structures grow internally less X-like and more sentence-like, as *i* goes from 1 to 3 and as the complements and specifiers are determined by more supercategories of V and fewer supercategories of X. Externally, however, they are still X^3, not S" (p. 221–222).[3]

   If we read N for X in (13), this quotation applies very well to the situation just described. Externally, the constructions have the distribution of NPs (section 2), but internally they differ in the degree of verbal behavior. Hoekstra (1984b) provides a detailed discussion of how to treat these intermediate options in terms of (13). We will not discuss this issue any further here.

   We would like to note here that there is an alternative for the deverbalizing rule scheme, the operation of affix raising proposed in Pesetsky (1985) (cf. also Fabb 1984). Although this alternative fits in better with the pursuit of reducing the explanatory role of the rewrite component (cf. Stowell 1981 and Hoekstra 1984b), in this paper we consider these two alternatives as two different technical realizations of the same concept.

3.2. Infinitival nominalization without *het* 'the'

The infinitival nominalization without *het* 'the' is internally verbal in almost all respects. We illustrate some of these properties.

– No realization of the theme as a PP with *van* 'of' following the infinitive:

(14) a. *Hij vond   dat [*op die middag   beroven van de bank*]
         he   thought that [on that afternoon rob-INF of   the bank]
         gevaarlijk   was
         dangerous   was
         'He thought that it would be dangerous to rob the bank on that afternoon.'

      b. *Hij vond   dat* [*op die middag   de bank beroven*]
         he   thought that [on that afternoon the bank rob-INF]
         gevaarlijk   was
         dangerous   was

– No adjectival modification

(15) a. *snel* / **snell-e   eten*
         fast / *fast-ADJ INFL   eat-INF

      b. *het snel / snelle   eten*
         the fast / fast-ADJ INFL   eat-INF

– The subject cannot be realized as a genitive.[4] We do find infinitives with a genitive subject as a premodifier, as in (16). In such cases, however, we are dealing with a variant of the infinitival construction with *het* 'the'. Although it is hard to establish that we are dealing here with an expression that is in the same paradigm as the article, the analysis seems to be acceptable. Normally the genitive premodifier is in the paradigm of the article indeed, and in the case of nominalizations the 'nominal' properties in the rest of the group and the genitive premodifier go together. For example, we find constructions as in (17):

(16) *Pauls   ontwaken*
       Paul-POSS   awake-INF
      'the awakening of Paul'

(17) a. *Pauls   vlugg-e   praten*
         Paul-POSS fast-ADJ INFL   talk-INF
         'Paul's talking fast'

   b. *Pauls   treiteren   van kleine kinderen*
         Paul-POSS torment-INF   of   little   children
         'Paul's tormenting of little children'

– Another difference involves the possibility of a *door* 'by'-phrase, which
   can be added to the *het* 'the' infinitival construction but not to the con-
   struction without *het* 'the'.

(18) a. * *Wij vonden dat* [*aardappels schillen door Jan*] *grappig was*
            we thought that [potatoes   peel-INF by   John] funny   was

   b. *Wij vonden dat* [*het schillen   van aardappels door Jan*]
         we thought that [the peel-INF of   potatoes   by   John]
         grappig was
         funny   was
         'We thought that the peeling of potatoes by John was funny.'

Why is it impossible to have a *door* 'by'-phrase in an infinitival construction
without *het* 'the'? For ease of exposition we will refer to every complement
of a *door* 'by'-phrase with the term 'agent'. A straightforward explanation
would be that there is no agent available. This could have two causes. First,
the agent could be 'absorbed', similarly to a passive construction without a
door 'by'-phrase, or alternatively, the agent role could be assigned to a NP
that is not realized lexically. There are few indications that the former
approach is correct. There is no morphological operation that could be held
responsible for this absorption. Moreover, it is not clear why this absorption
does not hold for infinitive constructions with *het* 'the' as well. The alter-
native would entail that there is a syntactic subject position in the nominal-
ization which is filled with PRO. In terms of (13), the difference between
nominalizations with *het* 'the' and those without can be represented struc-
turally as in (19).

(19)   without *het* 'the'   with *het* 'the'

```
            N^max                                        N^max
           /     \                                      /     \
       V^max     affix                                DET      N^i
       /   \      -en                                  |      /   \
     PRO    ⋮                                   {het, NPgen}  V^i  affix
            ⋮                                             ⋮    -en
            ⋮                                             ⋮
            V°                                            V°
```
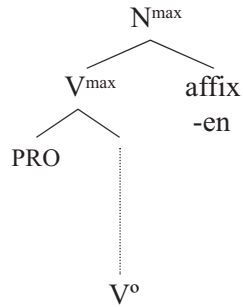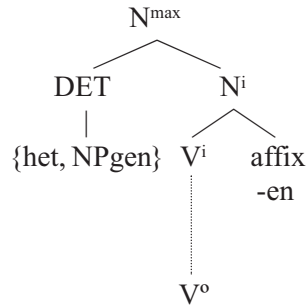
In these structures, attachment of complements and specifiers takes place at the dotted lines. For the assumption that S is V^{max}, see Hoekstra (1984b: ch. 2).

Now that we have established the internal structure of the different types of nominalizations, the next question is what we can derive from our assumption that infinitive constructions without *het* 'the' have a PRO subject. This will be the topic of the next section.

4. The PRO subject

We have just established that a *door* 'by'-phrase cannot occur in constructions without *het* 'the'. This claim is only partially true, as the examples in (20) show:

(20) a. *Hij zei   dat* [*door Kasparov verslagen worden*] *geen*
          he   said that [by   Kasparov beaten   be-INF] no
          schande   is
          shame   is
          'He said that is not a shame to be beaten by Kasparov.'

      b. *Hij vond   dat* [*gezoend worden door Marie*] *lekkerder*
          he thought that [kissed   be-INF by   Mary] nicer
          was dan [*geslagen worden door haar man*]
          was than [beaten   be-INF by   her   husband]
          'He thought that it was nicer to be kissed by Mary than to be
           beaten by her husband.'

However, these constructions are by no means counterexamples to our hypothesis that there is a PRO subject present. On the contrary, we are dealing here with a passive construction, which involves absorption of the agent role. The structure of these constructions is as in (21).

(21)   [PRO$_i$ [*door* NP] [NP e$_i$] V$_{pass}$]

As indicated, the PRO subject corresponds here to a trace in object position. As a consequence, the object cannot be expressed in this construction, cf.:

(22)   a. *[*door Kasparov Karpov   verslagen   worden*]
            [by   Kasparov Karpov   beaten   be-INF]

        b. [PRO *Karpov   verslaan*]
            [PRO Karpov   beat-INF]
            'to beat Karpov'

If it is true that there is a subject position in this construction, it must be filled by PRO. None of the other types of empty categories distinguished in generative grammar is a candidate for this position. PRO can only occur if it is the head of a chain to which a theta-role is assigned. Put differently, PRO can only function as an argument. This requirement is satisfied in the structure in (21): PRO is the head of a chain with the trace in object position as its foot, to which a thematic role is assigned.

We are now able to derive a clear prediction: even though Dutch has the option of an impersonal passive, this option is excluded in the *het* 'the'-less infinitive construction. This prediction is borne out.

(23)   a. *Gedanst   worden   in   de   kantine* (*is leuk*)
            danced   be-INF   in   the canteen (is fun)

        b. *Gelachen   worden   door   de   kinderen* (*stoorde   de leraar*)
            laughed   be   by   the children (disturbed the teacher)

Compare:

(24)   a. *Het is leuk dat er   in de   kantine gedanst wordt*
            it   is fun that there in the canteen danced is
            'It is fun that there are people dancing in the canteen.'

b. *Het stoorde   de leraar dat er   door de kinderen*
   it   disturbed the teacher that there by   the children
   werd gelachen
   was   laughed
   'It disturbed the teacher that the children were laughing.'

The structure of the nominalizations in (23) is as in (25).

(25) [PRO [*door* NP] V_{pass}]

PRO is not a part of a chain to which a thematic role is assigned. However, the argument that we have just presented is not sufficient to explain why impersonal passives are excluded from nominalizations with *het* 'the' as well, as in (26).

(26) a. **het gedanst worden*
         the danced   be-INF

b. **het gelachen worden door de   kinderen*
      the laughed be-INF by   the children

c. **het aan de bel getrokken worden*
      the on   the bell pull   be-INF

d. **het verteld worden dat Jan   ziek is*
      the told   be-INF that John sick is

The basis for an explanation of the illformedness of (26) is a reanalysis of the Burzio generalization presented in Roberts (1985). The Burzio generalization establishes an in itself peculiar relation between theta-marking of the subject and accusative case assignment to the object. It is formulated as in (27).

(27) If a verb does not assign a thematic role to the subject, it does not assign accusative case to the object, and vice versa.

Although the generalization in (27) roughly seems to be correct, it does not say anything about the nature of the proposed relation. Roberts's hypothesis given in (28) does give insight into the nature of this relation.

(28) The passive morpheme carries the external thematic role.

As a carrier of a thematic role the passive morpheme is an argument. Arguments, except PRO, become visible for the Theta Criterion by case marking. Consequently, the passive morpheme must receive case.

This hypothesis provides the basis for the explanation of a problem for the Burzio generalization. This generalization does not give insight into the difference between languages like English that do not allow impersonal passives and languages like Dutch in which impersonal passives do occur. We can account for this difference if we assume that the passive morpheme in English-type languages can only receive accusative case, whereas in languages of the Dutch type this morpheme can receive both accusative and nominative case. In impersonal passives there is no accusative case available for this passive morpheme, since it involves verbs that do not govern a NP object in the active voice. The nominative in English should always be assigned to the subject position, which has to be filled. There is no such requirement in Dutch. So-called expletive *het* 'it' is optional, hence nominative is available for the passive morpheme.

Returning now to the constructions in (26) we see how the hypothesis in (28) provides a straightforward explanation for their illformedness. Nominative case is assigned only in tensed clauses, in which INFL is specified. In nominalizations, INFL and hence nominative case are absent. The passive verbs in this nominalization do not assign accusative in the active counterpart. Therefore, there is neither nominative nor accusative case available for the passive morpheme. As a consequence, the argument expressed by this morpheme is invisible for the theta criterion and the construction is not well formed.

This explanation also applies to the constructions in (23). Thus, we establish that there is a certain amount of redundancy in the theory, while noting at the same time that the explanation presented here does not exclude the presence of PRO in the *het* 'the'-less construction in any way. We will present further motivation for the assumption that *het* 'the'-less infinitival nominalizations contain PRO in what follows.

The assumption that there is PRO subject present raises the question as to how PRO is interpreted. The theory distinguishes between two kinds of interpretations of PRO: obligatory control and arbitrary control, or rather arbitrary reference (see Williams 1980 and Manzini 1983, among others). For obligatory control there must be a specific antecedent present elsewhere in the structure. Two types can be distinguished. In the first place infinitival complement constructions with a lexically determined controller, as in (29a) where the matrix subject is the controller, and (29b), where the matrix object is the controller (cf. Van Haaften and Pauw 1982

and Van der Lubbe 1983). In the second place infinitival adjuncts, in which the controller usually is the matrix subject, as in (30) (but see Beukema 1984).

(29) a. *Jan beloofde Marie* [PRO *weg te gaan*]
　　　　John promised Mary [PRO away to go]
　　　　'John promised Mary to leave'

　　 b. *Jan dwong Marie* [PRO *weg te gaan*]
　　　　John forced Mary [PRO away to go]
　　　　'John forced Mary to leave'

(30) a. *Na* [PRO *aangelegd te hebben*] *schoot hij de bal in*
　　　　after [PRO taken aim to have] shot he the ball into
　　　　het doel
　　　　the goal
　　　　'After having taken aim he shot the ball into the goal.'

　　 b. **Na* [PRO *geschoten te hebben*] *verdween de bal*
　　　　after [PRO shot to have] disappeared the ball
　　　　in de linker bovenhoek
　　　　in the left upper corner

We find examples of arbitrary reference in (31). There is no NP in these sentences that could act as a controller of PRO. Arbitrary reference means that PRO is interpreted here as 'someone/anyone'.

(31) a. *Het is leuk* [*om* PRO *naar het strand te gaan*]
　　　　it is fun [for PRO to the beach to go]
　　　　'It is fun to go to the beach.'

　　 b. *Deze boeken zijn leuk* [*om* PRO *te lezen*]
　　　　these books are fun [for PRO to read]
　　　　'These books are fun to read.'

In this perception an important difference between the two interpretations of PRO involves the required presence versus the possible absence of an antecedent in the context (for other differences, see in particular Williams 1980). We have our doubts about the correctness of this factor. The question is how we should interpret the presence of an antecedent. In the case of control, presence seems to mean lexical presence,[5] although even that is in doubt, witness constructions such as (32).

(32) a. *Er   werd geprobeerd* [PRO *de brug   op te blazen*]
        there was   tried   [PRO the bridge up to blow]
        'There was an attempt to blow up the bridge.'

    b. *Er   werd gesuggereerd* [*om* PRO *water bij de wijn te doen*]
        there was   suggested   [for PRO water by the wine to do]
        'It was suggested to make a compromise.'

In (32a), PRO is controlled by the unexpressed agent of *proberen* 'try',
while in (32b) PRO is controlled by the implicit recipient of *suggereren*
'suggest'. Apparently, implicit arguments can control PRO too. In theory,
we can now distinguish three options for the interpretation of PRO, given in
(33). The so-called theory of control should then specify which of these
options must be selected for a particular instance of PRO. We will not go
any further into this issue here.

(33) a. control by an overt argument
    b. control by an implicit argument
    c. arbitrary reference

The question is now whether there is reason to distinguish option (33c) in
addition to (33b). In the examples in (31) option (33b) is relevant. The
adjective *leuk* 'fun' has an implicit argument that can be made explicit in a
PP with *voor* 'for'. The option in (33c) would only be relevant in circum-
stances in which it is impossible to identify an implicit argument or to
make it explicit. Compare the following constructions.

(34) a. *Het is noodzakelijk dat Jan   daar heen   gaat*
        it   is necessary   that John there toward goes
        'It is necessary that John goes there.'

    b. *Het is waarschijnlijk dat Jan   daar heen   gaat*
        it   is likely   that John there toward goes
        'It is likely that John will go there.'

As opposed to the adjective *noodzakelijk* 'necessary', which has an implicit
argument that can be made explicit as a PP with *voor* 'for'[6], the adjective
waarschijnlijk does not have an implicit argument. Such adjectives system-
atically disallow infinitival complements, as is illustrated in (35).

(35) a. *Het is noodzakelijk* (*voor Jan*) [*om* PRO *daarheen   te gaan*]
      it   is necessary   (for John) [for PRO there toward to go]
      'It is necessary (for John) to go there.'

    b. **Het is waarschijnlijk* [*om* PRO *daarheen   te gaan*]
       it   is likely   [for PRO there toward to go]

On the basis of this we conclude that option (33c) does not exist, i.e. the presence of PRO always requires the presence of an implicit or explicit argument. The so-called arbitrary reference of PRO is not a consequence of a lack of control, but is caused by an arbitrary or unspecified reference of the argument that controls PRO.

   After this discussion of the interpretation of PRO we return to the *het* 'the'-less infinitive nominalization, for which we also postulated a PRO subject. We now predict that such constructions are also only possible if there is a controller. This prediction is correct, as the following examples show.

(36) a. *Studeren   is   leuk* (*voor* NP)
      study-INF is fun (for NP)
      'It is fun to study.'

    b. **Studeren   is slechts schijn*
       study-INF is only   appearance

    c. *Het studeren   van Jan   is slechts schijn*
      the study-INF of John is only   appearance
      'John's studying is only apparent.'

(37) a. *Z'n broertje bedreigen   is vervelend* (*van* / *voor* NP)
      his brother threaten-INF is annoying (of / for   NP)
      'It is annoying to threaten his brother.'

    b. **Z'n broertje bedreigen   is onwaarschijnlijk*
       his brother threaten-INF is unlikely

    c. *Het bedreigen   van z'n broertje is onwaarschijnlijk*
      the threaten-INF of his brother is unlikely
      'The threatening of his brother is unlikely.'

The claim defended here that PRO always involves control, either by an explicit or by an implicit argument, also predicts that a PRO subject is impossible when no implicit argument is available as an antecedent. This

prediction is borne out as well, as we can see with weather verbs. These verbs can only take *het* 'it' as their subjects, or a PRO controlled by *het* 'it', as in (38). We assume that *het* 'it' is not a non-argument, but the only expression that can carry the thematic role assigned by weather verbs (Hoekstra 1984b: note 81 and Bennis 1985).

(38) a. *Het onweert zelden zonder* [PRO *ook te regenen*]
       it   thunders seldom without [PRO also to rain]
       'Thunder seldom happens without raining.'

   b. *Het is na*   [PRO *twee dagen geregend te hebben*]
       it   is after [PRO two days   rained   to have]
       toch nog droog geworden
       yet still dry   become
       'It has got dry after all after two days of rain.'

This specific argument *het* 'it' cannot occur as an argument of adjectives. (39a) is excluded. A *het* 'the'-less infinitive nominalization with a weather verb as its core is therefore excluded as well, as (39b) shows.

(39) a. **Het is vervelend van het / ervan*   *dat het regent /*
       it   is annoying of   it / there-of that it   rains /
       koud is / benauwd is
       cold is / muggy   is

   b. *Wij vinden [PRO *regenen / koud zijn / benauwd*
       we find   [PRO rain-INF / cold be / muggy
       zijn] *vervelend*
       be] annoying

The reason for the ungrammaticality of (39) is that the PRO subject of *regenen* 'rain' etc. cannot be controlled by an implicit argument of a predicate in the matrix.

    We conclude this section by establishing that the assumption of a PRO subject which was given a structural underpinning in section 3 makes a number of correct predictions. In the next section we briefly discuss some further consequences of the absence of the article *het* 'the' in infinitival nominalizations.

5. Absence of an article

The infinitive constructions that we have discussed here are all grammatically singular, as is shown by the number agreement on the finite verb when the nominalization is a subject. Singular nominal constructions (except when they have the function of a predicate noun) always have an article, unless we are dealing with what is traditionally called a material noun, to which we prefer to refer with the term 'non-countable noun'. Non-countable nouns include material nouns but also other words such as *muziek* 'music' en *armoede* 'poverty'. Non-countable nouns cannot occur with an indefinite article, cf. (40).

(40) a. *Jan   kocht   zand*
          John bought sand

      b. *Jan   kocht   het   zand*
          John bought the   sand

      c. ***Jan   kocht   een   zand*
          John bought a   sand

Infinitival nominalizations have in common with non-countable nouns that they may occur without an article but not with the indefinite article *een* 'a'.[7]

    Non-countable nouns without an article have two interpretations, an indefinite and a generic interpretation. The indefinite interpretation is relevant when the construction occurs within a restricted time frame, while the generic interpretation arises in a non-restricted time frame. When such a NP is the subject, the indefinite interpretation is obtained by the presence of so-called existential *er* 'there'.[8]

    The following examples illustrate these claims.

(41) a. *Er   ligt zand op de   vloer* (onbepaalde hoeveelheid)
          there is   sand on the floor   (undetermined quantity)

      b. *Zand is geschikt om mee te spelen* (de soort zand)
          sand is fit   for with to play   (the kind of sand)
          'Sand is fit to play with.'

In this respect the *het* 'the'-less infinitive constructions behave like NPs with a non-countable noun with a generic interpretation. They do not occur in a so-called existential construction, as in (42b).

(42) a. *Ritueel slachten   wordt weerzinwekkend gevonden*
        ritually slaughter-INF is   repulsive   considered
        'Ritual slaughter is considered to be repulsive.'

   b. **Er   wordt ritueel slachten   weerzinwekkend gevonden*
        there is   ritual slaughter-INF repulsive   considered

On the basis of this parallel we may expect that *het* 'the'-less infinitive
constructions occur in timeless contexts. This is indeed the case in the
examples in (43).

(43) a. *Veel   melk drinken   is ongezond*
        much   milk drink-INF is unhealthy
        'It is not healthy to drink a lot of milk.'

   b. *Roken   schaadt de gezondheid*
        smoke-INF damages the health
        'Smoking is bad for your health.'

   c. *Ik vind in de zon liggen saai*
        I find in the sun lie-INF boring
        'I find it boring to lie in the sun.'

   d. *Ik haat bollen pellen*
        I hate bulbs   peel-INF
        'I hate to peel flower bulbs.'

   e. *Ik hou van laat naar bed gaan*
        I like of late to   bed go-INF
        'I like to go to bed late.'

   f. *Ik ben dol op tv kijken*
        I am fond of tv watch-INF
        'I am fond of watching tv.'

In contexts that are clearly restricted in time the use of this construction is
odd, as the following examples show.

(44) a. **Gisteren is mij hasjies roken plotseling opgevallen*
       yesterday is me hashish smoke-INF suddenly struck

   b. **Jan ergerde mij vanmiddag door bier drinken*
       John annoyed me this afternoon by beer drink-INF

   c. **Een bank beroven is in dat dorp nog nooit voorgevallen*
       a bank rob-INF has in that village still never happened

This semantic property of the *het* 'the'-less infinitive construction explains the restrictions on its distribution that cannot be expressed in structural terms, such as the contrast in (45), where in both cases the construction is the NP in the prepositional object.

(45) a. *Ik hou van aardappels schillen*
      I like of potatoes peel-INF
      'I like to peel potatoes.'

   b. **Ik wacht op aardappels schillen*
      I wait for potatoes peel-INF

The constructions with *het* 'the' differ in this respect from the *het* 'the'-less constructions, as is shown by he examples in (46).

(46) a. *Jan heeft mij vanmiddag geërgerd door het drinken*
      John has me this afternoon annoyed by the drink-INF
      of beer
      van bier.
      'John has annoyed me this afternoon by drinking beer.'

   b. *Het beroven van een bank is in dat dorp nog nooit*
      the rob-INF of a bank is in that village still never
      voorgevallen
      happened
      'The robbing of a bank has never happened in that village.'

Here as well there is a correspondence between infinitive constructions with an article and (other) non-countable nouns. They as well occur both in time-restricted and timeless contexts.

In timeless contexts infinitive nominalizations and (other) non-countable nouns show yet another correspondence. For both it holds that the use of an article in a timeless context yields an odd construction, as (47) and (48)

show. When the article is omitted the constructions improve considerably. The peculiarity of the construction in (48) was also observed in Hulshof (1983).

(47) a. ? *Het zand bestaat uit kristallen*
     the sand consists of crystals

   b. ? *De wijn wordt gemaakt van druiven*
     the wine is   made   of   grapes

   c. ? *De hoofdpijn komt   veel   voor*
     the headache occurs often

(48) a. ? *Het slapen   is gezond*
     the sleep-INF is healthy

   b. ? *Het reizen   geeft plezier*
     the travel-INF gives pleasure

   c. ? *Het roken   is ongezond*
     the smoke-INF is unhealthy

The oddness also disappears when the (infinitival) noun is specified further. This is shown by the contrast between the examples in (47)–(48) and (49)–(50).

(49) a. *Het zand in Spanje is korreliger   van structuur*
     the sand in Spain is more granular of   structure

   b. *De wijn in Frankrijk wordt gemaakt van de pinot noir*
     the wine in France   is   made   of   the pinot noir

   c. *De nerveuze hoofdpijn komt   tegenwoordig vaker voor*
     the nervous headache occurs these days   more-often

(50) a. *Het slapen   op een Ubica matras   is gezond*
     the sleep-INF on a   Ubica mattress is healthy

   b. *Het reizen   met de trein geeft veel   plezier*
     the travel-INF with the train gives much pleasure

   c. *Het roken   van zware shag   is ongezond*
     the smoke-INF of   strong tobacco is unhealthy

Adding a further specification has the effect that the internally unstructured mass or kind to which the noun refers becomes internally structured, such that there are at least two subsets: one for which the specification holds and one for which this is not the case. The use of an article requires in any case a presupposed organization, at least with respect to the predicate. We mean by this that the cause of the oddness of e.g. (48c) is that it is presupposed that with respect to the predicate *ongezond* 'unhealthy' the domain of reference of *roken* 'smoke' is unstructured. Whether this is really the case is determined by knowledge of the world and not by the structure of the language.

We are convinced that a systematic comparison of the syntactic and semantic properties of the infinitive constructions discussed here and those of constructions with (other) non-countable nouns as their core will show further parallels, but this is outside the scope of this paper.

6. Conclusion

We have argued in this paper that the nominal character of several constructions with an infinitive as their core shows a certain amount of gradualness. We differ from Dik (1985) in that we do not draw a line between infinitive constructions with and infinitive constructions without an article. More important and more basic is the distinction between infinitive constructions with and without *te* 'to' (ignoring verb raising constructions). The former have the distribution of tensed clauses, whereas the latter have the distribution of NPs, regardless of the presence of an article and regardless of the further aspects of their internal structure.

This parallel distribution is accounted for by the assumption that the verbal stem becomes nominal by affixation of *-en*, a categorial property that we assign to the affix that is considered to be the head of the construction. The gradualness of the nominal character, as shown by the variable internal syntax of the infinitive constructions, is captured by Jackendoff's deverbalizing rule schema.

As an important internal difference we have identified the presence vs. absence of an article. When the article is absent we predict the presence of a PRO subject, with all its interpretive and syntactic consequences. We have shed some new light on control theory. In particular, we have established that there is no reason for a distinction between PRO control and the assignment of arbitrary reference to PRO. The theory of control does seem to require a distinction between control by a lexically specified argument and

control by an implicit argument. We have suggested that to a large extent this distinction can be reduced to case theory and the Theta Criterion.

Finally we have shown in section 5 that the presence or absence of an article is not exceptional within the class of NPs. There is thus no reason to consider this to be an important criterion for the distinction between nominal and verbal constructions, as Dik (1985) does. There are all kinds of further interesting parallels between constructions with infinitives and constructions with (other) non-countable nouns, of which the use of the article is only one example. These, however, require further research (see also Lambooy 1963).

Editors' note

This chapter first appeared in 1985 in *GLOT* 8/3, 257–274 as "De nominale infinitief". Republished here with kind permission from ICG/H. J. LaPorte. Translated into English by Sjef Barbiers.

Notes

1. In Dik's Functional Grammar framework 'theme' is called 'goal' and 'NP' is called 'term'.
2. (6c) is acceptable with comma intonation after *weerzinwekkend* 'repulsive'. In that case, however, we are dealing with an afterthought, i.e. the part between brackets is not syntactically integrated in the clause.
3. A supercategory is a higher projection level. According to Jackendoff's three-level hypothesis every major lexical category projects three levels of supercategories uniformly. He considers S (and S') as supercategories of V.
4. We use the term 'subject' for convenience. We do not want to take a stand on the grammatical status of the genitive modifier (cf. Williams 1982).
5. The obligatory presence of an antecedent, known as Visser's generalization (cf. Bach 1979), is one of the properties considered to be characteristic for obligatory control in the theories of Williams (1980), Bouchard (1984) and Koster (1984), among others. We note that the reanalysis of the Burzio generalization presented here can derive this property directly from the theta criterion. Therefore, there is no longer any reason to attribute this to the theory of control. The illformedness of (i) follows since *try* does not assign accusative case in the corresponding active construction, while nominative case, assigned to *it* in the position of the subject, is not available for the passive morpheme. Con-

sequently, the argument expressed by the passive morpheme is not visible for the Theta Criterion.

(i) **It was tried to go*

As opposed to other analyses in terms of obligatory control, this analysis explains why the Dutch equivalent of (i) is grammatical, as (32a) shows. The co-occurrence of an asymmetry with respect to obligatory control and the impersonal passive is not a coincidence under this analysis. It further explains the asymmetry with nominal counterparts of the verbs of obligatory control, for which the requirement of a lexically present antecedent clearly does not hold, as the contrast between (iia) and (iib) shows.

(ii) a. **It was desired to go home*
    b. *the desire to go home*

6. It should be noted that certain adjectives may have more than one implicit argument. Thus *vervelend* 'annoying' has an implicit argument that can be made explicit in a PP with *voor* 'for' and another one that can be made explicit with a PP with *van* 'of'. The first implicit argument acts as the controller in (i), the second in (ii).

(i) *Het is vervelend* [PRO *ontslagen te worden*]
    it   is annoying [PRO to be fired]

(ii) *Het is vervelend* [PRO *je vrienden in de steek te laten*]
     it   is annoying [PRO to let your friends down]

This switch in the interpretation of PRO is similar to the switch that we find with verbs such as *vragen* 'ask', as illustrated in (iii)–(iv).

(iii) *Jan vroeg de leraar* [PRO *weg te gaan*]
     John asked the teacher [PRO to leave]

(iv) *Jan vroeg de leraar* [PRO *weg te mogen*]
     John asked the teacher [PRO to be allowed to leave]

7. There is a possibility to use the article *een* 'a' with such words, as in (i)–(ii):

(i) *Ik heb een mooi   zand gekocht*
    I have a   beautiful sand bought
    'I bought very good sand'

(ii) *De onvrede   uitte   zich in een gelaten uitzitten*
     the dissatisfaction expressed itself in a   resigned sit out
     van de les
     of the class
     'The dissatisfaction expressed itself in sitting out the class resignedly'

The interpretive effect of the use of *een* 'a' is the same in both cases: it expresses a high degree, applied to quantity or quality. We find the same use of *een* in (iii) and (iv), with the remarkable property that singular *een* 'a' occurs with a plural noun:

(iii) *Jan   heeft een mooie   boeken gekocht*
      John has   a   beautiful books   bought
      'John bought very beautiful books'

(iv) *Die man heeft me toch een huizen*
      that man has   me yet   a   houses
      'That man has an amazing number of houses'

8.   We deliberately remain a bit vague in our terminology here. Within the confines
     of this article we cannot possibly do justice to the great many relevant observa-
     tions in the literature on existential *er* 'there' and the extensive literature on in-
     definiteness and genericity (cf. Carlson 1977a and Zwarts 1981, among others).

Parallels between nominal and verbal projections

1. Introduction

This chapter examines nominal structures in which *of*-insertion has taken place.[1] It is argued that such structures involve movement of the predicate to the specifier of *of*, which is itself a complementizer in the nominal structure. The analysis is an extension of some of the proposals of Kayne (1994). The main argument in favour of the particular analysis is based on properties of infinitival nominalizations in Dutch. However, there is no reason why the analysis should be limited to *of*-insertion in these nominalizations, and it is therefore argued that the analysis extends to other nominal constructions, both basic noun and derived nominal constructions. I will then argue that an inversion analysis may shed light on an as yet ill-understood property of nominal constructions, viz. the fact that they are so limited in their argument structure possibilities when compared to verbal constructions.

2. The problem of *of*-insertion

Let us briefly review the standard analysis of *of*-insertion, originally proposed in Chomsky (1970). Chomsky argues that nominal structures such as (1a) are not transformationally derived from corresponding verbal structures, but that they are generated in their own right, with a nominal head projecting a nominal phrase in a way parallel to a verbal head projecting a clausal structure. Although there are many parallels indeed, there are also differences of a categorial nature. In particular, while verbs can take nominal complements, such complements are excluded in the nominal domain, as is shown in (1b).

(1) a. *the enemy's destruction of the city*
     b. **the enemy's destruction the city*

In order to deal with this unexpected asymmetry, it is assumed that nominal complements require case, and that nouns, unlike verbs, are unable to assign case. Therefore, a prepositional element is called for, to provide case for the

nominal complement, as prepositions, like verbs, are able to assign case. It is furthermore assumed that the preposition *of* (or its equivalent in other languages) is transformationally inserted so as to rescue the structure corresponding to (1b) from the effects of the case filter. This rule of *of*-insertion can be simply formulated as in (2).

(2)   of-*insertion*
       [$_{N'}$ N–(Prt)–NP–X] 1–2–*of*+3–4   (Jackendoff 1977b: 70)

There are several problems with this analysis. Specifically, the linear formulation leaves unclear what the derived constituent structure is: does the rule create a PP superstructure out of *of* plus the following NP, and if so, does this PP structure prevent the NP dominated by it from scoping outside this PP structure? As we will see, this clearly seems to be the case.[2] Another problem vis-à-vis the constituency concerns the fact that the *of*-NP does not behave in all respects as a normal PP; it cannot, for instance, undergo *wh*-movement (cf. Jackendoff 1977b: 70, note 13), while it can undergo extraposition from NP.[3]

   In this chapter, I shall present an alternative analysis of *of* which does not show these defects. I shall start by examining *of*-insertion in Dutch nominalizations.

3. Infinitival nominalizations

Dutch features Nominalized Infinitival structures (henceforth NIs): the infinitive takes the determiner *het* and the phrase as a whole has the external distribution of a DP. It is often claimed that such infinitival constructions show a mixture of nominal and verbal properties (cf. for Dutch, Hoekstra and Wehrmann 1985, Van Haaften et al. 1985 and Hoekstra 1986a). A specifically nominal property is that direct objects may appear in *van*-phrases (*van* is the Dutch counterpart of English *of*) following the infinitive. Verbal properties are found as well, such as the possibility of PPs preceding the infinitive, something which is excluded in nominal constructions. Some examples are found in (3).

(3)   a. *Het roken   van sigaren is ongezond.*
           the smoke-INF of   cigars   is unhealthy

       b. *Het voortdurend*(*e*) *sigaren roken   is ongezond.*
           the continuous(ly) cigars   smoke-INF is unhealthy

c. *Het op konijnen jagen   in de zomer   is verboden.*
   the on rabbits   hunt-INF in the summer is forbidden

d. **De op konijnen jacht in de zomer   is verboden.*
   the on rabbits   hunt in the summer is forbidden

Examples (3a,b) show that the nominal object may either precede the infinitive as a bare DP, or follow it, preceded by *van*. Examples (3c,d) show that whereas a basic noun may not be preceded by a PP, an NI may. In this respect, NIs are like verbs.[4]

This hybrid nature of the NI might be accounted for by Jackendoff's deverbalizing rule schema (Jackendoff 1977b: 221), or some modern incarnation thereof. Jackendoff's formulation is given in (4).

(4)   *Deverbalizing rule schema*
       $X^i \rightarrow$ af-V^i

What (4) says is that verbal projections may, as a result of affixation, shift to a category X of the same level. So, the difference between (3a) and (3b) might be captured by saying that the category shift in (3a) has taken place at the V° level, and that the NI takes an object within N˴ therefore, while in (3b) the category shift has taken place at the V˴ level, namely after the NI has combined with its object within V˴. Apart from the fact that this approach raises several other questions, it is also empirically inadequate, at least under a Jackendovian interpretation of the projection levels. According to this interpretation, the head of an XP combines with its subcategorized complements at the X˴ level, whereas modifiers of various sorts combine with higher projection levels. Consider the NI construction in (5), where the object *de aardappels*, being a complement, should combine with the head at the X˴ level, and the modifier *met een mesje* at a higher level.

(5)   *het met een mesje schillen   van de   aardappels*
       the with a   knife peel-INF of   the potatoes

The occurrence of the object in a *van*-PP requires category shift at the V° level, but the occurrence of a PP modifier requires a V category at the level of attachment of this PP, a higher level, as there is no possibility of a pre-head PP at any nominal projection level. Hence, (5) imposes incompatible requirements within Jackendoff's approach.

From a more current point of view, the fact that the *van*-object in NIs must follow the head is perhaps even more surprising: PPs may precede the

NI in Dutch; why does a PP that corresponds to the object have to follow it? A simple solution might run as follows. If base structures are uniformly built in the form [specifier [head complement]], as Kayne (1994) argues, then the fact that the DP object precedes the verb in Dutch must be the result of leftward movement, let us say to a position SpecAgrOP, in order to receive case. As no case is available in nominal structures, but *of*/*van*-insertion applies instead, there is no motivation for such a leftward shift, and hence the *van*-DP follows the NI head. Note, however, that this places the object in NIs in a structurally very low position. We shall see in the next section that this seems highly inadequate.

Obviously, the alternation between (3a) and (3b) calls for an explanation as well. Although it is true that objects in NIs may occur as bare DPs preceding the NI head, there are rather severe limitations on the nature of this object. Basically, the object needs to be indefinite. So, pronouns, proper names, and definite DPs are excluded from pre-head position. In itself, this is rather surprising, as leftward movements are usually restricted to precisely those DPs that may not occur in pre-head position in NIs; that is, leftward scrambling does not apply to indefinite DPs, but it does affect pronouns, proper names, and definite DPs. We see here a basically inverse effect: those objects that may or must undergo leftward scrambling in clausal structures occur to the right of the NI head in a *van*-PP, while those that do not undergo leftward scrambling in clausal structures occur to the left of the NI head. We shall later see how our analysis immediately captures this fact.[5]

The hybrid nature of verbal nouns in English is mapped out slightly differently: English distinguishes two types of *-ing* construction, both with an external distribution of DP, viz. *-ing-of* and *-ing*-accusative. The former is more nominal, the latter more verbal. In fact, the *-ing-of* is nominal to such an extent that it is often taken to enter the syntax as a noun (cf. Horn 1975 and Zubizarreta 1987). Not only do such constructions take objects in a noun-like manner (i.e. preceded by *of*), they may occur with the determiner and be modified by adjectives – this all in contradistinction to *-ing*-accusative gerundives:

(6)　a.　*John's/the brutal*(**ly*) *killing of rabbits*
　　　b.　*John's/*the brutal**(*ly*) *killing rabbits*

The assumption that *-ing-of* gerundives are projected from a nominal head is also taken to explain a further difference between them and *-ing*-accusative structures, viz. their limited complementation options. Small clause com-

plements and exceptional case marking environments are not found in
-ing-of constructions, as (7) shows.[6] Since such options are equally not found
in basic or derived nominal constructions, the claim that the *-ing* word enters
the syntax as a noun in such *-ing-of* constructions would explain this.

(7) a. **the letting of children sleep*
     b. **the hearing of John climb the fence*
     c. **the finding of the students incompetent*
     d. ?*the putting of men on the moon*
     e. ?*the watering of the tulips flat*
     f. **appearing of the perpetrator guilty*
     g. **the becoming of John* (*the*) *major*
     h. **the electing of Bill* (*to/as/for*) *president*

However, this constitutes an explanation only insofar as we have an expla-
nation of this limitation in the case of basic and derived nominal structures.
It seems to me that such an explanation is lacking. From the point of view
of theta-theory or S-selection, the expected situation would be that nouns
corresponding in meaning to verbs with complex argument structures would
equally have complex argument structures. That this expectation is not borne
out requires an explanation. Kayne (1984) attempts an explanation in terms
of the concept of structural government (cf. also Chomsky's 1986b notion
of uniformity). Nouns differ from verbs in not being capable of governing
across a clausal boundary; that is, they are not structural governors. A prep-
osition, such as *of*, may inherit the structural government ability from a
verb, but clearly not from a noun, as the noun does not have it to begin with.
Hence, no case assignment by *of* is possible to the subject of a (small) clausal
complement.

   Although by and large capturing the facts, the central concept of struc-
tural government is dubious and has no relevant status in any current
framework. Moreover, it is not quite true that the complementation options
of *-ing-of* and regular noun based phrases are completely identical. The
former, but not the latter, allow 'verbal' (sic!) particles, as Abney (1987)
notes:

(8) a. *the explaining away of the problem*
     b. **the explanation away of the problem*

The Dutch situation in this regard is less straightforward than the situation in
English: while English appears to make a sharp distinction between *-ing-of*

and -*ing*-accusative, the presence or absence of *van* in Dutch NIs (cf. 3a,b) does not have the same range of effects: in either case the definite determiner is possible, and complex argument structures are found in both cases. Hence, most of the counterparts of the constructions in (7) are grammatical in Dutch, even with *van*. Obviously, there are differences in word order between Dutch and English.

(9)   a.   *het laten   slapen   van de   kinderen*
           the let-INF sleep-INF of   the children

      b.   *het over het hek   horen   klimmen van Jan*
           the over the fence hear-INF climb   of   John

      c.   *het incompetent vinden   van de   studenten*
           the incompetent find-INF of   the students

As to the word order in Dutch NIs, it is basically identical to that found in clausal structures, modulo the position of the object when it occurs with *van*. Yet, it is unclear how an account in terms of structural government would capture these differences between Dutch and English.[7] I shall argue below that this difference between English and Dutch verbal noun constructions (Dutch NI, English -*ing-of*) is an instance of a much broader generalization, related to word order rather than to N/V asymmetries.

   In summary, both English and Dutch show verbal noun constructions which are both verbal and nominal to certain degrees. There is no clear theoretical way to capture such mixture of properties. The problems concern word order, the distribution of object DPs, and, in *of/van* verbal noun constructions (the more nominal ones), the apparent lack of complex argument structures. An adequate theory of verbal noun constructions should shed light on these matters. Current theories of verbal noun constructions are lacking in this regard.

4. The scope problem

There is a strong relationship between linear order and scope, as is well known. Yet, a formulation of scope in terms of linear order alone is clearly inadequate, as some form of command is required to rule out *the parents of John like himself*. One might be tempted, therefore, to formulate a combined hierarchical and linear condition on scope. Alternatively, one may strengthen the relationship between hierarchy and linear order, such that

linear order strongly correlates with hierarchy, and hence capture the law-like correspondence between linearity and scope in this way. The latter strategy was followed by Larson (1988), and more recently, and more vigorously, by Kayne (1994).

With this in mind, let us return to the constituency problem of the *van*-DP. Recall that if the inserted *of/van* created a PP structure over the DP, our expectation should be that the DP cannot scope out of this PP. The facts concerning NIs in Dutch clearly indicate that this is wrong. In (10), we see that the DP following *van* (henceforth DP_{van}) is able to bind an anaphor (10a) and a pronominal variable (10b). Both require that the DP_{van} c-commands the dependent element. More surprising and also more problematic is the fact that DP_{van} also scopes leftwards, into material preceding the NI head. This is shown for anaphors and pronominal variables by the examples in (11) and (12).

(10) a. *het overleggen van de studenten over   elkaars   antwoorden*
        the discussing of the students   about each other's answers

    b. *het overhoren van elke student over zijn speciale onderwerp*
        the examining of   each student about his special   subject

(11) a. *het over zichzelf praten   van Jan*
        the about himself talk-INF of   John
        'John's talking about himself'

    b. *het naast elkaar   zetten   van de flessen*
        the next-to each other put-INF of   the bottles
        'the putting of the bottles next to each other'

(12) a. *het op zijn qui-vive zijn van iedere soldaat is een*
        the on his alert   be of every soldier is a
        eerste vereiste
        first   requirement

    b. *het aan zijn eigenaar teruggeven   van elk   geleend artikel*
        the to   its owner   back give-INF of   each borrowed article

It is not possible to devise a constituency structure for NIs in which the DP_{van} is hierarchically superior to both material that precedes and material that follows. This is most certainly the case if, as Kayne (1994) argues, right-adjunction is not allowed.

To be sure, there are other instances where linearity and scope do not match. Examples are given in (13). The strategy for dealing with such cases is to appeal to movement: in (13a), the phrase *each other's pictures* is raised from the subject position of the infinitival complement. Prior to movement, *the boys* can act as the binder of the anaphor *each other*.[8] Similarly, in (13b), under reconstruction of the *wh*-phrase, the boys scopes rightward so as to bind the anaphor themselves.

(13) a. *Each other's pictures seemed to the boys to be beautiful.*
      b. *Which pictures of themselves did the boys like?*

We may adopt the same strategy in the case of the backward scope instances in NIs (11–12); that is, we may assume that movement is involved and that, prior to movement, or after reconstruction, the DP_{van} adequately takes scope to its right, rather than to its left. In the next section I will establish the basis for providing a solution along these lines.

5. The [D CP] structure

In this section I shall investigate the particular structure of *of/van* in nominal constructions. I begin by laying out some of the specifics of Kayne's proposals on the structure of DPs, starting with the data in (14).

(14) a. * *the Paris*
      b. *the Paris that I used to visit*
      c. *the Paris of my youth*

Why would the proper name in (14a) resist combining with the determiner, while such a combination is fine in the presence of a relative clause or a postnominal PP? Kayne argues that (14a) involves a different structure than (14b,c). In particular, (14a) involves a DP, with D taking the regular kind of complementation for a simple noun phrase, say NP.[9] *Paris* is a noun, denoting the property of *x*, such that *x* has the name 'Paris'. In proper name DPs, no quantification takes place: rather, the noun in proper names occupies the quantifier position D as a result of N-to-D movement (cf. Longobardi 1994). The example in (14b), on the other hand, has a more complex internal structure. Here, the D takes a CP complement, a *that*-clause, from which the 'head' of the relative is extracted to SpecCP. Under this raising analysis

of relatives, originally due to Vergnaud (1974), the structure of (14b) is as in (15), where *Paris* does not occupy the complement position of D.[10]

(15)   [$_{DP}$ *the* [$_{CP}$ *Paris*$_i$ [$_{C'}$ *that I used to visit* t$_i$]]]

The pattern recurs in possessive constructions as well. Consider the triplet in (16).

(16)   a   *John's several books*
       b. **the several books of John's*
       c.   *the several books of John's that he bought last week*

For (16a), Kayne assumes a structure with an empty D, followed by a clausal constituent, say IP, of which the QP *several books* is the predicate, and *John* is the subject, as in (17a).[11] The construction in (16b) derives from (16a), in Kayne's view, through movement of *several books* to the left.[12] The analysis is modelled on Szabolcsi's (1994) analysis of Hungarian DPs, which involve a similar QP movement to SpecDP. According to Kayne, *of* occupies the D-position, which accounts for the ungrammaticality of (16b), as *the* and *of* would compete for the same D-position. Example (17b) is Kayne's structure for (16b).

(17)   a.   [$_{DP}$ ∅ [$_{IP}$ *John's* I [$_{QP}$ *several books*]]]
       b.   [$_{DP}$ [*several books*]$_i$ [$_{D'}$ *of* [$_{IP}$ *John's* I t$_i$]]]

The increased acceptability of (16c) is again understandable if the determiner is external to the constituent, in the same way as in (15). We may again adopt a [D CP] structure, with *several books of John's* raised from inside the relative to the SpecCP position.

   This also carries over to (14c), where we are also dealing with an *of*-construction. However, for other cases involving *of*, as in (18), Kayne equally proposes an inversion analysis, but here *of* is taken to head the CP, rather than the DP (cf. Den Dikken 1995 for extensive discussion of this construction).

(18)   a.   *that idiot of a doctor*
       b.   [$_{DP}$ *that* [$_{CP}$ *idiot*$_i$ [$_{C'}$ *of* [$_{IP}$ *a doctor* I t$_i$]]]]

The idea that *of* instantiates a complementizer rather than a determiner is less surprising in view of prepositional complementizers occurring elsewhere

(cf. *de* in French, *for* in English). I shall henceforth assume that *of*/*van* and their equivalents indeed occur in a C position, and not in D.[13]

The pattern observed in (14) and (16) extends to Dutch NIs, as observed in Hoekstra and Wehrmann (1985). The contrast in (19) can now be understood along the same lines. Basically, (19a) is a proper name construction, involving N-to-D movement of the infinitive (it is a generic term), while (19b), in contrast, involves a [D CP] structure.

(19) a.   (*het)   *roken*   *is   ongezond*
           the   smoke-INF   is   unhealthy
           [$_{DP}$ $\varnothing$ [$_{IP}$ … [$_N$ *roken*] …]]

      b.   *het roken*   *van sigaren is ongezond*
           the smoke-INF   of   cigars   is   unhealthy
           [$_{DP}$ *het* [$_{CP}$ [$_{NP}$ *roken*]$_i$ van [*sigaren*] … t$_i$ …]]

Possessive constructions in many languages come in two varieties: the Construct State (CS) and the Free State (FS). These notions are most familiar in the Semitic literature (cf. Ritter 1991 and Fassi Fehri 1993), where they refer to the constructions in (20a) and (20b), respectively.

(20) a.   *beit   ha-mora*   (CS)
           house   the-teacher
           'the teacher's house'

      b.   *ha-bayit   shel ha-mora*   (FS)
           the-house   of   the-teacher
           'the house of the teacher'

The construction in (20a) is called 'construct state' because the possessive relationship between the possessed noun and the possessor is not in any way marked (it is 'marked' by the construction).[14] Moreover, the noun and its possessor form a unit, both syntactically and semantically: syntactically because strict adjacency between them needs to be observed, semantically in that the definiteness value of the possessed object is dependent on the definiteness of its possessor. The differences between CS and FS involve (i) the overt marking of the possessive relationship by *shel* in FS, and (ii) the overt marking of the definiteness value on the possessed noun in FS.

In terms of the analyses developed so far, we can postulate the following structures for CS and FS constructions, respectively:

(21) a. $[_{DP}$ D $[_{IP}$ DP I … $[_{NP}$ … N …]]]   (CS)

                                                                          (X° movement)

    b. $[_{CP}$ D $[_{CP}$ … C $[_{IP}$ DP I … $[_{NP}$ … N …]]]]   (FS)

                                                                          (XP movement)

The CS construction in Hebrew is derived by N-to-D movement, an instance of head movement, while the FS construction involves phrasal movement of (a projection of) NP to SpecCP. This difference between head movement and phrasal movement becomes clear when we inspect the following paradigm (cf. Ritter 1991 and Longobardi 1996):

(22) a.   *ha-bayit   ha-godol* *(*shel*) *ha-mora*   (FS)
        the-house   the-big   of   the-teacher

    b. **habayit el ha-mora ha-godol*   (FS)
    c.   *beit* (*shel) *ha-mora ha-godol*   (CS)
    d. **beit ha-godol ha-mora*   (CS)

The adjectival modifier in the FS in (22a) moves along with the noun to the SpecCP position, where the presence of C, *shel*, is obligatory. Stranding of this modifier, as in (22b), is impossible. This impossibility follows from Chomsky's (1993) Minimal Link Condition (MLC). Consider the structure in (21b): in order to move to the SpecCP position, the phrase containing the noun must cross the intervening SpecIP position, occupied by the DP possessor. This is possible only if two conditions are met: first, the head of IP must undergo head movement so as to extend its domain and make SpecCP equidistant to SpecIP; secondly, the phrase that moves must be the maximal XP complement of the head of IP, or its specifier. We shall return to further implications of this latter requirement in section 7. The MLC, then, explains why phrasal movement to SpecCP in (22a,b) must involve both the noun and its adjectival modifier. The CS construction, in contrast, does not involve phrasal movement, but head movement. Therefore, other material, including the adjectival modifier, is stranded under N-to-D movement, which explains the ungrammaticality of (22d), or, generally, the strict adjacency between the noun in D and the possessor.

    The CS construction can be recognized by the absence of an overt determiner, even if the construction has a definite interpretation. In this respect, CS constructions of the Semitic variety are similar to possessive constructions involving prenominal genitives in Germanic languages.[15] This is why I refer to such constructions in Germanic as CS constructions as well. They differ from the Semitic CS construction with respect to the word

order, more precisely the position of N, which in Germanic does not seem to occur in the D position (at least not in Western Germanic[16]). Longobardi explains this by invoking the concept of procrastinated movement (cf. Chomsky 1993): N-to-D movement takes place in Germanic as well as in Semitic, but it is postponed in Germanic until after spell-out, and hence invisible.[17] I will therefore assume, following Longobardi, that in Germanic constructions involving prenominal possessors, we are likewise dealing with CS constructions, in which N-to-D movement is postponed until LF. On the other hand, Germanic and Romance constructions involving *of/van/de/di* can be taken to be the counterparts of FS constructions (cf. again Longobardi's (1996) discussion of *Casa Rossi* vs. *la casa di Rossi*). I shall apply this FS analysis to NI constructions in the next section.

The relationship between verb position and CS constructions seems evident. N-initial nominal structures basically arise in the same manner as V-initial structures, viz. movement of the lexical head to a functional position dominating IP (i.e. to a position preceding the subject).[18] Possibly, the postponement of such head movement in certain languages, such as English, may be the result of overt movement of the possessor DP to the higher SpecDP. Potentially, this may be the result of a general condition to the effect that at spell-out, either the head position of XP is filled, or its specifier, but not both.[19] This results in the following partial representations of English and Hebrew simple CS constructions at spell-out:

(23) a. $[_{DP}$ *John's*$_i$ $\varnothing$ [IP t$_i$ … [… *house* …]]]
     b. $[_{DP}$ $\varnothing$ *beit*$_i$ [IP *ha-mora* … [… t$_i$ …]]

An interesting consequence of the analysis of FS and CS constructions is that the category D may take two distinct kinds of complements: subject-initial IPs, yielding CS constructions, and non-subject-initial CPs, in which case the D position must be filled by a determiner. This situation parallels very strongly that found in clausal structures in several Germanic languages. In Scandinavian and certain varieties of German, embedded clauses introduced by an overt complementizer may either exhibit CP properties (the so-called embedded verb second clauses) or be plain IP complements, with the finite verb in a lower position. Similarly, for main clauses, one line of thought holds that the verb second phenomenon is not uniform in that the verb occupies an I position in subject-initial main clauses, but the C position in non-subject-initial main clauses, the so-called Travis Hypothesis (cf. Travis 1984 and Zwart 1994). I will not at this point go further into these parallelisms.

6. Reconstruction in FS NI structures

Let us now return to NI constructions in which an argument is preceded by *van*. Clearly, we would like to extend the analysis of FS constructions to such NIs, as this yields a uniform treatment of *van*. The analysis of an example such as (5), repeated here as (24a), will be as in (24b).

(24) a. *het met een mesje schillen van de aardappels*
the with a knife peel-INF of the potatoes

b. [$_{DP}$ *het* [$_{CP}$ [$_{XP}$ *met een mesje schillen*]$_i$ *van*
[$_{DP}$ *de aardappels*] H [$_{XP}$ t$_i$]]]]

As before, *van* occupies the C position, taking an IP complement: in line with the split Infl hypothesis, I take IP to be AgrP, but not much turns on this. As before, it is the maximal complement of H, the head of IP or AgrP, that must move to SpecCP, inverting around the DP in SpecAgrP as a result. In addition, the head H of IP must incorporate into C so as to make SpecCP equidistant to its own specifier.[20] The fact that the maximal complement of H must move to SpecCP would predict that the DP$_{van}$ is the final element in NIs. This prediction is wrong, and I shall discuss it in section 7.

Let us first look at the correct predictions of the analysis. First, given the inversion that takes place, we have achieved our goal, set out in section 4, of reconciling the scope facts with the linear restrictions on scope. The backward binding instances in (11) and (12) can now be regarded as instantiating binding under c-command by the DP$_{van}$ of the anaphors and pronominal variables in their original site. The structure of (11b) is represented in (25).

(25) [$_{DP}$ *het* [$_{XP}$ *naast elkaar zetten*]$_i$ *van* [$_{IP}$ [$_{DP}$ *de flessen*] H [$_{XP}$ t$_i$]]]]

As movement of XP is to SpecCP, such licensing under reconstruction is in fact expected. Note also that the constituency of the DP$_{van}$ is not problematic, as *van* and DP do not form a constituent, and hence, the DP$_{van}$ c-commands the material dominated by XP in the strict sense.

Very interesting confirmation of the correctness of this approach comes from parasitic gap constructions. As noted in Hoekstra (1992b), parasitic gaps can be found in NIs.[21] But their properties are surprising, if compared to those of parasitic gaps in clauses. Consider the examples in (26). The infinitival adjunct clause contains a gap, which is dependent on the object *zijn boeken* for its interpretation. As the contrast between (26a) and (26b) shows, the object must precede the adjunct clause in order to license the

gap inside it. This is not a general requirement on the ordering of adjunct clauses and objects. This linear condition on parasitic gaps can be understood if we make the following assumptions, as argued by Bennis and Hoekstra (1984). First, objects occur inside VP at some earlier level of representation; secondly, the position in front of the adverbial clause results from scrambling the object across the adjunct clause, and the movement path thus created licenses the parasitic connection. The analysis is depicted in (26c).

(26) a. *dat Jan* [*zijn boeken*]$_i$ [*zonder* e$_i$ *in   te kijken*] *terugbracht*
              that John his books   without into to look   back returned
              'that John returned his books without looking in them'

      b. **dat Jan* [*zonder* e *in   te kijken*] [*zijn boeken*] *terugbracht*
              that John without   into to look   his   books   returned

      c. … DP$_i$ [$_{PP}$ … pg$_i$ …] [$_{VP}$ t$_i$ V]

From this point of view, the grammaticality of the NI construction in (27a) may be surprising, as here the object follows the adjunct clause containing the parasitic gap. Even more surprising is the fact that (27b), where the linear condition appears to be met, is not grammatical: in brief, the linear condition in the nominal domain seems to be the inverse of the linear condition in the clausal domain.

(27) a. *het* [*zonder* e *in   te kijken*] *terugbrengen van* [*je   boeken*]
              the   without   into to look   return-INF   of   your books
              'returning your books without looking in them'

      b. **het terugbrengen van* [*je   boeken*][*zonder* e *in   te kijken*]
              the return-INF   of   your books   without   into to look

This inverse linearity immediately follows from the analysis, which involves an inversion of the object and the remainder of the construction. As indicated in the structure in (28), the object moves leftward, across the adjunct clause, thereby licensing the parasitic gap contained in it.[22] Then, the phrase containing the adjunct clause and the infinitive (XP) moves leftward, across *van* to the SpecCP position.

(28) *het* [$_{CP}$ – *van* [$_{IP}$ [*je boeken*]$_i$ I [$_{XP}$ [*zonder* e$_i$ *in te kijken*] t$_i$ *terugbrengen*]]]

This provides strong confirmation of the inversion analysis.

We are now also in a position to explain the observation, made in section 3, that those objects found in pre-infinitival position in NIs are basically those that do not scramble, contrary to those following *van*, which do. This observation follows from the fact that the DP$_{van}$ indeed does undergo scrambling, while DPs preceding the NI have not been so affected. Scrambling affects specific DPs, while non-specific indefinites occur in a more rightward position. Hence, objects preceding the NI head are restricted to DPs which fail to scramble, namely non-specific indefinites.

Den Dikken (1995), in his analysis of *van* in constructions of the type in (18), argues that *van*, instead of being a complementizer, is a kind of nominal copula, so that the inversion can be regarded as an instance of predicate preposing of the type *The cause of all trouble was John*, which is movement to an A-position rather than to an A'-position. Can we make out which is the better analysis? There is in fact very little at this point that I can say about this issue. One property of A'-movement is the domain extension for binding that results from it, as discussed in Barss (1986) and illustrated in (29).

(29) a. *Which picture of himself$_{i/j}$ does Bill$_j$ think that John$_i$ likes best?*
      b   *Bill$_j$ wondered [which picture of himself$_{i/j}$] John$_i$ liked best*
      c. *Bill$_j$ thought that John$_i$ liked these pictures of himself$_{i/*j}$ best*

While the matrix subject *Bill* is not a suitable antecedent for *himself* if no A'-movement has taken place, as in (29c), it becomes accessible as a result of *wh*-movement, as shown in (29a,b): apparently, *wh*-movement extends the binding domain of *himself*. The inversion taking place in NIs does not have such domain-extending effect, as (30) shows.

(30) a. **Jan$_i$ ergerde zich over [het over   zichzelf$_i$ praten   van jou]*
          John got annoyed about the about himself talk-INF of   you

      b. *Ik ergerde mij over [het over zichzelf$_i$ praten van Jan$_i$]*

Although movement of *over zichzelf praten* in (30a) brings the anaphor *zichzelf* closer to the matrix subject Jan, it may nevertheless not bind the anaphor. Only the DP$_{van}$ is an accessible antecedent for the anaphor, as in (30b). However, this does not allow us to conclude that the inversion operation is not an instance of A'-movement. The inverted XP is clearly a predicate, and A'-movement of predicates does not yield domain extension for binding, as is illustrated in (31).

(31) a. *How angry at himself$_{i/*j}$ does Bill$_j$ think that John$_i$ became?*
      b. *Billy wondered* [*how angry at himself$_{i/*j}$*] *John$_i$ became*

This lack of domain extension can be understood in terms of the predicate-internal subject hypothesis. Under this hypothesis, the preposed predicate contains the trace of the embedded subject, which itself acts as the local binder and hence as an opacity factor for binding from outside. In (30a), similarly, the preposed XP would contain a trace of the DP$_{van}$ which therefore acts as a local binder.

The only empirical difference I have so far been able to find between the inversion in NIs and regular predicate inversion concerns pronominal variable binding. As we saw in (12), pronominal variables can be bound by the DP$_{van}$ in NIs, but such binding seems excluded in regular cases of predicate inversion, as in (32). More research is required at this point.

(32) *In his office was working every colleague from the department.*

In this section we have seen how the problematic word order facts and the problems with scope in Dutch NIs can be solved straightforwardly if we adopt the FS analysis of such NI constructions, or, more precisely, if we adopt the [D CP] structure, with *van* as the CP head, and a movement of the phrase preceding van from a position following the DP$_{van}$. In the next section, I turn to a discussion of the other question, viz. the limited nature of complementation in nominal constructions.

7. Other nominal constructions

If the FS analysis is correct, we would like to extend it to *van*/*of* in general, and dispense with the rule of *of*/*van*-insertion altogether. So, the analysis of (33a) should equally be as in (33b).

(33) a. *the destruction of the city*
      b. [$_{DP}$ *the* [$_{CP}$ *destruction$_i$* [$_{C'}$ *of* [[$_{DP}$ *the city*] I [t$_i$]]]]]

As I suggested earlier, this analysis may shed light on the fact that nouns are much more limited in their argument structure compared to verbs. In order to see this, let us first concentrate on gerundives, both *-ing-of* and *-ing*-accusative. The latter show the same complexity of complementation as regular clauses, whereas the former are by and large restricted in the same way as basic and derived nouns. Consider first the examples in (34).

(34) a. *John's eating the apples*
    b. *John's eating of the apples*
    c. *the eating of the apples*

The precise analysis of (34a) is unclear to me. It probably involves an IP in the complement of D, which is empty as a result of the movement of *John's* to SpecDP. The *-ing* head *eating* probably undergoes head movement at LF, so that (34a) is basically a CS construction. Example (34b), on the other, involves a FS construction. I will leave undiscussed the way in which the subject *John's* relates to the construction, and therefore concentrate on (34c). Applying the analysis developed so far, we are led to postulate the structure in (35).[23]

(35) $[_{DP}$ *the* $[_{CP}$ $[_{XP}$ *eating*$_i]$ *of* $[_{IP}$ *the apples* I $[t_i]]]]]$

Recall that it follows from the MLC that XP in (35) must be the maximal complement of I, or the specifier of the complement of I. This condition then explains why the examples in (36) are ungrammatical, on the further assumption that the italicized phrases are (part of) the complements of the verb.

(36) a. **the raising of one's child Catholic*
    b. **the calling of John a liar*
    c. **the walking of shoes threadbare*
    d. **the looking of the information up*
    e. **the proving of the theorem wrong*

Consider the structure of these examples before the application of movement to SpecCP, given in (37).

(37) $[_{DP}$ *the* $[_{CP}-[_{C'}$ *of* $[_{IP}$ [*one's child*]$_i$ I $[_{XP}$ *raising* $[_{SC}$ t$_i$ [*Catholic*]]]]]]]]$

The subject of the small clause complement, *one's child*, has raised to SpecIP (probably SpecAgrOP). This supports the claim, made in the literature, that English allows scrambling of the same type as in Dutch and German, the VO nature in clauses resulting from further V movement (cf. Costa 1996, extending proposals in Johnson 1991 and Pesetsky 1989). For the sake of concreteness, let us assume that English clauses involve overt verb movement to T, to the left of AgrOP. Since there is no reason to assume that T is present in *-ing-of* gerundives, this movement does not take place, and English is OV at the point at which inversion takes place.

Given the structural representation in (37), it is impossible to obtain (36a) by phrasal movement (and we know independently that phrasal movement is involved), as *raising* is not a constituent by itself. Rather, only *raising Catholic* may undergo phrasal movement. The same applies to the other examples in (36). Instead of the orders in (36), the expected orders are those in (38), as they would result from XP movement to SpecCP in (37).

(38) a. *?the raising Catholic of one's child*
      b. **the calling a liar of John*
      c. **the walking threadbare of shoes*
      d.   *the looking up of the information*

In general, the results are ill formed, with the exception of certain 'phrasal idioms' such as *the cutting short of the meeting*, and verb-particle combinations. So, the question we now face is why these constructions are ungrammatical.

    The first thing to note is that the Dutch counterparts of these constructions are all well formed, as already mentioned in section 3. They differ from the English constructions in (38) in one telling respect: instead of preceding the complement, the NI head in Dutch follows the complements in the SpecCP position. This is shown by the translations of (38) given in (39).

(39) a. *het katholiek opvoeden van je kind*
      b. *het een leugenaar noemen van Jan*
      c. *het plat lopen van schoenen*
      d. *het op zoeken van de informatie*

The relevance of this difference in order reminds us of Williams's (1981a) head final filter, which was formulated to exclude prenominal modifiers with material following the head, as in (40).

(40) a. *a proud* (**of his children*) *man*
      b. *a more intelligent* (**than Bill*) *student* (*than Bill*)

The HFF restriction equally applies to Dutch. That we indeed seem to be dealing with a prohibition on right-recursion rather than with a kind of complexity constraint is clear in those cases where two orders are possible in Dutch prenominal APs. Consider the examples in (41) and the pair in (42).

(41) a. *een trotse* (* *op z'n kinderen*) *vader* (* *op z'n kinderen*)
        a   proud   on his children   father   on his children

    b. *een meer intelligente* (* *dan Wim*) *student* (*dan Wim*)
        a   more   intelligent   than Bill   student   than Bill

(42) a. *een verliefde* (* *op Marie*) *jongen*
        an   in love   on Mary   boy

    b. *een op Marie verliefde jongen*

These examples show that as long as the adjective is the final element in the prenominal AP, the construction is acceptable, but not when material intervenes between the noun and the adjective.

    The theoretical connection between the restriction observable in verbal noun constructions of the type in (38) and the prenominal modification constructions in (40)–(42) becomes clear when we look at the analysis Kayne (1994) proposes for prenominal modifiers. To begin, it should be noted that examples such as (40b) and (41b), with the PP following the head noun, suggest, in Kayne's framework, that the prenominal modifier has moved to its prenominal position from a postnominal position, stranding the PP. This is so, since Kayne's theory does not cater for rightward movement rules such as extraposition, nor for base-generation of adjuncts at the right side of a projection. Indeed, Kayne proposes that prenominal APs are predicates raised from a predicative clause contained in a CP, as illustrated in (43).

(43) D [$_{CP}$ — C [$_{IP}$ *father* I [$_{AP}$ *proud* (*of his children*)]]]

So, both prenominal modifiers and the verbal noun phrase occupy the SpecCP position. Moreover, they are apparently subject to similar restrictions on their complexity. If the AP is simplex, it may freely move to SpecCP, yielding the prenominal order. Complex APs, however, are not allowed to move to SpecCP, which Kayne (1994) attributes to a prohibition against complex specifiers of CP (specifically those without an overt complementizer). Failure to raise the AP yields movement of the subject of the IP, and hence the order *a father proud of his children*.

    The structure in (43) is parallel to that proposed for verbal noun constructions, or for nominal constructions involving *van*/*of*. The relevant constraint can then be formulated as in (44).

(44) The structure D [$_{CP}$ [$_{XP}$ … X YP] C [… is ill formed
    for certain choices of X, YP, and C, if YP is non-null.

Kayne (1994: 92), discussing the examples in (45), where absence of the complementizer *that* has a degrading effect, gives the following formulation: "a phrase (with)in a specifier position cannot have an overt complement (of a certain sort). This seems to hold of SpecCP when relative C is null, though not when it is non-null for reasons that are unclear."

(45) a. *I just read the book about your ancestors*
          ?(*that*) *your son published last year*

     b. *I just read the book that's about your ancestor*
          *(*that*) *your son published last year*

If *van/of* instantiates C, as we have argued, it is not just emptiness of C but choice of C that seems relevant. In any case, the constraint in (44) needs further clarification on various points: can it be derived from something more fundamental, what is the exact formulation, what choices of X, YP, and C are relevant, etc.? I am not in a position to provide answers to these questions, and therefore have to leave (44) in this rather ill-understood condition. Let me nevertheless comment on a number of points.

First, it is not that clear whether the formulation should indeed refer to overt complements. There clearly are cases where overt complements, at least under certain assumptions, do not yield ungrammaticality. For English, this is the case if the head is followed by a particle or a stranded preposition, as in (46).

(46) a. *a much talked about subject*   (cf. Kayne 1994: 99)
     b. *the looking up of the information*

Other instances where a head takes an overt complement are constructions of the type *a very beautiful car*, if we adopt Abney's (1987) analysis of very as a degree head with an AP complement, since under that analysis the head of the phrase in prenominal position is *very*, taking an overt AP complement.[24] Obviously, this kind of situation holds more generally of functional categories. So, if we discard the idea that prenominal participles are adjectives, not only cases such as (47a) instantiate the forbidden situation, because the participle takes an overt complement, but also simple cases such as (47b), which are not excluded but which would nevertheless involve some functional categories dominating the verbal base of the participle.

(47) a. *a recently sent to me book*
     b. *a recently published book*

Perhaps a distinction should be made between complements to a lexical head and complements to a functional head: in the former case, a separate complex of lexical head plus its own superstructure functions as the complement itself, whereas in the latter, there is just a single extended projection. So, perhaps there is no prohibition against [F LP] in SpecCP, with F a functional category and LP its lexical phrase, while there is against [L_1 [F [L_2P]]], where L_1 takes an extended projection of L_2 as its complement.

In Dutch, we find a number of situations of a slightly different nature. In the case of NIs, the part that is moved to the SpecCP position may involve verbal clusters, as in the examples in (48). As a matter of fact, examples of this type were originally used by Evers (1975) to motivate his verb-raising analysis of verbal cluster formation. The gist of his argument was that such cluster formation precedes the nominalization rule, so that the cluster, as a complex head, is nominalized.

(48) a. *het willen   lezen   van een boek*
          the want-INF read-INF of   a   book

      b. *het hebben   gelezen van een boek*
          the have-INF read   of   a   book

More recently, verb cluster formation has come to be no longer regarded as the result of head movement: rather, it is assumed that the verbal head of the complement clause is the only element left in the clause, everything else having scrambled out into the matrix clause (cf. Zwart 1994 for an overview). If that analysis is correct, the infinitival heads *willen* and *hebben* in (48) would have an overt complement, in violation of the constraint in (44). Note that, as in the case of particles and stranded prepositions in English (cf. [46]), these cases involve a bare head in complement position. As soon as the complement head is accompanied by any further material, ungrammaticality results, as is the case with following particles (cf. *the bringing (*right) back of books*). A full discussion of this issue is beyond the scope of this chapter. I note in passing that perfect tense constructions of the type in (48b) are not allowed in English *-ing-of* gerundives (**the having read of a book*). This might indicate that English is stricter in its obedience to (44) than Dutch.[25]

More generally, it seems that languages vary with respect to whatever (44) stands for. Several languages allow prenominal adjectives with complements of the adjective following the adjective (e.g. Polish; I thank Bozena Rozwadowska for pointing this out to me). Also, the difference between the Romance languages, with multiple *de*-constructions, and English, where multiple *of* is excluded, points in the same direction.

Secondly, it would appear that not only complements, but also adjuncts are excluded in the position following a head in SpecCP. This is illustrated in (49).

(49) a. *the books sold yesterday are shipped today.*
      b. **the sold yesterday books are shipped today.*
      c. **the reading carefully of books*
      d. **a more intelligent than Bill student*

This brings me to a further issue. Recall that, on the basis of the MLC, it is the XP in the structure in (50) which has to move to SpecCP. This would seem to predict that $DP_{van/of}$ necessarily is the final element in the nominal construction, contrary to fact.

(50) D [$_{CP}$ — *van* [$_{IP}$ DP I [$_{XP}$ …]]]

In particular, $DP_{van/of}$ can be followed by adverbial PPs of various kinds, as shown by the examples in (51). As a matter of fact, these adverbial PPs could not be moved along with the verbal noun, at least not when they follow the verbal noun, because of the condition in (44).

(51) a. *the examining* (*in the ward) *of the patient* (*in the ward*)
      b. *the peeling* (*with a knife) *of potatoes* (*with a knife*)

I will follow the analysis of adverbial PPs presented in Barbiers (1995b) which allows an immediate solution to the problem of stranding these adverbial PPs. Barbiers adopts Kayne's proposal that the base does not allow for the generation of adjuncts on the right side of the projection. Exploiting a proposal made by Sportiche (1994), he argues that an adverbial PP is adjoined to (a projection of) the VP, on the left. This order is indeed possible in Dutch, but not in English. In order to obtain the result that that PP follows the verb, it is claimed that (the relevant projection of) VP is moved into the specifier of the PP. This movement is required, within his theory, for semantic reasons, and hence it takes place before LF, overtly in English, optionally after spell-out in Dutch. The derived result of these assumptions for a construction such as (51a) is as in (52).

(52) D [$_{CP}$ − *of* [$_{IP}$ DP I [$_{PP}$ [$_{XP}$ *examining*] [$_{P'}$ *in the ward*] t $_{XP}$]]]

In this structure, PP cannot be moved to SpecCP: while the MLC would allow it, the result would violate (44), as the head of the PP (*in*) has an overt

complement (*the ward*).[26] XP, on the other hand, can freely move to SpecCP, as it is in the specifier position of PP, and therefore has only to skip the intervening SpecIP, which is possible if I moves to C to extend its domain.

This proposal provides an adequate account of adverbial modifiers in post-DP$_{van/of}$ position, and it makes a very clear prediction at the same time, viz. that only adjunct PPs (or adjuncts generally) may occur there. For Dutch, this prediction seems by and large correct. In particular. Barbiers provides an account of the fact that secondary predicate PPs, unlike adverbial PPs, cannot occur in postverbal position in Dutch. The reason is that this order could arise only through movement of the VP (or a higher projection thereof) into the specifier of the PP, but as the PP already has a subject, this is impossible. Consider the example in (53): the PP may not occur in postverbal position. This is because *de vaas* is the subject of the PP, which excludes movement of the VP into the specifier of the PP.

(53) a. *dat Jan   de vaas op de tafel zette*
          that John the vase on the table put

   b. *dat Jan de vaas zette op de tafel*

   c. *het op de tafel zetten   van de vaas*
       the on the table put-INF of   the vase

   d. **het zetten van de vaas op de tafel*

Although this is correct for Dutch, English seems more problematic. Also, in English, secondary predicates should not be allowed in post-DP$_{of}$ position. Although judgements are not uniform, there clearly seem to be cases that go against the prediction. Consider the examples in (54).

(54) a. % *the putting of men on the moon*
   b. % *the bringing of children to the swimming pool*
   c. * *the starving of John into giving up*
   d.   *the starving of rebels into submission*

Judgements on (54a,b) vary. The judgement on (54c) is from Kayne (1985b: ex. 114); the judgement on (54d) is from Carrier and Randall (1992: ex. 79a). Carrier and Randall even allow examples of AP secondary predicates, such as those in (55).

(55) a. *the hammering of metal flat*
   b. *the cooking of food black*

Constructions of this type are not predicted by the analysis advocated here. I have no solution to offer at present as to how they should be reconciled with the proposal, and leave them for future research.

Now, at the end of this section, I want to return to the issue of complementation restrictions on basic and derived nouns. Let us assume that such nouns, when taking an object, always require the FS construction. If the complement is more complex, the remainder cannot be stranded, as in (36), nor can it be moved along to SpecCP, because of (44). Hence, only a simple object complement is allowed.

Recall that it is sometimes claimed that the restricted complementation possibilities of *-ing-of* constructions can be explained on the assumption that the *-ing* form enters the syntax as a noun, as nouns do not have many complement options. We have now found that the limited nature of complementation options of *-ing-of* constructions is syntactic in origin: if, in the structure in (50), the head X of XP takes a complement, movement of XP runs into conflict with the constraint in (44). We may therefore reverse the perspective, and explain the limited range of complementation options of nouns in the same manner. Rather than resulting from the absence of some type of representation (e.g. argument structure, lexico-syntactic level), limitations on the range of complement types of nouns may derive from the same syntactic factors that are operative in the case of *-ing-of* constructions.

8. Summary and conclusions

In this chapter, I have made extensive use of Kayne's proposal that many nominal constructions are built on the structure [D CP], with different kinds of movement to SpecCP. In particular, I have extended the idea that *of/van* is a complementizer in such nominal CPs, rather than an inserted case marker that forms a PP with a case-needing DP complement of a noun. Reconstruction effects in Dutch NIs provided the basis for this conclusion.

It was then argued that there is an as yet not fully understood constraint on the complexity of the phrase occupying the specifier of the projection headed by *of/van* which covers the empirical domain of Williams's head final filter and unites it with restrictions on complementation in nominal constructions. This explanation of these restrictions makes appeals to other projection levels, such as argument structure, superfluous.

The analysis provides support for the conclusion that English has overt movement of the object to a preverbal position, similar to West Germanic

OV languages, the VO order in (verbal) clauses deriving from subsequent movement of the verb to a position preceding the object.

Editors' note

This chapter first appeared in 1999 in *Specifiers: Minimalist Approaches*, edited by David Adger, Susan Pintzuk, Bernadette Plunkett & George Tsoulas and published by Oxford University Press, 163–187. Republished here with kind permission from Oxford University Press.

Notes

1. Parts of the material in this chapter were presented in classes at UCLA, at the University of Budapest, and at the Holland Institute of Generative Linguistics (HIL), Universiteit Leiden, as well as at the conference on specifiers at the University of York. I thank members of these audiences for various suggestions. In addition I would like to thank Marcel den Dikken, Gertjan Postma, Johan Rooryck and Dominique Sportiche for valuable discussions.
2. This problem is not limited to the preposition *of*, but is found with other prepositions as well. To the extent that the analysis presented in this chapter is tenable, a similar approach might be taken for other such situations as well.
3. Under Kayne's theory (1994), there are no rightward movement rules, such as extraposition. Rather, 'extraposition' structures must be considered as resulting from stranding the extraposed material by leftward movement. The asymmetry between the impossible leftward movement of the *of*-NP combination and the apparent rightward movement (i.e. stranding) furnishes a further argument for the analysis pursued in this chapter, but I shall not develop the argument here.
4. Whether modification of the infinitive is by adverbs or adjectives is hard to establish. Adverbs do not inflect, whereas adjectives may show a suffix *-e* in certain environments. As indicated in (3b), the modifying word may or may not be inflected, suggesting that it may either he an adverb (uninflected) or an adjective (inflected). However, judgements on the use of the *-e* inflection in these constructions are not clear, and the rules governing the appearance of the *-e* inflection on adjectives are not fully understood either. So, it is not easy to base any arguments on the absence or presence of the *-e*.
5. One might, following the idea suggested in the previous paragraph, think of the pre-NI bare objects as caseless, assuming that indefinites need not be case-marked, while definites must receive (strong) case. I do not think that such a

distinction in terms of case is motivated, but that the further leftward scrambling of specific DPs is motivated by their specificity. Whatever the case may be, the assumption that post-NI objects preceded by *van* are in situ objects does not seem defensible.

6. Judgements on constructions of the types in (7) vary quite a bit between native speakers. For some speakers placing a star in front of some of these examples is not warranted. I do not know what causes this variation in judgements.

7. The differences between Dutch and English in this respect might be taken to suggest that the secondary predicate (e.g. *incompetent* in (9c)) and the verb form a complex predicate (cf. Hoeksema 1991 for an argument to this effect), instead of a small clause. (See Hoekstra 1992b for discussion of this idea.)

8. Note that the presence of *to* in this example introduces the same problem as *van/of* with respect to the options of the DP$_{to}$ to scope to the right (cf. note 2).

9. It seems reasonable that in between D and NP several functional categories, such as number etc., need to be postulated. That is irrelevant at this point.

10. Although I adopt the analysis of movement as copying and deletion, for clarity I indicate movement by coindexed traces.

11. In this analysis, then, the so-called genitive *'s* is not an instance of D, as proposed by Abney (1987), but rather an agreement marker, generated in I, and cliticizing to its specifier, *John*. This assumption raises several further questions, which I shall not go into, however.

12. A reviewer raises the obvious question of what drives this movement. Within the context of a theory incorporating greed, the equally obvious answer is that the movement is driven by some feature that needs to be checked. A likely candidate is the D-feature of the verbal noun. The reviewer also wonders why this movement to SpecCP is "much more local than traditional instances of movement to SpecCP." The answer is that if the movement is motivated by the need to license a D feature of the verbal noun in D, there is no motivation to move beyond the local D.

13. Kayne's main motivation for postulating of in D in possessives is the complementarity between it and a definite determiner. I shall not discuss this point.

14. The construct state may be marked by a special form of the possessed noun, which may be said to occur in construct state form – cf. the difference between the free form *bayit* in (20b) and he construct state form *beit* in (20a).

15. The fact that the possessor bears genitive case is irrelevant: within Semitic, the possessor in the CS may occur either in unmarked form, as in Hebrew, or in the genitive, as in Arabic. The status of English *s* in the 'Saxon genitive' (cf. note 11) is unclear: to analyse it as a morphological genitive seems incorrect. It should rather be taken to instantiate an agreement marker, but for our purposes the issue is not really relevant.

16. Gertjan Postma points out to me that there are some instances in English and Dutch which do seem to involve N-to-D raising in overt syntax, as in e.g*. midwinter*, which is '(in) the middle of the winter' or 'the winter's middle'. These

examples involve reduction of the noun, as in Semitic, and absence of the determiner, while having a definite interpretation. Longobardi (1996) notes a restricted range of Semitic-like CS constructions in Western Romance, limited to kinship terms and the word for 'house', as in *Casa Rossi* (the house of Rossi). Interestingly, these CS constructions seem to be able to express a 'prepositional' meaning, without a preposition. So, in Dutch we have *Ik ben hartje zomer vertrokken* (lit. 'I am heart summer left', idiomatically 'I left in the middle of the summer'). *Casa* DP has developed into a PP in modern French*, chez Jean* ('at John's').

17. This difference accounts in a straightforward way for the difference between patronymics of the type *John-son*, found in Germanic, and those of the types *ben-Yousef* found in Semitic and *mac-Bhrian* found in Celtic (also a language type with overt N-to-D in CS), with *son*, *ben*, and *mac* meaning the same: 'son'.

18. It is worthwhile to note in this respect that no adjacency is required in Welsh CS constructions; this is parallel to the lower position (SpecVP?) in which subjects may be found in VSO clauses.

19. Hilda Koopman (personal communication) is working on a proposal of this nature which in fact generalizes Rizzi's (1990) proposals concerning negation and *wh*-questions, as well as proposals of a similar nature in the work of Dominique Sportiche.

20. Some speculation may be in order here. Dutch *van* is both different from and similar to English *of:* it might be analysed as *of* plus something. This something might be identified as the preposition *aan* (cf. English *on*), which is the Dutch 'dative' preposition. Similarly, Hebrew has a complementizer *se*, which may be analysed as part of *shel*, the other part being the initial part of *li*, the dative preposition in Hebrew (this was pointed out to me independently by Edit Doron and Samir Khalaily). One may wonder why a dative preposition would be involved in the make-up of this complex nominal complementizer. A suggestion that comes to mind is that this dative preposition is incorporated into C from I (cf. English inflectional *to*). It might have arrived there, in turn, by being extracted from the 'possessor', if possessors start out as dative PPs (cf. Den Dikken 1995 for this claim).

21. Although the precise analysis of these parasitic gap constructions is problematic in current frameworks, I will nevertheless refer to these gaps as parasitic gaps.

22. In Bennis and Hoekstra (1984), it was argued that scrambling is an instance of A'-movement. This conclusion was forced upon us by the then-standard analysis of parasitic gaps. In subsequent discussion, the conclusion has been questioned (cf. Vanden Wyngaerd 1989, among many others). For the current analysis, it is important that the object moves to a specifier position, as it is the only option in restrictive theories of phrase structure (e.g. Kayne 1994). Whether this is an A'-position, and what the relevance thereof is for the licensing of parasitic gaps is beyond the scope of this chapter.

23. As for the subject *John's* we may assume that it raises from IP (which might be considered to instantiate AgrOP) as part of XP, and then undergoes further raising. Alternatively, it is the subject of an independent IP, taking the CP *eating of the apples* as its predicate.

24. In Hoekstra (1984b: 295, note 68), I discuss a number of cases which seem to violate the head final filter for adjectives, in that the adjective in prenominal position is followed by (part of) a degree modifier of the adjective. These cases suggest that the requirement pertains to properties of adjectival agreement, but it is unclear whether this can be extended to other instances of (44).

25. The order between the perfective auxiliary and the participle is free in Dutch clauses, and also in (48b). If instead of an NI construction, a noun is preceded by a reduced relative clause headed by the present participle of the perfective auxiliary, as in (i), the order is fixed. This may be related to the requirement, hinted at in the previous footnote, that the final element of a prenominal modifier be inflected.

   (i) *een   veel   boeken gelezen hebbend-e/*hebbend-e   gelezen man*
       a   many books   read   having-AGR/having-AGR read   man

26. Note that (44) therefore explains why PP modifiers of nouns necessarily occur in postnominal position.

IV. Small clauses

Complex verbs

with Monic Lansu and Marion Westerduin

1. Introduction

This article deals with the question as to why there are specific contrasts between morphologically simple and morphologically complex verbs with regard to the distribution, interpretation and positional possibilities of what is known in traditional grammar as the resultative verb attribute.[1] In section 2 we illustrate these specific contrasts while in section 3 we provide our analysis of constructions containing resultative modifiers. The final section purports to account for these contrasts.

The proposal put forward in the fourth section is further supported by the explanation it provides for the contrastive behavior of Dutch prefixal verbs and their English non-morphologically complex counterparts. In both languages we observe the same alternation in syntactic complementation that we illustrate in (1)–(2); however, in spite of this similarity, there are certain remarkable differences, which fall out from our analysis.

(1) a. *modder op je   gezicht smeren*
         mud   on your face   smear

     b. *je   gezicht met modder besmeren*
         your face   with mud   smear

(2) a. *smear mud on your face*
     b. *smear your face with mud*

The importance of our explanation for linguistic theory is that we show that the difference between morphological conversion and affixation cannot be taken to be merely concerned with the formal aspects of morphological relatedness, as is claimed – implicitly or explicitly – when conversion is taken to be zero affixation. In our account the affix is syntactically relevant in a manner that is excluded on principle with conversion. Our findings confirm this: while the syntactic structures of the examples in (1a) and (2a) are identical, there is a significant difference in syntactic structure between the examples in (1b) and (2b).

Our analysis is not only theoretically important for conversion: the notion 'word', and, in its wake, the notion 'lexicon' are up for discussion at the same time. The lexicalist hypothesis holds that morphologically complex words are formed in the lexicon and that the syntax treats them as atomic entities. As our analysis will show, a subpart of a word is syntactically relevant.

2.   Observations

2.1. Positional possibilities: PP-over-V

Resultative verb attributes may belong to several syntactic categories, AP and PP among them, as shown in (3).

(3)   a.   *dat ik   het   hooi **plat**   sla*   adjective
           thatI   the   hay   flat   beat
           '… that I beat the hay flat.'

      b.   *dat ik   de   schuur **aan   barrels** sla*   PP
           thatI   the   barn   to   barrels   beat
           '… that I smash the barn to smithereens.'

In Dutch subordinate clauses APs and NPs are obligatorily preverbal while PPs are generally more free in their placement. They may occur in pre- or postverbal position (the phenomenon known as PP-over-V), as in (4).

(4)   a.   *dat Jan met   zijn brommer met   een harde plof*
           that Jan with his moped   with a   loud thud
           in   de   berm belandde
           on   the verge landed

      b.   *dat Jan met   een harde plof in de   berm*
           that Jan with a   loud thud on the verge
           belandde met   zijn brommer
           landed   with his moped

      c.   *dat Jan met   zijn brommer in de   berm belandde*
           that Jan with his moped   on the verge landed
           met   een harde plof
           with   a   loud thud
        '…that Jan came to rest on the verge with his moped with a loud thud.'

There is a contrast here, however, with predicative complement PPs. We understand 'predicative complement' to be a cover term for the traditional category of resultative verb attributes and locational adjuncts having complement status (inherently adverbial adjuncts of location and direction). Traditionally, PPs denoting place are categorially taken to be adverbial adjuncts, whereas it is theoretically preferable to assign inherent modifiers that invariably predicate over subject or object to a category that also contains other predicative expressions complementing the verb syntactically or semantically.

We can now make the generalization that predicative PP-expressions cannot occur postverbally (unless bearing emphatic stress, or in other stylistically strongly marked circumstances). This is illustrated in (5).

(5) a. *dat Jan in de tuin   is/*is in de   tuin*
         that Jan in the garden is/*is in the garden
         '… that Jan is in the garden.'

     b. *dat Jan zijn kind naar school brengt/*brengt naar school*
         that Jan his child to   school brings/*brings to   school
         '… that Jan takes his child to school.'

     c. *dat Jan de schuur aan barrels slaat/*slaat aan barrels*
         that Jan the barn   to   barrels beats/*beats to   barrels
         '… that Jan smashes the barn to bits.'

In section 3 we will briefly elucidate why there is this contrast between adjuncts and complements. For the purposes of this article a different contrast is important, however. The generalization we have just made concerning the non-occurrence of predicative complement PPs in postverbal position is voided when the verb is prefixed with, for example, *be-* or *ver-*, as is shown in (6).

(6) a. *dat ik hem tot voorzitter **be**noem/**be**noem tot voorzitter*
         that I him to chairman appoint/appoint to chairman
         '… that I appoint him chairman.'

     b. *dat ik haar tot ontrouw   **ver**leid/**ver**leid tot ontrouw*
         that I her   to unfaithfulness seduce/seduce to unfaithfulness
     '… that I seduce her to becoming unfaithful.'

     c. *dat ik hem tot de galg   **ver**oordeel/**ver**oordeel tot de galg*
         that I him to the gallows condemn /condemn   to the gallows
         '… that I condemn him to the gallows.'

    d. *dat ik hem tot de voordeur **be**geleid/**be**geleid*
       that I him to the front door accompany/accompany
       tot de voordeur
       to   the front door
      '… that I accompany him to the front door.'

    e. *dat ik hem als mijn vriend **be**schouw/**be**schouw als mijn vriend*
       that I him as my friend consider /consider as my friend
      '… that I consider him my friend.'

Given that PP-over-V is impossible with non-prefixed verbs the question arises why the examples in (6) with the PP in postverbal position are grammatical.

2.2. Distribution

Dutch resultative complement expressions enjoy a very free distribution. We encounter the construction with verbs belonging to various syntactic categories: transitive, pseudo-transitive and intransitive verbs, albeit that some lexicalizations are more common than others. We will first provide some examples. In (7) we have cases of intransitive verbs while in (8) we find transitive or pseudo-transitive verbs, but the NP that is the direct object by tradition may not occur without an accompanying resultative expression. This is not the case in (9), but for reasons to be made clear in section 3 we will analyse these examples analogously to (7) and (8).

(7) a. *dat ik mijn schoenen scheef loop*
       that I my   shoes   awry   walk
      '… that I wear my shoes out on one side.'

    b. *dat Jan het kind wakker schreeuwt*
       that Jan the child awake   screams
      '… that Jan wakes the child by screaming.'

    c. *dat Jan een gat in de dag slaapt*
       that Jan a   hole in the day sleeps
      '… that Jan sleeps far into the day.'

    d. *dat Marie haar tanden bloot lacht*
       that Marie her   teeth   naked laughs
      '… that Marie's smile reveals her teeth.'

    e. *dat Gerrit het bed onder kotst*
       that Gerrit the bed under pukes
       '… that Gerrit throws up all over the bed.'

(8) a. *dat Wim zich dronken drinkt*
       that Wim himself drunk drinks
       '… that Wim drinks himself into a stupor.'

    b. *dat Gerrit de bezem aan flarden veegt*
       that Gerrit the broom to shreds sweeps
       '… that Gerrit's continuous sweeping wears the broom down.'

    c. *dat Marie de zeis bot maait*
       that Marie the scythe blunt mows
       '… that Marie's mowing blunts the scythe.'

    d. *dat Jan zijn vingers stuk breit*
       that Jan his fingers to pieces knits
       '… that Jan bruises his fingers by knitting.'

    e. *dat Marion haar longen zwart rookt*
       that Marion her lungs black smokes
       '… that Marion causes her lungs to turn black by smoking.'

(9) a. *dat Jan het schuurtje groen verft*
       that Jan the shed green paints
       '… that Jan paints the shed green.'

    b. *dat Piet de biefstuk in stukken snijdt*
       that Piet the steak in pieces cuts
       '… that Piet cuts the steak in pieces.'

    c. *dat Gerrit het straatje schoon veegt*
       that Gerrit the alley clean sweeps
       '… that Gerrit sweeps the alley clean.'

In section 3 we will point out a semantic condition verbs must meet in order to be able to occur in constructions of this type. Suffice it to notice at this point that verbs that are prefixed with *be-*, *ont-* or *ver-* can, generally speaking, not occur in this construction even though they do meet the condition. We are thus forced to ask why it is that cases like (10) are ungrammatical under the intended structure in which the predicative expression is the complement. We can bring the complement reading out by placing focal stress on the predicative expression.[2]

(10) a. **dat de dokter hem genezen **be**handelt*
          *that the doctor him cured   treats
      b. **dat ik de tuin   vol beplant*
          *that I the garden full plant

      c. **dat hij het huis   vervallen **be**woont*
          *that he the house derelict   inhabits

      d. **dat ik hem tot wanhoop bedrieg*
          *that I him to despair   deceive

      e. **dat ik het huis   groter **ver**bouw*
          *that I the house bigger rebuild

Notice incidentally that the examples in (6) also seem to be an exception to the generalization suggested above.

2.3. Omissibility/interpretation

Generally speaking, resultative verbal attributes are not omissible. This is very clear in constructions of the type in (7), and, to a lesser extent, in (8). It may also happen that omission of the resultative attribute changes the meaning of the verb, as we see in (11).

(11) a1. *dat ik de auto kapot   maak*
           that I the car   broken make
          '… that I ruin the car.'

      a2. *dat ik de auto maak*
           that I the car   make
          '… that I repair the car.'

      b1. *dat ik hem tot ridder sla*
           that I him to   knight hit
          '… that I knight him.'

      b2. *dat ik hem sla*
           that I him   hit
          '… that I hit him.'

      c1. *dat ik mijn vingers bont en   blauw verf*
           that I   my   fingers black and blue   paint
          '… that I work my fingers to the bone.'

    c2. *dat ik mijn vingers verf*
          that I   my   fingers paint
          '… that I paint my fingers.'

    d1. *dat Jan zijn team in de   eredivisie   schopte*
          that Jan his   team in the premier league kicked
          '… that Jan won his team entry into the premier league.'

    d2. *dat Jan zijn team schopte*
          that Jan his   team kicked
          '… that Jan kicked his team.'

It is thus quite striking that in the examples in (6) the resultative attribute can be left out without changing the meaning of the verb.[3]

2.4. Summary

We have seen that verbs prefixed with *be-* or *ver-* display a deviating behavior in constructions containing resultative attributes. In general, these verbs do not tolerate them, and if in exceptional instances they do accept them, the attribute is a PP, which can be postverbal and can be omitted without causing a difference in meaning.

    Basing ourselves on these observations, we might arrive at the conclusion that the PPs in (6), in spite of the traditional analysis, are not complements but adjuncts. This will indeed be our analysis. Before substantiating our claim in more detail, we will first briefly put forward our analysis of predicative complement structures.

3.   Background

3.1. What are resultative small clauses?

In this article we are discussing predicative expressions, i.e. expressions that are semantically linked to an NP expression. In recent literature there has been considerable discussion as to how this semantic relationship should be represented syntactically. Two approaches can be discerned here. The first asserts that the semantic relationship between the predicative expression and the NP to which it is related (the subject) is established by a rule of coindexation. This is the predication analysis proposed by Williams

(1980). The second approach is to be found in Stowell (1981). In his view the semantic subject-predicate relationship has a direct syntactic correlate: the predicate has a syntactic subject. The NP understood to be the subject is the syntactic subject whenever we are dealing with a predicative complement. When we are dealing with a predicative adjunct, the subject is a phonologically non-realised PRO, as in infinitive clauses, and the NP understood as the predicate's subject controls the PRO NP. This analysis has come to be known as the small clause analysis.[4] We adopt the small clause analysis without further motivation (see Hoekstra 1988 for more discussion).

In (12) and (13) we provide examples of the small clause analysis. In (12) the predicate is a complement, while in (13) we are dealing with an adjunct.

(12) a. *dat ik Jan vervelend vind*
        that I Jan boring   find
      '… that I think Jan boring.'

   b. *dat ik* [$_{SC}$ *Jan vervelend*] *vind*

(13) a. *dat Jan bedroefd zijn brood opat*
        that Jan sad   his   bread finished
      '… that Jan finished his bread sad.'

   b. *dat Jan*$_i$ [$_{SC}$ PRO$_i$ *bedroefd*] *zijn brood opat*

A verb such as *find* semantically selects a complement denoting a proposition. The complement can be realised syntactically as an S' (cf. *ik vind dat Jan vervelend is* 'I think that Jan is boring') or as a small clause (cf. [12a]). It is patently incorrect to refer to the latter case as a resultative attribute, as is done in Van der Toorn's grammar (1981: 53–54). The situation is different with regard to constructions of the type in (7)–(9). Here, too, it would be incorrect to use the term 'direct object' and alongside it, an attribute denoting the result; rather, it is the proposition denoted by the subject-predicate relationship that mentions the result. We will refer to such subject-predicate combinations as resultative small clauses.

Syntactically, resultative small clauses are always complements, i.e. the small clause is governed by the verb. A number of correct predictions follow. For example, it follows that predicative expressions cannot have a resultative reading when they are subject-oriented. The examples in (14) do not have a resultative reading.

(14) a. *Jan hakt de   bomen bezweet.*
          Jan   cuts the trees   sweaty
          'Jan is cutting the trees in a sweat.'

     b. *Jan zag al   dat bloed misselijk.*
          Jan   saw all that blood queasy
          'Jan saw all the blood nauseous.'

How can the unavailability of a reading that Jan gets to be sweaty from cutting trees, or sick as a dog when seeing all that blood, be accounted for? To acquire a resultative reading, the small clause of which *bezweet* or *misselijk* is the predicate must be the complement of the verb. At the same time, the orientation of the predicate towards *Jan* must be represented. Either of two ways would suffice for the theory: *Jan* is himself the subject of the small clause or *Jan* controls a PRO subject. The first scenario can be ruled out because *Jan* is already the subject of the matrix clause, while the second is excluded because PRO cannot the subject of a governed small clause. There is thus simply no path available to get to a resultative interpretation.

    There would seem to be a class of exceptions to the impossibility of subject-orientation of a resultative attribute. Within the class of intransitive verbs we distinguish two subclasses: ergative verbs, which form their perfect with *zijn* (English *be*) and verbs that form their perfect with *hebben* (English *have*). In government-binding theory, ergative verbs are analysed as verbs that have an underlying object and do not assign a thematic role to the subject. It follows that the object receives nominative case, which turns it superficially into a subject. We may now expect to find subject oriented resultative constructions with ergative verbs since these subjects are underlying objects. This is precisely what we find, as shown in (15).

(15) a. *dat het feest uit de   hand loopt*
          that the party out of   hand walks
          '… that the party gets out of hand.'

     b. *dat de auto kapot   gaat*
          that the car   broken goes
          '… that the car breaks down.'

     c. *dat het plan in het water viel*
          that the plan in the water fell
          '… that the plan fell through.'

 d. *dat de vaas aan scherven viel*
    that the vase into splinters fell
    '… that the vase broke into splinters.'

 e. *dat het glas in stukken brak*
    that the glass in pieces broke
    '… that the glass broke into pieces.'

 f. *dat de moed hem in de schoenen zonk*
    that the courage him in the shoes sank
    '… that he lost courage.'

In (15a,b,c) we are dealing with ergative counterparts of the examples in (8), while (15d,e,f) are ergative counterparts of the cases in (9). We may regard the verbs figuring in these examples as copular verbs. Our proposal would assign the structure in (16) to (15a).

(16)   *dat* [$_{NP}$ *het feest*]$_i$ [$_{SC}$ t$_i$ *uit de hand*] *loopt*

The case in (17) is interesting: in (17a) the non-ergative verb *vliegen* (English 'fly') is used. The subject *het vliegtuig* ('the plane') duly receives the thematic role 'agent of verb'. Analogously to what we see in (7), a resultative small clause can be added, as in (17b). The perfect of both (17a) and (17b) is formed with *hebben* (English 'have'). In (17b) the resultative attribute is not directly oriented on the subject, but by means of the intermediary *zich* (English '-self'). It is possible, however, to use a construction without *zich* so that we seem to be faced with an exception here, since a resultative attribute would then be subject-oriented, as in (17c). As may be expected under our proposal, the perfect of (17c) makes use of *zijn* (English *be*). Our claim is that the subject *het vliegtuig* does not now receive the thematic role 'agent of *vliegen*'. This becomes clearer when we consider (17d) and (17e). In these examples it is impossible to insert *zich*.

(17) a. *dat het vliegtuig vliegt*
        that the plane flies
        '… that the plane is flying.'

     b. *dat het vliegtuig zich te pletter vliegt*
        that the plane self to smithereens flies
        '… that the plane crashes.'

    c. *dat het vliegtuig te pletter   vliegt*
       that the plane   to smithereens flies
   '… that the plane crashes.'

    d. *dat het vliegtuig in brand vliegt*
       that the plane   in fire   flies
    '… that the plane catches fire.'

    e. *dat het huis   in brand vliegt*
       that the house in fire   flies
    '… that the house catches fire.'

    f. * *dat het huis   zich in brand vliegt*
      * that the house self in fire   flies

The same transition from non-ergative to ergative with a resultative complement is found with weather verbs and is fairly common with verbs of motion. Some examples are provided in (18).

(18) a. *dat mijn jas   nat **is** geregend*
        that my   coat wet is rained
      '… that my coat has got wet in the rain.'

    b. *dat het papiertje   in de sloot **is** gewaaid*
       that the bit of paper in the ditch is blown
     '… that the bit of paper was blown into the ditch.'

    c. *dat het horloge uit elkaar   **is** gesprongen*
       that the watch   out each other is jumped
     '… that the watch burst into pieces.'

The reverse of the generalization that resultative attributes are never subject-oriented is that constructions containing resultative attributes are always what has traditionally been called obligatorily transitive. Alongside (19b) and (19c) we will never come across a construction of the type in (19d).

(19) a. *dat Jan zijn brood om twaalf uur   eet*
        that Jan his   bread at   twelve o'clock eats
      '… that Jan has his lunch at twelve o'clock.'

    b. *dat Jan om twaalf uur   eet*
       that Jan at   twelve o'clock eats
     '… that Jan has his lunch at twelve o'clock.'

   c. *dat Jan zijn bord 's middags   leeg   eet*
       that Jan his   plate in the afternoon empty eats
       '… that Jan empties his plate in the afternoon.'

   d. *dat Jan 's middags   leeg   eet*
       that Jan in the afternoon empty eats

Why should that be so? *leeg* in (19d) is a resultative attribute and must be viewed syntactically as the predicate of a complement small clause. Such a small clause has a subject. What could the status of the subject of this small clause be? In the absence of a lexical expression the subject cannot but be an empty category. The only candidate is PRO but as the subject position of a complement small clause is a governed position, PRO is excluded, so that there is no conceivable candidate that could function as the subject of the resultative small clause.

    The addition of particles to verbs (or the formation of a complex verb consisting of separable prefix+verb) usually leads to 'transitivization' as well. It stands to reason therefore that, following Kayne (1985b), we regard particles as small clause predicates.[5] We provide some examples in (20).

(20) a. *dat hij zijn brood op eet*
        that he his bread up eats
        '… that he finishes his sandwiches.'

     b. *dat hij een borrel in schenkt*
        that he a   drink in pours
        '… that he pours a drink.'

     c. *dat hij zijn zoon weg   stuurt*
        that he his son   away sends
        '… that he dismisses his son.'

     d. *dat de boom om   valt*
        that the tree   over falls
        '… that the tree topples over.'

     e. *dat het geluid weg   sterft*
        that the sound away dies
        '… that the sound dies away.'

     f. *dat Jan uit gaat*
        that Jan out goes
        '… that Jan goes out.'

The cases in (20a,b,c) are unergative while the ones in (20d,e,f) are ergative, as appears from the use of *zijn* in the perfect. For the purposes of clarification we provide the analysis of (20e) in (21).

(21)   *dat* [$_{NP}$ *het geluid*]$_i$ [$_{SC}$ t$_i$ *weg*] *sterft*

As we can see in (20c) and (20f), and as we announced earlier in section 2, we also consider so-called inherently locational and directional attributes to be predicates in resultative small clauses. The italicized parts in (22) make up a small clause in our proposal (see Hoekstra 1984b: ch. 4).

(22)   a.   *dat hij **zijn zoon naar de   markt** stuurt*
              that he   his   son   to   the market   sends
              '… that he sends his son to the market.'

        b.   *dat Jan$_i$ t$_i$ **naar Groningen** gaat*
              that Jan   to   Groningen   goes
              '… that Jan goes to Groningen.'

Finally, we will briefly address the question as to why prepositional predicates of small clauses cannot occur postverbally (cf. section 2.1.). The explanation ultimately depends on the precise analysis of the internal structure of the small clause (cf. note 4). When we take over Stowell's (1981) analysis, and thus take for granted that small clauses are maximal projections of the head of their predicate, the explanation could run as follows. In (22a) the phrase *naar de markt* ('to the market') cannot be moved since this phrase is not a maximal projection and movement only targets heads or maximal projections (cf. Chomsky 1986a). Movement of the maximal projection (i.e. the entire small clause *zijn zoon naar de markt*) is not allowed either if we assume that such a small clause must be canonically governed (cf. Bennis and Hoekstra 1984).

3.2.   Where can the resultative small clause occur?

We have seen that resultative small clauses can be found in the complement of verbs belonging to various categories. We should not, however, take the linkage of a small clause to many of these verbs to be a matter of lexical selection, as is the case in constructions containing non-resultative small clauses (as in [12]). The semantics of a verb such as *lopen* (English 'walk')

does not include a result-denoting expression. We maintain therefore that adding a resultative small clause to a verb is a productive process that is not regulated by means of lexical selection. Such an approach raises the question as to possible restrictions on this productive process.

There turn out to be such restrictions. They show up when we examine the verbs that do select a small clause complement on a lexical basis, such as *vinden* 'find'. Even if a small clause occurs with these verbs, a resultative interpretation is impossible. An example like (23a) cannot be interpreted in such a way that the song gets media exposure as the result of my *vinden*. The same can be observed for the other cases in (23). The examples in (23c,d) are quoted from Simpson (1983: 146).

(23) a. **Ik vind het liedje bekend.*   (resultative reading)
       I   find the song   known

   b. **Jan weet   zijn cijfer hoger.*   (resultative reading)
      Jan knows his   mark higher

   c. **Medusa saw the hero stone/into stone.*

   d. **Midas touched the tree gold/into gold.*

Simpson suggests that the explanation of these and similar impossibilities involves the requirement that the object be 'affected' by the event, a demand that cannot possibly be correct when we consider cases like (8a): not only is *zich* not an object but it would be difficult to maintain that *zich* really undergoes the action of drinking. The correct generalization would seem to be that stative verbs cannot be combined with a resultative small clause. The cases in (24) are all in accordance with this generalization.

(24) a. **zij   haatte hem dood.*
        she hated him dead

   b. **Hij twijfelde het verhaal ongeloofwaardig.*
      he   doubted   the story   inveracious

   c. **Hij wenste mij de kamer uit.*
      he   wished me   the room   out

   d. **Zij vreesde haar kind   nerveus.*
      she feared   her   child nervous

   e. **Hij voelde het ijs   gesmolten.*
      he   felt   the ice   melted

The restriction is also understandable when we consider the semantic property which stative verbs have: they represent states of affairs without temporal change, i.e. there is no internal temporal articulation. That there should be such an internal articulation is a necessary prerequisite for combining with a resultative small clause: the verb refers to an action or process that, in combination with a resultative small clause, is represented as resulting (i.e. finding its terminal point) in the state of affairs denoted by the small clause. Though further restrictions can undoubtedly be uncovered, we will take it for granted that in principle any non-stative verb can combine with a resultative small clause.[6]

Given this background, the observation we made in section 2.2. is worth noticing. The prefixed verbs in (10) are clearly non-stative and yet they do not allow themselves to combine with a resultative small clause. The explanation of this impossibility is the subject of the next section.

4.   Proposal

4.1. Analysis

We have seen that in constructions containing resultative attributes objects are found that cannot occur there if the resultative attribute is absent (see especially the examples in [8]). Consider the cases in (25) against this background.

(25) a. *dat   ik   een   boom   plant*
       that I   a   tree   plant
     '… that I plant a tree.'

    b. *dat   ik   de   tuin   vol   plant*
       that I   the   garden full   plant
     '… that I fill the garden with plants.'

    c. ***dat   ik   de   tuin   plant*
       that I   the   garden plant

    d. *dat   ik   de   tuin   **be**plant*
       that I   the   garden **be**-plant
     '… that I plant up the garden.'

(25a,b,c) are not problematical: *plant* can combine with an object, while as a non-stative verb it may also take a resultative small clause, as in (25b).

The subject of the resultative small clause *de tuin* appears not to be suitable as a subject, as is clear from the ungrammaticality of (25c). How do we analyse (25d)? The analysis proposed in Dik (1980: 36) is noteworthy at this point. The alternation illustrated in (1) is treated in his proposal by a rule of predicate formation, which we reproduce in (26).

(26)   completive verb formation in Dutch
       input: P_v $(X_1)_{Ag}$ $(X_2)_{Go}$ $(X_3)_{Loc}$
       output: *vol/be*-P_v $(X_1)_{Ag}$ $(X_3)_{Go}$ $(X_2)_{Instr}$

The formula states that a predicate of the category V with three arguments having the semantic roles agent, goal and location, respectively, can be the input for the completive verb formation rule, of which the output is a verbal predicate preceded by either *vol* or *be-*. This predicate again has three arguments, of which the order and the semantic roles have changed slightly, in that the earlier goal argument now has become instrument, while the earlier location argument now turns up as a new goal. What is interesting about this proposal is that a unified description is provided for the construction with *vol* and the formation of the morphologically complex verb with the prefix *be-*.

We have a similar objective at heart. Our proposal is that the prefix *be-*, just like the predicate *vol*, is the predicative part of a small clause. What is different from other cases is that the predicate procliticizes to the verb. We might construe this as a mismatch between phonology and (morpho)syntax, in the same way as we find it on a large scale in polysynthetic languages like Eskimo (see a.o. Sadock 1985).

The fact that we wish to give (25b) and (25d) an identical treatment is the only resemblance to the rule in (26) for that matter. In our proposal the NP *de tuin* is not an argument of the verb *planten*. We will come back to the status of the optional *met*-adjunct, but we notice here that it seems incorrect to regard these adjuncts as instrumental. Normally only a single instrumental adjunct can be added to a predicate: it should be clear that in (27) *met een gieter* is the instrumental adjunct, and not *met kunstmest*.

(27)   *dat Jan de sla   met een gieter   besproeide*
       that Jan the lettuce with a   watering can sprayed
       met   kunstmest
       with fertilizer
       '… that Jan sprayed the lettuce with fertilizer with a watering can.'

Example (25) is not an isolated case. In (28)–(30) we provide more instances illustrating the same phenomenon.

(28) a. *dat Jan* (*bier*) *drinkt*
      that Jan   beer   drinks
      '… that Jan drinks beer/is a drinker.'

   b. *dat Jan zich   zat*/*vol   drinkt*
      that Jan   himself   tight/full   drinks
      '… that Jan drinks himself into a stupor.'

   c. **dat Jan zich   drinkt*
      that Jan   himself   drinks

   d. *dat Jan zich **be**drinkt*
      that Jan   himself   **be**-drinks
      '… that Jan drinks himself stupid.'

(29) a. *dat Jan het stuur   draait*
      that Jan   the   wheel   turns
      '… that Jan turns the wheel.'

   b. *dat Jan het verhaal om   draait*
      that Jan   the   story   around   turns
      '…that Jan turns the story around.'

   c. **dat Jan het verhaal draait*
      that Jan   the   story   turns

   d. *dat Jan het verhaal **ver**draait*
      that Jan   the   story   **ver**-turns
      '… that Jan distorts the story.'

(30) a. *dat Jan bier drinkt*

   b. *dat Jan zijn problemen van tafel drinkt*
      that Jan   his   problems   off   table drinks
      '… that Jan drowns his problems in drink.'

   c. **dat Jan zijn problemen drinkt*
      that Jan   his   problems   drinks

   d. *dat Jan zijn problemen **ver**drinkt*
      that Jan   his   problems   **ver**-drinks
      '… that Jan drowns his problems in drink.'

The analysis we propose for (28d), (29d) and (30d) is as in (31).

(31)   *dat Jan* [$_{SC}$ NP *be/ver*] V-*t*

We will point out a number of desirable consequences of this analysis in the following subsection.

4.2. Consequences of the proposed analysis

We noted in section 3 that constructions containing resultative attributes are always 'obligatorily transitive', at least on an underlying level. It is well-known that prefixation with *be-* also has a transitivizing effect, as is the case with *ver-* and *ont-*. If an 'object' does not surface, the prefixed verbs involved are ergative. This property of the morphological processes we are concerned with here is an automatic consequence of the analysis we have proposed. Examples of ergative verbs with *be-* and *ver-* are provided in (32).

(32) a. *dat   het   vlees   **be**derft*
          that the   meat   **be**-lose
          '… that the meat is going bad.'

    b. *dat   de   haas   **be**sterft*
          that the hare   **be**-dies
          '… that the hare's meat is hanging.'

    c. *dat   de   waterleiding   **be**vriest*
          that the waterworks   **be**-freeze
          '… that the water mains are freezing up.'

    d. *dat   het   huis   **ver**valt*
          that the   house   **ver**-falls
          '… that the house is falling into decay.'

    e. *dat   het   tapijt   **ver**slijt*
          that the   carpet   **ver**-wears down
          '… that the carpet is wearing down.'

    f. *dat   haar   permanent   **ver**waaide*
          that her   perm   **ver**-blew
          '… that her perm was blown about.'

The next consequence of our analysis is that the observation we made in subsection 2.2 now falls out automatically: because the relevant affixes are themselves predicates of a resultative small clause, a second predicate cannot be added (see note 4). This is what happens in the examples in (10), which we repeat here for convenience.

(10) a. ***dat de dokter hem genezen **be**handelt*
       *that the doctor him cured   treats
   b. ***dat ik de tuin   vol beplant*
       *that I   the garden full plant

   c. ***dat hij het huis   vervallen **be**woont*
       *that he the house derelict   inhabits

   d. ***dat ik hem tot wanhoop bedrieg*
       *that I   him to despair   deceive

   e. ***dat ik het huis   groter **ver**bouw*
       *that I   the house bigger rebuild

Furthermore, the exceptional property we encountered in subsection 2.1, i.e. the possibility of PP-over-V with prefixed verbs, can now be accounted for. Under our analysis the affixes in example (6) are the predicates of small clause complements. The relevant PPs in these examples must therefore be assumed to be adjuncts, as we already indicated in subsection 2.4.[7]

(6) a. *dat ik hem tot voorzitter **be**noem/**be**noem tot voorzitter*
       that I   him to   chairman appoint/appoint   to chairman
       '… that I appoint him chairman.'

   b. *dat ik haar tot ontrouw   **ver**leid/**ver**leid tot*
       that I   her   to unfaithfulness seduce/seduce   to
       ontrouw
       unfaithfulness
       '… that I seduce her to becoming unfaithful.'

   c. *dat ik hem tot de galg   **ver**oordeel/**ver**oordeel tot*
       that I   him to the gallows condemn/condemn   to
       de   galg
       the   gallows
       'that I condemn him to the gallows'

d. *dat ik hem tot de voordeur **be**geleid/**be**geleid*
  that I him to the front door accompany/accompany
  tot de voordeur
  to the front door
  '… that I accompany him to the front door.'

e. *dat ik hem als mijn vriend **be**schouw/**be**schouw als*
  that I him as my   friend consider/consider   as
  mijn vriend
  my friend
  '… that I consider him my friend.'

It should be noted that these adjunct predicates, which we may take to be a closer specification of the *be*-predicate, again and again have the categorial status of PP. Adjectival adjuncts seem to be excluded.[8] We will go into the adjunct status below, but notice here that assigning adjunct status to resultative attributes with prefixed verbs also explains our observation in subsection 2.3, namely that these resultative attributes can be omitted without changing the meaning of the verb.

That these correct consequences are predicted by our analysis, we take to be strong support for it. We finally turn to a contrast between Dutch and English in this area.

4.3. Contrast with English

We pointed out in the introduction that the alternation that occurs with Dutch *be*-prefixation has a parallel in English, albeit that the syntactic alternation in English does not show a morphological difference. The difference is often regarded as insignificant in the literature: in English we have zero-derivation, but for the rest the situation is fully identical to Dutch (see e.g. Dik 1980: 37).

The absence of a morphological manifestation is not the only aspect, however, in which the parallel between Dutch and English is not altogether perfect. As far as we know, the relevant observation has been overlooked in the literature, but is predicted by our analysis. We have maintained that in (1b) (the sentences in (1) and (2) are repeated below) *je gezicht* ('your face') is not the object of *smeren* ('smear'), and that the NP *je gezicht* can only occur in construction with *smeren* because the NP is the subject of a small clause containing *be*-. It follows that we take the *met*-adjunct to be a

kind of apposition to *be-*. The analysis of (2b) needs to be different, however, as there is no counterpart of *be-* to which the *with*-expression can be an apposition. In other words, contrary to the Dutch *met*-expression, the *with*-expression is not an adjunct but a part of the resultative small clause that needs to be present.

(1)   a. *modder op je   gezicht smeren*
          mud   on your face   smear

       b. *je   gezicht met   modder besmeren*
           your face   with mud   smear

(2)   a. *smear mud on your face*
      b. *smear your face with mud*

The prediction made by our analysis is that the *met*-adjunct is always optional, but that the *with-* attribute is not, just the predicative expression is omissible in the Dutch examples in (7) and (8). This prediction is correct in general, but caution is needed. Let us begin by considering the three counterexamples in (33).

(33) a. *load hay onto the wagon/load the wagon (with hay)*
      b. *spray paint on the car/spray the car (with paint)*
      c. *serve tea to the customers/serve the customers (with tea)*

As these cases show, the *with*-adjunct is optional. They are only apparent counterexamples, however, given the fact that the verbs can occur in Dutch with two kinds of objects, and without *be-*.

(34) a. *hooi op de wagen laden* / *de wagen* (**be**)*laden* (*met hooi*)
          hay on the wagon load / the wagon **be**-load   with hay

      b. *verf op de auto spuiten* / *de auto* (**be**)*spuiten* (met verf)
          paint on the car spray / the car   **be**-spray   with paint

      c. *thee aan de gasten serveren* / *de gasten serveren*
          tea   to   the guests serve   / the guests serve

(34c) is slightly different from the other two, in that verbs like *voeren* ('feed'), *betalen* ('pay') and also *serveren* ('serve') can occur with one or two objects in Dutch, evidently in much the same way as in English.

When we cast our net a little wider, however, and examine more examples, we observe that the Dutch *met*-adjunct is always omissible, whereas in English the *with*-adjunct is not, or only with specific NPs.

(35) a. *de   muur beplakken*   *stick the wall *(with leaflets)*
          the   wall   plaster

      b. *brood   besmeren*   *spread the bread *(with marmelade)*
          bread   spread

      c. *de   muur behangen*   *hang the wall *(with posters)*
          the   wall   paper

      d. *de   ezel   bepakken*   *pack the donkey *(with trunks)*
          the   donkey   pack

      e. *de   loper   bestrooien*   *strew the carpet *(with daisies)*
          the   carpet   strew

The contrast between Dutch and English brought up in (35) is of great theoretical importance. On a lexicalist view the formal difference between English and Dutch would have no potential syntactic importance, and the claim that English uses zero-derivation here would be tantamount to an innocuous remark. However, the contrast between Dutch and English shows that affixes are syntactically relevant, as do the generalizations that we were able to capture with the help of our analysis. Our analysis of complex verbs prefixed by *be-*, *ver-* and *ont-* shows that the notions 'phonological word' and 'syntactic word' do not run parallel, and that consequently a model in which such complexes are formed in a separate component is not capable of making the correct generalizations.

5. Conclusions

In this article we have proposed an analysis of deverbal derivations which bring about a change in the nature of the complementation of the input verb. Our analysis is modeled on the analysis of resultative attributes, for which we have accepted the small clause analysis. The analysis has been extended to inherently locational and directional adjuncts, and is not only applicable to phrasal predicates, but also to predicates in the form of particles. Moving on to the small clause analysis of prefixed verbs is now only a minor step. The main distinction between particles and prefixes like *be-*,

ver- and *ont-* is phonological: prefixes are weaker and thus cliticize very strongly to the verb. Their weak phonology is paralleled by a weak meaning, or rather, by a somewhat underspecified meaning. This meaning can be made more precise by the addition of predicative expressions, which we have taken to be adjuncts. Our approach leads to a number of correct predictions for which no explanations can be found in the available literature.

Editor's note

This chapter appeared in *GLOT* 10/1, 61–77 in 1988 as "Complexe verba". Republished here with kind permission from ICG/H.J. LaPorte. Translated into English by Frits Beukema.

Notes

1. Preparatory work for this article was done within the framework of the seminar on Comparative Syntax at the University of Leiden during the second semester of the academic year 1986–1987. The seminar was conducted by Hans Bennis and Teun Hoekstra. Thanks are due to the participants: Jolanda Bouman, Marcel den Dikken, René Mulder, Joan Neyndorff, Anneke Neyt, Sabine Rats, Wytske Sijtsma, Dirk-Jan de Vink and Bertjan van Weeren. Special thanks to Frans van der Putten for discussion and to Simone Langeweg for comments on an earlier version.
2. Predicative complements receive integrative stress while predicative adjuncts can only receive stress if they are independent focal elements. In that case there are two stresses, each corresponding to a different focal domain.
3. Note that the predicative complement in (6e) cannot be left out. We attribute this to the fact that there is no verb *schouwen* (at least not in present-day Dutch). In spite of this we treat *beschouwen* as complex, which is also borne out formally by the absence of the prefix *ge-* in the perfect participle, and syntactically by the possibility of PP-over-V. The same can be said about the verb *bedriegen* in (10d). *bedriegen* differs from *beschouwen*, however, in that no predicative complement is possible at all with *bedriegen*. We may have to distinguish various degrees of simplex or complex expressions (see Booij 1977).
4. There are two different articulations of the small clause analysis. The first, represented in Stowell (1981), assumes that the combination of subject and predicate is a projection of the head of the predicate. The second takes the small clause to be an S with an abstract INFL (see Chomsky 1981 and Hornstein and Lightfoot 1987). The choice between these two proposals is of no consequence for the purposes of this article.

5. Kayne (1985b) shows that all the arguments motivating the small clause analysis syntactically also apply to particle constructions, in particular left-branch effects in extraction and a ban on nominalization. Apart from this, the analysis of particles as independent predicates also raises problems, in particular the question as to why the distribution of these particle predicates should be restricted to predicative complements. It would take us too far afield to go into this problem here. We notice, however, that this analysis of particles provides an immediate answer to the observation that constructions like **dat ik de vaas uit het raam weg gooi* 'that I the vase out the window away throw' are excluded: there are two expressions that need to be analyzed as predicative complements, which is structurally impossible.

6. Dowty (1979) distinguishes four aspectual classes. In addition to stative verbs he recognizes three non-stative verbal classes: activities, accomplishments and achievements. We do not take over this subdivision as the relevant property of accomplishments is not a lexical property, but a property of the entire VP. It is precisely the combination of a non-stative verb and a resultative small clause that usually leads to an accomplishment VP. What does seem a relevant distinction within the class of non-stative verbs is the distinction we can describe as activity versus process. The latter category would then comprise the ergative verbs, which, just like activities, can be combined with resultative small clauses. As to where this leaves the predicates Dowty calls achievements we prefer to remain neutral.

7. It seems mildly surprising that these adjuncts always receive stress, which is unexpected on the grounds of what is stated in note 2. The integrative stress would have to be on *be-*, but *be-* is inherently unstressable. In similar situations, in which the complement cannot receive stress, the stress shifts to the verb (compare *dat ik een APPEL eet* ('that I an APPLE eat') with *dat ik 't EET* ('that I it-clitic EAT'). When an adjunct is added to such a combination, the normal stress pattern would be for the adjunct to have stress as well as a result of its own focus domain. This should not be confused with integrative stress (see Baart 1987).

8. This observation might be related to Kayne's so-called 'clitic doubling generalization', i.e. the phenomenon by which a clitic object occurs together with a fully coreferential NP. Kayne's generalization holds that this NP must always be preceded by a preposition for reasons of case theory: the verb bearing the clitic cannot assign case to the NP since the clitic has absorbed the case property. The P then takes care of assigning case to the NP. To make this generalization applicable to our context we need to assume that predicative NPs are subject to the case filter as well, or are minimally subject to some form of identification. We will not go into this here.

Small clauses everywhere

1. Background

The question which this paper addresses concerns the syntactic representation of predication. I argue that predication is uniformly represented in the syntax by Small Clauses (henceforth SCs). To this end, the notion of SC itself needs clarification. I argue that in principle projections of whichever category may instantiate the notion of SC (cf. Stowell 1981, 1983). This is one reason for the title of this article. Once the notion of SC is clarified, I will argue that SCs have an extremely wide distribution, as many construction types involve predicational relations which are represented by SCs, and this constitutes a second motivation for the title. In this respect, the paper follows the work of Kayne (1984), who also proposes a SC-analysis for many types of constructions for which such an analysis is not immediately evident.

I argue that the SC-analyses which we propose are the only ones allowed by the grammar. A conclusion of major syntactic importance which I hope to be able to defend is that adjunction is the only mode of syntactic combination, i.e. we reject the distinction between projection and adjunction as it is standardly made in the study of phrase structure in generative grammar. From this limitation to adjunction the generalizations follow which hypotheses such as Kayne's (1981) binary branching hypothesis and Larson's (1988: 381) single complement hypothesis aimed at capturing. Rejecting a distinction between adjunction and projection raises several obvious questions. Most importantly, it is not immediately obvious how a distinction can be made between specifiers and complements, as well as between both of these and so-called adjuncts. These questions will be dealt with in section 4. The central concept which I use here is that of licensing. We will distinguish between various types of licensing the composition of two elements in a syntactic structure, and formulate relevant concepts in terms of these.

A difficult problem concerns the notion of thematic role. In current generative grammar thematic roles play a rather important role. They have the status of primitives, but it is rather unclear how many of such primitives need to be distinguished, nor what their borderlines are.[1] I would like to maintain that there is no need for such thematic primitives. Thematic distinctions, in as far as they are relevant, can be defined in terms of an interplay of syntactic configurations and aspectual distinctions. To give one example:

the notion of theme understood as the argument the state/location or change of state/location of which is specified, can be defined, I argue, as the subject of a SC-complement to a predicate which is non-dynamic vs. dynamic respectively. To be sure, there are other thematic roles, such as instrument and manner, for which such configurationally based definitions are much less clear, but at the same time, the relevance of these thematic notions itself is not very clear either.

I also argue that various elements of the syntactic representation have no independent phonological representation. This conception is by now familiar in as far as traces and various types of empty NPs are concerned. However, I also postulate various predicates which have no independent phonological manifestation. This may be taken as a partial return to conceptions that were generally held in the generative semantics tradition. Although I shall discuss this matter more extensively below, I would like to make two comments at the outset. First, I will adhere to the basic assumption underlying such hypotheses as Baker's (1988) Uniformity of Theta role Assignment Hypothesis (UTAH) or Perlmutter and Postal's (1984) Universal Alignment Hypothesis (UAH, cf. also Pesetsky 1989), which express that particular thematic information is syntactically represented in a uniform way at deep structure. This conception, in conjunction with the projection principle (Chomsky 1981) to a certain extent takes us back to the central methodology of aspects (more specifically the Katz-Postal hypothesis), which was the basis of the generative semantics program.[2] Secondly, the approach advocated here requires a slightly different conception of the notion of a lexical element. The standard way of thinking of a lexical element is that it equals a syntactic atom (cf. Bresnan's 1980 Lexical Integrity Condition), introduced from the lexicon into the syntax at surface structure. I argue, on the contrary, that a lexical element, or rather a word, should be thought of as a phonological unit which licenses a particular structural representation. To illustrate this conception with a simple example: the word *went* licenses a configuration which includes PAST, an empty verb position which itself licenses the elements in its local domain, i.e. the arguments of *go*, its modifiers etc. Given such a view, insertion of words may be done at surface structure (or even at PF). Again this leads to a conception of deep structure as consisting of soundless morphemes, and of lexical elements as replacing chunks of these, which may be scattered at the deep structure level. However, also in this respect there is an outer correspondence with generative semantics only. For instance, the ECP heavily restricts the positions of deep structure elements which may be licensed by a single word. I shall also argue that there are aspectual restrictions on the

combination of major class elements, i.e. restrictions on the level of embedding.

A crucial consequence of the single complement (or single sister) condition (which itself follows from the theory of adjunction), concerns predications involving multiple complements. No head can take two arguments as its sister. This has consequences for e.g. double object constructions.[3] Given the apparent presence of more than a single complement, we are bound to assume that there is more than a single head at deep structure to license these complements. In effect we shall be arguing that the format in (1) underlies many different construction types. Pr in (1) stands for predicator.

(1) $NP_1 \ Pr_1 \ [_{SC} \ NP_2 \ Pr_2 \ XP]$

At deep structure, then, NP_2 and XP are selected by Pr_2. However, Pr_2 may be empty at PF, a lexical element appearing at Pr_1 which licenses both Pr_1 and Pr_2 (e.g. as a result of incorporation of Pr_2 into Pr_1). At the surface, then, the lexical element in the Pr_1 position appears to select three elements, and this surface appearance is correct in the sense that this lexical element (or rather 'word') licenses both the Pr_1 and the Pr_2 position, and hence, all the elements selected by Pr_1 and Pr_2.

2.   Small clauses

2.1. Motivation for small clauses

The topic of secondary predication, exemplified in (2) has been the subject of much controversy in recent years. There are three main candidates for the analysis of this construction: (i) the predication analysis (Williams 1980, 1983); (ii) the Complex Predicate Formation (CPF) analysis; (iii) the SC-analysis. The CPF has several variants, which need not concern us here. The three alternatives assign different structures to the sentence in (2), as illustrated in (3).

(2)   a.   *We found John guilty.*
       b.   *We found that John was guilty.*

(3)   a.   *We found* $[_{SC}$ *John guilty*$]$ SC structure
       b.   *We found* $[_{NP}$ *John*$]_i$ $[_{AP}$ *guilty*$]_i$ predication structure
       c.   *We* [*found guilty*] *John*   CPF structure

According to (3a), *John* is syntactically the subject of a clausal constituent. The details of that structure are discussed in section 2.2. In (3b), *John* and *guilty* are syntactically sisters, and the subject-predicate relationship between them is represented by means of indices, supplied by the rule of predication (cf. Williams 1980). In (3c) we see that *find guilty* is taken to be a complex predicate, taking *John* as its argument. Some syntactic mechanism is assumed to break up this complex predicate (cf. Bach 1979).

The first argument in favor of the SC approach is based on the thematic properties of a construction such as (2a). If we take (2b) into consideration, where *find* takes two arguments, *we* and a complement clause, the SC theory requires only a minimal difference to be made for (2a): instead of a full clause, the internal argument is now represented by a SC. Assuming thematic constancy, then, the projection principle (cf. Chomsky 1981) would disallow a structure of the type in (3b), as the postverbal NP does not receive a thematic role from *find*, while there is no constituent that could receive the thematic role which *find* assigns to the full clause in (2b). In section 4, I shall discuss resultative constructions which are claimed to involve theta marking of the postverbal NP.

A second argument in favor of the SC approach concerns word order. Dutch being an SOV-language and English an SVO-language, one might expect that the order of 'object' and secondary predicate in these languages would be different. Under the SC approach, there is no such expectation, as a subject precedes its predicate both in Dutch as in English. (4) shows that the order of the 'object' and the secondary predicate in Dutch is the same as in English.

(4)   a.   *dat   wij   Jan   aardig   vonden*
              that   we   John   nice   found

       b. **dat   wij   aardig   Jan   vonden*
              that   we   nice   John   found

A third argument can be based on PP-extraposition in Dutch. In general PPs may either precede or follow the verb in Dutch. This is true for prepositional objects, predicative adjuncts, as well as adverbial PPs of various kinds. There is one class of exceptions, however. As (5) illustrates, a PP-predicate of a SC-complement may not occur in postverbal position. In (5a), the prepositional object may occur both preverbally and postverbally. The same is true for the locative PP- adjunct in (5b). In (5c,d), however, the PP theta-marks the underscored NP, and it may only occur in preverbal position (cf. Hoekstra and Mulder 1990 for extensive discussion). As the

predication theory makes no distinction between predicative adjuncts and predicative complements in either structural or indexing terms, it is not at all obvious how the generalization may be expressed under the predication approach.

(5)   a.   *dat Jan over het weer   praat / praat over het weer*
         that John about the weather talks / talks about the weather

     b.   *dat Jan daar z'n vriendin   ontmoette / z'n vriendin*
         that John there his girlfriend met   / his girlfriend
         daar ontmoette
         there met

     c.   *dat Jan **de boeken** op de plank zett*e / **zette op*
         that John the books   on the shelf put / put   on
         de   plank
         the shelf

     d.   *dat **Jan** in de tuin   was / * was in de   tuin*
         that John in the garden was / was in the garden

A fourth argument is developed at great length in Kayne's (1984) work. Postverbal NPs in English that are the subject of a selected secondary predicate show extraction prohibitions of the left-branch variety, as is shown by the contrast in (6): subextraction from the postverbal NP in (6a), where this NP is subject of the secondary predicate, yields an ungrammatical result, while the 'non-subject' postverbal NP in (6b) does not block such extraction.

(6)   a.   **Who did you find the brother of* t *stupid?*
     b.   *Who did you find the brother of* t *in the attic?*

Kayne (1984) also argues that SC-complements resist nominalization. (7) illustrates this.[4]

(7)   a.   *the consideration of the student's problem*
     b.   **the consideration of the students stupid*

Opponents of the SC approach regularly point out that there is no syntactic evidence for the constituent nature of these SCs. It is not true, however, that there is no such syntactic constituency behavior. There are at least two contexts where the SC can be shown to form a constituent. The first instance is in the complement of absolute *with*, as illustrated in (8). Beukema and

Hoekstra (1983, 1984b) provide several arguments to show that the NP following *with* is not a direct complement of *with*. Note that a CPF-approach to this construction, involving a complex predicate *with in the hospital* seems very unlikely. This means that adherents of that approach have to allow an alternative representation of secondary predication, which raises the question as to why that alternative is not equally useful in other instances.

(8) a. *with* [*John in the hospital*]
     b. *with* [*the kitchen dirty*]

A second instance where SCs occur as clear constituents, is the so-called 'honarary NP' environment (Stowell 1981; Safir 1983), illustrated in (9). This construction type raises various interesting questions that I shall not discuss here, but it clearly shows that NP and predicate may form a constituent.

(9) a. [*Snakes under the bed*] *is a scary idea.*
     b. [*Workers angry about their pay*] *seems to be the normal situation.*

It is true, however, that such constituents do not always behave as one might expect from a constituent. As (10) shows, a SC cannot be moved by A-bar or by A-movement. It is unclear, however, what the force of this observation is, given the fact that we find a similar prohibition against movement for ECM-constructions, as is shown by (11).

(10) a. *[*John how silly*] *did they find* **t***?*
      b. *[*Who silly*] *did they find* **t***?*
      c. *[*The students incompetent*] *was generally considered* **t**

(11) a. *They believed* [*there to have been a riot*]
      b. *[*There to have been a riot*] *they all believed* **t**
      c. *[*There to have been a riot*] *was generally believed* **t**

Hoeksema (1987) advocates the CPF analysis by arguing that verb and secondary predicate do show constituent behavior in such examples as those in (12), where the combination is fronted. This argument is without any force, however.

(12) a. [*vervelend vinden*] *kan ik hem niet* **t**
            boring   find   can I   him   not
        'I cannot find him boring.'

     b. [*als een vriend beschouwen*] *kan ik hem niet* **t**
            as   a   friend consider   can I   him   not
        'I cannot consider him as a friend'

Two questions come up in this context: what is the nature of the sentence initial constituent and how is this constituent generated in this position? Following Den Besten and Webelhuth (1987), one might assume that we are dealing here with VP topicalization, more specifically, in the cases of (12) with topicalization of the remnant of VP. The idea is that the NP *hem* is first scrambled out of the VP, and hence also out of its SC subject position, and that the remnant of VP is subsequently topicalized. The examples in (13) illustrate that such V-containing initial constituents are certainly not to be considered simple VPs, however. The constituent may also contain adverbs of various types, pronominal objects as well as the clitical adverb *er*, in short elements that are standardly assumed not to be part of the VP. Clearly then, we are dealing with more than VP.

(13) a. [(*hem*) *vaak in Amsterdam ontmoeten*] *zou   ik* (*hem*) **t**
             (him) often in Amsterdam meet   would I   (him)
          niet willen
           not   want
        'I wouldn't want to often meet him in Amsterdam.'

     b. [*er   morgen   met Marie over   praten*] *kan ik niet* **t**
            there tomorrow with Mary   about talk   can I   not
        'I cannot talk about that with Mary tomorrow.'

I also maintain that the initial constituent is not moved to its surface position, but that instead, we are dealing with a base-generated IP, which is related to the remainder of the sentence through an empty pronoun in SpecCP, along the lines of Koster's (1978) proposal for subject sentences. This analysis is supported by the observation in (14). What (14) shows is that *laten* 'let' does not allow this alleged "remnant VP-preposing", contrary to other verbs taking infinitival complements. This correlates with a further property which sets *laten* apart from these other verbs, illustrated in (14a), viz. its impossibility of combining with a pronominal complement instead of an infinitival. If "remnant VP-preposing", as in (14b), should be analyzed

as I suggested, i.e. as 'IP$_i$ [$_{CP}$ pron$_i$ …]', the impossibility in the case of *laten* is immediately explained.

(14) a. *Piet kan/wil/hoort/laat   een liedje zingen en   Jan*
          Peter can/wants/hears/lets a   song   sing   and John
          *kan/wil/hoort/*laat   dat   ook.*
          can/wants/hears/lets   that too

      b. [*dat liedje zingen*] *kan/wil/hoort/*laat   Jan   ook*
           that song   sing   can/wants/hears/*lets John too

What this discussion shows is that no argument for a complex predicate can be built on the examples in (12).

An argument against the CPF approach can be built on the examples in (15). The secondary predicates headed by the participle in these examples are passive. In the case of simple passive constructions, one could assume that the participle is an adjectival passive, and create a complex predicate consisting of the matrix verb and the adjectival passive participle, at least if one assumes a lexical analysis of adjectival passivization. By Wasow's (1977) criteria, however, the passives involved in these examples are non-lexical, i.e. verbal passives, which are generated by movement. If complex predicates are formed at deep structure, it would seem impossible to deal with examples of this type, as the subject of this complex predicate is still contained within it at that level. In short, the CPF approach is incompatible with the transformational approach to passives.[5]

(15) a. *We wanted Reagan elected* t *president for a third term.*
      b. *They believed this theorem proven* t *false.*
      c. *They considered the table insufficiently wiped* t *clean.*
      d. *We considered this conclusion to have been arrived at too easily.*

As a final argument in favor of the SC approach I would like to mention its success in explaining the distribution of NP types as subjects of secondary predicates. In (16a), the subject of the secondary predicate, a predicative adjunct in this case, is PRO; in (16b), where the secondary predicate is a complement, we necessarily have a lexical subject, while in (16c), again a secondary predicate in complement position, we have a trace subject, due to the lack of case marking of the subject by the ergative *turn*.

(16) a. *John entered the room* [(**himself*) *drunk*]
      b. *John found* [*(*himself*) *sober enough*]
      c. *My skin turned* [t *red*]

Similarly, the SC approach is successful in accounting for the distribution of resultative secondary predicates: in (17a), the secondary predicate has a PRO subject, again as a consequence of its being an adjunct, and the predicate has no resultative interpretation. In (17b), on the other hand, the location *under the table* is understood as the position *John* ends up in as a result of his drinking activity. However, a so-called 'fake reflexive' is required to obtain this interpretation. This is a consequence of Simpson's (1983) law, which holds that resulting state denoting predicates may only predicate of (deep structure) objects, a law which follows automatically from the SC approach (cf. Hoekstra 1988, 1991 for discussion).

(17) a. *John drank* [PRO *under the table*]
      b. *John drank* [*himself under the table*]
      c. **John worked tired.*

Let me close off this section with some notes on the predication analysis (Williams 1980, 1983). Consider (18).

(18) *John proves the theorem wrong.*

According to the predication analysis, the structure of (18) involves a ternary branching structure, in which *prove* is syntactically combined with an NP and an AP. The subject predicate relation existing between these two is captured by a rule of predication, which coindexes NP and AP. There are several problems facing this approach. Firstly, the analysis does not adhere to the binary branching requirement, and hence admits of a wider class of phrase structure configurations. Secondly, it requires a weakening of the projection principle: the paraphrase with a full clausal complement (*John proves that the theorem is wrong*) suggests that the NP is not theta-marked by *prove*. In Chomsky's (1981: 37) version of the projection principle, an NP-complement to V is admitted only if V assigns a theta role to the NP. In this way a particular phrase structure is a direct projection of thematic properties of lexical elements. The consequences of this requirement are extremely far-reaching (for one thing, it makes possible the program to do away with constructions specific PS-rules; cf. Stowell 1981). A third problem concerns the selection of the NP and XP to be coindexed. Consider Williams's (1983) treatment of the triplet in (19).

(19) a. *John*$_i$ [$_{VP}$ *considers Bill*$_j$ [$_{AP}$ *sick*]$_j$]$_i$
      b. *John*$_i$ [$_{VP}$ *ate the meat*$_j$ [$_{AP}$ *raw*]$_j$]$_i$
      c. *John*$_i$ [$_{VP}$ *arrived* [$_{AP}$ *dead*]$_i$]$_i$]

In these structures *John* is the subject of the VP and is coindexed with it. In (19a) *Bill* is the subject of the AP *sick*, and is hence coindexed with it. In (19b) *the meat* is the subject of the AP *raw*. It is also theta-marked by *eat*, but *Bill* in (19a) is not theta-marked by *consider*. This is the distinction between a complement and an adjunct, and the theta-criterion is reformulated so as to capture this distinction: each phrase is assigned only one theta role in an argument complex, where *consider* and *sick* constitute an argument complex with *Bill*, but *eat* and *raw* do not constitute an argument complex. In (19c), *arrive* and *dead* similarly do not constitute an argument complex, and both may hence assign a theta role to the subject *John*. Yet, the configurational relation on the one hand between *Bill* and *sick* and *the meat* and *raw*, and on the other between *John* and *dead* and *John* and *raw* is not different. Whereas the former can be distinguished in terms of subcategorization, the distinction between the latter is not made at all. Finally, there are various pieces of syntactic evidence in favor of the SC-analysis most of which will be discussed below; the predication theory has no obvious way to account for the relevant generalizations.

Here I would like to end this survey of standard arguments, and proceed with a more detailed discussion of the notion of SC itself.

2.2. The nature of SC

In this section I develop a particular notion of SC, which is much broader than what is traditionally understood under this term. Traditionally the concept is restricted to such instances of secondary predication as those that figured in section 2.1, i.e. non-clausal instances of embedded predication.[6] Stowell (1981) proposed that such SCs should be considered projections of the category of the head of the predicate. He therefore generalized the definition of subject to all lexical categories. The structure he would assign to the VP in (2a) is as in (20a). Chomsky (1981), while also considering (20a) for adjunct cases of secondary predication, argued that the SC in (2a) should be analyzed as a genuine 'small clause', i.e. as a S without a filled INFL. As S was not considered a maximal projection at that time, the SC transparency to government from outside could be reconciled with the idea that maximal projections uniformly constitute barriers to external government (cf. also Hornstein and Lightfoot 1987 for relevant discussion).

(20a)
```
        V'
      /    \
    V°      AP
          /    \
        NP      A°
```

(20b)
```
        V'
      /    \
    V°      IP
          /    \
        NP      I'
              /    \
            I°      AP
                     |
                     A°
```
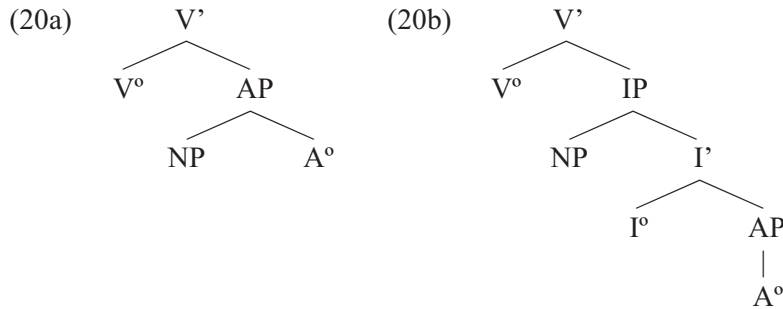
Note that Stowell's proposal was in line with the now generally adopted VP-internal subject hypothesis. Combining this hypothesis with Stowell's yields the possibility of the general hypothesis that thematic roles are always assigned within the projection of the lexical element that assigns these roles (cf. Hoekstra 1984b for a defense of this position). Chomsky's proposal in (20b) needs to be reevaluated in terms of the so-called split INFL hypothesis of Pollock (1989). Pollock argues that the traditional category INFL, hosting features of both agreement and tense, should be split up into two separate functional categories, T and Agr, each projecting a full phrase in accordance with the X-bar schema, yielding the alternative structure of IP in (21).

(21) $[_{TP}$ NP T $[_{AgrP}$ Agr $[_{VP}$ V …]]]

Apart from the possibility that SCs are projections of lexical categories, then, there are four other logical possibilities, if we adopt the structure in (21), given in (22).

(22) a. T=0   +   Agr=0
  b. T≠0   +   Agr=0
  c. T=0   +   Agr≠0
  d. T≠0   +   Agr≠0

The option that SCs could be a simple projection of a lexical category might not exist if we also follow Abney (1987) in assuming that each lexical projection is minimally dominated by one functional category. This is in fact what Guéron and Hoekstra (1992) propose. They argue that traditional SC constructions are instances of an Agr projection (i.e. 22c).

These developments (i.e. the VP-internal subject hypothesis and the split INFL hypothesis), make problematic the notion of A-position, as has

been noted on several occasions. We will discuss this issue in section 4, but let me briefly introduce some of the issues here. An A-position was defined in Chomsky (1981) as a potential theta position. SpecIP qualifies as an A-position only if it is ever possible to directly assign a thematic role to that position, which is precisely what the VP-internal subject hypothesis excludes. Various alternatives are currently available. Rizzi (1990) provides the definition of A-position given in (23):

(23)   An A-position is a theta position **or** an agreeing specifier position.

Notice that this formulation involves a disjunction, which raises the question what motivates the unification that is attempted by the definition. Such motivation would consist in showing that theta positions and agreeing specifier positions interact in ways that require such unification. It seems to me that such motivation is not available. Consider for instance A-movement in passives. If the external argument is somehow instantiated in passives,[7] A-movement of the direct object to SpecIP is not blocked by this intervening argument. There are various alternatives, but one way to make this understandable is by saying that while the external argument qualifies as a theta position, movement of the object is to an agreeing specifier position, and these two types of positions do not interact in terms of relativized minimality. Under such a view, passivization in fact constitutes an argument against collapsing theta positions and agreeing specifier positions.

   The fundamental distinction between lexical categories (theta-assigning categories) and functional categories (purely syntactic categories) tallies with a fundamental distinction between the two different notions involved in (23). As an alternative to (23) I therefore propose the definitions in (24) and (25):

(24)   Subject: an agreeing specifier position

(25)   Positions within lexical projections are theta positions.
       Position outside lexical projections are non-theta positions.

The traditional confusion about the notion of subject can now be cleared up: in a simple sentence, some phrase is the subject of the sentence according to (24), and the subject of the verb in terms of (25). Clearly, however, the subject of the sentence need not be one specific argument of the verb, as we can see in the case of different voices. Similarly, the syntactic notion of subject, as defined in (24), is not unique either, as we shall see.

From the definition in (25) it follows that there must be a functional category in some of the SCs that we already encountered, specifically those in (15), as we need a landing site for the postverbal NP which is not contained in a lexical projection, given (25). Further evidence in favor of the presence of some functional element, even if non-overtly present, can be obtained from considering the following asymmetry. SCs without any overt marker cannot be found in the complement of prepositional verbs. Consider the examples in (26):

(26) a. *we considered this example*
     b. *we considered this example ungrammatical*
     c. *we thought of this example*
     d. *we thought of this example* *(*as*) *ungrammatical*
     e. *we looked upon John* *(*as*) *naive*

Clearly, *of/upon* does not constitute a PP with the following NP, as is evident from the fact that this alleged PP cannot be moved as a unit. Rather, *of/upon* are followed by a SC, headed by *as*, which I take to instantiate a functional head. How is this systematic fact about prepositional verbs to be explained? Kayne (1984) appeals to a notion of 'structural' governor, saying that V differs from P in being a structural governor. Yet, if we are correct in assuming that *of/upon* in these examples take a SC, there is apparently no problem of case assignment across the SC boundary. So, the lack of structural government should pertain to the head of the SC, which may be empty in the complement of V, but not in the complement of P. The relevant distinction between V and P might be understood in terms of an analysis according to which the empty functional head of a SC incorporates into the governor. It is a general (though not a universal) property of P that it does not allow any 'morphology', in this case, no incorporation. Therefore, the head of the SC has to be overt in the complement of a prepositional verb.

    This line of reasoning may be extended to the observed lack of nominalization (cf. [7]), where the presence of *of* similarly would block incorporation of the empty head of the SC. However, if *of* is called for in nominalizations to provide case, one might expect that application of 'passive in NP' could save the SC structure, contrary to fact (cf. [27b]).

(27) a. **our consideration of Bill* F *incompetent*
     b. **Bill's consideration of incompetent* (*by us*)
     c. *consider + ation + F*

The explanation for the impossibility of the constellation in (27c) may be similar to Pesetsky's account of lack of nominal counterparts of causative psych verbs. The data in (28) are illustrative. While there is a well-formed word *annoyance* (cf. [28c]), there is no nominal counterpart to the causative construction in (28a), as is evident from the ungrammaticality of (28b). Pesetsky (1995) postulates an abstract causative affix, into which the verb is incorporated in (28a). To exclude the construct in (28e) we may appeal to Fabb's (1988) generalization, which says that suffixes do not attach to previously affixed forms (apart from a number of designated exceptions). I propose that (27c) and (28e) are similar and that both fall under Fabb's law.

(28) a. *the book annoyed Bill*
      b. **the book's annoyance of Bill*
      c. *Bill's annoyance at the book*
      d. *the book annoy* + CAUSE *Bill **t***
      e. **annoy* + CAUSE + *ance*

This generalization extends to the domain of verb raising in Dutch. Evers (1975) observed that among the verbs that take infinitival complements, none of the particle verbs allow verb raising, i.e. the clustering of the embedded infinitive with the matrix verb. This generalization is illustrated by the contrast in (29a,b), with two matrix verbs with broadly the same meaning. The particle verb *aanvangen* does not allow verb raising.

(29) a. *dat   wij onze rommel begonnen op te ruimen*
           that we   our   mess   started   up to clean

      b. **dat wij onze rommel aan-vingen op te ruimen*
           that we   our   mess   on-set   up to clean
           '… that we started to clean up our junk.'

If verb raising is analyzed as an instance of incorporation, the same constellation found in (27c) and (28e) holds here as well, as can be seen in (30), and again Fabb's law would immediately account for this.

(30)   […… t_i] [[prt + V] + V_i]
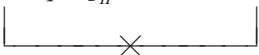
I refer to Guéron and Hoekstra (1992) for further arguments in favor of the presence of a functional category inside the traditional type of SCs.

The notion of subject as defined in (24) is of course not limited to the subject of a SC, but is equally relevant to other instances in which a specifier agrees with its head. Apart from 'traditional' syntactic subjects (i.e. SpecIP, which instantiates [22d]), we also find subjects in SpecCP, at least under the definition given. Rizzi discusses the asymmetry with respect to the possibility of weak pronouns, such as Dutch *het*, in sentence initial position in main clauses in verb second languages. If *het* is the subject, it may occupy this position, but not if it is the object. The asymmetry is illustrated in (31). The asymmetry is sometimes taken as an argument for a non-uniform analysis of verb second (e.g. Travis 1984): subject initial main clauses are IP, while non-subject initial main clauses are CP according to that view. The asymmetry can then be accounted for by stating that *het* may not occur in SpecCP. Rizzi (1990), in essence following an analysis by Holmberg (1986), opts for a uniform CP analysis of verb second clauses. In this analysis it is stipulated that a weak pronoun such as *het* does not qualify as an operator. The notion of variable is defined as an A-bar bound empty category. Sentence (31b) is now excluded: *het* is in an A-bar constituent, binding a variable in object position, but, not being an operator, it cannot bind a variable. In (31a), *het* occupies the same position as in (31b), i.e. SpecCP. So, what is different in this case? The crucial point is that the finite verb in C agrees with *het* in (31a), which makes the SpecCP an A-position, and hence the empty category bound by *het* an anaphor, rather than a variable. The analysis also explains why *het* can only occur in initial position if it is the main clause subject (cf. [31c]).

(31) a. *het is leuk*   'It is nice.'
     b. **het vind ik leuk*   'I find it nice.'
     c. ** het denk ik niet dat leuk is*   'I don't think that it is nice.'

A similar situation is found in the pseudo-relative construction in French, according to the analysis of Guasti (1988). In (32a), *Jean* is followed by what appears to be a relative clause, but the structure doesn't have the interpretation of a relative clause. Moreover, there are various properties that set this pseudo-relative apart from normal relative constructions: the 'antecedent' (*Jean*) may participate in movement processes, such as clitic movement (32b), A-movement (32c) and A'-movement (32d), suggesting that *Jean* in (32a) occupies an A-position. The construction is limited to the complement of verbs that in addition to an NP-complement, also allow a clausal complement. Finally, the antecedent must correspond to the local subject inside the 'relative' clause, as can be seen in (32e). Guasti is able to

explain all these properties by assigning to the relevant part of (32a) the structure in (32f). The fact that such constructions are limited to the complement of verbs like *voir*, which can also take a full CP-complement, is automatically explained. The status of *qui* in this construction is not that of a relative pronoun, but rather of an agreeing COMP (cf. Kayne 1984). Due to this agreement with *Jean*, the position occupied by *Jean* is a subject position. Hence, *Jean* may be moved by both A- and A-bar movement. The requirement that *Jean* corresponds to the local subject is also explained. Consider (32g), which represents a non-subject movement to the SpecCP. If there is agreement in COMP, this movement violates relativized minimality, as the subject *tu* is intervening.

(32) a. *J'ai   vu   Jean   qui   fume   une pipe.*
          I have   seen John   who   smokes   a   pipe

      b. *Je l'   ai   vu   qui   fume   une pipe.*
          I   him   have   seen   who   smokes   a   pipe

      c. *Jean   a   été   vu   qui   traverse   la   rue.*
          John   has   been   seen   who   crosses   the road

      d. *Qui   as-tu   vu   qui   fume   une pipe?*
          Who   has-you   seen   who   smokes   a   pipe

      e. **J'ai   vu   Jean   qui   tu   connais.*
          I have   seen   John   who   you   know

      f. *voir [$_{CP}$ Jean   qui [$_{IP}$ t fume   une pipe]*
          see   John   who   smoke   a   pipe

      g. *voir [$_{CP}$ Jean qui [$_{IP}$ tu connais t]*

We have seen, then, that there is a general definition of subject, which is not only relevant for SCs, but extends to potentially every functional category in which agreement with the specifier is possible. Looked at from this perspective, a normal IP is not different from a 'traditional' SC in any respect: IP, SC, and, as we just saw, CP all instantiate a subject predicate relationship, basically of the same kind.

2.3. Floated quantifiers

In the previous section we developed a conception of subject-predicate relations which can be broadly represented as in (33):

(33)   NP$_i$ F+Agr [$_{LP}$…t_i… L…]]

In this approach, then, the subject of a predicate is related to a thematic position in terms of movement. In the predication theory of Williams, in contrast, the thematic role is assigned directly to the subject, which itself is related to the predicate in terms an indexing relationship. No movement is involved, then, in Williams's system. One might argue that the movement approach is to be preferred, as we can often observe the movement path of a derived subject in terms of local agreements the subject has triggered on its way, but such an argument depends on the way in which agreement is handled. In this section we develop a similar kind of argument for movement, based on the position of so-called floated quantifiers.

Traditionally, the quantifier *all* in (34b) is said to have moved there from the position it occupies in (34a). Sportiche (1988) proposes an alternative analysis, based on the VP-internal subject hypothesis. In his analysis, the quantifier is stranded in the position it occupies in (34b) by movement of the NP to the SpecIP position. (34a) is derived through movement of the entire NP, consisting of Q and NP. The analysis is represented in (34c).

(34)   a.   ***all** the students will come to the party*
       b.   *the students will **all** come to the party*
       c.   ***e** will [$_{VP}$ [$_{NP1}$ Q NP$_2$] come to the party*

This analysis provides an immediate account of the subject-object asymmetry on Q-float: as (35) shows, object NPs do not float their Q, which is a consequence of the assumption that objects are in their base position and can therefore not strand an adjoined Q.

(35)   a. *we saw the men **all** yesterday
       b. *they yelled at the students **both** on the campus of MIT

Taking this analysis, the sentences in (36), all traditional SCs, provide an argument in favor of the SC-analysis as involving a lexical predicate in which the subject originates, as well as a functional category, to the specifier of which the subject has moved, stranding Q in its base position.

(36) a. *we saw the students **all** leave the building*
  b. *we considered our friends **all** rather loyal*
  c. *we looked upon the students as **all** very inspiring*
  d. *I thought of my brothers as **both** very good friends*
  e. *we put the books **all** in a separate package*

However, this simple argumentation is hampered by a number of problems. I restrict myself here to the observation that NP movement of internal arguments, as in passive and ergative constructions, does not allow the stranding of a quantifier in the base position (cf. *these books have been read all*). One might therefore try to formulate a different analysis which is more in line with the predication approach. Such an analysis might be formulated in the following terms: adjoin Q to XP if XP is a predicate of NP and Q is related to this NP. In (34b), then, Q is adjoined to VP, while VP itself takes *the students* as its subject, and Q is automatically related to *the students* (cf. Belletti's 1982; Jaeggli's 1982 analyses). The cases in (36) can be dealt with in the same way, while (35) is automatically excluded. Under such an approach, floated quantifiers do not provide an independent argument for the movement approach to predication.

Such an adjunction approach to floated Qs has recently been taken by Doetjes (1992). Doetjes argues, however, that her approach still requires that subjects be generated in VP-internal position, and hence that floated Qs indirectly constitute an argument in favor of the movement approach to predication. Her analysis of (34b) is given in (37). She does not formulate the condition on an adjoined Q that it be related to the subject of the predicate it is adjoined to. Rather, she maintains that Q may adjoin to some projection if that projection contains an empty category which Q can bind qua variable. In (37), this is the trace of the subject NP.

(37) *the students$_i$ will* [$_{VP}$ *all$_i$* [$_{VP}$ **t**$_i$ *come to the party*]]

It will be evident that Doetjes's theory is more adequate. Consider the following sample of Q-float constructions in French:

(38) a. *je **les** ai* [$_{XP}$ *tous* [$_{XP}$ *lus* **t**]]
  b. *Les livres **que** j'ai* [$_{XP}$ *tous* [$_{XP}$ *lus* **t**]]
  c. ***Les enfants** sont* [$_{XP}$ *tous* [$_{XP}$ *venus* **t**]]
  d. ***Les enfants** ont* [$_{XP}$ *tous* [$_{XP}$ *lu ces livres*]]

In (38a) and (38b), XP must be coindexed with *je*, i.e. the subject of XP is not identical to the NP to which Q is related. In all four cases, however, XP

contains an empty category which the Q may bind. This is clearly so in (38b), where *t* is bound from an A-bar position, and in (38d), where *t* is bound from an A-position, but it is also true in (38c) if the VP-internal subject hypothesis is maintained.

An even more dramatic case is found in so-called long *tous*-constructions of the type in (39):

(39) a. *Il a* [$_{XP}$ *tous*$_i$ [$_{XP}$ *voulu* [**les**$_i$ *voir* **t**$_i$]]]
      b. *Je* **veux**$_j$ [$_{XP}$*tous*$_i$ [$_{XP}$ **t**$_j$ *qu'ils*$_i$ *viennent* **t**$_i$]]

Clearly, in these examples *tous* cannot have reached its position through stranding, nor is *tous* related to the subject of the XP it is adjoined to. I conclude therefore that Doetjes's theory is superior to both Sportiche's stranding theory and to the adjunction approach that does not make use of an empty category to which Q is related. Floated Qs therefore constitute a strong empirical argument in favor of the general approach to predication developed in section 2.2, and to its instantiation in the case of traditional SCs of the type in (36).

2.4. SCs and scope

Williams (1983) puts forth an argument against SCs, based on observations about quantifier scope. The relevant observations are represented in (40) and (42). (40a) is said to be ambiguous between a wide scope reading of *someone* vis-à-vis *seem*, and a narrow scope reading, while (40b) only has the wide scope reading.

(40) a. *Someone seems sick.*
      b. *Someone seems to be sick.*
      c. $\exists x$ [*seem* [*sick* x]]   wide scope
      d. *seem* [$\exists x$ [*sick* x]]   narrow scope

This difference is argued to follow from the idea that movement is involved in (40b), but not in (40a): the trace left behind by movement can then be used as a reconstruction site at LF. Although the observation in this case seems right, the argument based on it seems fallacious. At the theoretical level the idea of reconstruction is at least surprising, in that A-movement is supposed not to yield reconstruction effects. At the empirical level, the assumption that reconstruction is possible runs into conflict with (41),

where *someone* takes wide scope with respect to *often* regardless of the presence of *to be* in the complement.

(41)   *Someone often seems* (*to be*) *sick*

The case in (42) is slightly different. (42a) is said to only have a wide scope interpretation of the embedded subject. Williams (1983) claims that it may have the reading corresponding to (42b), but not the one corresponding to (42c):

(42)   a.   *John saw somebody leave the building*
       b.   ∃x [*John saw* x *leave the building*]
       c.   : *John saw* [∃x [x *leave the building*]]

The lack of an interpretation corresponding to (42c) is caused by the lack of a clausal node of which *somebody* would be the subject. Yet, it is not at all obvious what the structures in (42a,b) are meant to represent. Clearly, it is not a matter of scope per se, as there is no interaction with other scope bearing elements. Rather, it seems to me that Williams attempts to represent specificity: (42b) might represent that John saw a specific individual leave the building, while (42c) would represent that John saw that someone unspecific left the building, indeed the reading we find if we replace the infinitival complement by a full clause. Apart from the question whether the representations in (42b,c) are adequate to represent the specific vs. non-specific interpretation of *somebody*, it seems to me that the basic claim, if construed in this fashion, is incorrect. This is shown by the examples in (43).

(43)   a.   *John saw somebody roam about the house.*
       b.   *John often saw somebody leave the building.*

The most natural reading of (43a) is that John saw someone unspecific roam about the house. In (43b), *somebody* can easily be in the scope of *often*. These observations contradict Williams's argument based on naked infinitives. In the same section (section 8), Williams construes a further argument against a SC-analysis of these naked infinitive complements, based on their resistance to matrix passivization. Within the context of the assumptions about SCs which we developed in section 2.2, this fact can be explained in terms of the extension of Fabb's law, if a non-overt functional category heads such bear infinitival complements, and needs to be incorpo-

rated into the matrix verb (cf. Bennis and Hoekstra 1989 for a more elaborate discussion of this issue).

I conclude that the notion of SC itself is well-motivated. The further question is where such SCs are found. As I argue in this paper, the distribution of SCs is much wider than is generally assumed.[8] A productive class of SC-complements is the resultative construction, which is the subject of the following section.

3. Resultative small clauses

In this section I briefly introduce some aspects of a SC-analysis of resultative sentences. Let me illustrate the construction with a few representative examples:

(44) a. *He laughed himself silly.*
      b. *We talked her out of her crazy scheme.*

(45) a. *We turned the heater down.*
      b. *We mowed the scyth blunt.*
      c. *They wrung a confession out of him.*

In (44) we find intransitive verbs, in (45) transitives. The secondary predicates vary in category: an AP, a PP or a particle. In all these examples, it is the combination of NP and secondary predicate that is responsible for the grammaticality, even in (45) where the postverbal NP does not entertain the same relationship with the verb as it does in simple V NP combinations. The case in (45a) is interesting, as it features a particle, which is limited in its occurrence to complement positions (either complement of V or of *with* in absolute constructions; see [8]).

In Hoekstra (1988) I argue at length for a SC-complement analysis of these constructions. As will be detailed below (section 4), the matrix verb is analyzed as denoting a non-telic activity, which is provided an endpoint in the state denoted by the SC-complement.[9] The resultativity thus is an aspectual property that follows from the combination of activity plus state, and is not a property of the secondary predicate or of the SC itself (see especially section 4.4).

There are basically three types of resultatives to be distinguished on the basis of the governing verb. These are given in (46)–(48): in (46), we find resultatives in the complement of an unergative intransitive, in (47) in the

complement of a pseudo-transitive verb, but with a postverbal NP which does not normally appear as the object of the verb, while (48), finally, contains examples of transitive verbs, with a postverbal NP which can also normally appear as its object:

(46) a. *The joggers ran the pavement thin.*
 b. *He cried his heart out.*
 c. *They danced their days away.*

(47) a. *He washed the soap* *(*out of his eyes*)
 b. *They drank the teapot* *(*empty*)
 c. *He drank himself* *(*silly*)

(48) a. *He painted the barn* (*red*).
 b. *He swept the street* (*clean*).
 c. *They watered the tulips* (*flat*).

In Hoekstra (1988) I argued for a uniform syntactic SC-analysis for all three cases. This means that the postverbal NP is not an argument of the verb in any of these cases; the verb imposes no direct selectional restrictions on it.[10] The apparent 'object' relationship in (48) I took to be a consequence of real world knowledge, not of theta marking by the verb, arguing that there were no known syntactic properties that set (48) apart from the cases in (46) and (47). For instance, in all three cases the postverbal NP may float a quantifier, as is shown in (49):

(49) a. *They danced their days all away.*
 b. *They drank the teapots all empty.*
 c. *They painted the barns all red.*

The fact that the postverbal NP is not an argument of the verb is clear in the examples in (44) and (45). It should be noted, however, that if a matrix verb obligatorily combines with a SC, this particular feature is not easily discerned. Consider the verb *put*. It is followed by an NP and a PP. Leaving out the PP yields as much of an ungrammatical result as leaving out the secondary predicate in (44) and (45). This might therefore be taken to indicate that the NP and PP form a SC-complement to *put*. This analysis was proposed in Hoekstra (1984b). The evidence in favor of this analysis is not limited to the necessary cooccurrence of NP and PP, but also on the position of the PP in Dutch. Dutch is an OV language, but PPs may normally

occur on either side of the verb, except when the PPs are predicates in SC-complements; we already discussed this, see (5) above. As (50) shows, the same 'exceptional' behavior is displayed by clear cases of resultatives, as shown in (50):

(50) a. *dat   hij   het   argument   aan   stukken   scheurde* /
          that he   the   argument   to   pieces   tore   /
          **scheurde   aan   stukken*
          tore   to   pieces

      b. *dat   hij   z'n   team   in   de   eredivisie   speelde* /
          that he   his   team   in   the major league   played /
          **speelde   in   de   eredivisie*
          played   in   the   major league

It is important to note that here too, the different types of resultatives in (46)–(48) behave in a uniform way; (46) and (47) do not behave differently from (48).

In short, three properties converge: (i) the obligatory preverbal placement of SC-complement PPs in Dutch; (ii) the obligatory cooccurrence of NP and the secondary predicate; (iii) the lack of selectional restrictions on the relevant NP by the verb.

Rappaport and Levin (1991), following Carrier and Randall (1993), however, do make a syntactic distinction between (46)/(47) and (48): for the former they accept a SC-analysis, while the latter is assumed to have a ternary branching structure, with the predicative XP related to the NP-object. They argue that there are three pieces of motivation for this distinct treatment (the examples and judgements are from Rappaport and Levin 1991):

– Middle Formation (MF) is applicable to (48), but not to (46)–(47):

(51) a. *This table wipes clean easily.*
      b. *This metal pounds flat easily.*

(52) a. **This pavement runs flat easily.*
      b. **The baby ticks awake easily.*
      c. **The teapot drinks dry in no time at all.*

– Adjectival Passive Formation (APF) is possible with (48), but not with (46)–(47):

(53) a.   *a wiped-clean table*
      b.   *pounded-flat metal*

(54) a. * *the run-thin pavement*
      b. * *the ticked awake baby*
      c. * *a drunk-dry teapot*

– Nominalization is allowed on the basis of type (48), but not of (46)–(47):

(55) a.   *The watering of tulips flat is a criminal offense in Holland.*

      b.   *The Surgeon General warns against the cooking of food black.*

(56) a. * *The drinking of oneself sick is commonplace in one's Freshman year.*

      b. * *The jogging craze has resulted in the running of a lot of pairs of Nikes threadbare.*

Rappaport and Levin assume that these patterns can be explained if it is assumed that MF and APF may only affect direct arguments, and that *of-*insertion is possible only before argument NPs. These assumptions are far from obviously correct. Hoekstra and Roberts (1993) argue that an approach to MF based on 'externalize direct argument' cannot be upheld in general, given the existence of adjunct middles in Dutch. Secondly, APF in Dutch can certainly not be restricted to direct arguments, as examples corresponding to (54) are fully grammatical. English appears to be different from Dutch in this respect, as clear cases of adjectival participles, such as in (57), which involve transitive-based resultatives, are ungrammatical. Finally, Rappaport and Levin fail to provide an analysis of gerundive nominalizations within which their claim holds, so it is hard to evaluate the claim at the theoretical level. Furthermore, native speakers I consulted uniformly reject the examples in (55).

(57) a. * *The metal remained unhammered flat.*
      b. * *The room was left unswept clean.*
      c. * *The house was unpainted red.*

I conclude therefore that the evidence in favor of the proposed distinction is rather scarce. However, let us assume that the distinction is real, and that we must conclude that the postverbal NP in examples like (48) must be theta-marked by the verb. Does that mean that the SC approach is misdirected? This is not self-evident. The predicative XP must also theta-mark this NP: hence, the theta criterion will have to be changed in order to accommodate this situation of dual theta marking, whether we adopt the SC approach or an alternative approach. Various such modifications have been proposed, cf. Williams (1983); Chomsky (1986a); Guéron (1986, 1990) among others. Usually, the uniqueness requirement is relativized to the theta-assigning element: an argument may receive no more than a single role from a theta-assigning head. This allows for the situation in which an argument receives two theta roles, as long as they are assigned by different theta-assigning heads. Let us tentatively adopt such a reformulation. The next question then is under what conditions such dual theta assignment may be expected. In Rappaport and Levin's view there are at least three configurations of theta assignment: direct assignment by the verb to its sister NP, for single NP-complements; theta assignment by the predicate of a SC to its subject, as in the resultatives of the type in (46)–(47); and theta assignment, under predication, by a predicative XP, as in (48), the latter in addition to another role which the verb assigns to the relevant NP. How could the SC approach handle such dual theta assignment?

Consider the structure in (58):

(58) X $[_{YP}$ NP_1 Y $NP_2]$

If sisterhood is a condition on theta assignment, NP_2 may receive a theta role from Y, and YP may receive a theta role from X, but NP_1 may not receive a theta role at all. Clearly, then, sisterhood is too strong a condition. In the normal case, NP_1 will be theta-marked by Y, certainly under the view on A-positions adopted here (cf. 24–25). Let us formulate this more precisely by saying that a lexical head theta-marks all phrases in its projection, and that no head may assign a theta role in the projection of another lexical head. This can be thought of as a particular instance of minimality.

Recall, that we have followed Abney (1987) in assuming that each lexical projection is dominated by a functional projection. Hence, if X and Y in (58) are lexical, there will minimally be some functional head F intervening, yielding (59):

(59) X $[_{FP}$ F $[_{YP}$ NP_1 Y $NP_2]]$

NP$_1$ will move to the specifier of FP, which is not assigned a theta role by F, as F is not a theta-assigning category. Therefore, if X theta-marks NP$_1$ while it is in SpecFP, it is not penetrating into the domain of another theta-assigning category. I propose that this is precisely the structure which allows for secondary theta assignment. Note that if FP is L-marked by X, FP does not constitute a barrier for theta role assignment by X to NP$_1$ in its specifier. One might argue that there is a vicious circularity here in that the notion of L-marking itself is defined in terms of theta marking, but the point here is that we are opening the possibility of secondary theta marking to a chain which is already theta-marked. Therefore the circularity does not arise.

Although the formulations given here would permit secondary theta assignment in transitive-based resultatives, at least under the relativization of the theta criterion, the evidence in favor of this loosening of the theta criterion is too slender in my view to accept the conclusion. It is conceivable that further research will provide firmer evidence to draw this conclusion. The point of this section was to establish that even if we accept the evidence put forth by Rappaport and Levin (1991) and Carrier and Randall (1993), this evidence does not constitute an argument against the SC approach. We will look at a more interesting (thematic) integration of the SC into the matrix sentence towards the end of the following section (section 4.5). For now, let us conclude that resultatives can be very well analyzed using SCs, and, indeed, can explain generalizations which other approaches are unable to explain. This confirms the general idea of this paper that analyses in terms of the restrictive set of binary branching structures yield important insights in the basic make up of syntactic structures. In the following section we turn to the relation between binary branching and the notion of subject alluded to above.

4.   Configurational representation of semantic information

4.1. X-bar theory

Current X-bar theory holds that there is a scheme for the projection of phrases, which is given in (60) (Chomsky 1986a). Each head X projects a level X' which dominates the head and its complements, while a second level is distinguished which comprises X' and the specifier. Phrases occurring internal to the projection of X are theta-marked by X.[11]

(60) X" → Spec X'
      X' → X Comp

Apart from the projection scheme in (60), the theory also allows for base adjunction, an option which is exploited for the generation of modifiers. Such adjunction is so-called Chomsky-adjunction, i.e. the bar-level of the adjunction structure is identical to the modified element, as represented in (61):

(61) [$_{VP}$ ADV [$_{VP}$ …]]

Configurationally, the result of adjunction is not distinguishable from the result of combining a phrase with a head or a projection of the head: the distinction is crucially made in terms of bar-levels, and hence in terms of the distinction between adjunction (bar-level preserving combination) and projection (bar-level increasing combination). Various proposals have been made to allow iteration or recursion of certain bar levels (e.g. Stuurman 1988; Speas 1986), just as there have been proposals in which more than two bar levels are distinguished (Jackendoff 1977b; Halitsky 1975). What I want to propose is that there is no relevance to such a distinction, and that structure building is limited to adjunction. There are three obvious questions that immediately arise: (i) How is the distinction made between adjuncts and complements? (ii) How is the distinction captured between internal and external arguments, specifically with intransitive verbs? (iii) How can we accommodate predicates with more than two arguments? – which, after all, is the main topic of this paper.

4.2. Adjuncts and complements

Notice that the theory which makes a phrase structural distinction between adjuncts and complements introduces a crucial redundancy in that the relevant differentiations are made twice. Consider the two constructions in (62):

(62) a.   ?   b.   ?

        V   NP   V   NP
        see   John   walk   a while

In (62a) we have a typical case of complementation, while (62b) is a case of modification. The distinction between these two is normally made in two

ways: in phrase structural terms and in terms of semantic notions (thematic roles). Given the independent need for a lexical indication of argument structure or theta grid, there is no real need for a configurational distinction.

The distinction between adjuncts and complements is specifically relevant in the domain of extractions. Chomsky (1986a) captures the distinction in terms of L-marking. Note that the concept of L-marking is defined in terms of a disjunction which repeats the redundancy just mentioned: A L-marks B iff A is lexical **and** A theta-marks B. The requirement that the L-marker be lexical is relevant in two distinct cases: A is a head, but a non-lexical one (like INFL); or A is not a zero-level category. As to the first, it is in fact quite unclear whether the assumption is relevant, as VP never seems to constitute a barrier. More generally, there appear to be no barrier effects in the domain of a lexical projection and the functional projections that relate to it. I shall not go into that here (cf. Hoekstra 1992a). The second case in which A fails to meet the condition of being lexical concerns the theta marking of the subject: here A is assumed to be phrasal (cf. Chomsky 1986a). By this assumption adjuncts (which are not theta-marked, and hence not L-marked) and subjects (theta-marked but not by a head) can be generalized over, thus capturing their island character (cf. Huang's 1982 CED). More generally, by assuming that the subject is not L-marked, the well-known subject/object asymmetries are accounted for. However, under the VP-internal subject hypothesis (cf. Kuroda 1986), the CED is more readily captured in view of the fact that the NP in SpecIP is never theta-marked in situ. It appears to be the case that VP-internal subjects in those languages which allow their subject to remain inside VP (cf. Koopman and Sportiche 1991) do not evidence ECP-violations under extraction. The relevant concept setting apart adjuncts and SpecIP therefore appears to be theta marking per se, without any requirement that the theta marker be lexical. In short, the distinction between modifiers and arguments can be made in thematic primitives alone, and does not require any difference in phrase structural terms.

One might object at this point and say that word order phenomena too motivate a configurational representation of the difference between arguments and modifiers. One of the central claims of X-bar theory, then, is that complements are closer to the head than are modifiers (cf. Jackendoff 1977b). Another way of putting this is 'the closer to the head, the lower in the structure', which has the linear consequence of adjuncts being peripheral in relation to complements. However, much recent work calls the correctness of this assumption into question; for instance, see Larson (1988, 1990), Stroik (1990) and Johnson (1991) in view of the Barss-Lasnik type facts concerning such phenomena as binding, bound variables and negative polarity

licensing (see section 5.2 below). This type of observation would seem to require that the direct object asymmetrically c-commands not only other complements, but certain modifiers as well. This then constitutes a major problem for one of the fundamental claims inherent in X-bar theory.

Before returning to this issue, let us for the moment assume that the basic tenet of X-bar theory is correct, and see whether these results can be obtained without invoking a distinction between adjunction and projection. Let us assume, following proposals by Higginbotham (1985), that arguments are saturated through theta assignment, while modifiers are saturated through theta identification. We may then further formulate as an empirical hypothesis that assignments have to precede identifications. Ranking licensing properties in this way would indeed have the required effects (still assuming that these effects are indeed required); the suggested ranking might even be derived from more elementary requirements. To give one brief illustration of what I have in mind, consider the contrast in (63).

(63) a. *John killed the chicken in the garden.*
        b. **John knows French in the garden.*

As discussed by Kratzer (1995), the predicate *know French* does not denote an event. In her terms, the verb *know* lacks an e-role.[12] The predicate *kill a chicken*, on the other hand, does denote an event. The grammaticality difference can then be made sense of by assuming that *in the garden* equally has an event role, which is saturated by being identified with the e-role of the predicate. Now, contrary to Kratzer (1995), I do not assume that the e-role on a VP is lexically determined, but I rather think it is compositionally determined, as is the case in general with aspectual notions of this type (cf. Verkuyl 1972, and much of his later work).[13] If that is correct, the e-role of the PP could only be saturated through identification after the argument roles have been saturated with adequate argument expressions. I shall not go into this matter any further here, but conclude that the distinction between arguments and modifiers does not require a phrase structural distinction between adjunction and projection.

4.3. Internal vs. external arguments

The next question to be addressed is how the distinction between external and internal arguments of intransitive verbs can be represented in a phrase structure theory that makes no reference to projection levels, particularly if

one assumes that the VP-internal subject hypothesis is correct. But let us first establish how this distinction is normally represented. One rather widely accepted view is that the verb's external argument is projected in the specifier position, while internal arguments are projected in the complement position. However, the distinction itself is often quite brutally stipulated, e.g. by adding a feature to the argument role which is the designated external role. I think that hardly anyone would be willing to invest much in such a treatment, and we can therefore agree that some more insight would be welcome.

There are a number of ways in which the problem of external vs. internal arguments can be approached. I will not go into any of these very deeply, but just briefly sketch a number of these possibilities.

The first approach would be to assume that verbs taking external arguments are always transitive. There are two pieces of motivation for this, as Burzio (1981) already suggested. First, Burzio suggests that unergative intransitives, but not ergative intransitives, can always combine with a cognate object (cf. *sleep a healthy sleep* vs. **arrive an early arrival*). Secondly, unergatives can generally take a resultative SC with a lexical subject (cf. *he laughed himself silly*), but ergatives cannot (**the boat stranded itself to pieces*).[14] This approach does not seem viable to me. Some ergative verbs can take cognate objects (cf. *die a horrendous death*). I note in passing that precisely the Dutch verb *sterven* 'die' is also claimed to allow impersonal passivization (cf. Zaenen 1988), and, conversely not all unergatives allow a resultative (e.g. *I talked him out of his crazy scheme* vs. **I spoke him out of his crazy scheme*, a difference which cannot be related to case theory, precisely because we can have *I spoke solemn words/a non-native language*, but not **I talked solemn words*).

A second approach would be to deny the relevance of the distinction and derive the phenomena that are accounted for in terms of the distinction from other properties. In Hoekstra and Mulder (1990) a large variety of cases are discussed which suggest that a basically unergative verb can shift into ergative behavior if certain conditions are met. Basically, the condition is that a secondary predicate of some sort, most commonly a location denoting one, is present. This line of work suggests that the correlates of (un)ergativity be reconsidered. I shall briefly do that here, but more research is needed in this regard.

Three major correlates of the ergative/unergative distinction in Dutch are given in (64):

(64)   **unergatives**   **ergatives**
    auxiliary selection   *hebben* 'have'   *zijn* 'be'
    impersonal passivization   yes   no
    prenominal participle   no   yes

However, upon closer examination it seems that these properties are more of an aspectual nature. Certain ergative verbs do select the auxiliary *hebben* (Mulder and Wehrmann 1989), as is shown by the pair in (65).

(65) a. *dat Jan de kleren aan de lijn heeft gehangen*
       that John the clothes on the line has hung

    b. *dat de kleren aan de lijn hebben gehangen*
       that the clothes on the line **have** hung

The verb *hangen* shows the AVB-BV alternation pattern, characteristic of transitive-ergative pairs of the *break*-type. By this criterion *hangen* in (65b) would be ergative, but it nevertheless takes *hebben*. The non-dynamic nature is responsible for the choice of this auxiliary, Mulder and Wehrmann argue, correctly to my mind. The unavailability of an intransitive interpretation of *de aan de lijn gehangen kleren* 'the on the line hung clothes / the clothes hung on the line' suggests that the possibility of using the participle prenominally equally depends on aspectual notions, rather than strictly on the ergative nature.

    There is a further type of behavior that distinguishes ergative and unergative predicates, which seems to most directly motivate a configurational distinction, viz. the governed behavior of ergative subjects. The most widely discussed behavior of this type is the Italian case of *ne*-cliticization (cf. Belletti and Rizzi 1988; Burzio 1981). A postverbal subject of ergative verbs behaves as an object of a transitive verb in that it may 'launch' the clitic *ne*, whereas subjects of unergative verbs behave like subjects of transitives in not allowing *ne*:

(66) a. *ne   arrivano molti*
      of-them arrive   many   'many of them are arriving'

    b. **ne   telefonano molti*
      of-them telephone many   'many of them are calling up'

Although such phenomena clearly warrant a configurational difference, it is not immediately self-evident whether the standard account is correct.

Rather, I think that the deep structure of an ergative verb (or, more specifically, of a construction that allows *ne*-cliticization) may be as in (67b) rather than as in (67a), as is standardly assumed. I would indeed want to claim that ergative verbs, i.e. verbs whose subject exhibits governed behavior, have (67b) as their basic structure (see Hoekstra and Mulder 1990 for discussion on 'unexpected' impersonal constructions with French *en*, on which this proposal is based).

(67) a.   V NP
      b.   V [$_{SC}$ NP PRED]

Notice that in the cases discussed in Belletti and Rizzi (1988) and in Burzio (1981) the ergative verbs are all change of state (or position) verbs. Even though the predicate which figures in (67b) is not overtly expressed, it is understood, and may therefore be present, realized as an empty category of some sort. I discuss such empty predicates immediately below (section 4.4). At this point, I would just like to propose (67b) as the general model for explaining the governed behavior of ergative subjects. The idea is that the postverbal NP can show governed behavior, as it can remain in situ because the predicate can be moved, as proposed for *there*-constructions in Hoekstra and Mulder (1990) and Moro (1990). If this hypothesis can be sustained, there is no motivation for a distinction between ergative and unergative verbs in terms of projection levels.

   In summary, I have proposed that the distinctions between arguments and modifiers and between internal and external arguments need not be represented in configurational terms. In the former case, the distinction is already represented in terms of other primitives, in the latter, the distinction may turn out to partly be of an aspectual nature, and partly of a configurational nature. However, by hypothesizing the presence of an abstract predicate in the case of (a certain class of) ergative verbs, the configurational distinction can be made without recourse to levels.

4.4. More on the empty predicate

The structure in (67b) postulates an empty predicate in the underlying structure of ergative verbs. I would like to propose that the end point of processes as well as accomplishments is always a state and will always be analyzed as in (67b), where the predicate may or may not be empty. If it is empty, the immediate question that comes to mind is how the distribution

of such empty predicates can be controlled. The analysis of a sentence such as *John died* in accordance with (67) is something like 'John became dead', or rather 'became [John dead]', and such an analysis not only is reminiscent of generative semantics analyses, it also raises the same questions. Specifically, how is the distribution of empty predicates restricted in a principled fashion?

To a large extent this question is answered by a theory of aspect, of which I shall give a broad outline here (cf. Hoekstra 1992a; Guéron and Hoekstra 1995 for more elaborate discussion). Of primary importance is the distinction between stage-level predicates and individual-level predicates introduced by Carlson (1977a), and taken up more recently by Kratzer (1995). Individual-level predicates hold true of some individual as a characteristic property, i.e. are defining the individual. Stage-level predicates, in contrast, attribute some property of a transient nature to some spatio-temporal instance or stage of the individual. The contrast is easily illustrated with *smoke* vs. *be smoking*. While one can say *John smokes* even when at the moment of speech John is not smoking, *John is smoking* ascribes a temporary state to John at the moment of speaking. Activities typically denote transient properties, while cognitive state verbs such as *love*, *hate*, *know* typically denote individual-level properties. Kratzer (1995) provides clear tests to tell these two types of predicates apart. She concludes that event-type predicates have an event role, which state predicates are lacking. I shall not discuss this distinction here, as I want to concentrate on the differences within the category of eventive predicates.

The fundamental property of all eventive predicates is their transient character, i.e. they denote a state of affairs which holds over a certain amount of time, or, phrased differently, which starts at some point T_1 and stop at some T_n different from T_1. The interval between T_1 and T_n I shall refer to as the event span. The event span is homogeneous in the sense that all T_i in the event span belong to the type of event denoted by the predicate. In other words, the internal points in the event span cannot be addressed separately. The only points of the event span which are addressable are T_1 and T_n. We can make a further division in types of eventive predicates by looking at these boundaries: the inherent meaning of the predicate may or may not specify the source, i.e., the force initiating and sustaining the event, and it may or may not specify the termination point, yielding a four way typology:

(68) TYPOLOGY OF EVENTS

source/ initiator	end point/ termination	
–	–	e.g. weather verbs (non-telic)
+	–	simple activities (non-telic)
–	+	processes (telic)
+	+	accomplishments (telic)

Typical examples of the first type are weather predicates: they denote events of which neither the initiator is specified, nor the termination point. Activities are like weather predicates in that there is no specification of their termination, but differ in that the event is initiated and sustained by the input of the agent. Predicates lacking a specification of a termination point can be combined with durational adverbs of the type 'for *x*-much time', as in *John ran for an hour* and *It was raining for an hour*. Processes such as *die* lack a specification of the initial point: they denote events which are specified only in terms of their termination point: some event is a dying event if it results in a dead entity. Accomplishments combine the properties of activities and processes. An example is *kill*: the killer initiates and sustains the event, which is completed by the state of death of some entity. Predicates of which the termination point is specified can combine with durational adverbials of the type 'in *x*-much time', where the adverbial measures out the event span. Other properties distinguishing accomplishments from activities, such as those discussed in Dowty (1979) can be explained along the same lines.

The given typology can serve as a basis for explaining the distribution of resultatives and lexical causatives (Hoekstra 1992a, 1992b). Only eventive predicates lacking an inherent specification of a termination point can be combined with a resultative SC. The role of the SC in these cases is precisely to supply the specification of the termination point, as in (69):

(69) a. *he drank for hours*
      b. *he drank himself silly in/*for an hour*

In (69b), the SC *himself silly* denotes the state which terminates the drinking event, itself an open-ended activity. A predicate such as *kill*, denoting a perfective event, i.e. an event with an inherently specified termination point, cannot be combined with a result SC:

(70) **the maniac killed the village into a ghost town*

Similarly, only predicates without an inherently specified initiator/sustainer form the domain of 'lexical causativization' of the *break*-type. Intransitive *break* is a proces predicate, i.e. it denotes an event of which only the termination point is specified as the state of being broken of the single argument. In its transitive use, an initiator of this event is also specified. Verbs denoting events with an inherently specified initiator may not undergo 'lexical causativization'.[15] We will discuss the licensing of resultatives briefly in section 4.5; causativization will be discussed at length in section 5.

It will be clear how this theory of events puts severe limits on the depth of embedding. Consider the triplet in (71).

(71) a. *John kicked Mary out of the room*
      b. *John kicked Mary black and blue*
      c. **John kicked Mary cry*

Kick denotes an activity, while the SCs [*Mary out of the room*] and [*Mary black and blue*] in (71a) and (71b) specify the termination point of this activity, yielding a fully specified event. (71c), on the other hand, is ungrammatical. The predicate *cry* denotes itself an event, as a consequence of which it cannot be integrated in the event span of *kick*. Guéron and Hoekstra (1995), building on insights by Higginbotham (1985), argue that each event is uniquely licensed by tense, i.e. each event requires its own tense. This explains the ungrammaticality of (71) and constructions like it. In general, then, only a single SC can be added onto an event denoting predicate, under the further condition that this predicate is not already inherently specified for its termination point. The distribution of empty predicates is hence likewise severely restricted.

As for the motivation for the postulation of an empty predicate, we should be careful not to take semantic intuitions for granted too easily. In almost each introduction to linguistics the 'fact' will be mentioned that some verbs, of which *give* is a typical example, have three arguments. In view of the binary branching hypothesis this cannot be literally true, as under that hypothesis, a verb is allowed maximally one internal argument. Closer examination of the facts will easily reveal that the statement that *give* has three arguments cannot be upheld in general, in view of such sentences as "John gave a sigh", where a third argument is not available. However, such uses of *give* are considered peculiar. Jespersen (1965) refers to this use of *give* as a light verb, a notion which has recently been revived by Grimshaw

and Mester (1988) and Kearns (1989), among others. Yet, what is the motivation to take *John gave Mary a book* as the 'normal use' of *give*, rather than the light verb occurrences?

More or less the same is true for the Dutch verb *gaan*. One could easily agree that this is a verb of motion in (72a). For the use of *gaan* in sentences such as the ones in (72b,c), concepts such as metaphor, grammaticalized meaning and so on are used.

(72) a. *dat Jan   naar Amsterdam   gaat*
          that John to   Amsterdam   goes
          '… that John goes to Amsterdam.'

     b. *dat Jan   dood gaat*
         that John dead   goes
         '… that John dies.'

     c. *dat Jan   gaat   slapen*
         that John goes   sleep-INF
         'that John goes to sleep'

Clearly, we may just as well assume that the meaning of *gaan* is always the same, and that the motional meaning which suggests itself in perhaps the most frequent use, derives from the complement locational SC. The inherent meaning of *go* would then just be 'change into' where the SC denotes the state into which the change takes place. More interesting is the verb *vallen*. Here the 'intuition' that it means 'to come (rapidly) downwards', or 'to come from upright into horizontal position' seems very strong. Yet, there are a host of other meanings, which neither involve position nor downward movement, but just change. Consider such examples as those in (73).

(73) a. *er   viel een stilte*
          there fell   a   silence

     b. *dat voorstel   is verkeerd gevallen*
         that proposition is wrong   fallen

     c. *het werk viel hem zwaar*
         the work fell   him   heavy

     d. *hij viel op de grond*
         he   fell   on the ground

As for the (73b,c), it would appear most reasonable to adopt a structure where *vallen* takes a SC-complement with an adjectival predicate, which

assigns a theta role to the derived subject. Similarly, in (73d), one might assume the same structure, this time with a locational PP. A reasonable paraphrase would be 'it ended up in such a way that he is on the ground'. Given that a change is involved, the implication is that at first he was not on the ground, an implication which holds in general for resultative constructions (e.g. *he painted the barn red* implies that the barn wasn't red before his painting activity[16]). The meaning of *vallen* as involving 'downward movement' can thus be seen as derivative from the constructional meaning, and need not be taken as an inherent part of the meaning of the verb. One might say at this point that the downward movement implication holds even if there is no PP-predicate. However, I would maintain that some PP-predicate is understood, i.e. I would postulate an empty predicate, as in (67b). Such empty predicates, the meaning of which is understood by convention, seems to be reasonably well motivated. Consider the examples in (74).

(74) a. *Jan   slaat   zijn broertje*
    John hits/beats his   brother

  b. ??*Jan sloeg   het kopje*
     John hit/beat the cup

  c. *Jan   sloeg   de   bal*
     John hit/beat the ball

  d. *Jan   sloeg   het kopje van   tafel*
     Jan   hit/beat the cup   from table

  e. *Jan   sloeg   een gat   in   de   tafel*
     John hit/beat a   hole in   the table

Although *slaan* can take an NP-object as in (74a), sentence (74b) is unacceptable, unless the cup is taken as in some fairy tale, suffering a punishment. The difference might be accounted for by assuming that the NP-complement of *slaan* receives the role of patient, and by further assuming that only animates can be patients. The full acceptability of (74c) is surprising from this point of view, as *de bal* needs not be personified. However, the meaning of the sentence is not that the ball suffers a beating, but rather that the ball is brought into a trajectory by John's beating, ending up e.g. in the outfield as in a baseball game. If such a location denoting PP is overtly present, *slaan* can also be combined with *het kopje*, as illustrated by (74d). I would argue that in neither (74c) or (74d) is the postverbal NP is an object of the verb, but rather that it is the subject of a SC-complement,

just like *een gat* in (74e). In that case, this NP clearly is not the receiver of the blow: (74e) should be paraphrased as 'due to a blow that John hit, the table ended up having a hole'. Similarly, (74d) can be paraphrased as 'the cup ended up being from the table, as a result of John's beating'. He might even have hit the table, rather than the cup. Under a SC-analysis of (74c), the fact that the NP *de bal* need not be taken as a patient follows immediately, as well as the specific interpretation attached to this example.

Summarizing the above, I would like to emphasize that we have no direct access to the meaning of elements of a sentence. In fact, asking for an intuition about the meaning of an element of a sentence is just as much of a heresy as asking for an intuition about structure. Secondly, I have argued that the assumption that (a major part of the) ergative verbs involve SC-complements with empty predicates derives independent support from a number of observations. Finally, it is easy to see how this assumption can be extended to accomplishments, which are then analyzed as activities with an endpoint in the form of state, linguistically represented in the form of a SC, the predicate of which may or may not be empty.

4.5. A note on licensing resultatives

Let us briefly go into two questions raised by resultatives (cf. also Hoekstra 1992b). (i) What licenses the occurrence of resultative complements? (ii) Where does the resultative meaning come from?

I would like to suggest that the licensing of resultative SCs involves saturation of the e-role of the SC by the tense lexically provided by the event structure of the governing verb. Consider again a sentence such as *John drank*. The representation of this sentence would involve a PAST-object, supplied by PAST itself, which has a certain extension, as determined by the inherent nature of *drink*: it denotes a dynamic stage-level event (an activity), but the termination of this event is not inherently given. We may represent this as in (75):

(75)

$$
\begin{array}{c}
\text{T} \\
\diagup\!\!\diagup\diagdown \\
t_1 \quad t_2 \ldots\ldots t_n \\
\text{drink}
\end{array}
$$
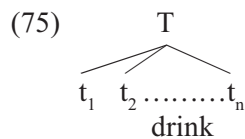
i.e. the past object consists of a sequence of points in time, which has an initial point (this is where drinking starts) and an indeterminate endpoint.

All temporal points t_1 to t_n are elements belonging to the activity of drinking. In the case of a verb such as *kill*, we would have a sequence of time points, but the final value is inherently fixed: by virtue of the meaning of *kill* t_n in its range is characterized as 'entity is dead'. We may, perhaps somewhat misleadingly, say that t_n of *kill* is theta-marked by *kill*, whereas this is not so in the case of *drink*. In the case of *drink*, then, t_n may be theta-marked through binding the e-position of a complement, i.e. the SC which denotes a state. The temporal point licensing the e-role of the SC is made available through the lexical meaning of the verb, and hence, the relation counts as a lexical relation, i.e. as a relation which counts as L-marking.

Notice that this provides an immediate answer to the second question: the ingressive or inchoative interpretation of the SC is determined by the way in which the SC is licensed, viz., through the final point in the event structure of the matrix verb. There is no need, therefore, to assume that the inchoative or resultative reading is part of the meaning of the SC itself.

Notice that a further property of these SC-complements follows from the analysis just presented. If the t_n of the matrix binds the e-position of the SC-complement, the SC-complement should have such an e-position. We mentioned earlier that verbs can be distinguished into stage and individual level predicates. The same is true for adjectives. So, Milsark (1977) makes a distinction between two types of adjectives: stage-level adjectives, like *sick* can occur in existential constructions, but individual-level adjectives, such as *intelligent* may not:

(76) a. *there are some students sick*
      b. **there are students intelligent*

As in the case of verbs, it is not possible to identify two lexical classes, as the choice whether or not a particular property is stage level or individual level depends on various factors, determined by our view of the world. So, intelligence is a property which we usually think of as a property of individuals, not of slices of individuals, but in the context of e.g. intelligence pills this would change. In any event, clear individual-level predicates cannot occur in resultative constructions, and we may account for this in terms of e-role vs. non-e-role projection. This would account for the grammaticality distinction between (77a) and (77b). It would also explain why location denoting predicates, PPs, have a much wider distribution in resultatives, as locations are very rarely, if ever, properties of individuals.

(77) a. *John laughed himself sick*
      b. **John laughed himself intelligent*

In any event, the case can be made that SC resultatives are integrated into the event structure of the governing verb in an interesting and straightforward way.

5. Morphological predicates

I now want to discuss a problem that a proposal which I have put forth elsewhere (cf. Hoekstra, Lansu and Westerduin 1988; Hoekstra and Mulder 1990) meets. It concerns the analysis of verbs with the prefix *be-*. We can distinguish between at least the five following classes:

– causative *be-*
   This type of *be-* is illustrated in (78):

(78) a. *Piet   maakte   het   kleed   vuil*
          Peter   made   the   carpet   dirty

      b. *Piet   bevuilde   het   kleed*
          Peter   BE-dirty-PAST   the   carpet

Again, calling *be-* causative suggests a particular analysis: *be-* would be a governing causative predicate, triggering incorporation of the SC predicate.

– ornative *be-*
   This causative analysis may be extended to denominal *be-* derivatives, such as those in (79), if one is willing to adopt a SC-analysis of 'possessive' relations (i.e. double object constructions):

(79) a. *Peter   bewapende   de   vijand*
          Peter   BE-weapon-PAST   the   enemy

      b. *Peter* BE [$_{SC}$ [*de vijand*] [*wapen*]]

– applicative *be-*
   This type of *be-* is illustrated in (80):

(80) a. *zij   spraken   over   het   probleem*
          they   spoke   about   the   problem

      b. *zij   bespraken   het   probleem*
          they   BE-spoke   the   problem

Calling this *be-* applicative suggests a particular analysis, viz. the analysis proposed by Baker (1988) to deal with applicatives in the Bantu languages. According to that analysis, the applicative affix is an incorporated preposition. Due to the government transparency corrolary the former object of the incorporee will be governed by the host of incorporation. Hence, the NP *het probleem* in (80b) will behave as an object of the derived complex verb *bespreken*.

– locative *be-*
    This *be-* occurs in the locative alternation pattern, displayed in (81).

(81) a. *Jan laadt het hooi op de wagen*
        John loads the hay on the waggon

   b. *Jan laadt de wagen vol (met hooi)*
        John loads   the waggon full (with hay)

   c. *Jan belaadt de wagen (*vol) met hooi*
        John BE-loads the waggon   with hay

   d. *John laadt* [$_{SC}$ *de wagen **be** (met hooi)*]

In Hoekstra and Mulder (1990) this *be-* was analyzed as the head of a SC-complement, on analogy with *vol* in (81b). The affixal head is incorporated into the governing verb. The underlying structure would thus be as in (81d), with *be-* incorporating.

– resultative *be-*
    In (81c), we are in effect dealing with a particular instance of the resultative *be-*. A clearer example is provided in (82), which behaves entirely parallel to the resultative constructions discussed above. Instead of the resultative AP predicate *dronken* in (82b), the SC-complement in (82c) is headed by *be-*, which again is incorporated into the governing verb. The structure therefore is as in (82d):

(82) a. *Jan drinkt bier*
        John drinks beer

   b. *Jan drinkt zich *(dronken)*
        John drinks himself drunk

   c. *Jan bedrinkt zich*
        John BE-drinks himself

   d. *John drinkt* [$_{SC}$ *zich **be***]

Inspecting these five cases, it turns out that there are two grammatically fundamentally distinct affixes *be-*:

I. host *be-*: causative and ornative *be-* appear to be matrix predicates, into which an element from the complement is incorporated

II. incorporee *be-*: applicative, locative and resultative *be-* are heads of the complement SC which are themselves incorporated.

One might be led to postulate two homophonous affixes, but that would clearly be quite undesirable from a comparative point of view: in many languages we find an affix which is open to the same two analyses. Let me illustrate this ambiguity with two further examples from genetically entirely unrelated languages. The first is the Indonesian suffix *-i*. It either functions as a causative morpheme, i.e. as a host, as in (83), or as an incorporee, both in applicative constructions, as in (84) and in the relevant variant of the locative alternation pattern, as in (85).

(83) a. *ikan   itu   asin*
          Fish   the   salt
          'The fish is salt.'

      b. *saya   men-asin-I   ikan   itu*[17]
          I   AFF-salt-AFF   fish   the
          "I salted the fish."

(84) a. *Parto   bohong   kepada   saya*
          Parto   lie   to   me

      b. *Parto   mem-bohong-i   saya*
          Parto   AFF-lie-AFF   me

(85) a. *saya   men-anam   bunga   di   kebun   itu*
          I   AFF-plant   flowers   in   garden   the

      b. *saya   men-anam-i   kebun   itu   dengan   bunga*
          I   AFF-plant-AFF   garden   the   with   flowers

A second example is from Tetelcongo Nahuatl (Aztecan), as described in Tuggy (1987) (cf. also Langacker 1977: 144–147). The suffix *-liya* occurs as a causative in (86a) and with applicative function in (86b):

(86) a. *ni-k-mewi-liya*
    I-him-arise-AFF
    'I make him arise.'

   b. *ni-k-tesi-liya*
    I-her-grind-corn-AFF
    'I grind corn for her.'

Clearly, then, a unified analysis is called for, but it seems that the analysis will have to be rather abstract. Let us first turn to the incorporee *be-*. As I already mentioned, the locative *be-* can be regarded as a specific instance of resultative *be-*. In both cases, the paraphrase which is typical of resultative constructions hold: the activity denoted by the matrix verb affects the state of the postverbal NP. If we take *be-* to represent some unspecified state, the SC-complement configuration captures this interpretation straightforwardly. Notice that the same paraphrase is applicable to the applicative cases, i.e. (80b) can be paraphrased as 'they affect the problem by talking'. In all these cases, then, *be-* may be analyzed as denoting a state, while the verbal stem denotes the activity that results in the state of the object, i.e. the state of being affected. In the case of applicatives, it would appear as if the object has to correspond to the object of the 'incorporated preposition', but this is in fact not always the case, as is shown by (87):

(87) a. *ik praatte over het probleem*
    I talked about the problem

   b. *ik zal hem wel bepraten*
    I shall him well BE-talk
    'I shall change his mind.'

Similarly, there is a significant meaning difference between (88a) and (88b):

(88) a. *hij denkt over een oplossing*
    he thinks about a solution

   b. *hij bedenkt een oplossing*
    he BE-thinks a solution

While there is no guarantee that there is a solution in (88a), (88b) implies that a solution is found, where there was none before. This might derive from the meaning of resultatives: there is a resultating state, as a result of a thinking activity. The stative predicate would be *be-*. Voskuil (1990), citing

Moeliono (1988), notes that many verbs with *-i* in Indonesian and *be-* in Dutch are intensives or frequentatives, a meaning category that I shall not discuss here any further. Moeliono collapses these two meaning categories with the meaning inherent in the locative variant with *be-/-i* by taking the basic meaning to be one of total affectedness (cf. Hoekstra and Mulder 1990: section 2), saying further that "that interpretation often goes hand in hand with a meaning element of systematic repetition: a space/surface can often be totally affected by an activity only if the activity is repeated". We conclude that incorporee *be-* can be given a unified analysis as the head of a SC-complement, with the meaning of 'state of being totally affected'.

Providing a unified analysis for incorporee *be-* along these lines, still leaves us with the dramatically different host *be-*, the causative and ornative. Taking *be-* as a genuine causative raises the immediate problem that it is impossible to derive causatives on a verbal base, even though, as we have seen, *be-* does combine with verbs. Yet, *bewandelen* does not mean 'make walk'. The reason for this, I argue, is that there is in fact no causative *be-*. I argue that instead *be-* arises in a complement SC in its apparent causative function as well. Ornative *be-* similarly is an embedded predicate, as we shall see. We thus arrive at a truly unified analysis of *be-*, a conclusion which appears to be imperative in view of the crosslinguistic homonymy of its correlates.

It is significant that a deadjectival *be-* verb is not always a causative. A case in point is *bekoelen*, which may be used either as an ergative as in (89a) or as a causative transitive, as in (89b):

(89) a. *zijn liefde bekoelt*
          his   love   BE-cool-s
          'His love diminishes.'

      b. *hij bekoelt   zijn woede*
          he   BE-cool-s his   anger
          'He takes out his anger.'

If we were to ascribed the causative meaning to *be-*, the ergative use would require a rule of detransitivization. In fact, the relationship between (89a) and (89b) is an instance of the familiar *break*-alternation, so the question as to how to relate (89a) to (89b) reduces to the question of the proper characterization of the *break*-alternation.

Before addressing this question, it is instructive to consider once again the Indonesian suffix *-i*. *-i* is like Dutch *be-* in combining with verbal bases, but never yielding causative readings in that case. It differs in this respect from the suffix *-kan*, as is illustrated in the examples in (90):

(90) a. *saya   tidur*
     I   sleep

    b. *saya   men-idur-kan   anak   saya*
     I   AFF-sleep-AFF   child   my
     'I made my child sleep.'

    c. *saya   men-idur-i   Nur*
     I   AFF-sleep-AFF   Nur
     'I slept with Nur.' ≠ 'I made Nur sleep.'

Combined with an adjectival base, *-i* and *-kan* both appear to form causative verbs (cf. [83b]), yet the absence of a causative reading for V+*i* suggests that the causative component is not a function of *-i*.

    The *break*-pattern shows up quite generally with deadjectival verb creating affixes. The English suffix *-ize* provides a productive example, as in *We wanted to Reaganize the country, but the country wouldn't Reaganize*.[18] Similarly, the French prefix *en-* is very much like Dutch *be-*.[19] It creates denominal ornatives, such as *encadrer*, *encapuchonner*, *enclouer*: provide with a *cadre* 'frame', *capuchon* 'hood', *clou* 'nail', but also deadjectival verbs, which may display the *break* alternation, such as *enlaidir*: become or make *laide* 'ugly', *enrichir*: become or make *riche* 'rich', *engourdir* become or make *gourd* 'stiff, slow'.

    One might suggest to capture this generalization by assuming that the relevant affixes themselves undergo the *break*-rule. The question, of course, is what this *break*-rule is. What I want to propose is that there is in fact no such rule, but that the transitive causatives are derived from an underlying structure as in (91)[20]:

 (91) NP CAUSE [$_{SC}$ …Pr…]

Pr, the embedded predicate, incorporates into CAUSE, itself an empty affix. The predicate thus created denotes a single event, which explains a number of the restrictions on the *break*-alternation. To see this, recall the typology of events in (68), which was set up by looking at the extremities.

– events of which the source responsible for initiating and sustaining it is encoded (activities);
– events of which the endpoint is encoded, or, the entity which is relevant is assessing the occurrence of the event (processes);[21]
– events of which both the source and the endpoint are encoded (accomplishments);

– events of which neither the source nor the endpoint is encoded (e.g. the weather type).

Note that if it is correct to think of events as denoting intervals of which only the extremities can be addresses, this event typology in effect explains why verbs can only take two arguments, an 'external' one specifying the source, and an "internal" one specifying the endpoint.[22] Both can only be specified once.

Consider, with this background, the *break*-alternation. Verbs displaying this alternation belong to the class of ergative verbs, as shown by the examples in (92) (see note 15):

(92) **ergative bases**   **unergative bases**
     John cured the patient   * *John giggled his son*
     John melted the wax   * *John slept his child*
     John grew tomatoes   * *John thought his students*
     John stopped the car   * *John worked his employees*

The non-existence of such forms as those in the righthand column has been put forth as an argument against the type of analysis in (91) of the cases in the lefthand column as well, because 'real causatives' can be formed with these verbs (cf. *John made his son giggle*). Yet, if the event conditions we arrived at are correct, the ill-formedness of the examples in the righthand column is at once explained, because the single argument of *sleep* is the source and sustainer of the sleeping event, and this excludes the possibility of specifying *John* as the initiator of the event. In a 'real' causative, on the other hand, there are two events, the causation event initiating another event.[23] Ergative verbs, on the other hand, only specify the endpoint, and hence, combining it with a CAUSE predicate, does not yield any conflict with the requirement that the extremities are uniquely specified: the argument of the CAUSE predicate is taken as the initiator and sustainer of the event. In a sense, then, the analysis in (91) is the mirror image of the formation of resultatives we discussed above: result SCs may be added onto predicates which refer to events of which the initiator and sustainer are specified, and the added SC specifies the endpoint (cf. Hoekstra 1992a).

Returning to *be-* now, we have established that *be-* should be taken as denoting a state (the state of being 'totally' affected), at least in the case of incorporee *be-*. We can now see why in *be-*V forms, *be-* could never be a host, into which the verb is incorporated, as such incorporation is possible with eventive predicates only. By the same token, *be-* cannot be taken as a causative predicate in combination with an adjective either.[24]

As much as there is no causative *be-*, there also is no 'host' *be-* in ornative constructions. Modifying the analysis suggested for ornative *be-* in (79b), repeated here, along the same lines as that of alleged causative *be-* leads us to adopt (79c) as the structure involved in the formation of ornative constructions.

(93) a. *Piet bewapende   de   vijand*
       Peter BE-weapon-PAST the enemy

   b. *Peter* BE [$_{SC}$ [*de vijand*] [*wapen*]]

   c. NP CAUSE [$_{SC}$ [*de vijand*] BE [*wapen*]]

If the analysis is correct, it provides interesting support for the SC-analysis of double object constructions in general (see section 5.2). One question that we have to address is why the incorporated noun in these ornatives corresponds to the notional direct object, rather than the indirect object; as we shall see, this follows from our assumption that *be-* is a state denoting predicate. I conclude the discussion of *be-* with a schematic overview:

I. 'applicative'
    ik bespreek het probleem
    I   BE-speak the problem
    ik spreek [$_{SC}$ [*het probleem*] *be-*]

II. 'resultative'
     Jan bedrinkt   zich
     John BE-drink-s himself
     Jan drinkt [$_{SC}$ [*zich*] *be-*]

III. 'locative'
     Jan bespuit   de planten
     John BE-spray the plants
     Jan spuit [$_{SC}$ [de planten] be-]

IV. "causative"
    Jan bevuilt   zijn kamer
    John BE-dirty-s his   room
    Jan CAUSE [$_{SC}$ [*zijn kamer*] *be-* [*vuil*]]

V. "ornative"
    Jan bewapent   de vijand
    Jan   BE-weapon-s the enemy
    Jan CAUSE [$_{SC}$ [*de vijand*] *be-* [*wapen*]]

Note, finally, that in I–III, the predicate *be-* satisfies the stray affix filter by incorporating into the governing verb, while in IV–V, this filter is satisfied by incorporation of an adjective or noun into *be-*.

6.   Complex argument structures have complex predicate structures

As I mentioned before, the binary branching hypothesis and similar considerations force us to adopt multi-predicate structures for multi-argument structures, so that many construction types have (1) as the underlying format.

(1)   NP$_1$ Pr$_1$ [$_{SC}$ NP$_2$ Pr$_2$ XP]

In the previous section we saw examples of how this format can be instantiated: resultatives and complex verbs. Other constructions with (1) as the underlying format are light verb constructions, serial verb constructions, double object constructions, object control constructions and verb particle constructions, and there may be others. In the following subsections, we look at some of these.

6.1. Particle constructions

Particle constructions, such as in (94), have long constituted a challenge.

(94) a. *I looked the information up*   outer particle form
      b. *I looked up the information*   inner particle form

Many analyses start out with the assumption that the verb and the particle should somehow be conceived of as a lexical unit, as the semantics is non-compositional, e.g. it is impossible to paraphrase (94) as 'the information is up, as a result of a looking activity'. Note, however, that this lack of a transparent semantics is not always the case, as in (95):

(95) a. *I turned the lights off*
      b. *The lights are off*

Yet, there are no differences in syntactic behavior between the transparent and the non-transparent ones.[25] This may be taken to argue for a 'lexical

unit' approach to (95), despite its semantic compositionality, or against a 'lexical unit' approach to (94), under the assumption that we have no direct access to the meaning of individual elements in a construction (i.e. the 'idiosyncrasy' in (94) may be limited to the particle, or the 'joint' meaning may be a function of LF-incorporation, etc.).

Kayne (1984) advocates the latter approach, proposing a SC-complement analysis for the non-transparent (94). Kayne demonstrates that the NP in (94a) shows 'subject' behavior in the same way as other SC subjects. Moreover, the construction resists genitivization in the same way as other SC constructions. Consider the following examples:

(96) a. **What did he look information about* t *up?*
      b. **Who did he find the brother of* t *silly?*

(97) a. **our looking of the information up*
      b. **our considering of the students incompetent*

The postverbal NP in outer particle constructions shows left-branch effects under extraction (as in [96a]) and resists genitivization (as in [97a]). Thirdly, although particle verbs combine with phrases of different categorial status, the position in between the verb and the particle is restricted to NPs, a categorial restriction which is also found with subjects.

Kayne considers the outer particle construction as base generated, and derives the inner particle form by means of extraposing elements from subject position to the right of the particle. Guéron (1986) proposes instead that the inner particle form is basic, and derives the outer particle form by leftward movement of the NP (see also Guéron 1990). Both proposals can be combined, however, by assuming that this leftward movement is not a kind of topicalization, adjoining the phrase to the particle projection, but rather movement into a specifier position, i.e. a subject position. Such a proposal is made in Guéron and Hoekstra (1992) and by Den Dikken (1990). Leaving details aside, (94a) is analyzed as in (98):

(98) *look* [[*the information*]$_i$ *up* t$_i$]

The subject properties of the inner NP are accounted for in the same way as under Kayne's analysis. In (94b), no movement of the NP has taken place, contrary to what holds under Kayne's analysis. The fact that extraction out of the NP in post-particle position is possible strongly argues against Kayne's proposal, as Guéron points out (cf. also Johnson 1991):

(99)   a. * *What do you find unbelievable descriptions of* t*?*
        b.   *What did you look up descriptions of* t*?*

The structure in (98) resembles quite closely an analysis of particle con-
structions recently proposed by Johnson (1991). However, in his analysis,
not only the NP has moved to a specifier position, but the verb has equally
moved to a VP-external position. Johnson's is a variant of the 'lexical unit'
approach: the verb and the particle are inserted under a V-node, heading a
VP, at deep structure. The verbal base moves out to a VP-external functional
head position, stranding the particle in much the same way as verb second
in Dutch and German particle constructions is argued to strand the particle
(cf. Koster 1975). The object of the particle verb optionally moves into the
specifier of VP, where it receives case. The subject properties are equally
captured under this analysis, as is the non-extraposed character of the post-
particle NP in (94b).
    A very important aspect of both our and Johnson's analysis is the de-
rived nature of the position in between the verb and the particle. This con-
clusion is strongly supported by those constructions in which the medial
NP is not theta-marked by the (particle) verb, but is the subject of a clause
which complements the (verb) particle, as in (100a):

(100)   a.   *We made John out* (*to be*) *a liar.*
        b.   *We made out that John was a liar.*

This conclusion will play an important role in our discussion of double
object constructions, and I formulate it for ease of reference as in (101):

(101)   The inner NP position in a particle construction is a non-theta-marked
        landing site.

Let us next consider differences between our proposal and Johnson's. A
question that arises on both accounts is what allows the NP to remain in
post-particle position, given that we assume that it moves to the left of the
particle to be case-marked. Johnson argues that case can be assigned from
the verb trace, just in case there is a particle. The exact definition of the
mechanism of case assignment that he proposes need not concern us here.
It should be noted, however, that the difference in case assignment is not
the only aspect in which the two variants of the particle constructions differ.
First of all, in outer form, the particle can be modified, which is impossible
if the particle is in inner position (cf. [102]). Secondly, the outer particle

construction allows a form of conjunction, which the inner form does not, as is shown in (103).

(102) a. *He turned the heater completely down.*
        b. **He turned completely down the heater.*

(103) a. *He turned the heater down and the lights off.*
        b. **He turned down the heater and off the lights.*

The contrast in (103) suggests that whereas the string following the verb in the outer particle form is a constituent, let's say a SC, which is open to conjunction, the string in inner particle form does not form a constituent. Den Dikken (1990) proposes that the inner particle construction results from reanalysis of the particle with the verb. Under this proposal, the particle *off* in (103b) has no verb to be reanalyzed with, and hence the structure is ruled out. The contrast in (102) is likewise explained by this reanalysis proposal, if we maintain that modification of an incorporated element is impossible. This assumption is independently motivated by the following contrast in Dutch:[26]

(104) a. *omdat   hij   de   auto   erg   vol   wil   tanken*
              because   he   the   car   very   full   wants   tank
          '… because he wants to tank the car very full.'

        b. **omdat hij de auto erg wil vol-tanken*

        c. *omdat hij de auto wil vol-tanken*

(104c) shows that the resultative adjective may incorporate in the verb, and be moved along with it under verb raising, while (104b) illustrates that such incorporation is incompatible if the modifier *erg* is stranded. (102b) is out for the same reason: the post-particle occurrence of the NP requires reanalysis of the particle, but such reanalysis is incompatible with modification.

    The reanalyzed particle is incapable of governing across a clausal boundary. This explains why (105b) is ungrammatical, as opposed to (105a):

(105) a. *They made Bill out a liar.*
        b. **They made out Bill a liar.*

From this point of view, the grammaticality of the examples in (106) is problematic, however.

(106) a. *They made out [Bill to be a liar]*
       b. *They put down [the books on the shelf]*

There is a contrast here between an NP-predicate, like *a liar* in (105), and PP and *to*-infinitivals, as in (106). I suggest that in the latter case, the predicate is extraposed, a possibility which is corroborated by the observation that these predicates can follow matrix adverbials, as in (107):

(107) a. *They made out Bill this time to be a liar.*
       b. *They put down the books this time on the shelf.*

A second piece of corroborating evidence can be found by looking at such extractions as in (108)–(109):[27]

(108) a. *What did they make Bill out to be*
       b. ***What did they make out Bill to be*

(109) a. *Which shelf did they put the books down on*
       b. ***Which shelf did they put down the books on*

The ungrammaticality of the (108b) and (109b) is explained if we make the following assumptions: (i) in inner position the particle does not govern across a clause boundary; (ii) extraposition of the predicate allows the subject of the SC to be governed from outside (probably due to lack of L-containment); (iii) extraposed predicates (or phrases in general) are islands for extraction.

   The first assumption is reminiscent of Kayne's (1981) notion of structural governor. Kayne argues that verbs, but not other categories, have the potential of structural government, allowing them to govern NPs which they do not theta-mark. Among other things, this assumption was used to explain why only verbs can take ECM and SC-complements. This assumption explains the ungrammaticality of (105b). The second assumption allows the clausal complements in (106) if we assume that PPs and *to*-infinitivals may extrapose, while the third assumption explains the contrasts in (108)–(109). Note that the second assumption derives independent support from the following observation.[28] (110a) is ungrammatical, as is expected under our assumption that only verbs can govern across a clausal boundary (cf. [97]). The contrast with (110b), then, is quite surprising, and recalls the contrast between (105b) and (106). The grammaticality of (110b) would be explained in a way parallel to (106), if the phrase *all the way up* were

extraposed, and the contrast with (110a) requires that *up* by itself may not be extraposed. That *up* and *all the way up* differ with respect to movability finds independent support in (111):

(110) a. ***his zipping of the bag up*
      b. *his zipping of the bag all the way up*

(111) a. *he zipped the bag this time *(all the way) up*
      b. *How far up did he zip the bag?*

The same contrast is found in the absolute *with*-constructions, as discussed in Beukema and Hoekstra (1984b). The predicate in these constructions may vary in category, as the following examples show:

(112) a. *with the kitchen dirty*   (AP)
      b. *with a hat on*   (part)
      c. *with Dick Cavett on TV*   (PP)

The subject of the complement of *with* does not allow extraction, unless the predicate is of the category PP, as the following examples illustrate (cf. Siegel 1983; Beukema and Hoekstra 1984).

(113) a. ***What did they leave with dirty?*
      b. ***What did Jil perform with up?*
      c. *What was Grace sitting with in her lap?*
      d. *Who did Larry arrive with on his arm?*

This categorial difference can be explained along the same lines, i.e. by assuming that the PP has been extraposed, something which predicates other than PPs cannot do. The lack of L-containment which results allows the subject of the SC to be governed by the particle, which can transfer the case from the verb with which it is reanalyzed.

In conclusion, then, the contrasts in (102) and (103) show that the difference between inner and outer particle form is not just a matter of from which position case is assigned, as Johnson claims, but rather involves a more fundamental structural distinction, the particle being reanalyzed in inner form, but being an independent category in outer form. It is not immediately evident how the conjunction facts in (103) could be accounted for under a theory like Johnson's which consider verb and particle to form a lexical unit, inserted under a single V-node at deep structure. In simplex

outer particle constructions, this theory would require that V-raising has access to the internal 'structure' of this unit, excorporating the verbal-base part. The coordinate cases in (103) involve excorporating V-raising in an across-the-board fashion (cf. Larson 1988). This across-the-board application should be made sensitive to whether or not the object has moved to the specifier of VP. It is unclear how this could be implemented.

Finally, the choice of particle form (inner or outer) is in some sense a lexical matter. Consider the examples in (114)–(115) (see also Kayne 1985b: note 46):

(114) a. *The referee considered the ball in.*
       b. *John read the figures in to the crowd.*

(115) a. * *The referee considered in the ball.*
       b. * *John read in the figures to the crowd.*

Under a purely syntactic approach like Johnson's it is unclear how this lack of generality can be accounted for. If the facts were reversed, an appeal might be made to a constraint on excorporation of certain complex lexical items. Such a constraint would be in some sense reminiscent of constraints on idioms, which also resist application of otherwise general syntactic rules. However, in this case, 'excorporation' is required, rather than forbidden. Under our analysis the lack of generality can be formulated as a condition on reanalysis. In the case of (114), where the matrix verb is stative, the lack of reanalysis can be explained in terms of aspectual properties (cf. Guéron and Hoekstra 1992). The case in (115), to which we return below, does not seem open to an aspectual account, in view of the contrasts displayed in (116).

(116) a. *John read back/off/out the figures to the crowd.*
       b. * *John read in/through/up the figures to the crowd.*

I shall leave open how the relevant distinction between (116a) and (116b) can be explained exactly, but conclude that it constitutes evidence in favor of our reanalysis proposal.

A final argument favoring our proposal concerns the ungrammaticality of (117a):

(117) a. * *Betsy figured carefully out the problem.*
       b. *Betsy figured out the problem carefully.*

The account of the ungrammaticality of (117a) is problematic for Johnson in view of his analysis of the difference in grammaticality between (118a) and (118b).

(118) a. **Chris hit quickly the dog.*
      b. *Mikey talked slowly to Gary.*

Johnson follows Pesetsky (1989) in arguing that the position of the adverb in between V and PP does not result from extraposition of the PP, but rather from movement of the V. The analysis of (118b) proposed by Johnson, in essence following Pesetsky, is given in (119):

(119)

```
          ╱╲
        μ      VP
            ╱╲
         Spec    V'
             ╱╲
          ADV     V'
              ╱╲
            V°    PP
```
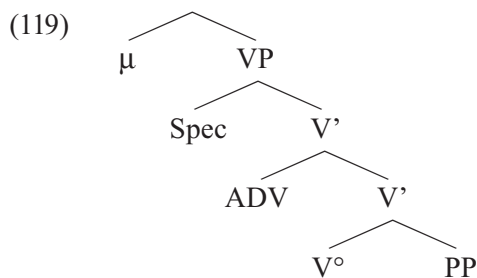
The verb raises from its base position to a functional head-position μ, crossing the adverb which is adjoined at the V'-level, and hence ending up in a position non-adjacent to its PP-complement. In (118a), this yields an ungrammatical result, as the verbal trace is incapable of assigning case. The NP-object therefore has to move to the SpecVP position, where it can be assigned case.[29]

    Recall that the inner particle form is analyzed by Johnson as involving verb raising of the verbal base to μ, with case now being assigned through the verbal trace, something which is possible because this trace position is not empty. Under these assumptions, (117a) can be generated. Johnson therefore has to provide an alternative account for its ungrammaticality, which he formulates in terms of the ECP. Two assumptions are involved here: (i) that the adverb induces the presence of a barrier in between the μ-position and the V-position; (ii) the empty category left behind by 'excorporation' from a particle verb is not theta-governed, unlike the empty category left behind in the case of raising a simplex verb. The verb trace in (117a) therefore differs from the verb trace in (118b) in that the latter, but not the former is theta-governed. In order to be licit, therefore, the verb trace in (117a) must be antecedent-governed, but this is impossible due to the barrier

induced by the presence of an adverb. Both assumptions seem questionable. In particular, the contrast between (117a) and (120) suggests that the problem has nothing to do with the occurrence of a 'partial verb trace' and an adverb:

(120) a. *Betsy narrowed secretly in on the problem.*
      b. *He looked quickly in on his children.*
      c. *He teamed secretly up with the women.*

The ungrammaticality of (117a) under our account follows straightforwardly. In fact, apart from (117a) and (117b), there are two other alternatives which needs to be taken into account, viz. (121a,b):[30]

(121) a. **Betsy figured the problem carefully out*
      b. **Betsy figured carefully the problem out*

Starting with (121b), its ungrammaticality follows from the general constraint against adjunction to an argument (cf. Chomsky 1986a, who credits Johnson for this idea): the verb figure takes a SC-complement, to which no adverb can be attached. A crucial feature distinguishing Johnson's and my approach here is that the position of *figure* under my account is a lexical position, from which the ban on adjunction on its complement follows from a general theory, while in Johnson's it is a functional position. Complements of functional categories normally do not resist adjunction (cf. the note on adjunction of adverbs). The ungrammaticality of (121a) is easily explained, as a matrix adverb occurs inside the complement SC. Johnson has to take recourse to the ECP-account in terms of failure on antecedent government of the 'partial' trace. (117a), finally, is ungrammatical on two grounds: the adverb apparently is generated on the complement of the verb and the presence of an adverb is incompatible with reanalysis.

    I conclude that particle constructions involve a double predicator structure (see [1]), the particle heading a SC-complement of the governing verb. The particle itself is ergative, as proposed by Guéron (1986, 1990), which triggers NP movement to the subject position of the SC, unless reanalysis takes place.

6.2. Double object constructions

The next construction we want to analyze as involving a dual predicator structure of the type in (1) is the double object construction, as well as the

related prepositional dative construction. A SC-analysis of double object constructions was proposed by Kayne (1984), who used essentially the same diagnostics as in the case of particle constructions, viz. the fact that the inner NP shows subject properties, such as left branch effects on extraction, illustrated in (122), and resistance to genitivization, illustrated in (123).

(122) a. *Who did he give the brother of a good idea?*
      b. *Which class did the teacher give the pupils of a bad mark?*

(123) a. *our gift of the student (of) a book*
      b. *his show of their audience (of) a difficult trick*

The SC-analysis is capable of accounting for the so-called Barss-Lasnik (1986) facts, which indicate that the inner object asymmetrically c-commands the second NP. These facts are illustrated in (124).

(124) a. *I showed them$_i$ each other$_i$'s pictures.*
      b. **I introduced each other$_i$'s parents my friends$_i$.*
      c. *I gave **none** of them **any** books.*
      d. **I gave **any** student **no** books.*
      e. *I showed **every** student **his** room.*
      f. **I gave **its** author **each** first novel.*

Reciprocal binding (124a,b), negative polarity licensing (124c,d) and bound variable interpretation of pronouns (124e,f) all require c-command. For this reason, the structure of the VP is these cases cannot be flat, as in traditional analyses in which the verb is supposed to take two arguments, as under such an analysis the second object is not only c-commanded by the first, but it also c-commands the inner NP. That would lead us to expect that (124b,d,f) would also be grammatical. Such a ternary branching structure is also at odds with the requirement that syntactic structures are strictly binary.

    The requirement that the two NPs do not c-command each other also militates against an analysis of the type in (125). There is a further reason not to adopt (125), viz. that it is unclear in what sense the second NP can be considered a predicate of the first NP. For these reasons we are forced to assume that the internal structure of the SC-complement is more abstract.

(125)   V [$_{SC}$ NP$_1$ NP$_2$]

A further question concerns the relationship with the prepositional dative variant. In earlier analyses, this relationship was captured in transformational terms (cf. Fillmore 1965; Emonds 1972; Jackendoff and Culicover 1971), but this transformational account was later given up in favor of a lexical treatment (cf. Oehrle 1976; Wasow 1977). The arguments in favor of a lexical treatment are two-fold; first, the dative alternation shows lack of generality, i.e. the alternation doesn't always hold; secondly, the two alternates are not equivalent in all respects (cf. Green 1974; Oehrle 1976). Specifically, the inner NP in double object constructions is affected in a sense in which the NP couched in the prepositional variant is not. For instance, while (126a) suggests that the teaching has had effect on the students, in this case implying that the students actually learned something, (126b) does not have any such implication.

(126)   a.   *He taught the children French.*
      b.   *He taught French to the children.*

It is questionable, however, whether this affectedness property is enough to override the fundamental similarity between the inner NP in the double object construction and its prepositional variant. Rather, as remarked in Hoekstra and Roberts (1993), affectedness appears to be a general property of SC subjects, and can therefore be taken as a property which derives from the structure, rather than being a primitive property of lexical item. To slightly elaborate, let me stress that the SC-analysis of double object constructions in effect equates these structures with resultative structures. The general interpretation of resultatives is that the activity denoted by the matrix predicate ends in a certain state, which is denoted by the SC-complement. The affectedness property is a natural consequence of this interpretation.

We shall therefore aim at an analysis of double object constructions in which these are derivationally related to the prepositional variant. Starting with the latter, it is important to note that the prepositional phrase is not an argument, but rather a predicate. In this respect, the prepositional dative construction differs from a construction with transitive verbs and a prepositional object of the type *convince*. Consider the contrast between (127b) and (128b):[31]

(127)   a.   *I gave a book to John.*
      b.   *To John was given a book.*

(128)   a.   *I convinced a man of my innocence.*
      b. **I convinced a man of my innocence.*

The ungrammaticality of (128b) is entirely expected. The grammatical subject, *a man* occurs in postverbal position, while the subject position (i.e. SpecIP) is either empty, or occupied by the PP *of my innocence*. Arguably, *a man* lacks case, and INFL lacks a proper specifier, two reasons for the ungrammaticality of (128b). However, we should expect that (127b) is equally ungrammatical, for the same reasons. Its acceptability can be explained, however, if it is assumed that the PP *to John* is a predicate of *a book* in (127). If so, (127b) is an instance of locative inversion (cf. Hoekstra and Mulder 1990 for extensive discussion).

On the basis of this conclusion we would be inclined to postulate the structure in (129) as the analysis of prepositional dative constructions, which equates these with complement constructions of the type found with verbs such as *put*:

(129)   V [$_{SC}$ NP [PP]]

However, the Dutch counterpart of the prepositional dative construction does not behave in the way we would expect if this were the correct analysis. As we discussed, PP-predicates of SC-complements cannot occur in postverbal position in Dutch (cf. section 2, ex. 5). The contrast in (130) illustrates that prepositional dative constructions do not adhere to this generalization.

(130) a. *dat ik de pan op de tafel zette /* zette op de tafel*
        that I   the pan on the table put / put   on the table

   b. *dat ik het boek aan Jan gaf / gaf   aan Jan*
        that I   the book to   John gave / gave to   John

There is a further difference between *put*-constructions and prepositional dative constructions, of course, viz. the fact that the latter alternate with a double object construction, whereas the former do not. The key to an understanding of this difference involves the claim that the double object construction is itself derived by means of locative inversion, in a way analogous to (127b), but not by movement to the matrix subject position, as in (127b), but to an embedded subject position. We abstract away from the disappearance of the preposition, to which we return below. In order to create such a subject position, we need to conclude that the structure of simple double object structures involves a double embedding as in (131):

(131)   V [PP$_i$ … [$_{SC}$ NP [t$_i$]]

Assuming (131) instead of (129), both differences with *put*-constructions can be made sense of. First, the impossibility of PP-predicates in postverbal position is restricted to PP-predicates which are themselves the complement of V. This explains the contrast in (130). Secondly, in (129) there is no landing site for the PP-predicate. The difference between dative constructions, which alternate with double object constructions, and *put*-constructions, which do not, then reduces to the contrast between simple SC-complements and *to*-infinitivals with respect to predicate-subject inversion, illustrated in (132) (cf. Ruwet 1974; Moro 1990):

(132) a. *I consider John* (*to be*) *my best friend*
       b. **I consider my best friend John*
       c. *I consider my best friend to be John*

The structure of (132c) is given in (133): the predicate is moved to the non-theta-marked landing site SpecIP, with *be* taking an SC-complement. There is no commutation of subject and predicate internal to this SC, nor is adjunction to this SC possible. Since in (132b) *consider* takes this SC as a complement directly, no subject-predicate inversion is possible.

(133) V [$_{IP}$ PRED$_i$ I [$_{VP}$ *be* [$_{SC}$ *John* [t$_i$]]]]

For all intents and purposes, then, (133) and (131) are identical, while the structure underlying *put*-constructions is identical to that of (132a,b).

    The structure in (131) is proposed by Den Dikken (1990), who argues for it on the basis of particle double object constructions of the type in (134):

(134) a. *they sent out a schedule to the stockholders*
       b. *they sent the schedule out to the stockholders*
       c. *they sent the stockholders out a schedule*
       d. **they sent out the stockholders a schedule*
       e. **they sent the stockholders a schedule out*

Recall our earlier conclusion that the inner NP-position in particle constructions is a non-theta-marked landing site (cf. [101]). In (134b), the subject of the SC-complement of the particle is moved to this inner NP position, which makes it parallel to (132a), with *to be*, while the predicate of the SC-complement is moved to that position in (134c), which makes it parallel to (132c). We abstract away again from the disappearance of the preposition. (134d) is impossible for the same reason as (132d): subject-predicate inversion is excluded within the confines of the SC itself. The ungrammaticality

of (134e) is a consequence of the general prohibition to move anything other than a single phrase to the left of the particle.

Den Dikken provides a interesting piece of corroborating evidence for this analysis on the basis of the paradigm in (135):

(135) a. *a package was sent off to Bob*
      b. *to Bob was sent off a package*
      c. **to Bob was sent a package off*
      d. **to Bob was sent right off a package*

(135a) and (136b) are related in terms of locative preposing (cf. [127b]), i.e. the paradigm is parallel to the paradigm in (136).

(136) a. *A man seems to be in the garden.*
      b. *In the garden seems to be a man.*
      c. **In the garden seems a man to be.*

Hoekstra and Mulder (1990) argue that (136a) and (136b) derive from the same underlying structure, with [*a man in the garden*] as a SC-complement to the verb *be*. The difference between (136a) and (136b) is accounted for by assuming that either the subject of the SC or the predicate can move to SpecIP to pick up case. The ungrammaticality of (136c) then follows simply from the assumption that there is no NP-movement, unless it is forced (cf. Chomsky 1986a). Alternatively, the intermediate position is already occupied by the trace of the preposed PP. If this analysis is correct, it supports the conclusion that the inner position (i.e. the position in between the verb and the particle) may function as a landing site for the PP.

Note that the analysis developed so far has abstracted away from the disappearance of the preposition *to*. We assume, again with Den Dikken, that this preposition is incorporated into the verb, or at least, it may remain empty if governed by the verb. Evidence to discriminate between these two options is difficult to obtain, and whatever evidence is available is ambivalent. For instance, the indirect object NP in varying degrees resists movements of various kinds. This might be explained in terms of a locality condition on the licensing of an empty preposition, suggesting that the PP is retained. Other cases require that the PP-structure is absent, as otherwise the required c-command relation does not hold. I leave this matter open.

We conclude that the analysis of double object constructions also involves a SC, as originally proposed by Kayne (1981), be it that the structure is more complex, viz. as in (137) (cf. [131]):

(137) V [$_{SC}$ [[$_P$ **e**] NP]$_i$ Pr$_2$ [$_{SC}$ NP [**t**$_i$]]]
     where Pr$_2$ may be a particle or an empty predicator.

Configurationally this analysis resembles the one recently proposed by Larson (1988), who also proposes a transformational relationship between the two variants of the dative alternation. Like our analysis, Larson's is in conformity with the binary branching requirement, stipulated by him as the single complement condition, as was mentioned above. The analysis of (138a) in Larson's theory is shown in (139):

(138) a. *John gave a book to Mary.*
     b. *John gave Mary a book.*

(139)
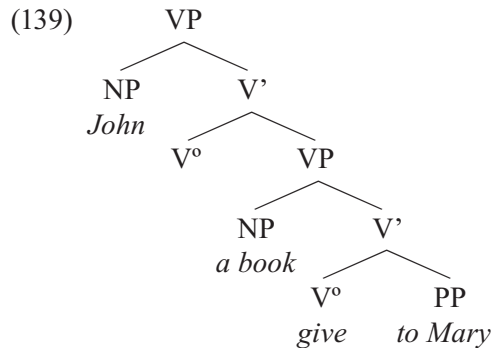
The V in the lower VP raises to the V-position in the higher VP. The double object in (138b) is derivationally related to (138a) by an operation on the lower VP which is essentially like passive: the NP-object *a book* is demoted, as a consequence of which the indirect object can be moved into the Spec of the lower VP. The verb again raises to the higher V-position, from where it case marks *Mary* and theta-marks *John*.

    The lower VP can be compared to our upper SC-complement in (137). The empty predicate of this SC is then parallel to the trace of verb raising in Larson's analysis. Larson's theory in a way requires a quite substantial revision of the conception of the projection principle, as was pointed out by Jackendoff (1990): argument positions may be theta-marked in the course of the derivation, i.e. the NP in the specifier of the higher VP is theta-marked by the verb after it has raised to the upper V-position. The V-movement under Larson's view is an instance of substitution. Larson (1990), in his reaction to Jackendoff, denies that there is a radical departure from the standard approach, drawing a parallel with the theta marking of the subject

of a clause. But, under the VP-internal subject hypothesis, this model no longer is available. In contrast to Larson's, our analysis is entirely in conformity with the projection principle, and it captures all the generalizations which Larson seeks to explain.

6.3. Object control constructions

Kayne (1981) suggested a SC-analysis for object control structures,[32] pointing at problems with nominal counterparts, as illustrated in (140):

(140) a. *Mary persuaded John to leave.*
       b. **Mary's persuasion of John to leave.*
       c. **John's persuasion to leave.*

Kayne suggests an analysis of the type [V [$_{SC}$ NP S']]', and this structure guarantees that NP asymmetrically c-commands elements internal to the infinitival clause or rather second argument, as required by such observations as those in (141):

(141) a. *I persuaded every$_i$ student of his$_i$ abilities.*
       b. *They will force none of them to do any work.*

In (141a), *his* can be interpreted as a bound variable, which requires c-command, while in (141b), negative polarity *any* is licensed, again under c-command, by *none of them*.

    Adopting a SC-structure we have to face the following problem, as Mulder (1990), on which much of what follows is based, observes: if the postverbal NP is a subject, what is the predicate? The infinitival CP in (140a) can be replaced by a full clause or a PP. Full clauses never function as predicates, cf.:

(142)   **I consider drinking that it is dangerous for your health.*

PPs can function as predicates, but if we look at Dutch, it becomes clear that the PPs in Dutch object control constructions behave differently from genuine SC-predicate PPs. As discussed above, such PP-predicates cannot be placed in postverbal position (cf. [5] and [143]). In the complement of object control verbs such PPs may freely be placed either in front or after the verb. This contrast in illustrated in (143):

(143) a. *dat Jan de boeken* [*op de plank*] *zet* /*zet [*op de plank*]
            that John the books   on the shelf   puts / puts [on the shelf]

   b. *dat Jan   Marie* [*van zijn onschuld*] *overtuigt / overtuigt*
            that John Mary   of   his innocence convinces / convinces
            [*van zijn onschuld*]
             of   his   innocence

Mulder then goes on to propose that the structure of the complement of object control verbs is as in (144), with Pr2 either an empty predicate or instantiated by a particle. The latter idea is inspired by the observation that many verbs of this type are particle verbs in Dutch.

(144) V [$_{SC}$ NP Pr$_2$ XP]   (where XP is either a PP or a clause)

This idea can be supported by various consequences that follow from it. First consider infinitival complements. As is well-known, infinitival complements in Dutch are generally thought to either be extraposed, or undergo the process of verb raising (cf. Evers 1975 for the standard analysis). This situation is illustrated in (145) with the verb *proberen* 'try', which allows either option:

(145) a. *dat Jan* [PRO *de krant te lezen*] *probeert*   deep structure
            that John PRO the paper to read   tries

   b. *dat Jan probeert* [*de krant te lezen*]   extraposition

   c. *dat Jan* [*de krant* e] *probeert te lezen*   verb raising

The difference between these two is also brought out by the IPP-effect (Infinitivus Pro Participio): with extraposition the main verb appears in participial form in perfect tense, while in verb raising it may surface as an infinitive:

(146) a. *dat Jan   heeft* **geprobeerd** [*de   krant te lezen*]
            that John has   tried (PART) the paper to read

   b. *dat Jan   de krant heeft* **proberen** *te lezen*
            that John the paper has   try (INF) to read

Not all verbs allow both possibilities: verbs that combine with a bare infinitive (as opposed to a *te*+infinitive) all require verb raising, while there

are also verbs that only allow extraposition. More recently it was realized that apart from verb raising and extraposition, a third type of infinitival complement must be distinguished, referred to as the third construction (cf. Den Besten and Rutten 1989). Consider (147):

(147) *dat Jan de krant heeft **geprobeerd** te lezen*

(147) seems to combine the properties of (146a) and (146b): the infinitival complement is split up, but there is no IPP-effect. I shall not at this point go into the analysis of this third construction. Relevant for our purposes here is the conclusion which is drawn from this state of affairs, viz. that the third construction is a particular instance of extraposition plus scrambling. This allows us to maintain that verb raising always involves IPP. Indeed, matrix verbs that do not allow extraposition, require IPP.

It is now time to return to object control constructions. The relevant observation is that no object control verb allows IPP, even though there are apparent verb raising effects. These verb raising effects, however, are due to scrambling after extraposition. So, we have the following very strict correlation: no object control structure allows verb raising, while subject control verbs, as well as subject raising verbs do. The structure in (144) would immediately account for this, under the further assumption that verb raising involves raising of the head of the complement. In (144) the infinitival clause is not the complement of the verb itself, but rather of the empty head of the complement of the verb.

A parellel to this is found in the Romance languages that allow clitic climbing. Kayne (1989c) notes that clitic climbing is incompatible with object control, for which he provides the following explanation. Clitic climbing is not climbing of the clitic, but rather of the embedded INFL to which the clitic is attached. The embedded INFL moves up to the matrix INFL, but this is possible only if there is no conflict of indexing. In the case of subject control and subject raising, the two INFLs are coindexed, but in the case of object control, the embedded INFL bears an index identical to the matrix object, which is distinct from the matrix subject.

(148) a. $NP_i\ I_i\ [_{VP}\ V\ \dots\ [\ NP_i\ I_i\ [_{VP}\ V\ cl\dots]]]$ subject raising
+ subject control

b. $NP_i\ I_i\ [_{VP}\ NP_j\ \dots\ [\ NP_j\ I_j\ [_{VP}\ V\ cl\dots]]]$ object control

In view of more recent analyses, this explanation for the contrast between object control constructions on the one hand and other infinitival complements on the other can no longer be upheld. Note that in Italian, the infinitival verb appears to move at least as high up as the finite verb. Let us say that it moves to INFL (cf. Belletti 1988), or the highest of the functional projections. If, then, this INFL were to move to the matrix INFL, the embedded infinitive would have to move along with it, generating the wrong surface order. If we adopt (144) as the structure of object control constructions in Italian as well, the impossibility of clitic climbing follows from the same factor that excludes verb raising in Dutch: it would involve clitic climbing out of a non-direct complement.

Let me conclude this discussion of object control constructions. We have argued that the VP of such constructions is not a ternary branching structure, but rather that the matrix verb only takes a single argument, a SC. The SC itself is headed by a predicative element, Pr2 in the schema in (144). The relevant point at this moment is that we have found reasons to analyze an apparent multiple argument taking verb as a simple transitive verb, involving just a single complement.

Editors' note

For a while, Teun had been working on a book with the working title *Small clauses everywhere*; he had already stopped working on this book long before his death. On his computer, there were a great number of files with the extension "sce" (or "sco": small clauses overal). All these files date from the early 1990s. One file turned out to be a rough draft of a longer paper, entitled "Small clauses everywhere". It contained parts of most of the other files. This chapter is based on this paper. It is structured in exactly the same way, but the actual content of the different sections is not always the same, as they may have been replaced by any of the other files. Section 2 turned out to be a slightly different version of Hoekstra (1992b). Section 4.4 has been extracted from Hoekstra (1992a). As this chapter has been assembled using material that had never been prepared for publication in any form before, more editing was necessary than anywhere else in this book; for the sake of readability, we had to add a sentence here and there. This chapter was edited by Rint Sybesma.

Notes

1. In some frameworks, a distinction is made between thematic roles and argument roles, the former belonging to levels of representation prior to deep structure, such as lexical conceptual structure. Thematic roles are said to map onto argument roles, which themselves are projected onto syntactic positions bearing specific grammatical functions. Such an approach faces the same theoretical problem as to the number and nature of these thematic primitives, while it introduces a certain redundancy between argument roles (external argument, direct argument, indirect argument) and grammatical functions at the same time. Undoubtedly, some of these problems can be done away with by introducing redundancy functions, such a linking conventions, but only at the expense of adding further machinery, which then itself is wanting from an explanatory point of view.

2. A major difference with that program is that we now have a much more sophisticated theory of categories. The monolithicity of the generative semantics program was in part due to the lack thereof. Consider e.g. the treatment of tense and negation, both of which were taken as predicates taking sentential subjects (see e.g. Lakoff 1970), while they are now treated as functional categories, dominating a VP. Quantifiers were similarly analyzed as predicates of sentences. In current approaches quantification is dealt with at LF, through the use of quantifier raising (May 1985), with independently motivated syntactic restrictions on its application. In that sense, then, our current approach is much more modular, which forestalls many of the conceptual problems that generative semantics ran into.

3. The notion of argument is rather sloppily used in much of the literature. A distinction should be made between the notion of complement, or of being selected, and the notion of argument. A location denoting PP may be a complement, e.g. in combination with a verb such as put, but it is not an argument. Rather it is a predicate, in the case of put-constructions taking the postverbal NP as its semantic subject. The notion of locative argument, then, is a terminological contradiction if applied to such cases.

4. Dutch infinitival nominalizations seem to contradict this generalization, but see Hoekstra (1992b).

5. There is a variant of the CPF-approach for which these cases do not constitute a problem, viz. if it is assumed that the complex predicate is formed in the course of the derivation. I think that such an approach involves reanalysis and I don't consider it a genuine alternative to the SC-approach. Whether SCs undergo restructuring at some later stage in the derivation is an independent issue, which I shall not discuss here. It seems likely, though, that not all instances of SC-complements behave alike in this respect (cf. Rizzi 1986).

6. The empirical coverage of this notion of secondary predication is a matter of debate, however. Various types of construction have been treated under this

heading, e.g. particle constructions (Hoekstra 1984b; Kayne 1985b), double object constructions (cf. Den Dikken 1990; Hoekstra 1995), object control constructions (cf. Kayne 1981; Mulder 1990).

7. Such an analysis has been proposed by Roberts (1987), Hoekstra (1986a), Jaeggli (1986) and Baker, Johnson and Roberts (1989), with differences in the exact way in which the external argument is represented.

8. So far I haven't said anything on the internal structure of SCs, or (related to that) their categorial nature. I don't think that all SCs are identical in these respects, as will become clear below. See for further discussion of this issue Guéron and Hoekstra (1992).

9. The complement status of the SC is confirmed when we realize that it is impossible for a verb to take more than a single SC complement. I return to this later on.

10. It is conceivable that the verb imposes an indirect selectional force: if the activity denoted by the verb can only yield certain resulting states, this imposes limitations on the range of SCs, and hence, indirectly on its subject, e.g. a verb such as *talk* may take a result SC (cf. [44b]), but we may expect that the subject of this SC will be animate (more likely human), as the state of non-animate entities is not easily affected by talking.

11. In fact, the position can even be strengthened to saying that every XP in the projection of some head H is theta-marked by H, and that each theta role which H assigns is assigned within the projection of X (cf. Hoekstra 1984b). The so-called VP-internal subject hypothesis (Kuroda 1986) follows from such a requirement. It should be noted that the PS-rules in (60) limit PS-configurations to binary branching structures, even though in actual practice many linguists do not adhere to this requirement.

12. There is some confusion in the current literature in the use of e-role. In Higginbotham's theory, every lexical verb has an e-role, which it assigns to T (or rather, which T in his terminology theta-binds). Kratzer (1995) and others following her, use the notion of e-role to discriminate between eventive predicates and non-eventive ones (or, more precisely, between stage-level and individual-level predicates). It is this latter notion of e-role which I am exploiting here.

13. To give just a single example, the predicate headed by *state* in (i) can be eventive, due to the fact that its subject may express varying opinions at different moments in time, but in (ii) the predicate is not eventive, due to the nature of documents.

(i) *John stated that the world is flat.*
(ii) *This document stated that the world is flat.*

14. To be sure, ergative verbs can combine with result SCs, but the subject of the SC then raises to the higher subject position, presumably for reasons of case. To give one example, consider (i):

(i) *dat mijn jas nat geregend is*
     that my   coat wet rained   is

Rain in this example is an ergative verb, as is evident from the perfective auxiliary it selects. It combines with the SC [*mijn jas nat*], yielding an interpretation 'a raining event has resulted in the state of my coat being wet'. The NP *mijn jas* raises to the matrix SpecIP. See Hoekstra (1988, 1992a) for further discussion.

15. There are certain counterexamples to this generalization, at least when taken at face value. Consider the examples in (i):

    (i) a.   *John jumped the horse over the fence.*
         b.   *John walked his father.*
         c.   *The sergeant marched his soldiers.*

    However, upon closer inspection it turns out that these cases support the event-based account we propose here. Note that (ib) is only appropriate if John's father is incapable of walking by himself, i.e. the sustaining of the event does not emanate from his father, but from John. Similarly, in (ic), the initiating and sustaining of the marching event emanates from the sergeant. This might be taken to suggest that event structure is a more fundamental notion than theta role, i.e. theta roles should be defined on the basis of event structure, rather than being conceived of as lexically prespecfied primitives (cf. Hoekstra and Mulder 1990). The example in (ia) might represent a slightly different case. In Hoekstra (1984b), I have argued that verbs of motion with a defined end point of motion are ergative. If so, the possible addition of an external instigator is congruent with the claim I make here.

16. There also is an implication that the barn was painted. It is a moot point whether that implication should be taken as evidence that the barn must be theta-marked by paint, contrary to what the structure which I postulate suggests. Note, first of all, that the same implication holds for *the barn became red through painting*. One could postulate an empty object in the complement position of paint in this example, but it is totally unclear what type of empty category that should be (it cannot be a parasitic gap, as it, or the empty operator binding it would be c-commanded by the matrix subject, which is not normally allowed in parasitic gap constructions). Secondly, the implication that the barn is affected by the painting activity is a general feature of resultative constructions (e.g. *he swept the broom to pieces* does not imply that the broom was swept, but that it was affected by the sweeping activity. It seems dubious, therefore, that the implication in the 'paint-the-barn' case should be syntactically represented.

17. The prefix *men-* has a number of allomorphs, the place features of the final nasal being determined by the initial consonant of the stem. If this is voiceless, it still determines the place features of the nasal, but deletes itself. The default place feature of the nasal is velar. The status of *meN-* is not clear to me: it is often glossed as a transitivity marker, but that certainly is not the correct analysis, as it is also found with certain ergative verbs.

18. This example was provided to me by Tom Roeper, who also pointed out the systematicity of the ergative/transitive alternation with *-ize*.

19. Its English counterpart *en-* behaves in all relevant respects identical. It may derive ornatives, as in *encamp*, *enchain*, *endow* (provide with a camp, chains, dow), as well as de-adjectival *enlarge*, which shows the relevant alternation (*the gap enlarged*, *we enlarged the gap*). However, *enlarge* was the only example I could find which showed this alternation, but it should also be noted that the number of de-adjectival *en-* forms in English is very limited (in fact, apart from *enlarge* and *enrich*, I didn't find other examples). The same is true for Dutch de-adjectival *be-* forms, as Voskuil (1990) points out. The Van Dale dictionary lists only about 20 forms, and most of these are awkward. Some are like *beëindigen*, based on the adjective *eindig* 'finite', itself a denominal adjective derived by *-ig* suffixation, but its meaning is not 'make finite', but 'provide an end to, finish', i.e. it is semantically more like an ornative.

20. The example in (i) has been much discussed in the literature (cf. Chomsky 1981; Marantz 1981 a.o.). It is noted that the example is ambiguous between a genuine causative reading, and a not causative reading, more or less equivalent to 'John's arm broke'.

    (i)   *John broke his arm.*

    The former reading has the underlying structure we are proposing for causative verbs, while the latter reading has a structure which is similar to the French inalienable datives. We may refer to this as nominative of possession. Only a single theta role is assigned in this structure, borne by the lexical chain (John, his arm). Cf. Guéron (1985b) for discussion of such lexical chains.

21. The phrasing concerning the endpoint is unnecessarily complicated, if we are correct in our claim that ergative verbs take SC-complements, as suggested in section 2.1. In that case, the endpoint is always specified by a state denoting SC, of which the predicate is not overtly realized. The same is true for accomplishments.

22. This is true only insofar as eventive predications are concerned. It is unclear to me what the correct analysis of stative verbs (most particularly the coginitive state verbs) is, nor why their syntax is so similar to that of eventive predicates.

23. This difference between 'lexical' causatives and 'syntactic' causatives was another reason to reject the analysis in (91). However, this argument does not hold against the proposal made here.

24. Note that verbs may not occur in result SCs, as is shown by (i). The explanation for this again follows from the conditions on events: in order to take a resulting state denoting SC, the matrix predicate must denote an event, so that only a state can be denoted by the embedded predicate in a single event-domain. In order to have a second event, we also need a second tense, as the relation between tense and V is bi-unique (cf. Guéron and Hoekstra 1992).

    (i)   **John kicked Mary cry.*

Similarly, adjectival predicates may not take SC complements, as is shown by (ii):

(ii) **John was ill (himself) dead.*
(attempted reading: 'John ended up dead as a result of being ill')

25. David Lebeaux (pc) points out that a SC-analysis is more acceptable is some cases than in others. Specifically, if the alleged SC can occur as an independent copular relation, e.g. *I want John out* and *John is out*, but *I call John up* does not correspond to *John is up*, and he suggests that this difference might correspond to possible cleft-constructions, viz. ?*What I want is John out*, vs. **What I call is John up*. However, the correlation is spurious, as is evident from *I consider John foolish*, *John is foolish*, **What I consider is John foolish*. So, ultimately the judgement here reduces to a purely semantic intuition, which cannot be given the status of a linguistic argument; cf. Kayne (1985b: 124–125). I am unaware of any syntactic test to tell the 'intuitively plausible' particle SCs apart from the 'intuitively implausible' ones.

26. And similarly by (i):

(i) a. *dat ik het er* (*boven) *wil opzetten*
     b. *dat ik het er boven op wil zetten*

27. Note that to many native speakers of English, all four sentences in (108)–(109) are equally good.

28. I am grateful to Tom Roeper for bringing this contrast to my attention.

29. Johnson allows adverbs to adjoin to non-maximal projections, a position which is at odds with the assumptions concerning adverb placement on which much recent work is based, specifically work on the structure of the clause in line with Pollock's (1989) proposals. Also, by allowing the 'object' to move to SpecVP, Johnson apparently does not adopt the hypothesis that the external argument is base-generated in this position. This may still be consistent with some version of the VP-internal subject hypothesis, viz. one which makes a distinction between VP and VP^{max}, as e.g. in Sportiche's (1988) proposal, but such a proposal seems to require phrase structural stipulations to make the required distinction.

30. Note that the following sentence is grammatical (Fiengo 1980: 63, ex. 127):

(i) *He handed the papers {slowly, grudgingly} out to the class.*

31. Not all native speakers consulted find (127b) grammatical. The same applies to (135b) below.

32. I shall use the term object control structures also for constructions in which a PP or a full clause appears instead of an infinitival clause.

References

Abney, Steven
   1987   The English noun phrase in its sentential aspect. Doctoral dissertation, MIT.
Adams, Marianne
   1985   Government of empty subjects in factive clausal complements. *Linguistic Inquiry* 16 (2): 305–313.
Adger, David
   1993   Functional heads and interpretation. Doctoral dissertation, University of Edinburgh.
Aissen, Judith
   1974   Verb raising. *Linguistic Inquiry* 5 (3): 325–366.
Allen, Margaret
   1978   Morphological investigations. Doctoral dissertation, University of Connecticut, Storrs.
Allen, William
   1964   Transitivity and possession. *Language* 40 (3): 337–343.
Aoun, Joseph and Dominque Sportiche
   1983   On the formal theory of government. *The Linguistic Review* 2 (3): 211–236.
Aronoff, Mark
   1976   *Word formation in generative grammar*. Cambridge, MA: MIT Press.
Baart, Joan
   1987   Focus, syntax and accent placement. Doctoral dissertation, Universiteit Leiden.
Bach, Emmon
   1979   Control in Montague grammar. *Linguistic Inquiry* 10 (2): 515–531.
   1980   In defense of passive. *Linguistics and Philosophy* 3 (3): 297–342.
Baker, Mark
   1985   The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16 (3): 373–415.
   1988   *Incorporation: a theory of grammatical function changing.* Chicago: University of Chicago Press.
Baker, Mark, Kyle Johnson and Ian Roberts
   1989   Passive arguments raised. *Linguistic Inquiry* 20 (2): 219–251.
Balk-Smit Duyzentkunst, Frida
   1968   Het meewerkend voorwerp, een grammaticale vergissing. *Levende Talen* 243: 5–12.

Barbiers, Sjef
    1995a   PP extraposition and the interpretation of X-bar structure. Paper presented at GLOW 18, Tromsø. Abstract in *GLOW Newsletter* 34: 12–13.
    1995b   The syntax of interpretation. The Hague: Holland Academic Graphics.

Barss, Andrew
    1986   Chains and anaphoric dependence: on reconstruction and its implication. Doctoral dissertation, MIT.

Barss, Andrew and Howard Lasnik
    1986   A note on anaphora and double objects. *Linguistic Inquiry* 17 (2): 341–354.

Belletti, Adriana
    1982   On the anaphoric status of the reciprocal construction in Italian. *The Linguistic Review* 2 (2): 101–137.
    1988   Generalized verb movement: on some differences and similarities between Italian and French. Paper presented at GLOW 11, Budapest. Abstract in *GLOW Newsletter* 20: 15–16.

Belletti, Adriana and Luigi Rizzi
    1988   Psych-verbs and theta-theory. *Natural Language and Linguistic Theory* 6 (3): 291–352.

Belvin, Robert
    1993   The two causative HAVEs are the two possessive HAVEs. In *CLS 29: papers from the 29th regional meeting of the Chicago Linguistic Society, volume 1: the main session*, Katharine Beals, Gina Cooke, David Kathman, Sotaro Kita, Karl-Erik McCullough and David Testen (eds.), 61–75. Chicago: Chicago Linguistic Society.

Bennis, Hans
    1985   *Het*-raising. In *Linguistics in the Netherlands 1985*, Hans Bennis and Frits Beukema (eds.), 11–20. Dordrecht: Foris Publications.
    1986   *Gaps and dummies.* [Linguistic Models 9.] Dordrecht: Foris Publications.

Bennis, Hans, and Teun Hoekstra
    1984   Gaps and parasitic gaps. *The Linguistic Review* 4 (1): 29–87.
    1989   Why Kaatje wasn't heard sing a song. In *Sentential complementation and the lexicon*, Dany Jaspers, Wim Kloosters Yvan Putseys, Pieter Seuren (eds.), 21–40. Dordrecht: Foris Publications. [This volume.]
    1988   The tense connection. Paper presented at GLOW 11, Budapest. Abstract in *GLOW Newsletter* 20: 17–19.

Benveniste, Émile
    1960   «Être» et «avoir» dans leur fonctions linguistiques. *Bulletin de la Société de Linguistique de Paris* 55 (1)*: 113–134.

Berg, B. van den
    1978   De struktuur van de Nederlandse VP met één V. *Nieuwe Taalgids* 71 (2): 164–169.

Besten, Hans den
    1981a   Government, syntaktische Struktur und Kasus. In *Sprache, Formen und Strukturen: Akten des 15. linguistischen Kolloquiums, Münster 1980, band 2*, Manfred Kohrt and Jürgen Lenerz (eds.): 97–107. Tübingen: Max Niemeyer Verlag.
    1981b   On the interaction of root transformations and lexical deletive rules. In *On the formal syntax of the Westgermania*, Werner Abraham (ed.), 47–131. Amsterdam: John Benjamins.

Besten, Hans den and Jean Rutten
    1989   On verb raising, extraposition and free word order in Dutch. In *Sentential complementation and the lexicon*, Dany Jaspers, Wim Kloosters, Yvan Putseys and Pieter Seuren (eds.), 41–56. Dordrecht: Foris Publications.

Besten, Hans den and Gert Webelhuth
    1987   Remnant topicalization and the constituent structure of VP in the Germanic SOV languages. Paper presented at GLOW 10, Venice. Abstract in *GLOW Newsletter* 18: 15–16.

Besten, Hans den, Jean Rutten, Tonjes Veenstra and Joop Veld
    1988   Verb raising, extrapositie en de derde constructie. Ms., Universiteit van Amsterdam.

Beukema, Frits
    1984   Small clauses and free adjuncts. In *Linguistics in the Netherlands 1984*, Hans Bennis and Willem van Lessen Kloeke (eds.), 13–21. Dordrecht: Foris Publications.

Beukema, Frits and Teun Hoekstra
    1983   MET met PRO of MET zonder PRO. *Nieuwe Taalgids* 76 (6): 532–548.
    1984   Extraction from WITH-constructions. *Linguistic Inquiry* 15 (4): 689–698.

Booij, Geert
    1974   Zinsbepalingen in het Nederlands. *Spektator* 3 (8): 617–646.
    1977   *Dutch morphology*. Lisse: Peter de Ridder Press.
    1982   Lexicale morfologie en de organisatie van de morfologische component [Lexical morphology and the organization of the morphological component]. *Spektator* 12 (3): 169–188.

Bos, Gijsberta
    1972   Het indirect object. *Levende Talen* 284: 7–18.

Botha, Rudolf
    1981   A base rule theory of Afrikaans synthetic compounding. In *The scope of lexical rules*, Michael Moortgat, Harry van der Hulst and Teun Hoekstra (eds.), 1–79. Dordrecht: Foris Publications.
    1983   Morphological representation and semantic interpretation. *Stellenbosch Papers in Linguistics* 11: 1–49.

Bouchard, Dennis
  1984   *On the content of empty categories*. Dordrecht: Foris Publications.
Bree, Cornelis van
  1981   HEBBEN-constructies en datiefconstructies binnen het Nederlands taalgebied: een taalgeografisch onderzoek [HAVE-constructions and dative constructions in the Dutch language area: a language geographic research]. Doctoral dissertation, Universiteit Leiden.
Bresnan, Joan
  1980   Polyadicity: part I of a theory of lexical rules and representations. In *Lexical grammar*, Teun Hoekstra, Harry van der Hulst and Michael Moortgat (eds.), 97–121. Dordrecht: Foris Publications.
  1982   The passive in lexical theory. In *The mental representation of grammatical relations*, Joan Bresnan (ed.), 3–86. Cambridge, MA: MIT Press.
Brody, Michael
  1985   On the complementary distribution of empty categories. *Linguistic Inquiry* 16 (4): 505–546.
Broekhuis, Hans and Leonie Cornips
  1994   Undative constructions. *Linguistics* 32 (2): 173–190.
Burt, M.K.
  1971   *From Deep to Surface Structure*. New York: Harper Row.
Burzio, Luigi
  1981   Intransitive verbs and Italian auxiliaries. Doctoral dissertation, MIT.
  1986   *Italian syntax: a government-binding approach*. Dordrecht: D. Reidel.
Carlson, Greg
  1977a   A unified analysis of the English bare plural. *Linguistics and Philosophy* 1 (3): 413–457.
  1977b   Reference to kinds in English. Doctoral dissertation, University of Massachusetts, Amherst.
Carrier, Jill, and Janet Randall
  1992   The argument structure and syntactic structure of resultatives. *Linguistic Inquiry* 23 (2): 173–234.
  1993   From conceptual structure to syntax. In *Knowledge and language, volume II: lexical and conceptual structure*, Eric Reuland and Werner Abraham (eds.), 119–142. Dordrect: Kluwer.
Cattell, Ray
  1978   On the source of interrogative adverbs. *Language* 54 (1): 61–77.
Chomsky, Noam
  1957   *Syntactic structures*. The Hague: Mouton.
  1970   Remarks on nominalization. In *Readings in English transformational grammar*, Roderick Jacobs and Peter Rosenbaum (eds.), 184–221. Waltham, MA: Ginn.

1973   Conditions on transformations. In *A festschrift for Morris Halle*, Stephen Anderson and Paul Kiparsky (eds.), 232–286. New York: Holt, Rinehart and Winston.

1981   *Lectures on Government and Binding*. Dordrecht: Foris Publications.

1986a   *Barriers*. Cambridge, MA: MIT Press.

1986b   *Knowledge of language: its nature, origin and use*. New York: Praeger.

1989   Some notes on economy of derivation and representation. In *Functional heads and clause structure*, Itziar Laka and Anoop Mahajan (eds.), 43–74. [MIT Working Papers in Linguistics 10.] Cambridge, MA: MIT, Department of Linguistics and Philosophy.

1993   A minimalist program for linguistic theory. In *The view from building 20: essays in linguistics in honor of Sylvain Bromberger*, Kenneth Hale and Samuel Jay Keyser (eds.), 41–58. Cambridge, MA: MIT Press.

Christensen, Kirsti Koch

1985   *Complex passive and conditions on reanalysis*. Trondheim: Lingvistik institutt, NTNU.

Chung, Sandra

1976   On the subject of two passives in Indonesian. In *Subject and topic*, Charles Li (ed.), 57–98. New York: Academic Press.

1981   Transitivity and surface filters in Chamorro. In *Studies in Pacific languages and cultures in honour of Bruce Biggs*, Jim Hollyman and Andrew Pawley (eds.), 311–332. Auckland: Linguistic Society of New Zealand.

Cinque, Guglielmo

1990   *Types of A' dependencies*. Cambridge, MA: MIT Press.

Cole, Peter

1977   A causative construction in Modern Hebrew: theoretical implications. In *Studies in modern Hebrew syntax and semantics: the transformational-generative approach*, Peter Cole (ed.), 99–128. Amsterdam: North-Holland.

Comrie, Bernard

1975   Causatives and universal grammar. *Transactions of the Philological Society* 1974: 1–32.

Coopmans, Peter

1985   Language types: continua or parameters? Doctoral dissertation, Universiteit Utrecht.

Costa, João

1996   Adverb positioning and V-movement in English: some more evidence. *Studia Linguistica* 50 (1): 22–34.

Culicover, Peter and Kenneth Wexler
    1980   *Formal principles of language acquisiton*. Cambridge, MA: MIT Press.

Daalder, Saskia and Alied Blom
    1976   De strukturele positie van reflexieve en reciproke pronomina. *Spektator* 5 (6-7): 397–414.

Déchaine, Rose-Marie
    1995   One BE. In *Linguistics in the Netherlands 1995*, Marcel den Dikken and Kees Hengeveld (eds.), 75–88. Amsterdam: John Benjamins.

Déchaine, Rose-Marie, Teun Hoekstra and Johan Rooryck
    1994   Augmented and non-augmented HAVE. In *Actes du premier colloque Langues et Grammaire,* Léa Nash and Georges Tsoulas (eds.), 85–101. Paris: Publications de l'université de Paris VIII.

Diesing, Molly
    1992   Bare plural subjects and derivation of logical representations. *Linguistic Inquiry* 23 (3): 353–380.

Dik, Simon
    1975   The semantic representation of manner adverbials. In *Linguistics in the Netherlands 1972–1973*, Albert Kraak (ed.), 96–121. Assen: Van Gorcum.
    1978   *Functional grammar*. Amsterdam: North-Holland.
    1980   *Studies in Functional Grammar*. London: Academic Press.
    1985   Nederlandse nominalisaties in een funktionele grammatika. *Forum der Letteren* 26 (2): 81–107.

Dikken, Marcel den
    1990   Particles and the dative alternation. In *Leiden Conference for Junior Linguists: 11-14 december 1990, University of Leiden*, John van Lit, René Mulder and Rint Sybesma (eds.), 71–86. Leiden: Rijks-universiteit Leiden.
    1992   Particles. Doctoral dissertation, Universiteit Leiden.
    1993   Auxiliaries and participles. In *NELS 24: proceedings of the North East Linguistic Society, volume 1,* Mercè Gonzàlez (ed.), 65–79. Amherst, MA: GLSA.
    1994   Predicate inversion and minimality. In *Linguistics in the Netherlands 1994,* Reineke Bok-Bennema and Crit Cremers (eds.), 1–12. Amsterdam: John Benjamins.
    1995   Copulas. Paper presented at GLOW 18, Tromsø. Abstract in *GLOW Newsletter* 34: 20–21.

Dobrovie-Sorin, Carmen
    1992   LF representations, weak islands and the ECP. Paper presented at GLOW 15, Lisbon. Abstract in *GLOW Newsletter* 28: 14–15.

Doetjes, Jenny
    1992   Rightward floating quantifiers float to the left. *The Linguistic Review* 9 (4): 313–332.

Dowty, David
    1979   *Word meaning and Montague grammar*. Dordrecht: D. Reidel.
Drijkoningen, Frank
    1986   On the order of (auxiliary) verbs and syntactic affixes. In *Linguistics in the Netherlands 1986,* Frits Beukema and Aafke Hulk (eds.), 51–59. Dordrecht: Foris Publications.
Dryer, Matthew
    1985   The role of thematic relations in adjectival passives. *Linguistic Inquiry* 16 (2): 320–326.
Emonds, Joseph
    1972   Evidence that indirect object movement is a structure preserving rule. *Foundations of Language* 8 (4): 546–561.
    1976   *A transformational approach to English syntax: root, structure-preserving and local transformations*. New York: Academic Press.
    1985   *A unified theory of syntactic categories*. Dordrecht: Foris Publications.
Enç, Mürvet
    1987   Anchoring conditions for tense. *Linguistic Inquiry* 18 (4): 633–657.
Erteschik-Shir, Nomi
    1973   On the nature of island constraints. Doctoral dissertation, MIT.
Evers, Arnold
    1975   *The transformational cycle in Dutch and German*. Bloomington: Indiana University Linguistics Club.
    1981   Twee functionele principes voor de regel "verschuif het werkwoord". *GLOT* 5: 11–30.
Fabb, Nigel
    1984   Syntactic affixation. Doctoral dissertation, MIT.
    1988   English suffixation is constrained only by selectional restrictions. *Natural Language and Linguistic Theory* 6 (4): 527–539.
Fassi Fehri, Abdelkader
    1993   *Issues in the structure of Arabic clauses and words*. Dordrecht: Kluwer.
Fiengo, Robert
    1980   *Surface structure*: *the interface of autonomous components.* Cambridge, MA: Harvard University Press.
Fillmore, Charles
    1965   *Indirect object constructions in English and the ordering of transformations.* The Hague: Mouton.
Frampton, John
    1991   Relativized minimality: a review. *The Linguistic Review* 8 (1): 1–46.
Gabelentz, Hans-Conon von der
    1861   Über das Passivum: eine sprachvergleichende Abhandlung. *Abhandlungen der Philologisch-Historischen Classe der Königlich Sächsischen Gesellschaft der Wissenschaften* 3: 449–546.

Geest, Willy de
  1972   *Complementaire constructies bij verba sentiendi in het Nederlands.*
              Ghent: Higro.
Giorgi, Alessandra
  1987   The notion of complete functional complex: some evidence from
              Italian. *Linguistic Inquiry* 18 (3): 511–518.
Green, Georgia
  1974   *Semantics and syntactic regularity*. Bloomington: Indiana University
              Press.
Grimshaw, Jane & Armin Mester
  1988   Light verbs & theta-marking. *Linguistic Inquiry* 19 (2): 205–233.
Guasti, Maria Teresa
  1988   La pseudorelative et les phénomènes d'accord. *Rivista di Gram-
              matica Generativa* 13: 35–57.
Guéron, Jacqueline
  1980   On the syntax and semantics of PP extraposition. *Linguistic Inquiry*
              11 (4): 637–678.
  1985a   Le verbe AVOIR. *Recherches Linguistiques* 14/15: 155–188.
  1985b   Inalienable possession, PRO-inclusion and lexical chains. In *Gram-
              matical representation*, Jacqueline Guéron, Hans-Georg Obenauer
              and Jean-Yves Pollock (eds.), 43–86. Dordrecht: Foris Publications.
  1986   Clause union and the verb particle construction in English. Paper pre-
              sented at NELS 16 [not included in Proceedings].
  1990   Particles, prepositions and verbs. In *Grammar in progress: GLOW
              essays for Henk van Riemsdijk*, Joan Mascaró and Marina Nespor
              (eds.), 153–166. Dordrecht: Foris Publications.
Guéron, Jacqueline and Teun Hoekstra
  1988   T-chains and the constituent structure of auxiliaries. In *Constituent
              structure*, Anna Cardinaletti, Guglielmo Cinque and Guillana Giusti
              (eds.), 35–99. Dordrecht: Foris Publications.
  1992   Chaînes temporelles et phrases réduites. In *Structure de la phrase et
              théorie du liage*, Hans-Georg Obenauer and Anne Zribi-Hertz (eds.),
              69–92. Saint-Denis: Presses Universitaires de Vincennes.
  1995   The temporal interpretation of predication. In *Small clauses,* Anna
              Cardinaletti and Maria Teresa Guasti (eds.), 77–107. [Syntax and
              Semantics 28.] San Diego, CA: Academic Press.
Haaften, Ton van and Annelies Pauw
  1982   Het begrepen subject, een fantoom in de taalbeschrijving. *Forum der
              Letteren* 23 (2): 124–146.
Haaften, Ton van, Simon van de Kerke, Marja Middelkoop and Pieter Muysken
  1985   Nominalisaties in het Nederlands. *GLOT* 8 (2): 67–104.
Hale, Kenneth and Samuel Jay Keyser.
  1992   The syntactic character of thematic structure. In *Thematic structure:
              its role in grammar*, Iggy Roca (ed.), 107–143. [Linguistic models 16.]
              Berlin: Foris Publications.

1993   On argument structure and the lexical expression of syntactic relations. In *The view from building 20: essays in linguistics in honor of Sylvain Bromberger*, Kenneth Hale and Samuel Jay Keyser (eds.), 53–109. Cambridge, MA: MIT Press.

1997   On the complex nature of simple predicators. In *Complex predicates*, Alex Alsina, Joan Bresnan and Peter Sells (eds.), 29–65. Stanford, CA: CSLI.

Halitsky, David

1975   Left-branch S's and NP's in English: A bar notation analysis. *Linguistic Analysis* 1 (3): 279–296.

Harbert, Wayne

1977   Clause union and German AI constructions. In *Grammatical relations*, Peter Cole and Jerrold Saddock (eds.), 121–149. [Syntax and Semantic*s* 8.] New York: Academic Press.

Heim, Irene

1987   Where does the definiteness restriction apply? In *The representation of (in)definiteness*, Eric Reuland and Alice ter Meulen (eds.), 21–42. Cambridge, MA: MIT Press.

Hertog, Cornelis den

1975   *Nederlandse spraakkunst*. Third edition. Amsterdam: W. Versluys.

Higginbotham, James

1985   On semantics. *Linguistic Inquiry* 16 (4): 547–593.

Hoek, Th. van den

1971   Woordvolgorde en konstituentenstruktuur. *Spektator* 1: 125–136.

Hoeksema, Jack

1983   Zwaarlijvig en breedgeschouderd [Heavy-bodied and broad-shouldered]. *Tabu* 13 (2): 49–70.

1984   Categorial morphology. Doctoral dissertation, Rijksuniversiteit Groningen.

1987   Relating word structure and logical form. *Linguistic Inquiry* 18 (1): 119–126.

1991   Complex predicates and liberation in Dutch and English. *Linguistics and Philosophy* 14 (6): 661–710.

Hoekstra, Teun

1983   Government and the distribution of sentential complements in Dutch. In *Sentential complementation*, Wim de Geest and Yvan Putseys (eds.), 105–116. Dordrecht: Foris publications.

1984a   Krijgen. In *Linguistics in the Netherlands 1984*, Hans Bennis and Willem van Lessen Kloeke (eds.), 65–73. Dordrecht: Foris publications.

1984b   *Transitivity: grammatical relations in government-binding theory*. Dordrecht: Foris publications.

1986a   Deverbalization and inheritance. *Linguistics* 24 (3): 549–584.

1986b   Passive and participles. In *Linguistics in the Netherlands 1986,* Frits Beukema and Aafke Hulk (eds.), 95–104. Dordrecht: Foris publications.

1986c   Verbal affixation. Ms., Universiteit Leiden. [This volume.]

1988   Small clause results. *Lingua* 74 (2-3): 101–139.

1992a   Aspect and theta theory. *Thematic Structure. Its Role in Grammar*, Iggy Roca (ed.), 145–174. Berlin: Foris Publications.

1992b   Small clause theory. *Belgian Journal of Linguistics* 7: 125–151

1993   Possession and transitivity. Ms., Universiteit Leiden. [This volume.]

1995   To have to be dative. In *Studies in comparative Germanic syntax, volume 1: papers presented at the seventh Workshop on Comparative Germanic Syntax held at the University of Stuttgart in November 1991*, Hubert Haider, Susan Olson and Sten Vikner (eds.), 119–137. Dordrecht: Kluwer.

Hoekstra, Teun, Harry van der Hulst and Michael Moortgat

1980   Introduction. In *Lexical grammar*, Teun Hoekstra, Harry van der Hulst and Michael Moortgat (eds.), 1–48. Dordrecht: Foris publications.

Hoekstra, Teun, Monic Lansu and Marion Westerduin

1988   Complexe verba [complex verbs]. *GLOT* 10 (1): 61–77. [This volume.]

Hoekstra, Teun and René Mulder

1990   Unergatives as copular verbs; locational and existential predication. *The Linguistic Review* 7 (1): 1–79.

Hoekstra, Teun and Frans van der Putten

1988   Inheritance phenomena. In *Morphology and modularity: in honour of Henk Schultink*, Martin Everaert, Arnold Evers, Riny Huybregts and Mieke Trommelen (eds.), 163–186. Dordrecht: Foris publications.

Hoekstra, Teun and Ian Roberts

1993   Middle constructions in Dutch and English. In *Knowledge and language, volume II: lexical and conceptual structure*, Eric Reuland and Werner Abraham (eds.), 183–220. Dordrecht: Kluwer.

Hoekstra, Teun and Pim Wehrmann.

1985   De nominale infinitief [the nominal infinitive]. *GLOT* 8 (3): 257–274. [This volume.]

Holmberg, Anders

1986   Word order and syntactic features: in the Scandinavian languages and in English. Doctoral dissertation, Stockholms Universitet.

Honcoop, Martin

1992   ER or OR: quantification, intervention and fission. MA thesis, Universiteit Leiden.

Horn, George

1975   On the nonsentential nature of the POSS-ING construction. *Linguistic Analysis* 1 (4): 333–387.

Hornstein, Norbert and David Lightfoot

1987   Predication and PRO. *Language* 63 (1): 23–52.

Huang, Cheng-Teh James

1982   Logical relations in Chinese and the theory of grammar. Doctoral dissertation, MIT.

Hulk, Aafke
    1985   Double tree representation and the binding theory: some problems. Ms., Vrije Universiteit Amsterdam.

Hulk, Aafke and Erna Vermeulen
    1987   The impersonal construction in French and the Burzio generalization. In *Linguistics in the Netherlands 1987*, Frits Beukema and Peter Coopmans (eds.), 71–79. Dordrecht: Foris publications.

Hulshof, Hans
    1983   Enkele opmerkingen over nominalisering. *Forum der Letteren* 24 (3): 207–223.

Jackendoff, Ray
    1972   *Semantic interpretation in generative grammar*. Cambridge, MA: MIT Press.
    1977a   Constraints on phrase structure rules. In *Formal syntax*, Peter Culicover, Thomas Wasow and Adrian Akmajian (eds.), 249–283. New York: Academic Press.
    1977b   *X' syntax: a study of phrase structure*. Cambridge, MA: MIT Press.
    1990   On Larson's analysis of the double object construction. *Linguistic Inquiry* 21 (3): 427– 456.

Jackendoff, Ray and Peter Culicover
    1971   A reconsideration of dative movement. *Foundations of Language* 7: 397–412.

Jaeggli, Osvaldo
    1982   *Topics in Romance syntax*. Dordrecht: Foris publications.
    1986   Passive. *Linguistic Inquiry* 17 (4): 587– 622.

Jansen, Frank
    1978   De relatie potentiële- en gerealiseerde konstuktie als meetprobleem in de sociolinguistische benadering van de syntaxis. In *Handelingen van de ANéLA studiedag op 8 april 1978*, Johan Matter (ed.), 20-37. [Toegepaste taalwetenschap in artikelen 4.] Amsterdam: VU Boekhandel.

Janssen, Theo
    1974   Het indirect object en het zogenaamd indirect object. Ms., Universiteit van Amsterdam.

Jelinek, Eloise
    1986   The projection principle and the argument type parameter. Paper presented at the Groningen-Amsterdam workshop on non-configurationality, April 1986.

Jespersen, Otto
    1965   *A modern English grammar on historical principles*. London: George Allen & Unwinn/Copenhagen: Ejnar Munksgaard.

Johnson, Kyle
    1991   Object positions. *Natural Language and Linguistic Theory* 9 (4): 577–636.

Kayne, Richard
  1975   *French syntax: the transformational cycle*. Cambridge, MA: MIT
            Press.
  1981   Unambiguous paths. In *Levels of syntactic representation*, Robert
            May and Jan Koster (eds.), 143–183. Dordrecht: Foris publications.
  1984   *Connectedness and binary branching*. Dordrecht: Foris publications.
  1985a   L'accord du participe passé en français et en italien. *Modèles Lin-
            guistiques* 7 (1): 73–89.
  1985b   Principles of particle constructions. In *Grammatical representation*,
            Jacqueline Guéron, Hans-Georg Obenauer and Jean-Yves Pollock
            (eds.), 101–140. Dordrecht: Foris publications.
  1989a   Facets of Romance past participle agreement. In *Dialect variation
            and the theory of grammar*, Paola Benincà (ed.), 85–103. Dordrecht:
            Foris publications.
  1989b   Notes on English agreement. *CIEFL Bulletin* 1: 41–67.
  1989c   Null subjects and clitic climbing. In *The null subject parameter*,
            Osvaldo Jaeggli and Kenneth Safir (eds.), 239–261. Dordrecht: Kluwer.
  1993   Toward a modular theory of auxiliary selection. *Studia Linguistica*
            47 (1): 3–31.
  1994   *The antisymmetry of syntax.* Cambridge, MA: MIT Press.
Kayne, Richard and Jean-Yves Pollock
  1978   Stylistic inversion, successive cyclicity and move-NP in French.
            Linguistic Inquiry 9 (4): 595–621.
Kearns, Kate
  1989   Predicate nominals in complex predicates. In *Functional heads and
            clause structure*, Itziar Laka and Anoop Mahajan (eds.), 123–134.
            [MIT Working Papers in Linguistics 10.] Cambridge, MA: MIT,
            Department of Linguistics and Philosophy.
Keenan, Edward, and Bernard Comrie
  1977   Noun phrase accessibility and universal grammar. *Linguistic Inquiry*
            8 (1): 63–99.
Keyser, Samuel Jay and Thomas Roeper
  1984   On the middle and ergative constructions in English. *Linguistic Inquiry*
            15 (3): 381–415.
Kiparsky, Paul
  1982   Word-formation and the lexicon. In *Proceedings of the 1982 Mid-
            America Linguistics Conference,* Fred Ingemann (ed.), 3–29.
            Lawrence: University of Kansas.
Kiparsky, Paul and Carol Kiparsky
  1970   Fact. In *Progress in linguistics,* Manfred Bierwisch and Karl
            Heidolph (eds.), 143–173. The Hague: Mouton.
Kirkwood, Henry
  1969   Aspects of word order and its communicative function in English
            and German. *Journal of Linguistics* 5 (1): 85–107.

Klima, Edward
    1964   Negation in English. In *The structure of language: readings in the philosophy of language*, Jerry Fodor and Jerrold Katz (eds.), 246–323. Englewood Cliffs, NJ: Prentice-Hall.

Kooij, Jan
    1973a   *Is Nederlands een SOV taal?* Amsterdam: Noordhollandsche uitgeversmaatschapppij.
    1973b   Presuppositie, topic en de plaats van het indirekt objekt. *Spektator* 2 (5): 261–270.
    1978   Fronting in Dutch. In *Studies on fronting*, Frank Jansen (ed.), 29–51. Lisse: Peter de Ridder Press.

Kooij, Jan and E. Wiers
    1977   Vooropplaatsing van PP's in het Nederlands. *Spektator* 6 (7-8): 445–449.

Koopman, Hilda, and Dominque Sportiche
    1990   The position of subjects. *Lingua* 85 (2-3): 211–258.

Koster, Jan
    1973   PP over V en de theorie van J. Emonds. *Spektator* 2 (5): 294–311.
    1974   Het werkwoord als spiegelcentrum. *Spektator* 3 (8): 601–618.
    1976   Dutch as an SOV language. In *Linguistics in the Netherlands 1972–1973*, Albert Kraak (ed.), 165–177. Assen: Van Gorcum.
    1978   Why subject sentences don't exist. In *Recent transformational studies in European languages*, Samuel Jay Keyser (ed.), 53–64. Cambridge, MA: MIT Press.
    1984   On binding and control. *Linguistic Inquiry* 15 (3): 417–459.

Kraak, Albert and Willem Klooster
    1968   *Syntaxis*. Culemborg: Stam-Kemperman.

Kratzer, Angelika
    1995   Stage-level and individual-level predicates. In *The generic book*, Gregory Carlson and Francis Pelletier (eds.), 125–175. Chicago: University of Chicago Press.

Kuroda, Shige-Yuki
    1986   Whether we agree or not. *Lingvisticae Investigationes* 12 (1): 1–47.

Laka, Itziar
    1992   Negative complementizers: interclausal licensing of negative polarity items. In *NELS 22: Proceedings of the North East Linguistic Society*, Kimberly Broderick (ed.), 275–289. Amherst, MA: GLSA.

Lakoff, George
    1970   *Irregularity in Syntax*. New York: Holt, Rinehart & Winston.

Lambooy, J. H. Th.
    1963   De korte infinitief. In *Studies op het gebied van het hedendaagse Nederlands*, Albert de Groot (ed.), 107–158. The Hague: Mouton de Gruyter.

Langacker, Ronald
  1977   *Studies in Uto-Aztecan grammar, volume I: an overview of Uto-Atzcetan grammar*. Dallas, TX: Summer Institute of Linguistics and Arlington: University of Texas.
Larson, Richard
  1988   On the double object construction. *Linguistic Inquiry* 19 (3): 335–391.
  1990   Double objects revisited: reply to Jackendoff. *Linguistic Inquiry* 21 (4): 589–632.
Law, Paul
  1991   Verb movement, expletive replacement and head government. *The Linguistic Review* 8 (2–4): 253–285.
Levin, Beth
  1984   On the nature of ergativity. Doctoral dissertation, MIT.
Levin, Beth and Malka Rappaport
  1986   The formation of adjectival passives. *Linguistic Inquiry* 17 (4): 623–661.
Longobardi, Giuseppe
  1994   Reference and proper names. *Linguistic Inquiry* 25 (4): 609–665.
  1996   *The syntax of N-raising: a minimalist theory*. [OTS Working Papers 96–5.] Utrecht: Universiteit Utrecht, Research Institute for Language and Speech.
Lubbe, Henricus van der
  1983   Het blijft spoken in de linguïstiek. *Forum der Letteren* 24 (2): 81–93.
Mahajan, Anoop
  1994   The ergativity parameter: have-be alternation, word order and split ergativity. In *NELS 24: proceedings of the North East Linguistic Society, volume 1,* Mercè Gonzàlez (ed.), 317–331. Amherst, MA: GLSA.
Manzini, Rita
  1983   On control and control theory. *Linguistic Inquiry* 14 (3): 421–446.
Marantz, Alec
  1981   On the nature of grammatical relations. Doctoral dissertation, MIT.
Marchand, Hans
  1974   The syntactical change from inflectional to word-order system and some effects of this change on the relation verb/object in English: a diachronic-synchronic interpretation. In *Studies in syntax and word-formation: selected articles by Hans Marchand: on the occasion of his 65th birthday on October 1st, 1972*, Dieter Kastovsky (ed.), 98–117. Munich: Wilhelm Fink Verlag.
May, Robert
  1985   *Logical form: its structure and derivation*. Cambridge, MA: MIT Press.
Meijs, Willem
  1981   Synthetische composita: voer voor morfologen. *Spektator* 10 (3): 250–290.

Melvold, Janis
    1991   Factivity and definiteness. In *More papers on wh-movement*, Lisa
              Cheng and Hamida Demirdache (eds.), 97–117. [MIT Working Papers
              in Linguistics 15.] Cambridge, MA: MIT, Department of Linguistics
              and Philosophy.
Milner, Jean-Claude
    1982   *Ordres et raisons de langue*. Paris: Editions du Seuil.
Milsark, Georg
    1977   Towards an explanation of certain peculiarities of the existential con-
              struction in English. *Linguistic Analysis* 3 (1): 1–29.
Moeliono, Anton (ed.)
    1988   *Tata Bahasa Baku Bahasa Indonesia*. Jakarta: Balai, Pustaka.
Moortgat, Michael
    1986   Lambek categorial grammars and the autonomy thesis. *INL Working
              Papers*, 86–98.
Morin, Jean-Yves
    1978   Une théorie interprétative des causatives en français. *Lingvisticae
              Investigationes* 2 (2): 363–417.
Moro, Andrea
    1989   *There/ci* as raised predicates. Ms., MIT and Università Ca' Foscari,
              Venezia.
    1990   *There* raising: principles across levels. Paper presented at GLOW
              13, Cambridge.
Mulder, René
    1991   An empty head for object control. In *Proceedings of NELS 21*, Tim
              Sherer (ed.), 293–308. Amherst, MA: GLSA.
Mulder, René and Pim Wehrmann
    1989   Locational verbs as unaccusatives. In *Linguistics in the Netherlands
              1989*, Hans Bennis and Ans van Kemenade (ed.), 111–122. Dordrecht,
              Foris publications.
Napoli, Donna Jo
    1981   Semantic interpretation vs. lexical governance. *Language* 57: 841–887.
Nash, Lea
    1994   BE, unergative BE and unaccusative HAVE. Paper presented at the
              MIT Morphology-Syntax Connection Workshop.
Obenauer, Hans-Georg
    1984   On the identification of empty categories. *The Linguistic Review* 4
              (2): 153–202.
Oehrle, Richard
    1976   The grammatical status of the English dative alternation. Doctoral
              dissertation, MIT.
Penner, Zvi and Thomas Bader
    1991   Main clause phenomena in embedded clauses: the licensing of em-
              bedded V2-clauses in Bernese Swiss German. *Linguistic Review* 8
              (1): 75–95.

Perlmutter, David and Paul Postal
  1984   The 1-advancement exclusiveness law. In *Studies in relational grammar 2*, David Perlmutter and Carol Rosen (eds). Chicago: University of Chicago Press.

Pesetsky, David
  1982   Paths and categories. Doctoral dissertation, MIT.
  1985   Morphology and Logical Form. *Linguistic Inquiry* 16 (2): 193–246.
  1989   Language-particular processes and the earliness principle. Paper presented at GLOW 12, Utrecht. Abstract in *GLOW Newsletter* 22: 48–49.
  1995   *Zero syntax: experiencers and cascades*. Cambridge, MA: MIT Press.

Pollock, Jean-Yves
  1983   Accord, chaînes impersonnelles et variables. *Lingvisticae Investigationes* 7 (1): 131–181.
  1989   Verb movement, universal grammar and the structure of IP. *Linguistic Inquiry* 20 (3): 365–424.

Postma, Gertjan
  1996   The argumental licensing of perfect tense. In *Studies in comparative Germanic syntax, volume 2: selection of papers presented at the ninth Comparative Germanic Syntax Workshop, held at Harvard University, January 5–6, 1994,* Höskuldur Thráinsson, Samuel Epstein and Steve Peter (eds.), 197–226. Dordrecht: Kluwer.

Progovac, Ljiljana
  1992   Nonnegative polarity licensing must involve COMP. *Linguistic Inquiry* 23 (2): 341–347.

Radford, Andrew
  1978   Agentive causatives in Romance: accessibility versus passivization. *Journal of Linguistics* 14 (1): 35–58.

Randall, Janet
  1984   Thematic structure and inheritance. *Quaderni di Semantica* 4 (1): 94–112.

Rappaport, Malka and Beth Levin
  1991   Is there evidence for deep unaccusativity in English? Ms. Bar-Ilan University, Ramat-Gan, Israel and Northwestern University, Evanston, IL.

Reichenbach, Hans
  1947   *Elements of symbolic logic*. New York: MacMillan.

Riemsdijk, Henk van
  1978   *A case study in syntactic markedness: the binding nature of prepositional phrases*. Lisse: Peter de Ridder Press.

Ritter, Elizabeth
  1991   Two functional categories in noun phrases: evidence from modern Hebrew. In *Perspectives on phrase structure: heads and licensing*, Susan Rothstein (ed.), 37–62. [Syntax and Semantics 25.] San Diego, CA: Academic Press.

Rizzi, Luigi
1982   *Issues in Italian syntax*. Dordrecht: Foris publications.
1986   Null objects in Italian and the theory of pro. *Linguistic Inquiry* 17 (3): 501–557.
1990   *Relativized minimality.* Cambridge, MA: MIT Press.
Roberts, Ian
1985   Absorption parameters and the passive in UG. Paper presented at GLOW 8, Brussels. Abstract in *GLOW Newsletter* 14: 71–73.
1987   *The representation of implicit and dethematized subjects*. [Linguistic Models 10.] Dordrecht: Foris publications.
Rooryck, Johan
1992   Negative and factive islands revisited. *Journal of Linguistics* 28 (2): 343–374.
Roose, H.
1956   Kategorieën van voorgeplaatste bepaling bij substantieven. *Levende Talen* 186: 474–483.
Rosenbaum, Peter
1967   *The grammar of English predicate complement constructions*. Cambridge, MA: MIT Press.
Ross, John
1967   Constraints on variables in syntax. Doctoral dissertation, MIT.
Rothstein, Susan
1983   The syntactic forms of predication. Doctoral dissertation, MIT.
1985   Absorption parameters and the passive in UG. Paper presented at GLOW 8, Brussels. Abstract in *GLOW Newsletter* 14: 71–73.
Rouveret, Alain
1980   Sur la notion de proposition finie: gouvernement et inversion. *Langages* 60: 75–107.
Rouveret, Alain and Jean-Roger Vergnaud
1980   Specifying reference to the subject: French causatives and conditions on representations. *Linguistic Inquiry* 11 (1): 97–202.
Ruwet, Nicolas
1974   Phrases copulatives. *Recherches Linguistiques* 3: 143–191.
Sadock, Jerold
1985   Autolexical syntax: a proposal for the treatment of noun incorporation and similar phenomena. *Natural Language and Linguistic Theory* 3 (4): 379–439.
Safir, Kenneth
1983   Small clauses as constituents. *Linguistic Inquiry* 14 (2): 370–375.
Santen, Ariane van
1986   Synthetic compounds: syntax or semantics? *Linguistics* 24 (3): 645–660.

Selkirk, Elisabeth
   1981   English compounding and the theory of word structure. In *The scope
            of lexical rules*, Michael Moortgat, Harry van der Hulst and Teun
            Hoekstra (eds.), 229–278. Dordrecht: Foris publications.
Seuren, Pieter
   1973   *Predicate raising and dative in French and sundry languages*. Trier:
            L.A.U.T.
   1975   *Tussen taal en denken: een bijdrage tot de empirische fundering van
            de semantiek*. Utrecht: Oosthoek, Scheltema and Holkema.
Shibatani, Mayayoshi
   1975   *A linguistic study of causative constructions*. Bloomington: Indiana
            University Linguistics Club.
Siegel, Dorothy
   1974   Topics in English morphology. Doctoral dissertation, MIT.
Siegel, Muffy
   1983   Problems in preposition stranding. *Linguistic Inquiry* 14 (1): 184–188.
Simpson, Jane
   1983   Resultatives. In *Papers in Lexical Functional grammar*, Lori Levin,
            Malka Rappaport and Annie Zaenen (eds.), 143–158. Bloomington:
            Indiana University Linguistics Club.
Smith, Carlota
   1986   A speaker-based approach to aspect. *Linguistics and Philosophy* 9
            (1): 97–115.
Smyth, Ronald, Gary Prideaux and John Hogan
   1979   The effect of context on dative position. *Lingua* 47 (1): 27–42.
Speas, Margaret
   1986   Adjunctions and projections in syntax. Doctoral dissertation, MIT.
Sportiche, Dominique
   1987   A theory of floating quantifiers. In *Proceedings of NELS 17, volume
            2,* Joyce McDonough and Bernadette Plunkett (eds.), 581–592.
            Amherst, MA: GLSA.
   1988   A theory of floating quantifiers and its corollaries for constituent
            structure. *Linguistic Inquiry* 19 (3): 425–449.
   1994   Adjuncts and adjunctions. Talk given at the Linguistic symposium
            on Romance linguistics, Los Angeles.
Sproat, Richard
   1985   On deriving the lexicon. Doctoral dissertation, MIT.
Stowell, Tim
   1981   Origins of phrase structure. Doctoral dissertation, MIT.
   1983   Subject across categories. *The Linguistic Review* 2 (3): 258–312.
Strauss, Steven
   1982   On 'relatedness paradoxes' and related paradoxes. *Linguistic Inquiry*
            13 (4): 694–700.
Stroik, Thomas
   1990   Adverbs as V-sisters. *Linguistic Inquiry* 21 (4): 654–661.

Stuurman, Frits
    1988   X-bar and X-plain: a study of X-bar theories of the phrase structure component. Doctoral dissertation, Universiteit Utrecht.

Szabolcsi, Anna
    1994   The noun phrase. In *The syntactic structure of Hungarian*, Ferenc Kiefer and Katalin Kiss (eds.), 197–274. [Syntax and Semantics 27.] San Diego, CA: Academic Press.

Taraldsen, Knut-Tarald
    1983   Parametric variation in phrase structure: a case study. Doctoral dissertation, Universitetet i Tromsø.
    1984   *Some phrase structure dependent differences between Swedish and Norwegian*. Trondheim: Lingvistik institutt, NTNU.

Tellier, Christine
    1990   Underived nominals and the projection principle: inherent possessors. In *Proceedings of NELS 20, volume 2*, Juli Carter, Rose-Marie Déchaine, Bill Philip and Tim Sherer (eds.), 472–486. Amherst, MA: GLSA.

Toorn, Maarten van den
    1971   Enkele opmerkingen over het indirect object. *Levende Talen* 274: 32–41.
    1977   *Nederlandse grammatica*. Fifth Edition. Groningen: Wolters-Noordhoff.
    1981   *Nederlandse grammatica*. Seventh edition. Groningen: Wolters-Noordhoff.

Travis, Lisa
    1984   Parameters and effects of word order variation. Doctoral dissertation, MIT.

Tuggy, David
    1988   Náhuatl causative/applicatives in Cognitive Grammar. In *Topics in cognitive linguistics*, Brygida Rudzka-Ostyn (ed.), 587–618. Amsterdam: John Benjamins.

Vergnaud, Jean-Roger
    1974   French relative clauses. Doctoral dissertation, MIT.

Verkuyl, Henk
    1972   *On the compositional nature of the aspects*. Dordrecht: D. Reidel.

Vikner, Sten
    1990   Verb movement and the licensing of NP-positions in the Germanic languages. Doctoral dissertation, Université de Genève.

Vinet, Marie-Therese
    1995   Copular predication and checking of inflectional features. In *Linguistique comparée et langues au Maroc*, Abdelkader Fassi Fehri (ed.), 75–99. Rabat: Faculté des Lettres et des Sciences Humaines de l'Université Mohammed V.

Voskuil, Jan
    1990   Some transitivization processes in Malay. MA thesis, Universiteit Leiden.

Wasow, Thomas
  1977   Transformations and the lexicon. In *Formal syntax*, Peter Culicover,
              Thomas Wasow and Adrian Akmajian (eds.), 327–360. New York:
              Academic Press.
  1980   Major and minor rules. In *Lexical grammar*, Teun Hoekstra, Harry
              van der Hulst and Michael Moortgat (eds.), 285–312. Dordrecht:
              Foris publications.
Weil, Henri
  1844   *De l'ordre des mots dans les langues anciennes comparées aux
              langues modernes*. Paris.
Williams, Edwin
  1980   Predication. *Linguistic Inquiry* 11 (2): 203–238.
  1981a   Argument structure and morphology. *The Linguistic Review* 1 (1):
              81–114.
  1981b   On the notions 'lexically related' and 'head of a word'. *Linguistic
              Inquiry* 12 (2): 245–274.
  1982   The NP cycle. *Linguistic Inquiry* 13 (2): 277–295.
  1983   Against small clauses. *Linguistic Inquiry* 14 (2): 287–308.
Wyngaerd, Guido Vanden
  1989   Object shift as an A-movement rule. In *Papers from the student con-
              ference in linguistcs*, Phil Branigan, Jill Gaulding, Miori Kubo and
              Kumiko Murasugi (eds.), 256–271. [MIT Working Papers in Linguis-
              tics 11.] Cambridge, MA: MIT, Department of Linguistics and
              Philosophy.
Zaenen, Annie
  1988   Unaccusative verbs in Dutch and the syntax-semantics interface.
              [CSLI Report no. CSLI-88-123.] Menlo Park, CA: CSLI.
Zaenen, Annie and Joan Maling
  1984   Unaccustive, passive and quirky case. In *Proceedings of the 3rd West
              Coast Conference on Formal Linguistics,* Mark Cobler, Susannah
              MacKaye and Michael Wescoat (eds.), 317–329. Stanford: CSLI.
Zagona, Karen
  1982   Government and proper government of verbal projections. Doctoral
              dissertation, University of Washington, Seattle.
  1988   Proper government of antecedentless VP in English and Spanish.
              Natural Language and Linguistic Theory 6 (1): 95–128.
Zubizarreta, Maria Luisa
  1985   The relation between morpho-phonology and morphosyntax: the case
              of Romance causatives. *Linguistic Inquiry* 16 (2): 247–289.
  1987   *Levels of representation in the lexicon and in the syntax.* Dordrecht:
              Foris publications.
Zwart, Jan-Wouter
  1994   Dutch syntax: a minimalist approach. Doctoral dissertation, Rijks-
              universiteit Groningen.

Index