LINGUISTICS IN THE NETHERLANDS

1972-1973

VAN GORCUM

LINGUISTICS IN THE NETHERLANDS 1972-1973

edited by

A. KRAAK

Van Gorcum, Assen/Amsterdam, 1975

ISBN 90 232 1251 7

Printed at VAM-Voorschoten

PREFACE

This volume contains the papers presented at the third* and fourth annual meeting of the General Association for Linguistics which were held at Amsterdam on 22.1.1972 and 20.1.1973.

The purpose of these meetings is to provide linguists in the Netherlands with an opportunity to report on work in progress and to discuss their results with colleagues. As such they have proved to be very successful.

The papers in this volume give an excellent idea of the linguistic activities that are going on in the Netherlands.

For practical reasons the references of the separate papers have been brought together in a bibliography at the end of this volume.

Amsterdam, November 1974 A. KRAAK

*Not included is a paper presented by A.J.M. van der Geest, 'Naar een syntactische complexiteitsscore' (Towards a Syntactic Complexity Score) which will be available as a separate publication in Dutch at the Department of Linguistics of the University of Amsterdam.

CONTENTS

COMPETENCE ET INTUITIONS LINGUISTIQUES

Bernard P.F. Al

1 Introduction

L'ensemble des aptitudes linguistiques d'un sujet parlant est appelé dans la littérature générative-transformationnelle, en termes généraux, "l'information, relative à la structure de la phrase, qui est disponible, en principe, a quiconque a appris la langue"(Chomsky 1968b,p.61), "ce que le sujet parlant sait de sa langue"(Katz et Fodor 1964,p.482; Chomsky 1965,p.4,8,9)[1], mais aussi sa "connaissance *intuitive*"(Chomsky 1965,p.8 - c'est nous qui soulignons), son "*intuition* linguistique"(Chomsky 1968b,p. 64 - c'est encore nous qui soulignons). Il ne suffit donc pas de dire que Chomsky ne fait pas explicitement la distinction entre compétence et intuitions(Botha 1968,p.24). Pour Chomsky compétence et intuitions sont simplement identiques, témoin encore un passage où il parle de "l'intuition linguistique - la compétence tacite - du locuteur" (Chomsky 1965,p.27). L'identification erronée des deux notions a été signalée de façon pertinente par Harman(1967) et Botha a consacré à ce sujet un paragraphe intéressant (1968,p.69-78). La raison qui nous a poussé à revenir sur cette question est qu'elle continue à être débattue(Heger(1969),Bever(1970), Watt(1970), Levelt(1971)), et que, sur certains points, elle demande à être clarifiée davantage.

En examinant les publications qui traitent le sujet qui nous intéresse, on constate que presque tous les points de vue théoriquement possible ont été défendus:

a Les intuitions n'existent pas. Telle est l'opinion de Olmsted(1955),p.47 qui semble être partagée par Uhlenbeck(1967,p.284)[2].
b Il n'a pas été prouvé que nous ayons besoin de la notion de compétence linguistique (Harman 1967,p.82; Bever 1970,p.343; Levelt 1971).
c La compétence linguistique d'un sujet, c'est son intuition linguistique(Chomsky 1965,p.27).
d Il y a une compétence linguistique et il existe également des intuitions linguistiques, mais le statut méthodologique de celles-ci est fondamentalement différent de celui de la notion de compétence(Botha 1968,p.70-71).

Nous partageons le dernier point de vue, ce que nous essaierons d'illustrer dans la suite.

2 Caractérisation de la notion de compétence chez Chomsky

En énumérant toutes les 'aptitudes' qui ont été attribuées au sujet compétent (du point de vue linguistique) depuis Chomsky(1957), on en arrive à la liste suivante:

i L'aptitude à émettre et à comprendre un nombre illimité de phrases, pour la plupart nouvelles, de sa langue. Cette aptitude a été soulignée des le debut comme étant fondamentale(Chomsky 1957,p.15,23;1964a,p.7;1965,p.15; 1966,p.4;1961,p.222; 1968b,p.1,61 et 64). Dans des publications plus récentes cette aptitude est definie comme "la capacité d'un locuteur (idéal) à associer sons et signification de de façon strictement conforme aux règles de sa langue"(Chomsky 1967a,p.398; Chomsky et Halle 1968,p.3).
ii L'aptitude a décider qu'un énoncé est une réalisation d'une phrase de la langue en question(Chomsky 1957,p.23,85)[3].
iii L'aptitude à identifier, interpréter et utiliser une phrase déviante(Chomsky 1964 a,p.7;1968b,p64).
iv L'aptitude à déterminer des degrés de déviation(Chomsky 1965,p.148-153).
v L'aptitude à constater et à lever des cas d'ambiguïté(Chomsky 1965,p.21-22).
vi L'aptitude à constater une relation grammaticale ou sémantique entre deux ou plusieurs phrases(Chomsky 1961,p.223 sv.;Katz et Fodor 1964,p.482-486; Chomsky 1967 a,p.406).

A cette liste on pourrait sans doute ajouter d'autres 'aptitudes', par exemple celle de pouvoir déterminer la cohésion des éléments d'une construction(Levelt 1971).

Ce qu'il y a de trompeur dans cette liste, c'est qu'il n'apparaît pas qu'il existe une différence essentielle entre l'aptitude à émettre et à comprendre des phrases d'une part, aptitude qui à juste titre est appelée la 'compétence' du sujet parlant, et les autres 'aptitudes' de la liste d'autre part que nous qualifions provisoirement 'd'intuitions linguistique'. En effet, dire que quelqu'un est doué d'une compétence linguistique, qu'il possède cette aptitude, implique que cette personne 'sait', bien qu'inconsciemment, 'comment' faire pour produire et comprendre un nombre illimité de phrases. D'autre part les intuitions linguistiques (ii)à(vi) constituent un 'savoir que',qui peut être explicité étant donné que le sujet parlant peut être amené à exprimer un jugement concernant les faits (ii) à (vi) de la liste susmentionnée. Cette distinction est faite correctement par Harman qui accuse Chomsky de confondre "knowing how with knowing that"(1967,p.81).

Signalons finalement, à la suite de Botha, que la notion de 'compétence', contrairement à celle d''intuition linguistique', est "un concept théorique, une idéalisation du processus mental qui soustend la performance linguistique..."(Botha 1968,p.71), ce qui implique qu'une réalité mentale est postulée pour cette notion, et qu'on ne peut donc l'interpréter comme un concept formal ayant pour seule fonction de rassembler un certain nombre de faits disparates, comme le fait Dik 1967(p.360)[5].

3 Intuitions linguistiques

Commençons par noter qu'il n'est pas tout à fait exact de parler d'intuitions linguistiques par rapport aux 'aptitudes' (ii) à (vi) du paragraphe précédent. En fait il s'agit de 'jugements intuitifs', terme dont nous nous servirons dans la suite. Ces jugements intuitifs, dont dans la pratique personne ne nie l'existence ni l'importance constituent simplement des données d'observation. Mais comme il n'y a, à l'heure actuelle, aucune méthode satisfaisante qui permette de les provoquer systématiquement, c'est-à-dire de façon controlée, il faut les manier prudement. Dans ce sens les avertissements d'Uhlenbeck 1967(p.290 sv. et 314) et plus récemment ceux de Bever 1970 (p.348) et de Levelt 1971 sont pleinement justifiés.D'ailleurs Chomsky lui-même a souligné à plusieurs reprises que les jugements intuitifs ne sont pas toujours dignes de foi (voir Chomsky 1964a,p.56-59;1965,p.8,19,24).

Les jugements, en tant que données d'observation, diffèrent des autres énoncés du locuteur en ceci que les premiers se rapportent toujours aux derniers. L'attention du sujet, en général, est concentrée sur les événements du monde extra-linguistique. Ses énoncés sont pour la plupart du temps spontanés. Les jugements, au contraire, témoignent du fait que le sujet peut être amené a s'exprimer sur sa propre langue. Ils constituent donc des données d'observation méta-linguistiques et pour cette raison ils doivent être considérés comme des données indirectes, secondaires(cfr. Uhlenbeck 1967, p.286). Le fait que cette distinction entre les deux types de données d'observation n'a pas été faite d'une manière satisfaisante dans la littérature générative-transformationnelle explique peut-être une erreur qu'on trouve aujourd'hui chez certains psychologues et qui consiste à croire que la tâche du linguiste n'est pas la construction d'une théorie concernant la compétence du sujet parlant, mais plutot la construction d'une théorie rendant compte des intuitions linguistiques de ce sujet(Bever 1970a,p. 343; Levelt 1971)[6]. Notons aussi qu'évidemment tous les jugements intuitifs n'intéressent pas le linguiste au même titre. Ainsi certains jugements de 'grammaticalité' fournissent plutôt des indications sur la mémoire immédiate du sujet parlant que sur la structure des énoncés qui lui ont été soumis. Résumons-nous. Les jugements intuitifs d'un sujet sont à ne pas confondre avec sa compétence linguistique. Ils constituent des données d'observation méta-linguistiques dont le linguiste peut et doit se servir, mais avec prudence, surtout si c'est le linguiste lui-même qui fait fonction de sujet parlant.

4 Relation entre compétence et jugements intuitifs

La distinction que nous venons d'établir entre compétence et jugements intuitifs pourrait faire croire qu'il s'agit là de deux phénomènes strictement indépendants. C'est visiblement l'opinion de Heger lorsqu'il affirme que "les jugements attribués a la compétence des sujets, proviennent non pas de la langue en tant que système, mais d'une conscience méta-linguistique préscientifique que les sujets ont de leur langue ..."(Heger 1969,p.52). C'est également ce qui ressort des propos de Watt qui suppose que la grammaire mentale (c'est a dire la compétence linguistique du sujet) comprend deux composantes, la première étant responsable de la production (et de la compréhension) des phrases, la seconde étant constitué d'"un savoir abstrait" concernant la première(Watt 1970,p.158, 189-192 et 212). Il nous semble que ce point de vue est erroné. La relation entre compétence et jugements intuitifs s'éclaircit lorsqu'on se pose la question suivante: est-ce qu'un mécanisme, par exemple un ordinateur, doté d'un système de règles de type génératif-transformationnel serait capable d'exprimer les jugements qui nous intéressent? La réponse doit être affirmative. En effet, pour pouvoir porter, par exemple, un jugement de 'grammaticalité' à propos d'un énoncé donné, il suffit que le mécanisme essaie de reconstruire une phrase correspondant a l'énoncé qui lui a été proposé. Le résultat, qu'il soit positif ou non, permet d'exprimer le jugement désiré[7]. Pourvu que le mécanisme soit équipé d'une grammaire suffisamment détaillée, il n'éprouvera aucune difficulté à traiter les autres problèmes énumérés dans le paragraphe 2. Ainsi 'le savoir que présuppose le savoir comment' le dernier étant sous-jacent au premier. Dans la réalité, le sujet parlant, contrairement a l'ordinateur, n'est pas capable de consulter sa grammaire mentale comme une sorte de dictionnaire étant donné qu'il s'agit d'un savoir quasiment inconscient. Il en résulte les erreurs et les incertitudes dont nous avons fait mention dans le paragraphe précédent. Mais le principe selon lequel il est possible d'exprimer un jugement à base de la formalisation chomkyenne de la compétence demeure inaltéré. Il est donc superflu de postuler une conscience métalinguistique spéciale comme le font Heger 1969 et Watt 1970.

5 Objet de la description linguistique

Distinguons tout d'abord: (1) la 'compétence' (ou 'langue'); (2) la mise en oeuvre de cette compétence, mécanisme qui est appelé 'performance'; (3) les instances spécifiques qui sont le produit de la performance d'un individu et que nous appelons 'discours'; à l'intérieur de celui-ci il convient de distinguer les 'jugements intuitifs' des autres 'énoncés'. Il paraît incontestable que la tâche du linguiste n'est pas de construire un modèle de perception ou de production, bien que la relation entre compétence et performance le concerne, comme le note à juste titre Fromkin 1968(p.47). Pourtant ceci n'implique pas automatiquement que l'objet de la description linguistique soit constitué par la compétence du sujet parlant. Par exemple, les post-bloomfieldiens se proposent de fournir une classification d'éléments[8] et c'est cette systématisation que Bloomfield appelle 'langue'. Uhlenbeck se déclare d'accord, en principe, avec l'objet de la description linguistique, tel qu'il a été défini par les structuralistes américains(Uhlenbeck 1966,p.14). Et Dik affirme que, pour lui, une description générative n'est pas plus un modèle de la compétence du sujet parlant qu' un modèle de sa performance:"C'est plutôt une description complète d'une langue particulière, qui n'est pas en soi un phénomène psychologique..."(Dik 1968,p.62; voir aussi les p.162 et 190). Est-ce à dire que ces linguistes prennent seulement en considération les données d'observation que nous avons appelées primaires?(cfr.par.3). Non. La linguistique post-bloomfieldienne a implicitement fait une distinction entre phrases et non-phrases[9], Uhlenbeck admet la légitimité de certains jugements intuitifs (Uhlenbeck 1967,p.289 sv.) et Dik définit 'une expression linguistique bien formé' comme "une expression linguistique qui sous des conditions de communication normales est totalement acceptable pour le locuteur"(Dik 1968,p.26). En d'autres termes, toute description linguistique, n o l e n s v o l e n s , rend compte de certains jugements intuitifs.

Ce qui, en fait, oppose les linguistes que nous venons de citer et les chomskyens

c'est la portée explicative de leurs théories respectives. Pour Chomsky, comme pour tous les mentalistes, l'objet de la description linguistique est la compétence qu'ils supposent exister réellement. Une telle compétence constitue une 'explication' des données d'observation primaires aussi bien que secondaires. L'hypothèse concernant la nature de la compétence, avancée par le linguiste, est donc une tentative d'explication. Unw théorie non-mentaliste peut 'rendre compte' des mêmes données d'observation, mais elle ne saurait les 'expliquer', c'est-à-dire elle se saurait rendre compte du 'pourquoi' de leur existence. Elle ne saurait 'expliquer' non plus la relation entre les deux types de données d'observation que nous avons distingués dans le paragraphe 4. Finalement, on ne voit pas comment un linguiste non-mentaliste pourrait justifier un recours aux jugements intuitifs du sujet parlant[10]. Pour terminer, nous tentons de visualiser les deux conceptions concernant l'objet de la description linguistique, que nous venons d'esquisser.

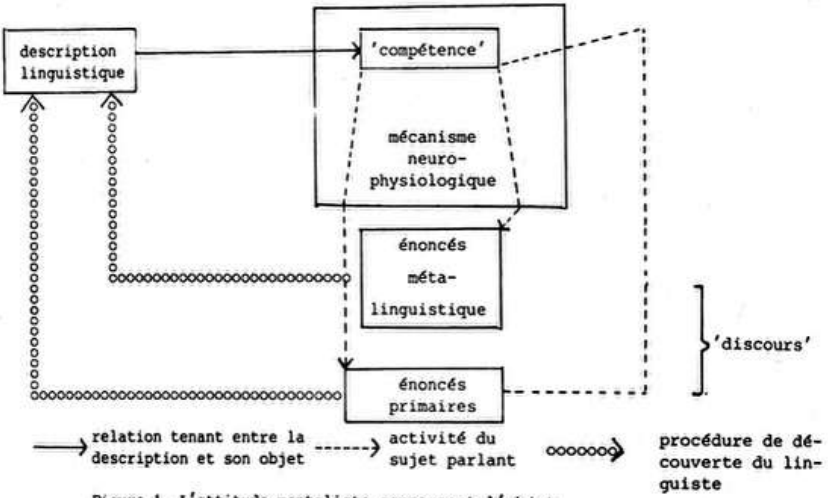


Figure 1. L'attitude mentaliste concernant l'objet de la description linguistique

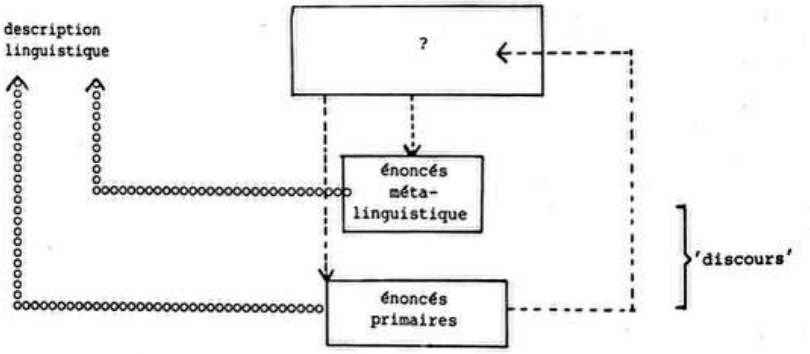


Figure 2. L'attitude non-mentaliste concernant l'objet de la description linguistique

Notes

1 Notons bien que dire que le sujet parlant possède une certaine connaissance de la structure de sa langue n'est pas équivalent à affirmer qu'il a "une connaissance de sa grammaire"(Bever 1968,p.481) ou qu'il a "une connaissance des règles de la grammaire"(Harman 1967,p.81); voir à ce sujet Chomsky 1965,p.8.

2 Dans la suite de son article cependant, Uhlenbeck reconnaît que ces intuitions existent et il estime même que le linguiste doit s'en servir, mais prudemment: "Utterances consciously composed upon request of the linguist and, especially, the performers' statements about their own speech production should be checked by observational evidence..."(Uhlenbeck 1967,p.293).

3 Pour les 'aptitude' (ii) à (vi) nous nous contentons de citer une seule source. Pour la distinction entre 'phrase' et 'énoncé', voir Bar-Hillel 1967,p.537-538.

4 Nous ne comprenons tout simplement pas comment Harman dans la suite de son article en arrive à affirmer que "la nécessité d'une notion ressemblant à celle de 'compétence linguistique' n'a pas été démontrée"(Harman 1967, p.82).

5 Toutefois, les remarques de Chomsky à ce sujet, contrairement à celles de Katz 1964, ne sont pas toujours claires; voir Botha 1968,p.91-93,104.

6 En fait Bever va encore plus loin. Il affirme qu'une grammaire décrit les intuitions de sujet parlant concernant la 'grammaticalité' seulement(Bever 1970a,p.343).

7 L'axiomatisation chomskyenne de la compétence ne permet pas de considérer la grammaire qui en résulte comme une procédure de décision(cfr. Reuland 1971,p.51), mais cela n'implique pas que la construction d'une telle procédure soit exclue.

8 Harris, exposant extrême du post-bloomfieldianisme, parle d'une "représentation compacte (...) des énoncés constituant le corpus"(Harris 1951,p.366).

9 Voir à ce sujet Botha 1968, p.23-24.

10 Pour un traitement du mentalisme en linguistique, nous renvoyons le lecteur à Botha 1968(p.84-110). Nous reproduisons cependant un passage où l'auteur fait remarquer à juste titre, il nous semble, qu'un linguiste ne saurait déterminer 'a priori' le caractère non-mentaliste de sa théorie:"La nature mentaliste (ou non-mentaliste) d'une telle théorie ne peut être établie que lorsqu'il a été démontré qu'il est possible (ou impossible) de dériver des hypothèses psycholinguistiques correctes de la dite théorie"(Botha 1968,p.104).

TWO TYPES OF CAUSAL RELATIONSHIP IN GRAMMAR

T. Pollmann

Given the following sentences(the English sentences are word-for-word renderings of the Dutch examples):

1a Door die pruik lijkt Marie op Elizabeth.
   By that wig Mary looks like Elisabeth.
1b Met die pruik lijkt Marie op Elizabeth.
   With that wig Mary looks like Elisabeth.

It is my purpose to analyse the sentences (1) and to describe their differences in general semantic terms. The problem involved in describing causal relations in grammar are far from simple and only a small number of them have been dealt with up to now. The following might contain possible guide-lines for the solution of these problems.

The syntactic-semantic relations between all or some parts of certain sentences are governed by what is called a causal relation. Although the surface structures of these sentences differ greatly, their similarity is easy to determine. Grammar has to show which similarities make these sentences related in deep structure, of what nature the differences are and which factors influence the differences in surface structure.

In traditional grammar both adverbials in (1), the *door*-adverbial and the *met*-adverbial, would be called adverbials of cause or causal adverbials. In traditional grammar the assumption is implicit that the *door*-adverbial is pre-eminently the causal adverbial. Traditional grammarians consider the *door*-adverbial, as distinguished from other causal adverbials, the most precise expression in Dutch of what is called, in common usage, a cause. At least this would explain the fact that most grammars giving only one example of a sentence with a causal adverbial, give a sentence in which a *door*-adverbial occurs. Following that intuition I adopt the view that what is called a cause in common usage can be expressed by a *door*-adverbial like *door die pruik* (by that wig) in (1a). A is called a cause of B if A necessarily results in B. Once the cause is given, the effect B is bound to result. Since sentences with a causal *door*-adverbial do not always denote a (physical) law, this implies that the effect is a property of the cause.[1] The cause, by its nature, determines the effect. It is a property of the wig in (1a) that Mary looks like Elisabeth. This analysis is illustrated by (2):

2 Die pruik is zo (van dien aard) dat Marie op Elizabeth lijkt.
  That wig is such (of such nature) that Mary looks like Elisabeth.

Generally speaking sentences with a *door*-adverbial can be paraphrased with a *zo... dat*-sentence. The reverse is not true. The notion 'cause' can be made even more explicit. It also implies something like 'action'. That notion can best be expressed in Dutch by the verb *maken(dat)* (lit. to make(that)). See the paraphrase (3) of (1a).[2]

3 Die pruik is zo (van dien aard) dat die pruik maakt dat Marie op Elizabeth lijkt.
  That wig is such (of such nature) that that wig makes Mary look like Elisabeth.

Perhaps an abstract predicate CAUSE exists, a feature-bundle in the sense of Lakoff (1968b), that allows for some broader generalizations. In any case the lexicalization of CAUSE depends on the environment of CAUSE, on the nature of the subject for example, or of the verb in the effect-sentence. *Maken*(to make) is such a lexicali-

zation. I will not at this juncture discuss the *maken*-clause of the construction (3), except to say that in my opinion there must be a transformation that transforms *maken* into *door*, because of the grammaticalness vs. ungrammaticalness of the sentences (4):

4a Die pruik is van dien aard dat Marie daardoor op Elizabeth lijkt.
That wig is such that Mary looks like Elisabeth by it(by that wig).
4b *Die pruik maakt dat Marie daardoor op Elizabeth lijkt.
That wig makes Mary look like Elisabeth by it(by that wig).

A sentence like (4a) raises the question of the necessity of the first part of (3), the clause *die pruik is zo...dat*(that wig is such...that). Besides the fact that an important aspect of a causal relation has been made explicit here, there are some arguments to support its existence in deep structure. Those arguments are rather complex and I shall restrict myself to an indication of their importance. The homonymy of (5), for example, demands two different deep structures;(6) is also homonymous, but (7a) and (7b) may in fact be interpreted like both (5) and (6):

5 Hij ziet door de bomen het bos niet meer.
He does not see the wood any more by the trees.
6 De bomen maken dat hij het bos niet meer ziet.
The trees make that he does not see the wood any more.
7a Er zijn zoveel bomen dat de bomen maken dat hij het bos niet meer ziet.
There are so many trees that the trees make that he does not see the wood any more.
7b De bomen zijn van dien aard dat de bomen maken dat hij het bos niet meer ziet.
The trees are such(of such nature) that the trees make that he does not see the wood any more.

Let us return now to the sentences (1). If the *door*-adverbial in (1a) indicates a cause, then what does the *met*-adverbial in (1b) indicate? Before attempting to describe the differences between the sentences (1), I should like to point out that there are, in the field of causal adverbials and clauses, often such subtle differences in meaning between pairs of sentences, even if the adverbials and clauses begin with different prepositions and conjunctions. Sentences (8)-(10) may serve as examples:

8a Door die muziek kan ik niet slapen.
By that music I cannot sleep.
8b Van die muziek kan ik niet slapen.
From that music I cannot sleep.
9a Uit boosheid smeet Karel met de verf.
From anger Charles splashed with the paint.
9b In zijn boosheid smeet Karel met de verf.
In his anger Charles splashed with the paint.
10a Door de prijzen stijgen de lonen.
By the prices the wages rise.
10b Onder invloed van de prijzen stijgen de lonen.
Under (the) influence of the prices the wages rise.

A sentence like (1b) is ambiguous. In one reading it conveys that Mary looks like Elisabeth; in another it is a possibility that Mary will look like Elisabeth. Both readings are approximately paraphrased in the sentences (11):

11a Nu Marie die pruik op heeft, lijkt zij op Elizabeth.
Now Mary has that wig (on), she looks like Elisabeth.
11b Als Marie die pruik op heeft, lijkt zij op Elizabeth.
When Mary has that wig (on), she looks like Elisabeth.

Note that (1a) is not ambiguous. (1a) has to be read as a description of an actual situation. The difference between the two readings of (1b), which have been demonstrated provisionally, can best be described in conditional terms. As the sentence (1b) in the reading (11b) describes an unfulfilled condition, so the sentence (1b) in the reading (11a) describes a condition that could be called fulfilled. The difference between the sentences (1) appears to be that between cause and condition. If it is assumed that both sentences express a connection of causal nature between two facts, it must be possible to describe both concepts, 'cause' and 'condition', in causal terms. For example, the question is obvious: if a condition is fulfilled, does that fulfilled condition become a cause? Sentence (10b) is ambiguous in the same way as sentence (1b). The view can be held that the phenomena involved in the relationship are the same in both sentences, viz. the prices A and the rising of the wages B. In the a-sentence A determines, by its nature, the effect B. The b-sentence first of all expresses that the wages have some influence upon the prices. (Note that the other b-sentences of (1), (8-10) also have some appositional qualities). The real cause of the rising of the wages has something to do with this influence of the wages on the prices, but the sentence does not express which the determining factor is. As a statement about the causal connection between the two phenomena A and B, (10b) is more prudent, but also less definite, than (10a), since the latter sentence takes no account of the possible complexity of the cause of the rising wages. In my opinion the sentence (10b) can be fully paraphrased by (12) (Cf. also (1b) and (13)).

12 Dat de lonen onder invloed staan van de prijzen, is voldoende om te maken dat de lonen stijgen.
That the wages are influenced by the prices, is enough to make the wages rise.

13 Dat Marie die pruik op heeft, is voldoende om te maken dat Marie op Elizabeth lijkt.
That Mary has that wig (on), is enough to make Mary look like Elisabeth.

The constructions with *voldoende zijn om te maken dat* (to be enough to make) in (12) and (13) are interesting for more than one reason. First of all, (12) and (13) are ambiguous in the same way as already explained with reference to (1b); they have a factual and a virtual reading. As the first *dat*-clause is interpreted as a fact or as a possibility, so the second *dat*-clause is interpreted as a factual or virtual effect. Secondly, the first *dat*-clauses in (12) and (13) state explicitly the relation between the two things meant by the subject of the sentence in (10b) and (1b) and the NP of the adverbial. Thirdly, the logical subject of *maken* in the constructions (12) and (13) seems to be a non-human and most probably unspecified NP. The sentences may have readings in which the logical subject could be the indefinite personal pronoun *je* (you). Since in these readings an unspecified actor is involved, (12) and (13) are not synonymous with (10b) and (1b) respectively. But in the readings in which the paraphrases are synonymous with the sentences under discussion, the subject must be non-human. That the logical subject of *maken* has to be unspecified rather than specified is less easy to see. The deleted subject of the complement of *voldoende zijn om te* (to be enough to) is on the face of it identical with the subject of the matrix-sentence. There are some cases, however, in which things appear to be more complicated. The examples in which the logical subject is an unspecified human actor are obvious counter-examples. But see also the sentences (14):

14a Twee honden i s voldoende om te maken dat niemand meer naar binnen durft.
Two dogs is enough to make that nobody dares to go inside.

14b *Twee honden m a a k t dat niemand meer naar binnen durft.
Two dogs makes that nobody dares to go inside.

Lack of agreement does not effect the grammaticalness of (14a), but it does make (14b) ungrammatical. This is an argument that (14b) is not a part of the underlying structure of (14a). Perhaps there is some constructional resemblance between (14a)

and (15), both the antecedent and the relative pronoun in (14a) being unspecified:

15 Twee honden is iets dat maakt dat niemand meer naar binnen durft.
Two dogs is something that makes that nobody dares to go inside.

In conclusion, it should be stated that there are a few reasons to admit that in (13) some semantic properties of (1b) have been made explicit.There is also some plausibility in the view that (13) exhibits some characteristics of the deep structure of (1b).

Arguments to support the above analysis must be derived in the first place from the applicability of these analytic views to other sentences denoting a causal relation. In my opinion this applicability is quite general. An illustration may be found in the position of the concessive adverbials and clauses amidst the causal adverbials. Concessivity is traditionally connected with causality. The Dutch grammarian Den Hertog(1897,p.58) described concessive adverbials as 'frustrated' causes.Perhaps this description can be stated more precisely. The adverbial in sentence (16a) will always be interpreted as a concessive one. The same will usually be the case with the adverbial in (17a):

16a Ondanks zijn woede bleef hij beleefd.
In spite of his anger he remained polite.
17a In zijn woede bleef hij beleefd.
In his anger he remained polite.

In both sentences there exists a concessive relation between the anger of the subject and his remaining polite. Like all concessive relations, these can be understood as the negation of the causal relation between the two facts. Hence there must be a causal relation underlying these concessive relations. In the case of (16a) the sentences denoting this relation are (16b) and its paraphrase (16c):

16b Hij was zo woedend dat zijn woede maakte dat hij niet beleefd bleef.
He was so angry that his anger made that he did not remain polite.
16c Door zijn woede bleef hij niet beleefd.
By his anger he did not remain polite.

Sentence (16a) in its turn can be correctly paraphrased by (16d):

16d Hij was niet zo woedend dat zijn woede maakte dat hij niet beleefd bleef.
He was not so angry that his anger made that he did not remain polite.

In the same way (17a) can be paraphrased with (17b):

17b Zijn woede was onvoldoende om te maken dat hij niet beleefd bleef.
His anger was not enough to make that he did not remain polite.

Department of Dutch Language and Literature
University of Utrecht

Notes

1 In much of the philosophical literature on this subject causality is related to (physical) laws. Only once did I find a concept of causality which accords with the above mentioned pecularities of sentences containing a causal *door*-adverbial, viz. in a passage cited by Ayer(1964, p.202-203) from an introduction to logic by H.B.W. Joseph:"...if a thing a under conditions c produces a change x in a subject s, the way in which it acts must be regarded as a partial expression of what it is. It could only act differently if it were different... To assert a causal connexion between a and x implies that a acts as it does

because it is what it is; because, in fact, it is a."

2 In paraphrases of sentences denoting a causal relation it is generally better to use *maken* than *doen* , *er voor zorgen dat* , *er toe leiden dat* of *veroorzaken*. The last verb is often found as the lexicalization of the abstract predicate CAUSE that Lakoff(1968b) uses.

PROPER NAMES - WHENCE, WHY, AND HOW?

Norval S.H. Smith

Recent work on the subject of proper names has not really contributed much to our understanding of them as linguistic phenomena. Within linguistics, little has been done other than note the possibilities of occurrence of these names. Thus, the most recent study, that by Sloat(1969), demonstrated that, syntactically, proper nouns differ only from common nouns in that they have a zero-allomorph of the unstressed definite article when singular and not preceded by a restrictive relative clause. He claims also that proper names in such contexts as

1 the famous Grimm wrote the book

means the same as those in such contexts as

2 Grimm wrote the book

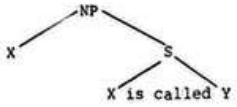
and thus that it is pointless to say that *Grimm* is being used as a common noun in (1). More has been done in this field by philosophers, but they have, it seems to me, at least reduced the value of their work by putting unwarranted restrictions on the meaning of the term 'proper name'; thus Searle(1969),p.165 criticizes Russell for doing this, but he himself is guilty of the same offence. Starting his argument that proper names have no meaning, he goes on to claim that names like the 'Bank of England' are d e g e n e r a t e proper names (the paradigm examples being presumably names like 'Alexander', 'Aristotle', or 'Everest'). For him, then, proper names have no meaning, they only refer. In his words, they 'function not as descriptions, but as pegs on which to hang descriptions'(p.172). As an instantiation of this he states that if he names his son 'Martha' he may mislead but he does not lie (because *Martha* would not be a description as such). However this remark is of little relevance to the question at issue since the act of naming (in the sense meant here) is a performative act. 'I name you Martha' (or some equivalent utterance) is no more capable of having its truth denied than the act of questioning in 'Are you cold?', or the act of saying in 'I'm going now'. These too are only capable of misleading (or of being unsuitable acts, given the particular circumstances), and are not capable of being untrue.With regard to the status of names like the 'Bank of England', it is quite obvious that they have a meaning. The fact that a name may be used such that its intrinsic meaning clashes with some feature of the thing to which it refers, contradicts or is totally irrelevant to a 'definite description' of this thing, is completely irrelevant to whether or not such a name has any intrinsic meaning or not. Thus the 'International Laxative Corporation' may in fact be an intra-national non-incorporated body dealing in oat products. However, this does not detract from the fact that 'International Laxative Corporation' has a definite meaning. It is only by virtue of this fact that we are able to utter such sentences as

3 I work for the International Laxative Corporation, but that's a bit of a misnomer.

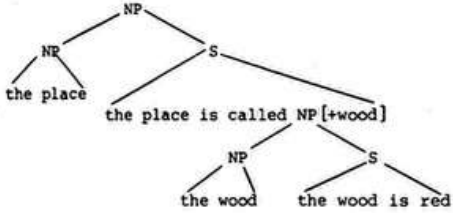
Here of course I am assuming that 'International Laxative Corporation' is a genuine proper name. This would probably be denied by philosophers. In fact, though, there are several points supporting my position. First, our instinct as native speakers tells us, whatever philosophers may say, that 'Seahouses' is every bit as much a proper name as 'London', despite the fact that we can say what the first means while we can't do this with the second. Secondly, the reason why so many proper names have non-transparent meanings within our culture is that we have a long tradition of literacy and that we have had extensive cross-cultural contacts during this time. In many societies the majority of proper names are easily interpretable by 'naive' speakers of the language. Indeed, this may even be true with regard to some forms of English.

Thirdly, almost every proper name ever used has begun its history as a meaningful proper name. This is rather obvious but it suggests that it is not necessarily a feature of proper names that they have no intrinsic meaning but rather the opposite. Because this meaning may later be or become unclear for some group of users does not affect its other linguistic features or its functional value.

I will now give some arguments for deriving proper names, within the context of a generative semantic theory of language, from structures of the form:



where X is some general term: place, person, etc., and Y is the name itself, associated perhaps with some feature relating to the kind of context the name may appear in. For personal names, *John* would be [+make], *Mary* [+female], for place names, *Everest* would be [+mountain], *Amsterdam* would be [+city], etc.[1)]. Whether or not a given name has an intrinsic meaning depends on whether or not what appears in Y is complex. Thus the name 'Red Wood' will have the structure:



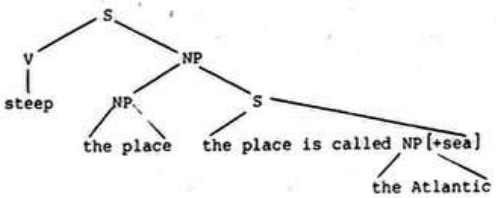
The features associated with Y would seem to be closely connected with what Searle (1969,p.170) is talking about when he says that proper names have some loose logical connection with the objects they refer to. 'Some general term is analytically tied to any proper name: Everest is a mountain, the Mississippi is a river, etc.(op. cit. p.167). According to Vendler(1967, p.38), however,this sort of knowledge belongs to geography and not to linguistics. This seems to me to be questionable for two reasons. Firstly, it is extremely difficult to decide just where the boundary between linguistically relevant and linguistically irrelevant knowledge lies. Secondly, I do feel, however, that this sort of information is indeed relevant for a linguistic description. We have to be able to rule out sentences like

4 *the Atlantic is steep
5 *Mount Everest breathes well
6 *The International Laxative Corporation is six feet deep

just as much as

7 *John ate beauty
8 *The white line is two inches deep

Such sentences are bad not because they portray inconceivable situations, but because they break selectional restrictions. Thus (4) is bad because its underlying structure (I will argue) has some resemblance to:



and it breaks a restriction on the cooccurrence of the verb 'steep' and the feature(s) [+sea]. That other types of geographical knowledge are indeed irrelevant for a linguistic description is rather easy to demonstrate. Thus, the city of Glasgow has some million inhabitants, while the village of Muthill has some 1200. However, the sentence

9 Glasgow is smaller than Muthill

is perfectly acceptable. The fact that it is obviously untrue does not affect this acceptability in the slightest.

The first syntactic argument that I wish to put forward is what I will refer to as the 'synonymy argument'. In my opinion as a native speaker of English, the following two sentences are synonymous:

10 last week I was at Coishavachan
11 last week I was at the place called Coishavachan

If, as I have implied, it is indeed part of the meaning of Coishavachan that it is a place (rather than a person, for example), then, working on the assumption that sentences with the same meaning have the same semantic representation, it is logical to assume that the sentence which makes this more explicit is closer to the underlying structure than the other. At this juncture it might be objected that we do not say things like

12 last week I was in the place called London

but only

13 last week I was in London

However, a moment's reflection should reassure us that the semantic information carried by (12) is exactly the same as that contained in (13). The only difference is, that we would use these sentences under different circumstances. We would use (12) only if we were talking to someone who we did not think knew that London was a place and who might therefore not even realize that we were using a proper name. At this point it might be worthwhile looking again at proper names used with the definite article. Thus Vendler, and philosophers in general, want to distinguish between sentences like

14 the London in Canada is much smaller than the London in England

and sentences like (13) above. So that we can see that this difference of whether or not a definite article is present is purely superficial, let us look at the following two sentences:

15 last week I saw the woman
16 the woman in my life is less of a problem than the woman in yours

If we now assume a context for (15) where some woman is of such great significance that it is obvious who is being referred to when someone says '...the woman...', then we can see that the parellelism between (13) and (14) on the one hand, and (15) and (16) on the other, is complete. In (13) and (15), a place called London and a woman are respectively being referred to whose identification is so obvious that mere mention in a definite context is sufficient (the lack of an article with London is certainly a definite context. See Sloat(1969)). In (14) and (16) on the other hand, a not so obviously identified place London and woman are respectively being compared with some other such place London and woman.

The second syntactic argument that I want to present involves sentences of the type of

17 last week I was in Aberuthven, which is a l s o called Smidyhaugh(the spacing of a l s o indicates that the main stress falls here)

Consider some other sentences where 'also' may also appear.

18 I kissed Mary and I a l s o hit Bill (identity of subject)
19 I hit Bill and Fred a l s o hit Bill (identity of predicate)
20 *I hit Bill and Fred a l s o hit Mary (identity of verb)[2)]
21 *I hit Bill and Fred a l s o nipped Bill (identity of object)

It is obvious from these examples that certain conditions of identity must be met before 'also' can appear in a sentence. To see that these conditions also apply where embedded sentences are involved, consider also

22 I saw the woman with the new hat who a l s o had a rather natty scarf
23 *I saw a woman, who a l s o was wearing a scarf
24 I saw the man elected for Ince, who has a l s o been made a minister
25 I saw a man loading fishboxes, who was a l s o smoking a pipe
26 *I saw the man, who was a l s o smoking a pipe
27 I saw the man who was lying on the grass today and I think John once said that he'd seen a horse that was a l s o lying on the grass
28 *I saw a man that didn't like me and a horse that a l s o talked
29 I saw the man who had been injured, who had a l s o been covered in paint

The acceptable sentences are all ones where the elements compared by 'also' are either relative clauses with the same antecedent, as in (29), or a relative clause and an element transformationally derived from a relative clause such as a post-nominal modifier, as in (24) (these two types have identity of subject), or two relative clauses with the same predicate as in (27) (this type obviously has identity of predicate). This suggests that in (17) the relative clauses must be being compared with another sentence with at least either the same subject or the same predicate.

The third syntactic argument I have derives from the apparent existence of proper names with two articles.

30 there's a The Knowes in this area

The most obvious explanation for this superficially strange fact is to assume that the two articles derive from two different NP's, one of which has disappeared from the sentence as it now stands. If we try to make use of the source I have suggested for proper names, then we would have a deeper structure of the type of

31 there's a place called The Knowes in this area

Apart from the fact that I have jumped the gun in one way, by spelling 'The' with capital letters (which is for me a matter of intuition), we can show that the 'The'

here is in fact part of the proper name by means of the following examples.

32a there's a place called The Knowes in this area
 b there's a place called Glasgow in this area
 c there's a river called (the) Tay in this area[3)]
33a it's the northern The Knowes I mean
 b it's the northern Glasgow I mean
 c it's the northern Tay I mean
34a there's a The Knowes in this area
 b there's a Glasgow in this area
 c there's a Tay in this area

where (32a,b,c) equal (34a,b,c) in meaning. Notice, however, that we do not have (35a) parallel to (35b,c):

35a *the The Knowes in this area is the one I mean
 b the Glasgow in this area is the one I mean
 c the Tay in this area is the one I mean[4)]

but instead

36 the Knowes in this area is the one I mean[5)]

However, the double definite article does appear to be possible in Dutch for at least some speakers, as in

37 dat was de De Poel in Vlaanderen
 that was the The Pool in Flanders

parallel to

38 dat was de Vlaamse De Poel
 that was the Flemish The Pool

This would suggest that the impossibility of (35a) has no connection with the validity of my argument but is rather due to some constraint in English on '...the the...' sequences[6)].

My fourth argument derives from the synonymy of the sentences:

39a	I like the r e d car	
b	it's the r e d car I like	CLEFT
c	the one I like is the r e d car	PSEUDO-CLEFT
d	the car I like is the r e d car	PSEUDO-CLEFT
e	what I like is the r e d car	PSEUDO-CLEFT

as against that of

40a	I like the red c a r	
b	it's the red c a r I like	CLEFT
c	the one I like is the red c a r	PSEUDO-CLEFT
d	the thing I like is the red c a r	PSEUDO-CLEFT
e	what I like is the red c a r	PSEUDO-CLEFT

Akmajian(1970) has argued for cleft sentences to be derived from pseudo-clefts like (39e) and (40e). These he wishes to dissociate from pseudo-clefts like (39c) or (40d) because he finds differences of meaning in some cases. Thus he claims that (41) has a

different meaning from (42).

41 the place where I found John was in the garden
42 where I found John was in the garden

He says that (41) means that 'a certain p l a c e is located in the garden' (op.cit. p.161), not 'that J o h n was located in a certain place'. I agree that (41) can have this meaning, but it also has the meaning of (42), i.e. it is ambiguous. Here, at any rate, we do not have any such problems, as none of these sentences ((39)-(40)) seem to be ambiguous.

Postal(1971) has suggested that sentences with constrastive stress like

43 C h a r l e y cut himself

are derived from sentences like

44 the one who cut himself was Charley

i.e. a pseudo-cleft sentence. Inasmuch as all these sentences (39) and all the sentences (40) are synonymous (the sentences of (39) specifying the car that is liked, and the sentences of (40) the thing that is liked) the pseudo-clefts (39c) or (39d) and (40d) respectively would seem to be reasonable sources for them. The relevance of all this is that we have

45a	I like L o n d o n	
b	it's L o n d o n I like	CLEFT
c	the place I like is L o n d o n	PSEUDO-CLEFT
d	what I like is L o n d o n	PSEUDO-CLEFT
e	*the thing I like is L o n d o n	PSEUDO-CLEFT
f	?the one I like is L o n d o n	PSEUDO-CLEFT

(45a-d), and (45f) if it is possible, are all synonymous (specifying the place that is liked) while (45e) is not possible as it implies that London is a thing. Assuming then that all the sentences of (39), (40) and (45) are derived from unreduced pseudo-cleft sentences, we still have the choice of deriving them from pseudo-clefts of the type of (39c), (40c), (45f) or from the type of (39d), (40d), (45c). The doubtful or non-occurrence of some of the former type cannot give us much clue as this might be due to context-sensitive conditions on a transformation deriving the second type from them. However I will show that whatever the direction of the relationship between the two types, it is necessary to assume the presence of the element p l a c e somewhere in the complement of all the sentences of (45). Thus if (39d) is the source of all the other sentences of (39), a condition of identity must exist between the two nouns in the sentence before we can derive (39b) from it. This is necessary to prevent

46 the plane I like is the green jet

being transformed into

47 it's the green jet I like

which has a different meaning (i.e. it=the jet I like is the green jet). If on the other hand, (39c) is the source of the other sentences, then (39d) will have to be derived by copying the complement-noun c a r onto the dummy element o n e deleting it in the process. Thus in either case there will need to be an element p l a c e in the complement of the sentence underlying the sentences of (45), either to satisfy an identity condition or else to provide the source of the element p l a c e copied onto the dummy element o n e . This need would, of course, be satisfied by our sug-

gestion that at a deeper level 'London' has the representation 'place called London'.

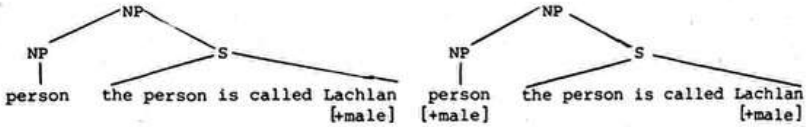
Having, I hope, given at least some strongly suggestive evidence for a deeper structure of proper names of the type of 'X that is called Y', it remains to state what additional transformations are required by our proposal. An early transformation, PROPER-LABELLING, is required to label any definite[7] NP in position Y as [+proper]. This simplifies later reference to proper names. We get at least the following types of name-construction:

48a place / village which is called Muthill
b place / village called Muthill
c place / village Muthill
d Muthill
e Muthill village

49a river which is called Tay
b river called Tay
c river Tay
d (the) Tay
e the Tay river

50a person / man who is called Lachlan
b person / man called Lachlan
c person / man Lachlan
d Lachlan
e *Lachlan man[8]

The occurrence of less general terms like v i l l a g e in the examples of (48) and m a n in those of (50) can be explained as the result of an assimilatory rule that attaches the features of Y to X[9]; thus



The reduction of the (a)-forms to the (b)-forms need not concern us as this will be carried out by the already existing transformation of RELATIVE CLAUSE REDUCTION. An optional transformation of CALLED DELETION is required to delete the element 'called' when it occurs before proper noun phrases. A transformation of DEFINITE ARTICLE DELETION is needed which will operate under the conditions specified by Sloat(1969) for the non-appearance of the definite article with proper names. A transformation of X-deletion is required to convert the (c)-forms into the (d)-forms. This will also operate in the environment before proper noun phrases. It has been pointed out to me that the flipping that has taken place in the (e)-forms can be explained if we assume that MODIFIER SHIFT optionally applies to the (c)-forms (H. van Riemsdijk, personal communication).

The criticism of Vendler's suggestion of this source 'X CALLED Y' for a sub-set of proper names by Florijn(1971,p.112) and Searle's(1969,p.170) undirected criticism

of such suggestions on the grounds that it leads to an infinite regress, i.e. their claim that to posit 'the river called the Thames' as the source (or meaning, respectively) of the 'the Thames', is to imply that a surface occurrence of 'the river called the Thames' would have to have the source (or meaning, respectively) 'the river called the river called the Thames' seems to me not to hold water. The source (or meaning) of both 'the Thames' and 'the river called the Thames' is identical, i.e. something close to the second. The difference lies in the fact that in one case an optional transformation (or rather several) has applied, and in the other not[10].

So, to conclude, I have firstly tried to demonstrate that proper names may have meaning, whether or not this meaning is apt, and further that all proper names have meaning in the sense that Searle(1969,p.167) admits that they have 'connotation'.I.e. they all have features associated with them which are a) of a semantic nature, and b) crucial for determining the possibilities of occurrence of the name-construction as a whole[11]. Secondly I have given a number of syntactic arguments, a) the 'synonymy argument' that eg. Coishavachan has the same meaning as the place called Coishavachan, b) the 'also argument' that the underlying structure of names is a sentence of a particular kind, c) the 'double article argument' suggesting the deletion of some originally intervening element, and d) the 'pseudo-cleft argument'. Thirdly and lastly, I have tentatively suggested some transformations whose existence is necessary to explain the various actually occurring proper name constructions.

Department of Linguistics
University of Amsterdam

Notes

1a I will not attempt here to provide a deeper analysis of the 'is called' relationship.
b Obviously [+city] is an oversimplification.
c Vendler(1967,p41,p.50) has suggested the same source but only for proper names with articles, whereas I will argue that it holds for all proper names.
2 This sentence becomes grammatical if *Fred* and *Mary* are given contrastive stress.
3 The presence of the article is more normal, but its absence is also possible.
4 I feel that the definite article with *Tay* here is not part of the proper name.
5 I have no definite instincts about which *the* appears here with *Knowes*.
6 Compare Gross(1967) for a rather similar constraint in French. Also Perlmutter (1971,p.34).
7 The corresponding structures with indefinite articles may be represented in such constructions as 'This is a carburettor'; this might derive from a structure 'This is a thing called a carburettor'. A proper name parallel to 'The Knowes' like 'A Den' is quite inconceivable, of course.
8 However such constructions are possible with deictic words:'that Smith man', 'that Glasgow place', 'that London dump', etc.
9 This must be a pre-lexical rule,since *person*[+male]must be replaced by *man* by a lexical rule.
10 Note that this is also of phonological relevance since the wood, 'the South Wood' has a different stress pattern from the town 'Southwood' and this must be forecast from these features.
11 The reaction of people who are aware of the existence of London to sentences like 'the place called London' that they are strange perhaps comes from the fact that we normally, as a stage in the interpretation of common proper names, perform the reverse of the transformations here: i.e. London=the place called London. Then if we actually hear 'the place called London' we create a structure 'the place called the place called London' which would account for the impression of strangeness.

THE CYCLE IN DUTCH: ITS RELEVANCE TO THE THEORY OF GRAMMAR

Arnold Evers
Mac Huybregts

A An A-B-A Type of Argument

Introduction

In this section we try to construct an order paradox, which will demonstrate that Dutch grammar contains cyclic transformations. E.g.

1 Jan werd gedwongen te protesteren.
  John was forced to protest.
2 Jan protesteerde gedwongen te worden.
  John protested against being forced.

In (1) the rules are applied in the order: Equi NP Deletion, Passive

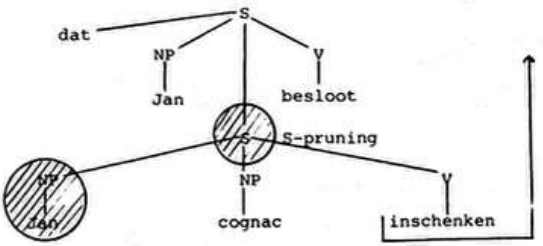
In (2) the rules are applied in the order: Passive, Equi NP Deletion

An important transformation of Dutch and German syntax is Predicate Raising. A sentence like (3) will show this:

3 Denk je dat Jan cognac besloot in te schenken?
  Think you that John cognac decided to pour?
  (=Do you think that John decided to pour cognac?)

The distribution in the surface string makes it obvious that the V-constituent of the sentential object is moved out of the embedded S into the matrix S:

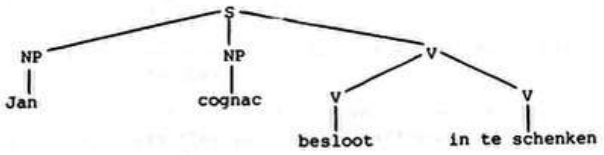
4



Equi NP Deletion Predicate Raising

Since there is no reason whatever to regard the remainder [cognac] as an S constituent, we may assume that Predicate Raising causes S-pruning. This yields surface structure (5):

5



We will prove that Equi NP Deletion, Predicate Raising and Reflexivization are cyclic transformations by means of three partial orderings:

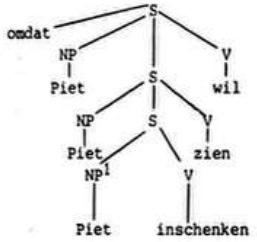
1	2	3
Equi NP Deletion	Predicate Raising	Reflexivization
Predicate Raising	Reflexivization	Equi NP Deletion

1 The order Equi NP Deletion/predicate Raising
Our examples to prove this order are:

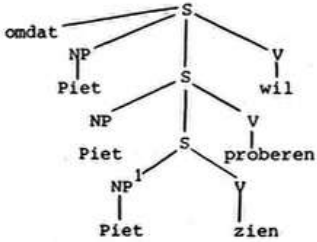
6 ...omdat Piet zichzelf wil zien inschenken
...because Piet wants to see himself pour
7 ...omdat Piet zichzelf wil proberen te zien
...because Piet wants to try to see himself

Corresponding deep structures are:

6a



7a

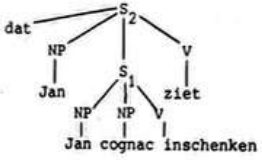


The application or non application of Equi NP Deletion depends on the governing verb. E.g. *zien* in (6a) blocks Equi NP Deletion of NP^1 whereas *proberen* in (7a) triggers Equi NP Deletion of NP^1. Since the notion of governing verb no longer makes sense if all verbs are swept together into one constituent, it is obvious that Equi NP Deletion must precede Predicate Raising.

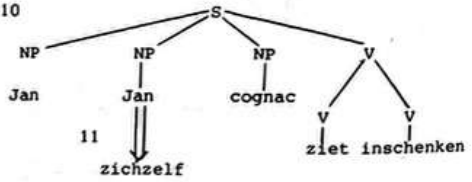
2 The order Predicate Raising/Reflexivization
Reflexivization is based on the identity of clausemates. Since Predicate Raising involves the pruning of an S-label, secondary clausemates must also be taken into account. Reflexivization appears to apply to these new clausemates, i.e. Reflexivization must apply after Predicate Raising. E.g.:

8 Denk je dat Jan zichzelf cognac zag inschenken?
Do you think that John saw himself pour cognac?

9



10



We suggest in these diagrams the derivation (9) ——Predicate Raising——→ (10) ——Reflexivization——→ (11)

3 The order Reflexivization/Equi NP Deletion
It would needlessly complicate the statement of Reflexivization if Equi NP Deletion

were to be applied first. In this case Reflexivization would follow from some controlling NP, not necessarily the subject of the matrix clause. E.g.:

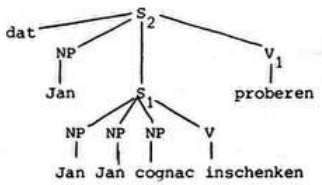
12 Wim beloofde / dwong Jan te proberen zichzelf te onderhouden.
Bill promised / forced John to try to support himself.

If Reflexivization precedes Equi NP Deletion, it is dependent upon identity of clausemates only.

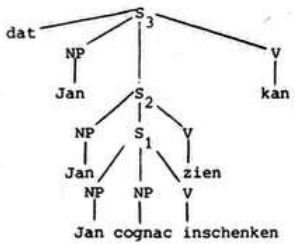
4 We may now demonstrate the order paradox (15) by means of (13) and (14):

13a Denk je dat Jan zichzelf cognac in probeert te schenken?
Do you think that John tries to pour cognac for himself?
14a Denk je dat Jan zichzelf cognac in kan zien schenken?
Do you think that John can see himself pour cognac?

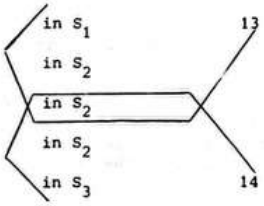
13b



14b



15 Reflexivization
Equi NP Deletion
Predicate Raising
Reflexivization
Equi NP Deletion



The cyclic character of these three transformations follows immediately from this paradox. If not applied cyclically, none of these rules could either precede or follow any of the others.

B The Cyclic Nature of Nuclear Stress

1 A cyclical pronominalization paradox
Assuming the existence of Predicate Raising, which in fact is a well-established rule of Dutch grammar, it is possible to construct the following ordering paradox:

A Predicate Raising precedes Reflexivization
B Predicate Raising follows Reflexivization

The former ordering simply follows from

1 Paul ziet zichzelf Cointreau drinken.
Paul sees himself drink Cointreau.

The structure underlying (1) could be roughly characterized in terms of labelled bracketing as

2 $[_{S_1}$ $Paul_1$ $[_{S_2}$ $Paul_2$ Cointreau drinkt $]_{S_2}$ ziet $]_{S_1}$ [1)]

Not until Predicate Raising has applied on the second cycle, i.e. in S_1, can S_2 be pruned. The pruning of the S_2 node results in $Paul_1$ and $Paul_2$ sharing all clause-memberships: this is a necessary condition for the applicability of Reflexivization on $Paul_2$ (of course, $Paul_1$ and $Paul_2$ are taken to be co-referential).

The second rule ordering can be inferred from a slightly more complex argument. In order to make this clear let us first turn to (3):

3 Paul leert Karel op zichzelf toasten.
Paul teaches Charles to toast to his own health.

Only if *Karel* and *zichzelf* are taken to be co-referential will (3) receive a natural interpretation. The grammaticality of (3) is uniquely explained in terms of the applicability of Reflexivization in the embedded sentence, cf.

4 $[_{S_1}$ Paul $Karel_j$ $[_{S_2}$ $Karel_j$ op $Karel_j$ toast $]_{S_2}$ leert $]_{S_1}$

After Reflexivization has applied on the first cycle, Equi NP Deletion and Predicate Raising will apply on the next cycle. Subsequently, a few less important transformations apply (e.g. Verb Placement) to yield (3) ultimately. So far so good. The obligatory non-coreferentiality of *Paul* and *zichzelf*, however, causes considerable trouble. Assuming the first rule ordering, which we have shown to be necessary in order to account for (1), there is no principled way to block Reflexivization on the second cycle of (5):

5 $[_{S_1}$ $Paul_1$ $Karel_i$ $[_{S_2}$ $Karel_i$ op $Paul_2$ toast $]_{S_2}$ leert $]_{S_1}$

On the first cycle, i.e. in S_2, nothing happens that is crucial to our argument; on the next cycle, e.i. in S_1, Equi NP Deletion and Predicate Raising apply. Consequently, the S_2 node will be pruned. Finally, Reflexivization applies since $Paul_1$ and $Paul_2$ have become clausemates due to S_2 pruning. The sentence ultimately derived will be ungrammatical (6):

6 **$Paul_j$ leert Karel op $zichzelf_j$ toasten.

It is only by requiring that Reflexivization precede Predicate Raising that the ill-formed sentence (6) can be blocked. Summarizing, it should be clear that we have constructed an ordering paradox that can not be solved in terms of a cyclical principle of rule application since Predicate Raising must both follow and precede Reflexivization within the same cycle. This result causes serious troubles to any theory of grammar aiming at a principled explanation of the empirical data (1), (3), and (6) in terms of the combinatory power of Predicate Raising and Reflexivization. Both of these cyclical transformations seem to be well motivated in transformational studies of Dutch. It will turn out in section 3 that the solution to this cyclical ordering paradox consists in abandoning all transformational rules of pronominalization. That it is in fact necessary to do so, will become clear from the kind of evidence that stress behaviour in complex sentences brings to bear on the choice between competing theories.

2 Stress

2.1 Word stress and nuclear stress

The phonological component of Dutch contains stress rules that apply cyclically: within the phonological cycle of Dutch grammar there are at least two rules that are relevant to our argument, viz. the Word Stress Rule (WSR) and the Nuclear Stress Rule (NSR). WSR accounts for the placement of stress within words, NSR accounts for the assignment of stress to larger constituents. Within the phonological cycle NSR follows WSR. WSR applies cyclically within words and NSR does so beyond the level of the word. In order to account for stress placement for lexixal items of Dutch we can formulate WSR in the following way:[2)]

7 $$[+\text{syll}] \longrightarrow [1\ \text{stress}] \Big/ \text{——} \; C_o^n\left(\left(\begin{matrix}[+\text{syll}]\\[-\text{tense}]\end{matrix}\right) C_o^1 \begin{matrix}[+\text{syll}]\\[-\text{tense}]\end{matrix} C_o^1\right)\Big]$$

This rule is an abbreviation of a sequence of three rules that are disjunctively ordered with respect to each other. Together with a less important rule that reduces non-primary stresses within words, (7) assigns stress to lexical items such as:

synópsis, labyrínt, márathon, mónnik, univérsum, effékt, víes, enórmiteit, ideálist, prédikánt, ángstig, modérnisme, móslim.

In phonological strings beyond the level of the word, NSR assigns primary stress to the rightmost primary-stressed vowel immediately preceding the verb if it has at least one more primary-stressed vowel to its left in the string under consideration at that point in the cycle; in all other cases the verb receives primary stress. All this can be inferred in a straightforward way from data like the following:

8 Pieter gelooft dat Gijsbrecht een likéurtje drinkt.
Peter believes that Gilbert drinks liqueur.

9 Pieter gelooft dat Gijsbrecht het drínkt.
Peter believes that Gilbert drinks it.

10 Pieter gelooft dat Gijsbrecht drínkt.
Peter believes that Gilbert drinks.

To explain the stress distribution in (8)-(10) we propose the following simplified compact statement of NSR:[3)]

11 $$[+\text{syll}] \longrightarrow [1\ \text{stress}] \Big/ X \begin{matrix}[+\text{syll}]\\[1\ \text{stress}]\end{matrix} Y \left[\begin{matrix}\text{———}\\[1\ \text{stress}]\end{matrix}\right] Z\ (V)\Big]$$

condition: Z does not contain [1 stress]

Once again, NSR (11) is a rule scheme comprising two disjunctively ordered rules. Whenever (7) and (11) apply to assign primary stress to a certain vowel it will be the case that all other stresses in the string under consideration are reduced by one degree by virtue of a general convention. As stated above, NSR must be ordered after WSR in the cycle since sentence stress is dependent on lexical information and syntactic constituent structure. In this way, the phonological cycle simply gives formal expression of the fact that the stress distribution in complex forms is a compositional function of the stresses of the constituent parts and their syntactic relations.

2.2 The interaction of syntactic transformations and nuclear stress

It is a fact crying out for explanation that the stress patterns of simple Dutch sentences are reflected in the stress patterns of syntactically more complex structures that contain these kernel sentences as embedded constituent structures:

12 Pieter gelooft dat Gijsbrecht likeur probeert te leren drinken.
Peter believes that Gilbert tries to learn to drink liqueur.

13 Pieter gelooft dat Gijsbrecht probeert likeur te leren drinken.
Peter believes that Gilbert tries to learn to drink liqueur.

14 Pieter gelooft dat Gijsbrecht probeert te leren likeur te drinken.
Peter believes that Gilbert tries to learn to drink liqueur.

15 Pieter gelooft dat Gijsbrecht (het) probeert te leren drinken.
Peter believes that Gilbert tries to learn to drink (it)

16 Pieter gelooft dat Gijsbrecht probeert (het) te leren drinken.
Peter believes that Gilbert tries to learn to drink (it).

17 Pieter gelooft dat Gijsbrecht probeert te leren (het) te drinken.
Peter believes that Gilbert tries to learn to drink (it).

It can be easily demonstrated that NSR can not apply at surface structure level although on the basis of the above sentences one could be inclined to conclude that the V of the Nuclear Stress Rule (11) should be read A-over-A, and that consequently the correct results would obtain from the application of NSR (11) at the level of surface structure (as has been generally assumed so far)[4]. We will use (18) and (19) to prove the claim that the linguistically most significant formulation of NSR implies that NSR must apply in the transformational cycle:

18 Pieter gelooft dat Gijsbrecht likeur leert drinken.
Peter believes that Gilbert learns to drink liqueur.

19 Pieter gelooft dat Gijsbrecht Magdalena leert drinken.
Peter believes that Gilbert teaches Maud to drink.

These sentences have identical derived structures, but their stress contours are sharply distinct: they illustrate clearly enough that NSR not just assigns primary stress to a rightmost NP immediately preceding the most inclusive V constituent, but carefully selects the primary stress of the rightmost NP immediately preceding the verb a t d e e p s t r u c t u r e l e v e l . However, this sort of syntactic information is no longer present at the level of intermediately derived or surface structure. Consequently, not only do sentences like (18) and (19) prove conclusively that NSR must be ordered within the transformational cycle, but, more importantly, that NSR must be ordered before Predicate Raising. The crucial sentence will settle this point beyond any reasonable doubt; it has different interpretations according to the different stress patterns that go with it:

20 (Pieter gelooft) dat Gijsbrecht Benedictine probeert te leren drinken.
(Peter believes)that Gilbert tries to learn to drink Benedictine.
(Peter believes)that Gilbert tries to teach Benedicta to drink.

Sentence (20) is two way ambiguous depending on which constituent has been assigned primary stress:

i if the nuclear stress is on *drinken*, the meaning of (20) can be paraphrased roughly as 'Peter believes that Gilbert tries to teach Benedicta how to drink'.
ii if the nuclear stress is on *Benedictine*, however, (20) is paraphraseable as 'Peter believes that Gilbert tries to learn how to drink Benedictine'.

If NSR is ordered before Predicate Raising within the transformatonal cycle, cyclical application of (11) will correctly assign stress contours 2 3 2 3 1 and 2 1 2 3 4

to (20), depending on its interpretation (i.e. its underlying structure):

dat Gijsbrecht Benedictine probeert te leren drinken.

$[_S$Gijsbrecht $[_S$Gijsbrecht Benedictine $[_S$Benedictine drinkt$]_S$leert$]_S$probeert$]_S$

1	1	1	1	1	1	1	WSR
			2	1			NSR, case (ii)
			ø				Equi NP Del.
	2	2		1	2		NSR, case (i)
			$[_V$leert drinken$]_V$				Pred. R.
	ø						Equi NP Del.
2		3		3	1	2	NSR, case (i)
			$[_V$probeert $[_V$te leren drinken$]_V]_V$				Pred. R.

...Gijsbrecht Benedictine probeert te leren drinken.

Gijsbrecht probeert Benedictine te leren drinken. (last-cyclic Verb Placement in root sentences).

dat Gijsbrecht Benedictine probeert te leren drinken.

$[_s$Gijsbrecht $[_S$Gijsbrecht $[_S$Gijsbrecht Benedictine drinkt$]_S$leert$]_S$probeert$]_S$

1	1	1	1	1	1	1	WSR
		2	1	2			NSR, case (i)
		ø					Equi NP Del.
	2		1	3	2		NSR, case (i)
			$[_V$leert drinken$]_V$				Pred. R.
	ø						Equi NP Del.
2			1	3	4	2	NSR, case (i)
			$[_V$probeert $[_V$te leren drinken$]_V]_V$				Pred. R.

...Gijsbrecht Benedictine probeert te leren drinken.

Gijsbrecht probeert Benedictine te leren drinken. (last-cyclic Verb Placement in root sentences).

3 Implications

The data discussed above and the conclusions derived from them are highly interesting

in a number of ways. In this section some of the most outstanding implications for the theory of grammar will be summarized:

a The Generative Semantics Hypothesis is refuted. This simply follows from rule ordering: Generative Semantics exists by virtue of post-transformatical lexical insertion. More specifically, lexical material need not, or even more crucially can not, be inserted into tree structures until some node collecting transformations like Predicate Raising have applied to create new constituents that are to be lexicalized later on in the derivation. However, we have seen that according to the Phonological Cycle NSR follows WSR (since it must be capable of referring to lexical material), and consequently is applicable only after lexical insertion processes. But this contradicts the previously established rule ordering Equi NP Deletion ⟶ NSR ⟶ Predicate Raising, which is necessary on independent grounds.

b Nuclear stress partly depends on previously assigned word stress in agreement with the phonological cycle, and thus refers to lexical material. This means, however, that pronouns must be inserted into deep structure for otherwise it will be impossible to account for the systematic difference that exists between (12), (13), and (14) on the one side and (15), (16), and (17) on the other side in a non-ad hoc way.

c If pronouns are inserted at deep structure level already, it will be a necessary corollary to (b) that interpretive rules must be formulated to account for obligatory and optional co-reference assignments. The cyclical ordering paradox will be solved only if we let these interpretive rules apply cyclically[5]: the semantic rule of reflexive interpretation will then be ordered after Predicate Raising in the cycle. We have shown then that stress rules demand that pronouns be present at deep structure level, and that they a fortiori require the postulation of interpretive rules applicable to derived structures. The reflexivization paradox of section 1 lends independent support to this conclusion.

d Conversely, since the stress contours of the deepmost embedded structures are persistent throughout syntactic derivations, the stress distributions of surface structures may very well pave the way to a better approximation of challenging and long-standing problems of syntax such as the order of deep structure constituents (i.e. VSO, SVO, or SOV), the underlying representation of passive structures and *schijnen*-sentences, etc.

Department of Linguistics
University of Utrecht

Notes

1 It is assumed in this paper that Dutch has underlying SOV order. Nothing that is crucial to our argument hinges on this assumption.

2 Notice that (7) looks very much like Chomsky and Halle's main stress rule of English(cf. Chomsky & Halle(1968),p.83,(53), for example); WSR (7) gives formal expression of the fact that stress placement within words is governed by a weak cluster principle. Stress placement in lexical items such as *lexikon*, *radio*, *aroma*, *veranda*, *diabolo*, etc. will be accounted for by the joint operation of the Word Stress Rule and a Tensing Rule. However, it would be beyond the scope of this paper to discuss the details of stress assignment to these items.

3 Notice that this statement of NSR presupposes verb final position at the point of the derivation where it is applicable (V in (11) denotes the verb). It is argued in section 2.2 that NSR is included in the transformational cycle. Since Verb Placement is a last-cyclical rule, (11) correctly predicts the following contrasts:

x Pieter denkt dat Gijsbrecht bier drinkt.
Peter thinks that Gilbert drinks beer.

x' Gijsbrecht drinkt bier.
Gilbert drinks beer.

y Pieter denkt dat Gijsbrecht het opdrinkt.
Peter thinks that Gilbert drinks it up.

y' Gijsbrecht drinkt het op.
Gilbert drinks it up.

If Dutch turns out to be SVO, (11) can be simplified by deleting the contextual substring enclosed within parentheses from the formulation of NSR; an underlying VSO order, however, is not compatible with the linguistically most significant formulation of nuclear stress. Finally, it will be clear that (11) in its present form is unduly simplified since it can not account for sentences like *hij doet het* (he does it). However, not to complicate things further, we will let the matter rest.

4 Cf. Bresnan(1971) for a similar argument to the effect that NSR should be included in the transformational cycle of English. However, her argument crucially hinges on Question Formation and Relativization being cyclical rules: a position for which she offers an A-B-A type of argument that would seem to be questionable.

5 See Jackendoff(1969, chapters II and III) for an interpretive theory of pronouns and reflexives.

ON THE ARTICLE*

F. Ch. van Gestel

Previous to the publication of Perlmutter's article 'On the Article in English', there were two main proposals in transformational generative grammar to account for the presence or absence of articles in sentences. The first one involves rewriting rules that produce an article constituent. Depending on the N involved - in languages which show gender differences in determiner words - one of the article formatives is attached under this label. In Dutch either the form *de* or *het* is used in singular definite NP's depending on the non-neuter or neuter character of N, and only *de* when the NP is plural (*the* in all three cases in English); in indefinite NP's *een* appears in the case of singular countable nouns, where English uses *a* or *an*; all other indefinite NP's have no overt article in Dutch; in most publications this is regarded as an article without phonological representation. Apart from this proposal, which is with some variations the view expressed in Chomsky(1965), Postal(1969) suggested another way of accounting for articles. He proposed to represent the article on the level of deep structure by a cluster of features, connected with the other characteristics of the kernel N in a NP. At a late stage of the derivational process such a cluster of features is to be separated from the matrix by a segmentalization rule and subsequently 'spelled' as one of the article forms. In spite of the differences in derivational history these two analyses have in common that articles are already present in the underlying structure as distinct elements. Moreover, in this conception, the definite and the indefinite articles have the same status. In opposition to the two points of view sketched above, Perlmutter proposes a fundamentally different description: the article is reduced to a property of surface structures. Only on this level does he accept the equivalence of the definite and the indefinite articles. The most remarkable characteristic of his analysis is that in his opinion the deep structure representation of the indefinite article is identical with the numeral *one*(in the Dutch examples referred to hereafter as *één* ([ein])). The justification for this proposal is found in the obvious agreement in distribution of the numeral *one* (*één*) and the indefinite article *a/an*(in the Dutch examples *een*([ən])). Perlmutter presents ample evidence. The following sentences may serve as indicational examples.

		English	Dutch
1	i	five seventh	vijf zevende
	ii	one seventh	één zevende
	iii	a seventh	een zevende
2	i	*three blood	*drie bloed
	ii	*one blood	*één bloed
	iii	*a blood	*een bloed

On the basis of these and other observations, which show that *a*(*een*) is found where a numeral can appear and is impossible in those cases in which a numeral cannot be used,we can state a generalizing simplification, because now it is no longer necessary to describe the characteristics of the article in the base of the grammar.

The examples (1)ii and iii illustrate that the (surface) difference between *one*(*één*) and *a/an* (*een*) is due to accentuation. Perlmutter in fact assumes a rule which obligatory changes *one* to *an* or *a* (before consonants) in the phonological component of the grammar, when *one* is unstressed. The change referred to does not appear to be possible in Dutch in all cases, however[1]. The phonological aspect of this question is left out of consideration here. Perlmutter proposes another change, which is hardly less notable: the way in which the definite article is introduced. He does not regard definiteness as a property of deep structures, but takes it to be the result of the transformational

process of definitization. In the examples he mentions, however, (compare (3) below) definitization cannot be regarded as the substitution of the indefinite numeral/article by the definite article. On the contrary, the rule introduces *the* immediately on the left of the indefinite element. It is not at all clear how the definite article is introduced here and how it is hierarchically related to the NP concerned. From his remarkts about the antecedents of relative clauses, however, I conclude that Perlmutter suggests an addition rule. In the previous section distributive phenomena seemed to justify the conclusion that numerals and the indefinite article are to be put on a level. The following examples seem to contradict this.

3 i Marcel heeft de drie boeken gekocht.
Marcel bought the three books.
ii *Marcel heeft het een boek gekocht.[2)]
Marcel bought the one book.
iii *Marcel heeft het een boek gekocht.
Marcel bought the a book.

The procedure placing the definite article in front of the numeral in the case of definitization, gives a grammatical result in (3)i, but causes unexpected complications in (3)ii and (3)iii: both *één* and *een* cause ungrammaticality. This certainly emphasizes their equivalence once again, but it suggests at the same time the existence of a rule which deletes *één/one* or *een/an/a* when a definite element is present on the left, in the derivational structure of the NP involved. Such a rule, which has to cancel the undesirable result of the proposed way of definitization, is an ad hoc solution, but I accept it for the moment.

1 The definite article.
I generally agree with Perlmutter's view on the article. The following remarks are meant as additions, for in my opinion he does not touch upon some interesting problems. One such problem is that he discusses the indefinite article in detail, but does not answer the question as to the origin of the definite one. I do not want to pay all that much attention to the definite article in this paper, but I cannot disregard it altogether. I assume the definite article to be related to the demonstrative pronoun, which is not a historical linguistic remark, but refers to its grammatical derivation. One consideration in favour of this line of thought is that the phenomena illustrated by sentences (3) remain the same when *de* is replaced by *die*[3)]. Independent evidence for the agreement in distribution of the demonstrative and the definite article in Dutch is also formed by the fact that in both cases the form to be chosen depends on the gender of the following singular noun, while this is not the case when the noun is plural:

4 i het/dat bruine paard
the/that brown horse
ii de/die lange tafel
the/that long table
5 i de/die bruine paarden
the/those brown horses
ii de/die lange tafels
the/those long tables

I propose to account for the appearance of the definite article not by introducing *de* or *het* transformationally, but by introducing the corresponding demonstrative pronoun instead. No other provisions will be necessary to settle for the definite article, except for a, presumably phonological, reduction rule of the type assumed by Perlmutter for weakening *one(één)* to *an/a(een)*. This addition to Perlmutter's proposal seems to imply a generalization: not only is the definite article also reduced to a phenomenon in the phonetic representation of sentences, but at the same time we achieve the result that the distinction between the definite and the indefinite article can be traced back to the difference between the numeral *one(één)* and the two demonstrative pronouns mentioned. It follows that in this description definitization will have to be

formulated as a kind of pronominalization. By making some demonstrative pronouns underly the definite article, its appearance comes to depend on the same conditions as those which hold for the introduction of these pronouns. Although many questions about pronominalization still remain to be answered, the process at any rate takes place when the second of two NP's with referential identity is not repeated, but is replaced by a pronoun. The possibility of replacement depends on information provided by the situation or the context, in the latter case within as well as beyond the boundaries of the sentence concerned. That we should think of a procedure of replacement is obvious, when we look at the occurrence of third person personal pronouns and demonstrative pronouns without a following noun: they may be regarded as substitutes for NP's. There is a problem, however, when we try to determine which NP of the underlying structure has to be replaced when an attributive demonstrative - or the article derived from it - turns up in surface structure. I shall subsequently try to make clear that a description of the structure of NP's in which such an underlying NP can be accounted for, is possible.

2 Two problems.

The two remarks to be made now are more fundamental. In the first place I would like to point out that Perlmutter has not restricted his analysis to the indefinite article and to some phenomena concerning the definite one; he also mentions so-called generic sentences in a very extensive footnote and suggests that there is reason to believe that in sentences of the type

6 i Een paard eet graag hooi.
A horse likes to eat hay.

a special role is played by *any* and *one*. However, it seems very difficult to indicate any kind of solution for the types

6 ii Paarden zijn viervoeters.
Horses are quadrupeds.
iii Het paard dreigt uit te sterven.
The horse threatens to die out.

One might now ask whether these difficulties do not indicate that we must look for another kind of specification of the noun, by means of which all kinds of use, including generic sentences, may be accounted for. In the second place I should like to know what we are talking about when we speak about indefiniteness. Perlmutter concludes that the so-called indefinite article *an/a* (*een*) is apparently no special indicator of indefiniteness: he observes, completely correctly in my opinion, that, for instance, *one mouse* and *twelve mice* are alike in indefiniteness; perhaps there is something more to say about this.

3 Indefiniteness

3.1 Among the numerals an exceptional case is formed by *one/één*, as is indicated by the sentences (3). Let us try to trace what is so peculiar about the function of this single numeral, when it does not represent indefiniteness. I assert that *één* - and consequently *een* also - functions as 'singularizator', which is restricted to nouns that also appear in the plural[4]. The singular of such nouns appears only after *één/een*: in all other cases, viz. after all other numerals, including zero, or even when no number is mentioned, the form of the noun is plural. A new question immediately arises now: is the singular number not marked well enough by the singular form of the noun? As far as nouns of this type are concerned, the conclusion must be that this is indeed not the case, that is to say, in languages like Dutch. When we compare the plural type noun to nouns like *haat(hate)* and *zilver (silver)*, which we generally characterize as non-countable and in combination with which the determiner *een* cannot be used, it seems to be necessary to consider the singularizator *een* with countable nouns as an extra indicator of the singular. One could even wonder whether the term singular,

in the strictest sense of the word, is appropriate for nouns such as *haat* and *zilver*, as they are never combined with any singularizator. In my opinion a possible consequence of this line of thought is, that the plural is to be considered a more fundamental characteristic of countable nouns, becuase a special process of singularization is needed to produce singular NP's. Consequently I propose the following grammatical derivation: *een muis* (*a mouse*) is derived with *een* from a basis element *muis* that is specified - semantically at any rate - as something plural. This suggestion does not imply that a lexical element thus specified must be plural in its underlying lexical form. We are accustomed to a lexical representation of nouns in which, semantically too, singular is the central notion: terms such as countable and non-countable point in that direction(from my point of view these two words could not be used any more). This preference for singular can be explained by the fact that in some way, very much taken for granted, the plural f o r m can be derived from the singular underlying lexical form by affixation in an apparently very natural way. As far as the form is concerned, I think it is acceptable to do so, but there is no general or particular reason why morphological considerations would have to turn the balance. I shall present some evidence below suggesting that we are right in choosing a 'plural content' as a starting-point for the lexical representation of the kind of nouns which show a singular as well as a plural form.

3.2 So far we have not touched upon the question of whether our observation concerning the so-called countable nouns is in any way relevant for a description of those nouns of which no plural form occurs and which are consequently never accompanied by the numeral *één* or the article *een*[5]. It is known that there is some relationship between plurals such as *knikkers* (*marbles*) and *boeken* (*books*) on the one hand, and 'singular' forms such as *angst* (*fright*) and *vuter*(*water*) on the other. I see no evidence for the supposition that these two phenomena are essentially the same. To illustrate this assumption I mention the following examples:

7 i een partij tabak
a parcel o f tobacco
ii een partij asbakken
a parcel o f ashtrays
8 Bob handelt in tabak en asbakken.
Bob deals in tobacco and ashtrays.

The possibilities of syntactic use of *tabak* and *asbakken* are, as (7)-(8) show, very much the same; This kind of singular and the plural can both be used as the second noun in the (Dutch) combination noun-plus-noun, whereas English uses an *of*-formula; both can very easily be coordinated, which emphasizes their equivalence, and in the last place they correspond completely in both having an article which is phonologically zero, when indefinite.

3.3 In linguistic publications, whatever their historical background, one is regularly confronted with paraphrases and semantic descriptions which can be interpreted in such a way that the nouns concerned have the function of - let us put it informally - the 'names of sets' of things[6], more or less used as the logical notion[7]. The grammatical account of so-called countable nouns corresponds to the notion 'set' in a natural way. I propose to describe this type of nouns in the lexicon as follows: the (underlying) phonological form is the singular form, not only because of the predictable affixation of the plural suffix, but particularly because of the essential point that this singular form is the name of o n e set of elements, seen as a totality. The property described until now as [+Count] will now be expressed in the right way by the feature [+indiv. set], which means 'set of individual elements, each of which has the same properties'. The '+' of this new feature indicates the most essential difference with the non-countable types of noun, mass terms and abstract terms. In my opinion, these can be characterized with [-indiv. set]. Perhaps it does not seem very plausible to use the notion 'set' as a characteristic for *zilver*, *water*, *angst*. Being

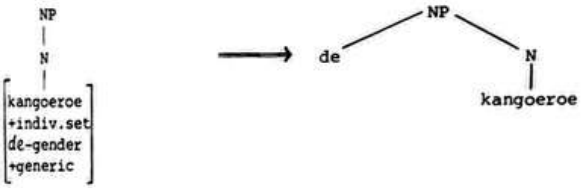
a set is a matter of convention, however. In other words: we are used to the idea that *stoel* (*chair*) refers to a lot of separate objects. The only difference with the 'set' w a t e r is that the quantities of which it can be thought to consist, are not distinguished in advance, but may be isolated in a more arbitrary way.

4 Generic sentences.
Now consider the subject-NP's in the following sentences:

9 i De kangoeroe dreigt uit te sterven.
The kangaroo threatens to die out.
ii (Het) ijzer is een element van de achtste groep in het periodiek systeem.
(The) iron is an element of the eighth group in the periodical (chemical) system.

The sentences (9) are general truths with regard to the unique phenomena *kangoeroe* and *ijzer*. These statements are appropriate only for the species, the genus, the sort as a whole. In Dutch grammar the term 'soortnaam' ('name of the sort') is justifiably used for the nouns in this kind of NP's[8]. The basic form as meant above in section 3.3 shows up in the most pure way in (9)ii. It is not even necessary to use the article (*het* in this case) to maintain the general character of the sentence, but it is impossible to leave it out in (9)i. I would like to call attention to the fact that in the case of (9)i where a [+indiv. set] noun is used, it is impossible to have a plural if it is to be interpreted as a general truth. More important, the article used cannot be characterized as definite, because it cannot be replaced by the demonstrative pronoun to which it would be related. In accordance with the 'genus'-indicating character of this kind of NP's, I reserved the qualification 'generic' ('generiek' in Dutch) for this article, to differentiate it from the use of the article that is called 'categorial' (see section 5)[10]. Without any further comment I now suggest that this generic article is created by some kind of segmentalization rule, the scheme of which is given in (10):

10



The last feature may be attributed on the basis of the character of the predicate.

5 Categorial NP's
I will now give examples of statements about a l l members of a set at the same time - and not about the set as a whole -:

11 i Paarden zijn viervoeters.
Horses are quadrupeds.
ii Een paard is een viervoeter.
A horse is a quadruped.

For the sake of comparison I also mention the possible generic variant:

11 iii Het paard is een viervoeter.
The horse is a quadruped.

This seems to contradict my previous statement that a sentence like (11)iii has no indefinite counterpart, other things being equal. My opinion still is that the distinc-

tion between generic and categorial is correct, as is indicated by

12 i *Paarden zijn een van de viervoeters.
Horses are one of the quadrupeds.
ii *Een paard is een van de viervoeters.
A horse is one of the quadrupeds.
iii Het paard is een van de viervoeters.
The horse is one of the quadrupeds.

The grammaticality of (12)iii is explained by the fact that the predicate used in all three sentences can only be used correctly in combination with a generic NP as subject, not with categorial ones. The same difference appears when we look at *if ... then* descriptions like (13):

13 i Als iets een paard is, dan is het ook een viervoeter.
If something is a horse, then it is a quadruped too.
ii Als ietsen paarden zijn, dan zijn het ook viervoeters.
If things are horses, then they are quadrupeds too.
iii *Als iets het paard is, dan is het ook een viervoeter.
If something is the horse, then it is a quadruped too.

We can say that categorial statements function as implications, but generic statements do not[11]. I can only speculate about the underlying structure of categorial statements although I should like to suggest that further investigation will profit from an exploration of implicational structures. It is after all mysterious why there are two ways of expressing categorial assertions, or is there any difference in meaning between the singular and plural sentences (11)i and (11)ii? I wish to draw attention to the fact that in such implicational paraphrases as (13)i and (13)ii the predicate noun in both the *if*- and the *then*-sentences takes an indefinite article; the definite article would make these sentences ungrammatical. Perhaps this explains why the indefinite article is also used in categorial NP's. It may be the case, as Perlmutter suggests, that *any* plays a role and it is also possible that *all* has a function in the analysis of this type of sentences, at least in the plural sentence (11)i, where *alle* (*all*) might have been the first word of the sentence. In Dutch *al de* might have been used instead of *alle*. The last form is in my opinion a fusion of the two elements of the first one, and not a kind of declination. Whatever an analysis of categorial statements will look like, it is clear that, given a lexical representation of nouns as the names of sets of things, and taking into consideration that categories can be described as sets as well, the proposal I formulated is not opposed to the character of these statements.

6 Quantity.
On the basis of my supposition - I assume the existence of two distinct kinds of sets - it is clear why in

14 i Marian heeft gisteren boeken besteld.
Marian ordered books yesterday.

it is quite natural to add a numeral, say *two*, in order to mention two individual members, which cannot be identified, from the set which is labelled with the name *boek* (*book*) in (14)[12]. In

15 Karel heeft gisteren tabak gekocht.
Charles bought tobacco yesterday.

such an addition is impossible, if the meaning of the sentence is not to be changed.[13] Nevertheless, both in (14) and (15) the speaker is talking about elements and parts of the set *boek* and the set *tabak* respectively, in spite of the lack of observable indications in these surface structure forms. Following tradition I shall speak of a par.

titive relation. In order to set up a more or less informal description of such a relation - in which I leave out of consideration the problems connected with so-called abstract nouns - I shall make use of a semantic-syntactic element QUANTITY. I am not very sure about the theoretical status of such elements; but the interpretation of the sentences (14) and (15) is completely parallel with

16 Marian heeft gisteren een hoeveelheid/hoeveelheden boeken besteld.
Marian ordered a quantity/quantities of books yesterday.

17 Karel heeft gisteren een hoeveelheid/hoeveelheden tabak gekocht.
Charles bought a quantity/quantities of tobacco yesterday.

Here I see at least an important indication in favour of such an underlying structure element. I am supported by Klooster(1972), who also operates with the element 'quantity', although he does not connect an abstract constituent of that name with the representation of articles. It is relevant here to note that he also points at a partitive relation in a global way. I shall now present some sentences which show the partitive relation. Note that in English the use of *of* is not the same as the use of *van* in Dutch:

18i Jan at kaas.
John ate cheese.

ii Jan at een stuk kaas.
John ate a piece of cheese.

iii Jan at van de kaas.
John ate of the cheese.

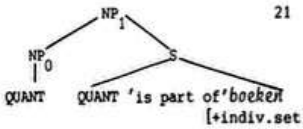
19i Jan bracht boeken mee.
John brought books with him.

ii Jan bracht een stapel boeken mee.
John brought a pile of books with him.

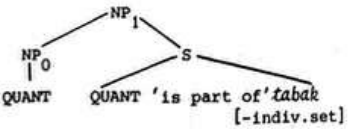
iii Jan bracht een (twee, etc.) van de boeken mee.
John brought one (two, etc.) of the books with him.

In Dutch the only case in which partitivity is expressed in surface structure (by *van*) is in the expression of the relation of some indication of quantity and one or more members ((19)iii) or an undetermined part ((18)iii) of a set which is determined in some way, as is shown by the definite article. As far as I can see, there seems to be no reason why we should not suppose a partitive relation in the i- and ii-sentences of (18) and (19). The English examples with *of* support this solution. I represent the structures of indefinite NP's such as *boeken* and *tabak* in the following diagrams:

20



21



(Note that 'is part of' is a rather arbitrary concrete form for what is perhaps a single abstract predicate). In the preceding pages (sections 3.2 and 3.3) I have stressed the fact that a plural form without an article like *boeken* and a singular form without an article like *tabak* are essentially the same. This holds for the indefinite function as well as for the representation of categoriality. This equivalence is clearly expressed in the indefinite structure of (20) and (21) by the corresponding construction of the NP's with subscript 1. We now have to determine why the indefinite NP's of our examples show no phonologically represented article in the corresponding surface structures. Supposing that a deletion rule can be formulated, by which QUANT and 'is part of' are removed from the relative clause to produce a correct derivational structure, I propose to account for the absence of the article constituent in these cases by the dele-

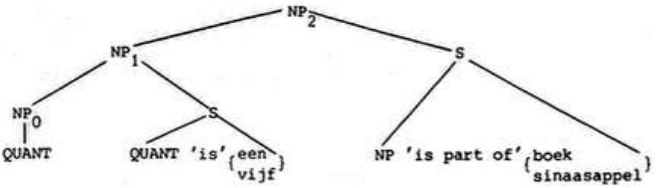
tion of NP_0 as mentioned in (20) and (21). In (20) the plural suffix *-en* now must be affixed to *boek* on the basis of [+indiv.set], this last operation being the only difference between the surface structures of (20) and (21).

7 Numerals as predicative adjectives.
With some modification the representation proposed also applies to

22 i Hij kocht één/een boek.
He bought one/a book.
ii Hij kocht vijf sinaasappels.
He bought five oranges.

This time I account for the structure of the direct object NP's in the following way:

23



The way in which the modification mentioned above is realized in diagram (23) implies that I join - unintentionally - in the discussion on 'quantifiers'[14]. I do not want to discuss this topic here, but I do want to give the following comment as some explanation for the view expressed in (23). One of the two most important points of view concerning quantifiers is, that in the deep structure of, for instance,

24 i seven chairs

a proposition is to be assumed like

24 ii chairs are seven

in which the numeral is regarded as an adjective. The other point of view is rather close to what I should like to defend, but differs from it especially by the representation of numerals as nouns. In my opinion numerals are to be considered as adjectival predicates, as (23) shows; but not as predicates immediately connected with the 'head' noun of the NP (cf.(24)ii)), but as a specification of the structure element QUANT. This means that in the case of (24)i the numeral *seven* has an attributive link with *chairs* only on the surface. In the description I propose here, numerals already 'precede' nouns in deep structure as a specification of the general numeral element QUANT. If we maintain in the meantime that real adjectives are derived from embedded relative clauses, the proposal for numerals may explain why attributive adjectives are found between the numeral or article and the noun in surface structures. Perhaps superfluously, I call attention to the fact that my proposal implies that the numerals in

25 i Jan bracht een van de boeken mee.
John brought one of the books with him.
ii Jan bracht twee van de boeken mee.
John brought two of the books with him.

are not reductions of

26 i Jan bracht één boek van de boeken mee.
John brought one book of the books with him.

ii Jan bracht twee boeken van de boeken mee.
John brought two books of the books with him.

In my opinion there can never be two occurrences of *boek* in the deep structure of the sentences (25). From the viewpoint of selectional restrictions I see no semantic justification for considering all members of the infinite string of numbers as as many possible properties of such things as *chairs*: it is not a property of all objects which can be counted that there can be, for instance, ninety three of them. It appears to me that it is more natural and semantically more adequate to connect the specification of number with the quantity term. The only characteristic of a noun that, in the frame of my description, influences the introduction of a numeral in the underlying structure, is the feature [indiv.set], which must be positively marked to permit numerals in the deepest relative clause, say of (23). The rest of the feature content of the noun concerned is not relevant for the lexical selection and insertion of the numeral. I did not investigate whether the relative clause mentioned is restrictive or can perhaps be interpreted both ways. In the second case there are two different sources for the numeral, on a par with the derivation of the two kinds of relative clauses. The following examples indicate that I am right in supposing (in (23)) an underlying S of the form 'QUANT is vijf':

27 i een hoeveelheid van zeven stoelen
a quantity of seven chairs
ii een aantal van drieëntwintig rozen
a number of twenty three roses
iii een verzameling van vierhonderd postzegels
a collection of four hundred stamps

In these constructions I distinguish two parts; the first part consists, for instance in the second case, of *een aantal van drieëntwintig*. The *van* (*of*) in this structure, which does not have a partitive character, is transformationally introduced when the nominalization rule is applied to the underlying structure of (27)ii 'QUANT is drieëntwintig. A similar rule is supposed to operate in the course of the derivation of

28 i the washing of the dishes
ii the leaving of the guests

To obtain the result of (27)ii + Nominalization ⟶ *een aantal van drieëntwintig* the condition must be fulfilled that a cognate lexical element is chosen to replace QUANT.

8 Indefiniteness again.
Where can the phenomenon of indefiniteness in the structures I assumed above be located now? This question arises when we recall Perlmutter's conclusion that there is no link between the indefinite article and indefiniteness. From the remarks made so far I conclude that indefiniteness is not a property which is located in a single constituent inside a NP. I describe it in the following way: indefiniteness is a property of a NP as a whole and originates in the construction of a partitive relation between QUANT and the name of a set; the result is the mentioning of one or more (but not all) arbitrarily chosen members or parts of it. Defined in this way indefiniteness is not found in the categorial NP's of categorial surface structures.

9 There is at least one other question: in what way can definitization be integrated in my proposal? Talking about the definite article I have claimed that the demonstrative pronouns *die* (*those*) and *dat* (*that*) underly the forms *de* and *het* respectively. What is more, definitization seems to be a matter of pronominalization rather than a matter of, for instance, simple addition of article-words by means of a transformation. The NP which, in my opinion, is a serious candidate for demonstrative pronominalization is the same NP_0 which is deleted when pronominalization does not take place (see the

diagrams (20), (21), and (23)). In this analysis both the article which is phonologically zero and the definite article are connected with the constituent QUANT, which was introduced for very different reasons. We have seen that *één* (*a/an*) derives from *één* (*one*) and is essentially a numeral. When the numeral *één* is replaced by another one, say *tien*(*ten*), the presence of an ordinal numeral shows that the anaphoric element has a relatively independent status with respect to the cardinal numeral:

29 i die/de tweede tien bomen
those/the second (row of) ten trees

This is one of the considerations, justifying the decision to assume a separate NP in the deep structure as the element underlying the definite article. Another consideration was, that such an NP could also serve to account for the zero-article. The presence of an ordinal numeral in structures such as (29)i is conditioned, the NP as a whole being definite:

29 ii *Hij verkocht tweede tien bomen.
He sold second ten trees.

In the examples (3) in the first part of this paper we established that it is impossible for *de* or *het* to appear together with *één* or *een*. Therefore we now understand that in

29 iii die/de derde man
that/the third man

it cannot be seen that the numeral *één* originally formed part of the structure:

29 iv die/de derde één man
that/the third one man

Here, as in the case of the examples (3), the deletion rule which removes *één/one* when preceded by a definite element, produces the right results. I assume that (29)i and (29)iii have similar underlying representations.

10 Conclusions.

In many linguistic publications, traditional as well as transformational, the 'article' is considered to be a rather marginal phenomenon. Perlmutter has shown that it is justified to conclude that articles are only surface structure elements. His analysis seems to confirm the older points of view. It was my aim to raise some questions which arise when we take Perlmutter's point of view as a starting point. The considerations and evidence presented in this paper make me conclude that the whole issue of the structure of nominal phrases is a much more complex matter than is generally assumed. Finally I would like to mention two other questions, which I left aside and which may possibly provide crucial evidence for or against any proposal for the analysis of NP's. In the first place there is the problem of how to give an enlightening description of relative clauses of at least two kinds[15]. A second issue about which I want to raise some questions here is the problem of whether there is any systematic syntactic connection between *één*(*one*) and *geen*(*no*(*ne*)). If so - and the phonetic shape of the two words seems to suggest a correspondance - can this connection always be found? Is there a difference between English and Dutch, where this issue is concerned? Compare

30 i Hij zag geen van hen.
He saw none of them.
ii Hij voelde geen haat.
He felt no hate.
iii Hij zag geen vogels.
He saw no birds.

In all three cases the Dutch negative form is *geen*; in English there is some difference. It is possible to account for the facts in Dutch by supposing that even in the case of plural nouns and so-called non-countable singular nouns there is an underlying *één* when there is negation as well. The English form in (30)i does not provide counter-evidence, but what to think of the two other cases? This implies that sentences in which the negative is fused with an indefinite element are not automatically to be considered as positives with a negation simply added[16]. If I were speculating, I would suggest that the underlying structure of the *geen*-cases can be accounted for by assuming an abstract representation with *één quantiteit* (*one quantity*) and not with *quantiteiten* (*quantities*). In the sentences (16) and (17), where no negation is involved, I did not have to choose between the two possibilities.

Department of Dutch Language and Literature
University of Utrecht

Notes

I wish to thank Drs. Nelly Stienstra for all her help with the English translation of the earlier Dutch version.

1 Compare

i a Eén stoel was donkergroen.
One chair was dark green.
b *Een stoel was donkergroen.
A chair was dark green.

iia Eén paard graasde in de wei.
One horse grazed in the meadow.
b ?Een paard graasde in de wei.
A horse grazed in the meadow.

I. Although not all native speakers of Dutch will agree upon the acceptability of iib, there is some difference between i and ii. This difference is, among other reasons, due to the stative or non-stative character of the predicates used(cf. Lakoff(1966)). In the stative case *één* cannot be reduced to *een*. In many cases no problems arise when the *er*-(*there*-)form is used:

iiia Er stond één/een stoel in de kamer.
There was one/a chair in the room.
b Er graasde één/een paard in de wei.
There grazed one/a horse in the meadow.

II.It is perhaps a problem that the subject-NP's in the a-sentences of i and ii can be interpreted as 'one of the chairs/horses', while this is impossible in the b-sentences.

2 To put it explicitly: in my opinion (3)ii is not synonymous with 'Marcel heeft dat/het *ene* boek gekocht'(Marcel bought that/the one book) which is a grammatical sentence in Dutch. What is meant here, is a unique, identifiable specimen from a collection which is known by situation or context. This 'ene' is opposed to 'andere'(other). One might say that 'ene' has a pronominal status.

3 Tentatively and only on the basis of a consideration concerning Middle Dutch - where the definite article appears to have the same form as the demonstrative pronoun *die* or *dat* - I think of *die/dat*(*those/that*) in the first place, and not of *deze/dit*(*these/this*). The last pair has the property 'nearness', which is absent in both *die/dat* and *de/het*.

4 The term 'singularizator' is found in Mattens(1970), in an exposition on pages 146-160. In this book the n o t i o n 'singularizator' is completely different from the notion I introduce here.

5 This assertion conflicts with such examples as

i Ons bedrijf gebruikt hoogwaardige ijzers.
Our factory uses highly valued irons.
ii Ons bedrijf gebruikt een hoogwaardig ijzer.
Our factory uses a highly valued iron.

The interpretation can be paraphrased here by using *kind of*. In (i) *ijzers* is *kinds of iron*, in (ii) *een hoogwaardig ijzer* is *a kind of iron which is highly valued*. I disregard this issue, although it can easily be integrated in my proposal.

6 See, among other, Kraak and Klooster(1968), chapter 5, passim, and Janet Dean, 'Nonspecific Noun Phrases in English', NSF-Report no.20, Section VII, p.5.

7 See Reichenbach(1966), p.299.

8 Kraak and Klooster(1968),p.111.

9 For reasons comparable th those in note 5, it would carry us too far to explain that the demonstrative pronoun in 'Dat paard behoort tot de echte dravers'(That horse belongs to the real trotters) does not exclude a generic interpretation, but can be used only when a distinct 'kind' of horse has been mentioned earlier in the discourse. In an example like the one given above, it is in my opinion impossible to use *het* instead of *dat* in the same situation. The anaphoric *dat* used here, excludes the interpretation, in which the whole genus 'horse' is meant.

10 See, a.o., Kraak and Klooster, sections 5.4-5.8.

11 See Ramsey(1965). My attention was drawn to this exposition by my collegue M.M.W. Pollmann.

12 It is difficult to imagine a situation in which an indefinite plural NP without a number mentioned, can be given a specific interpretation, as is possible for (14), apart from the non-specific interpretation used here. Cf., a.o., Janet Dean's paper mentioned in note 6.

13 Compare 'Karel heeft drie kilo van twee tabakken gekocht'(Charles bought three kilos of two tobaccos). The interpretation of the direct object can only be correct when the topic of discourse is two 'kinds' of tobacco. Cf. note 5 and 9.

14 A short and clear survey of the problems is found in Klooster(1972), section 7.1.

15 In Kraak and Klooster(1968), section 10.2, another distinction is added under the name 'bepalend' (determining) relative clause.

16 See Kraak(1966), p.89.

SOME REFLECTIONS ABOUT REFLEXIVE COMPOUND ADJECTIVES

W.J. Meys

In Chomsky(1967b) it is argued that the derivational process underlying the formation of derived nominals such as (2) is not quite on a par with that underlying gerundive nominals such as (1), although both types of nominalization are of course clearly related to the propositions of sentences (3):

1a John's being eager to please.
b John's refusing the offer.
c John's criticizing the book.

2a John's eagerness to please.
b John's refusal of the offer.
c John's criticism of the book.

3a John is eager to please.
b John has refused the offer.
c John criticized the book.

Dik(1967), too, points out that there is a 'fundamental difference between expressions like *destruction of the property, refusal to come* on the one hand, and *destroying the property, refusing to come* on the other'(p.379). The main differences between the two types of nominalization, as they emerge from Chomsky(1967b), have to do with the productivity and generality of the processes involved, and with the internal structure of the nominal phrase:

a The nominalization process underlying gerundive nominals is wholly productive, while the one underlying derived nominals is of restricted productivity.
b Gerundive nominals have a regular meaning relation with their corresponding propositions, while in the case of derived nominals this relation is much more varied and idiosyncratic.
c Gerundive nominals do not have internal noun phrase structure, derived nominals do.

Gerundive nominals, Chomsky argues on the basis of these points of difference, are therefore best derived transformationally - roughly in the manner of Lees(1960) -, derived nominals, on the other hand, can better be derived directly, by an extension of the rules of the base. The introduction of features, lexical insertion rules, and speculations about 'internal computation' within the lexicon in Chomsky(1965) had paved the way for this 'lexicalist hypothesis', which finds a more articulate expression in Chomsky(1967b), particularly in a re-formulation of the rules of the base. Rather more tentatively, Chomsky also suggests a lexicalist approach for action nominals such as (4):

4a John's refusing of the offer.
b John's proving of the theorem.
c The growing of tomatoes.

Fraser(1970a), however, attempts to demonstrate that a transformational derivation of such action nominals is more in accordance with the facts. Among other things he bases himself on evidence which suggests that certain action nominals presuppose previous application of certain transformations. For an important implication of the lexicalist hypothesis, as Chomsky himself points out(p.212), is that forms that are derived in the lexicalist way must reflect base structures, while those that are transformationally derived can reflect transforms. However, how this must be inter-

preted depends crucially on the relative strength or weakness that one attributes to the base rules. Thus, given the kind of base component sketched in Chomsky(1967b), it can be argued that (5) need not be regarded as a nominal derived transformationally from a passive such as (6)(cf.p.203-205):

5 The city's destruction by the enemy.
6 The city was destroyed by the enemy.

Within this framework Chomsky considers also *self*-compounds such as (7). On the face of it, he says(p.213)'examples such as (53c) seem to provide the strongest case for transformational analysis of derived forms', for one might argue that a derived nominal such as (8) results from (7), which, in turn, can be regarded as a form resulting from the reflexive transformation applied to (9).(The subscript i has been added to indicate co-reference.)

7	John is self-indulgent.	(53c)
8	John's self-indulgence.	(53d)
9	$John_i$ is indulgent to $John_i$.	(54b)

(The numbers on the right of the examples are Chomsky's). A closer examination of a number of *self*-compounds, however, leads him to conclude that a general, transformational treatment of such structures is in fact unwarranted:

10	John sent a self-addressed envelope.	(55a)
11	This is clearly a self-inflicted wound.	(55b)
12	The prophecy is self-fulfilling.	(55c)
13	Confrontations between students and administration are self-generating.	(55d)
14	John is self-educated.	(55e)
15	John's remarks are self-congratulatory.	(55f)
16	John's actions are self-destructive.	(55g)

About these Chomsky remarks(p.213-214):"Sentence (55a) does not mean that the envelope was addressed to itself; the phrase *self-addressed envelope* can appear in sentences where there is no syntactic source for *self* at all(*self-addressed envelopes are barred by law from the mails*)-the same is true of (55b), (55f), (55g). Sentence (55c) does not, strictly speaking, mean that the prophecy fulfilled the prophecy, which is senseless, but rather that it led to a state of affairs that fulfilled the prophecy. In the case of (55d), what is meant is that certain confrontations generate other confrontations of the same sort; confrontations do not generate themselves. (55e) cannot be derived by a rule analogous to one that purportedly forms (53c) from (54b), since the postulated underlying form, *John was educated by himself* is ruled out by the principle, whatever it may be, that makes passives incompatible with reflexivization. A similar argument applies to (55g); the postulated underlying form, *John's actions destroy himself*, is ruled out by general conditions on reflexivization. Furthermore, a consideration of such forms as *self-conscious*, *self-proclaimed(enemy)*, *self-contained*, *self-evident*, *self-esteem*, *self-explanatory* (i.e. needs no explanation) , *self-important*, *self-seeking*, and so on makes one search for a general transformational analysis of such structures seem ill-conceived. The variety and idiosyncracy of such items seem to be of the sort that is characteristic of the lexicon; it is difficult to see how they can be accounted for by syntactic rules of any generality." I believe that a number of observations in the above passage are incorrect. First of all it must be pointed out that at least one obvious generalization about the *self*-compounds in (10)-(16) is missed out here, namely the fact that they fall apart into two distinct types, viz. those in which the second member is a (present or past) participial form, (10)-(14), and those in which this is not the case, (15) and (16).As far as morphology is concerned, the second members of the compounds in (10)-(14) are quite regular, while the forms in (15) and (16) are much more idiosyncratic. In this respect, therefore, the compounds

in (10)-(14) are like the gerundive nominals, for which Chomsky suggests a transformational derivation, while those in (15) and (16) are more like the derived nominals for which he has suggested a lexicalist approach. There are thus good a priori reasons to assume that a transformational approach to cases like (10)-(14) might be a more likely proposition than for ones like (15) and (16). In what follows I will in effect be concerned only with the participial *self*-compounds.

Chomsky argues that *a self-fulfilling prophecy* cannot mean *the prophecy fulfills the prophecy*, as this is senseless. The question is whether there is an underlying sentence from which *self-fulfilling prophecy* can be transformationally derived, and in this respect there is no problem, witness (17), which can be generated quite regularly, by the reflexive transformation, from (18):

17 The prophecy fulfills itself.
18 The prophecy$_i$ fulfills the prophecy$_i$.

Not being a native speaker of English myself, I have checked the grammaticalness of (17), along with a number of similar forms, such as (19) and (20), with native informants, in two versions, with and without special emphasis on *self*.

19 The dream fulfilled itself.
20 The problem explains itself.

As it happens, all of these forms were considered grammatical; some informants expressed a slight preference for the emphatic renderings, which were felt to be more 'usual'. The conclusion is fairly obvious; transformational derivation of (12) is possible, as there is a well-formed source-sentence, (17). True, there is something illogical, or, if you like, semantically idiosyncratic about the meaning of (12), but this can also be said of the underlying sentence (17), and it cannot be used therefore, as an argument against transformational derivation of (12) from (17). Rather, the inverse seems to be the case: the fact that the semantic peculiarity of (17) is 'carried over' to the corresponding compounds in (12), (21), and (22) strongly suggests that they are transformationally related.

21 A self-fulfilling dream.
22 A self-explaining problem.

Thus the problem which Chomsky points out in connection with (12) has nothing to do with the lexicalist versus the transformational controversy as such; it has to do with the interpretation of the reflexive forms - in (17) no less than in (12). In a case like (23), for which one can postulate (24) as a well-formed underlying sentence, interpretation of the reflexive form seems to be less of a problem:

23 A self-winding watch.
24 The watch winds itself.

But this is only seemingly so, for, again strictly speaking, only the spring of the watch can be looked upon as winding itself, or rather as being wound, by arm-movements made by the person wearing the watch, or something. Thus the relative illogicality, or rather, imprecision adhering to (12),(17),(19),(20),(21),(22) can be related to that of reflexives generally as revealed by a somewhat closer examination of apparently more 'ordinary' cases such as (23)-(24). Words like *prophecy, dream, problem, wish*, etc., are 'content-words', and it is their implied content to which the reflexives refer. (13) is slightly different. There the reflexive form apparently results from a partial formal identity of the lexical items involved, not from strictly referential identity. Notice, incidentally, that the generative semantics claim concerning *self*-compounds like *self-educated* and *self-fulfilling* could thus be made even stronger than in the discussion of them in Postal(1969a), in which he

claims that they constitute exceptions to the anaphoric island constraint, in that part of the compound, viz. *self*, is co-referentially related to some lexical item outside of it. For, it could be argued that in cases like the above *self* must be assumed to be co-referentially related not to the 'content'-headword as a whole, but to some part of its underlying semantic structure. In any case, it seems to me that Chomsky's remarks in connection with (12) and (13) cast doubt not so much on the position of transformational derivation of such compounds, as on the correctness of the standard theory, the deletion-theory, with regard to pronominalization and reflexivization, which, in its strongest form, requires full identity of the underlying NP's. That such doubts are well-motivated on other grounds need hardly be mentioned here.[1)]

The picture is complicated further by the fact that *self* can also be used as an emphatic element. Chomsky claims that there can be no syntactic motivation for *self-educated* in (14), because of the fact - first pointed out, at least within the transformational framework, by Lees and Klima(1963) - that reflexives and passives are incompatible. Postal(1971), however, has demonstrated that this incompatibility only applies in the case of unstressed reflexives(p.9-10, and, in more detail, p.230-239). Thus, while (25), with unstressed *himself* is ungrammatical, (26), with the stressed form *himsélf*, is all-right:

25 *Harry was shaved by himself.
26 Harry was shaved by himsélf.

The ungrammatical sentence (25), according to Postal, derives from (22), via, first, passivization, and then reflexivization. Violation of this order of transformations would result in an even more glaringly ungrammatical product, (28):

27 Harry_i shaved Harry_i.
28 *Himself_i was shaved by Harry_i.

The deep structure of the well-formed sentence (26), on the other hand; contains two S, as indicated in (29). The sub-scripts i and j indicate that within S_1 and S_2 there is no strict co-reference('binding' in Postal's terminology), but rather an indirect, inferred kind of co-reference(to which Postal applies the term 'predicational'),via the identity-predicate be in S_1. (29) can lead to (30), in which (Hárry) (himsélf) is meant to indicate the three possible emphatic forms: *Hárry, Harry himsélf*, or just *himsélf*. However, if what Postal calls the contrast movement transformation (optionally) applies, Harry_j 'descends' from the higher sentence S_1 to the lower sentence S_2, the result being (31). In case of passivization within S_2, finally, the outcome will be (32)(=(26)). Postal's formulation of the contrast movement transformation is given as (33):

29 S_1 [the one$_i$ S_2[one$_i$ shaved Harry$_j$]$_{S_2}$ was Harry$_j$]$_{S_1}$

30 The one who shaved Harry was (Hárry)(himsélf).
31 Harry shaved (Hárry)(himsélf).
32 Harry was shaved by (Hárry)(himsélf).

33 $X , {}_{NP}[\begin{bmatrix} NP \\ +Pro \end{bmatrix} , {}_{S}[Y , \begin{bmatrix} NP \\ +Pro \\ +wh \end{bmatrix} , W ,]_S]_{NP}$ be , NP , Z

1 2 3 4 5 6 7 8 ⟶ 1,Ø,3,7,5,Ø,Ø,8

In view of this, it appears, therefore, that the incompatibility of passive and reflexives is not absolute. If we relate *self-educated* not to the ungrammatical sentence (34) mentioned by Chomsky, but to the grammatical sentence (35), with strong-stressed reflexive element, then transformational derivation of (14) remains a pos-

sibility:

34 *John was educated by himself.
35 John was educated by (Jóhn)(himsélf).

In this connection the preference expressed by some of the informants for the stressed renderings of (17),(19), and (20), may perhaps be regarded as an indication that strong-stressed *self* is always involved in the formation of *self*-compounds generally.

Now compare (10)-(14) with forms like (36)-(40):

36 editor-addressed letters
37 enemy-inflicted wounds
38 wish-fulfilling luxuries
39 conflict-generating housing conditions
40 Mary Quant-educated mannequins.

It seems to me that cases like these alone provide the right sort of background against which compounds such as those in (10)-(14) must be viewed - a background that is conspiciously absent in Chomsky(1967b). In the light of (36)-(40) the *self*-compounds in (10)-(14) turn out to be merely somewhat special products of a much more general process which transfers the nucleus of a NP or PP from a (reduced) relative clause to pre-nominal position, along with a (present or past) participial form of the main verb. The NP that is the source of the first member of such compounds can function in a number of ways in the underlying sentence. Cf.(41)-(45):

41 tailor-made clothes
42 hand-made tapestries
43 home-made wine
44 winter-fallen twigs
45 aroma-sealed coffee

In (41) the first-member noun derives from an agentive NP - the subject, in fact, of *make* -, in (42) from an instrumental NP, in (43) from a locative, in (44) from a temporal one. In (45)(which I quote from Osselton(1970)), one could argue that the source-NP functions as the direct object of the verb *seal*.

It is interesting to observe that *self*-compounds seem to reflect the same gamut of possibilities. Thus one could trace *self*- in (10)(*self-addressed*) to a dative, or indirect object NP, in the same way as *editor* in the corresponding combination in (36). Similarly, the first members in (11)(*self-inflicted*), and(14)(*self-educated*) can be regarded as derived from underlying agent NP's, just as one can do this for the corresponding combinations in (37) and (40). Notice, incidentally, that one could also interpret *self* in (11) as deriving from an underlying prepositional object. These observations illustrate that *self*-compounds like the ones in (10)-(14) have a kind of 'latent ambiguity' which appears to be characteristic of participial compounds generally. This, too, might be regarded as an argument in support of a transformational approach; surface-structure ambiguity which can be accounted for by different possible deep-structure configurations. The close correspondance between the compounds in (10)-(14) and those in (36)-(40) cast doubt on the correctness of Chomsky's claim that there can be no syntactic source for *self* in(46):

46 Self-addressed envelopes are barred by law from the mails.

nor for the *self* of *self-inflicted* in (11).(I don't suppose Chomsky's remark that 'sentence (55a) does not mean that the envelope was addressed to itself' is meant as a serious suggestion as to what sentence (55a)(=(10) above)might mean). Notice,

first of all, that one must posit one occurrence of unspecified *someone* for the underlying structures of the corresponding combinations in (36) and (37), as shown in (47) and (48):

47 Someone$_i$ addressed the letters to the editor$_j$ (by Passive).
48 The enemy$_j$ inflicted wounds on someone$_i$ (by Passive).

Since the *self*-compounds seem to resemble the non-reflexive compounds fairly closely, we might then posit underlying structures for them analogous to these, as shown in (49) and (50):

49 Someone$_i$ addressed the envelopes to someone$_i$ (by Passive).
50 Someone$_i$ inflicted wounds on someone$_i$ (by Passive).

It is clear that (49) and (50) only differ from (47) and (48) in that the former contain two unspecified NP that are co-referential, while the latter contain two non-co-referential NP, one of which is specified, and the other unspecified. Thus, if we regard participial *self*-compounds as following the pattern of participial compounds generally, we may assume that whenever *self* cannot be interpreted as referring to some other NP in the sentence, it must be looked upon as a reflexive resulting from the occurrence of two co-referential unspecified NP in the underlying structure.

It is instructive to see how a related language like Dutch handles some corresponding cases. Besides participial compounds that are structurally on a par with the English ones, the Dutch language also allows looser pre-nominal complexes. These are much more clearly transformational in character, in that the underlying sentence remains recognizable as a sentence: prepositions, articles, and plural morphemes remain intact in these looser complexes. Compare the Dutch examples (51)-(54) with the corresponding English examples in (10), (11), (36), and (37):

51 Jan stuurde een aan hemzelf geadresseerde brief.
51' John sent a to himself addressed letter.
52 Hij toonde zijn door hemzelf toegebrachte wonden.
52' He showed his by himself inflicted wounds.
53 Er werden veel aan de redaktie geadresseerde brieven ontvangen.
53' There were many to the editor addressed letters received.
54 Hij toonde de hem door de vijand toegebrachte wonden.
54' He showed the him by the enemy inflicted wounds.

It appears that Dutch only permits compounds in case of the unspecified form *someone-iemand* - and generically used nouns in the underlying sentence. Cf. (55)-(56) and their paraphrases (57)-(58):

55 zelfgemaakte meubelen.
55' self-made furniture.
56 handgeknoopte tapijten.
56' hand-made rugs.
57 De meubelen zijn door iemand zélf gemaakt.
57' The furniture has been made by someone himsélf.
58 De tapijten zijn door iemand met de hand geknoopt.
58' The rugs have been made by someone by hand.

(Notice, incidentally, that in the Dutch *self*-compounds, too, such as (55), the stressed reflexive element is involved). The generic use of the first-member noun in Dutch participial compounds is clear also in well-established combinations such as *zonovergoten* (sun-splashed), *bloeddoorlopen* (blood-shot), *luchtgekoeld* (air-cooled). Although both Dutch and English of course have the alternative option of a post-nominal

reduced relative clause, it is interesting to note that English, lacking the possibility of looser pre-nominal syntactic complexes like the Dutch examples (51)-(54), apparently also resorts to participial compounds to express non-generic relationships. Cf. (59)-(64):

59 Het gebied dat door de rebellen werd bezet.
60 Het door de rebellen bezette gebied.
61 *Het rebellen-bezette gebied.
62 The territory that was seized by the rebels.
63 *The by the rebels seized territory.
64 The rebel-seized territory.

Sentence (59), with the non-generic plural form *rebellen* transforms to (60); compound-formation turns out to be impossible: (61). English does not have a construction corresponding to (60), so (63) is impossible. On the other hand, compound-formation in English not being restricted to generic relationships, (62) transforms to (64) without difficulty. Notice that *rebel* in (64), though singular in form, will normally be interpreted as plural in meaning by native speakers of English.

The relevance of evidence drawn from one language for phenomena in another language is of course always very hard to assess. In this particular case, our brief excursion into 'contrastive analysis' in fact provides clearer and more revealing evidence from English for the grammar of Dutch than vice versa, for it permits us to formulate a clearly statable condition on the productivity of the process underlying the formation of Dutch participial compounds, one, moreover, that has never yet, to my knowledge, been noted before.[2] As for the relevance of the Dutch examples to the grammar of English, one can only remark that for some English participial compounds, viz. 'generic' ones, there are corresponding participial compounds in Dutch, while other English participial compounds, viz. 'non-generic' novel or nonce-formations, cannot be rendered in Dutch by means of corresponding participial compounds, but only by looser pre-nominal syntactic groups that are unmistakably transformational in character. Although this observation undoubtedly constitutes some independent support for the transformational hypothesis as regards non-generic participial compounds in English, it cannot, of course, count in any way conclusive evidence for such a hypothesis. On the other hand it is undeniable, as Chomsky has pointed out, that many *self*-compounds exhibit idiosyncrasies of some kind[3], although one must, of course, bear in mind that such idiosyncrasies can only be considered 'truly characteristic of the lexicon' if they adhere only to the compounds as such, and not also to possible underlying constructions to which they might be transformationally related, as I have demonstrated to be the case with respect to (12) and (13). I have shown that participial *self*-compounds clearly have some transformational characteristics; this seems to be true even for compounds which are semantically idiosyncratic, like *self-proclaimed* and *self-contained*, for which one feels tempted to assume a basically regular structure with some additional semantically idiosyncratic element. Semantic idiosyncracy is not a privilege of participial compounds with *self* only; it can be observed in many participial compounds not containing *self* as well, such as *custom-built*, *soft-spoken*, *star-crossed*, etc. In fact, idiosyncrasies are a characteristic of compounds generally, as has frequently been observed (cf., for instance, Katz and Postal (1964), Fraser (1970b), Weinreich (1966). Thus Katz and Postal call such idiosyncratic compounds lexical 'idioms' differing from idiomatic expressions ('phrasal idioms' in their terminology) in that the constituent elements are together dominated by one noun, verb, of adjective node. I would suggest that the idiosyncrasy of many *self*-compounds - like that of many compounds generally - has to do with their being 'established' compounds. (The fact that most of the *self*-compounds mentioned in Chomsky's paper also occurred in a relatively small random corpus of compounds which I had independently collected from newspapers and magazines - cf. Meys (forthcoming) - is another indication that they qualify as established compounds). Many of them have undoubtedly started out as fully-motivated transformationally-derived forms, but have subsequently fallen victim to an idiomatization process due to

'rule-changing creativity'[4] or to changes in the extra-linguistic world, without thereby completely losing their transformational characteristics. This is particularly clear, for instance, in a non-participial compound such as *watchmaker*, which is still completely transparent and regular, transformationally, but does not any more happen to refer to someone who makes watches, but to someone who repairs and sells them.[5] At the same time it is clear that a compound like *watchmaker* can be used in the 'literal' sense, in some plausible context. It seems then, that one and the same linguistic form may be meant or interpreted as a established complex lexical item, with a certain, conventionalized, idiosyncratic meaning, or as the result of the regular, creative sentence-generating process. In the case of participial compounds, too, one could get doublets of this kind. Thus compare (65)-(68)[6]:

65 John is a self-composed chap.
66 John played some self-composed music.
67 We only produce custom-built cars.
68 We must put our custom-built House of Commons in order.

In (65) and (67) we are dealing with established idiomatic compounds. (66) and (68), on the other hand, contain homophonous, but syntactically regular, formations. The compounds in (66) and (68) can therefore be paraphrased in a straightforward way by means of a relative clause containing the constituent elements, as in (70) and (72), in accordance with two possible underlying patterns that can be associated with regular participial compounds. This would hardly do for the compounds in (65) and (67), however, witness the attempts in this direction in (69) and (71), which are clearly insufficient to convey the idiomatic meaning of the compounds,as the paraphrases in (73) and (74) bring out:

69 ?John is a chap who has composed himself.
70 John played some music which he himself has composed.
71 ?We only produce cars which are built by/through custom.
72 We must put our House of Commons, which has been built by/through custom, in order.
73 John is a chap who has his emotions under control.
74 We only produce cars which are built in accordance with the customers' wishes.

We can account for doublets like the above if we make a systematic distinction between idiosyncratic products of rule-changing creativity that have acquired lexical status, on the one hand, and forms that have no conventionalized lexical status, but result from regular word-formative processes within the range of rule-governed sentence-generation, on the other. Such a distinction between established idiomatic compounds and creatively-produced regular ones could be employed, among other things, to account for certain stylistic effects - such as the fact that native speakers will experience the compound in (68) as a pun, because of the existence of the established idiomatic compound of (67).

It is clear that, by and large, established idiosyncratic compounds have the same meanings for all the members of a given speech-community. We must assume, therefore, that the non-ideal native speaker knows such items as familiar lexical items - he would not be able to arrive at their conventionalized idiomatic meanings via the regular word-formative rules of his internalized grammar. Regular, creatively produced, compounds, on the other hand, he would not have to know as such at all; as long as he has a fully-developed generative grammar of his language he will be able to 'projectively' generate or interpret any such items. In a mentalistic perspective, then, knowledge of idiomatic compounds involves a 'familiarity factor'. Weinreich argues that, in order to avoid 'imposition of arbitrary linguistic structure', we must also employ this notion of familiarity in a grammar which purports to describe an ideal speaker-listener's competence, and he even suggests a 'familiarity-rating' device, which assigns degrees of familiarity. Weinreich's notion of familiarity,

which is largely based on Zimmer(1964), is challenged in Botha(1968), who argues that such a notion belongs to the study of performance, and is therefore irrelevant to a theory that purports to be dealing with competence. Ironically, however, it would seem that Botha's own proposal of a 'phonological dictionary' (p.232-247) likewise presupposes some sort of familiarity-notion. This device (to be incorporated in a generative-transformational grammar of Afrikaans) functions in much the same way as the 'idiom-list' suggested in Weinreich(1967). By means of a matching rule operation output combinations leaving the transformational component are systematically compared with information stored in this phonological dictionary about 'given compounds' (p.232) in order to establish whether or not an 'unpredictable' link-phoneme is required. Unfortunately, Botha does not intimate what he means by the term 'given compound', but I fail to see how it could mean anything very different from what we are wont to call 'familiar compounds' or 'established compounds' (notions which Botha rejects, along with their counterpart 'novel compounds')[7]. I do not believe that the notion of 'familiarity with complex lexical items' belongs in the realm of performance-studies only. After all, the whole idea of the ideal speaker-listener's linguistic competence, as it emerges from any of the standard characterizations, crucially hinges on the distinction between his finite 'direct' knowledge - i.e. his being perfectly familiar with a finite set or list of formatives and rules - and his theoretically infinite 'indirect' or 'projective' knowledge - which is infinite in the sense that it has the theoretically infinite number of possible sentences in the language for its scope. Since, evidently, the non-ideal native speakers' knowledge of established idiomatic compounds is of a kind with their knowledge of simplex lexical items, that is, knowledge of the 'direct' kind, it seems reasonable to postulate that the ideal speaker-listener's competence likewise involve 'direct' knowledge of - or familiarity with - both simplex lexical items and established complex ones. It is properly a matter for the study of performance to decide what the established compounds of the language are; just as it is similarly a matter of performance-study to establish what the simplex lexical items of the language are. As far as the ideal speaker-listener's competence is concerned we need only idealize, and simply postulate that he knows them all. It follows that the criterion for the inclusion of any linguistic form in the lexicon should be that of familiarity.

I have argued that many idiomatic, idiosyncratic compounds may have started out as fully-motivated regular ones, later acquiring their particular idiosyncrasies. It is clear that a synchronic grammar of competence need not account for the way in which idiosyncratic compounds came to be what they are. In order to reach observational adequacy, it must, however, record the fact that they exist, as familiar complex lexical items. As we have argued, the proper place to enter any familiar item is the lexicon. Since many idiosyncratic compounds have developed diachronically from completely regular ones, the implication is that there may well be regular elements left, including transformational traits. It would seem, then, that the lexicalist requirement concerning non-transform character should be relaxed in order to accommodate such 'transformational relics' (including idiomatic *self*-compounds) in the lexicon. A natural format to do this in is the kind suggested in Gruber(1967a), who, among other things, points out that left-branching, which is also a characteristic of *self*-compounds, seems to be typical of stored 'pre-generated' forms, while right-branching is typical of forms that are creatively produced. Gruber's format thus provides, as it were, for the representation of familiar, idiosyncratic compounds as static syntactic configurations, with the added mentalistic implication that these do not somehow require the same kind of 'mental computation' involved in the creative sentence-generating process. At the same time it is clear, as I have pointed out in connection with the 'doublets' above, that the word-formative rules should not go by the board. These define the full range of the ideal speaker-listener's 'projective' knowledge of all possible, regular, novel compounds. Since all idiosyncratic compounds are by definition entered in the lexicon, the word-formative rules can once more be restricted to account just for strictly regular word-formative processes, without additional 'ad-hoc' devices like idiom-lists or phonological dic-

tionaries, for all kinds of idiosyncratic cases.

Notes

1 The 'deletion hypothesis' as regards pronouns and reflexives, as sketched in Chomsky(1965), and developed further in Ross(1967d), and Rosenbaum(1970) and (1967), has had a hard time of it since 'Bach's paradox'(Bach(1967) and (1970)). Bach showed that the deletion hypothesis forces one to assume infinitely-deep deep structures in a number of cases. (Karttunen(1971) and Kuroda(1971) contain attempts to dodge Bach's paradox). In the rival theory, the interpretive approach, pronouns are introduced in deep structures to be interpreted referentially later on (cf. Jackendoff(1968), Dougherty(1969), Bresnan(1970a)). I feel that Jackendoff rather too summarily dismisses the delicate network of constraints in connection with pronominalization and reflexivization demonstrated in Postal(1971). (See, for instance, Lakoff(1968a) and Lakoff(1970e), in which the interpretive rule for pronominalization is called 'antecedent hunt', and also Grinder and Postal (1971), and Harada(1971). Harada's exposé is not too convincing; thus he argues that the interpretive approach would be forced to 'swap referents' in the derivation of sentence (a),

a John believes himself to be hard for Bill to understand.

from the underlying structure (b):

b S_1 [John believes S_2 [NP [S_3 [Bill understands himself] S_3] NP be hard] S_2] S_1

He argues that 'himself' must thus be assumed to refer first to 'Bill' and then to 'John'. Notice, however, that Harada's argument is undermined, if not vitiated, by his assumption that an intermediate form of S_2 is (c):

c Himself be hard for Bill to understand.

which is ungrammatical, and conflicting with the cross-over principle - cf. e.g. (d), quoted in Postal(1971), p.154, as an example of an ungrammatical sentence resulting from a violation of the cross-over constraint:

d *Himself is difficult for Harry to shave.

2 At first I thought this constraint on the formation of compound adjectives in Dutch had to do with inherent feature characteristics such as non-count, mass, 'uniqueness', etc. However, *hand*, as in *handgeknoopt*, is not inherently non-count at all, and it is quite possible, to talk about more than one sun, and so forth. Although in many cases the nouns within such participial compounds are indeed inherently unique, or non-count, or mass, it would seem that what is involved when the nouns do not have these features inherently, they seem to get them 'imposed on' them (a phenomenon which could perhaps be handled along the lines of Weinreich's suggestion concerning 'transfer features', in Weinreich(1966)). In other words, one might say that in such cases, the nouns constituting the first members of such participial compounds are 'used in a particular, specialized way', for which use the term 'generic' seems the most appropriate. My colleaque, Miss T.Zuidema, has suggested the term 'kategoriaal' as used in e.g. Kraak and Klooster(1968),p.103 ff, as the nearest equivalent in current Dutch grammatical terminology, for 'generic'.

3 Van Beek(1968),p.68-70, contains a large number of *self*-compounds introduced into the English language by the Puritans, many of which exhibit idiosyncrasies of one kind or another.

4 For the terms 'rule-governed' and 'rule-changing', see, e.g., Chomsky(1964),p.22, and Botha(1968), 2.2., 3.6.4.1., and 4.3.6.

5 Compare Lipka(1971): "Watchmaker is definitely still analysable, but no longer motivated with respect to 'make'".(p.226).

6 I owe the observation about *self-composed* to my colleague T.J.R. van Dijk.

7 Botha's phonological dictionary serves primarily to deal with Afrikaans compounds such as *pypiabak*(pipe-tobacco), *dorpsplan*(village-plan), and *lippetaal* (lip-language), particularly in connection with the link-phonemes /s/ in compounds like *dorpsplan* and /ə/ in compounds like *lippetaal*, and the absence of any link-phoneme in compounds like *pypiabak*. He calls the occurrence or non-occurrence of these link-phonemes unpredictable because there does not seem to be any underlying regularity involved.

As for Weinreich's idiom-list, he himself clearly had misgivings about the appropriate place of such a device within the grammar, first suggesting it would be part of the lexicon, afterwards deciding that it would have to follow the transformational component. (Cf. Weinreich(1967), p.48 ff. and 72 ff.). Notice that post-transformational position of the idiom-list violates the principle that deep-structure alone determines semantic interpretation.

WHAT DOES A LISTENER KNOW ABOUT A SPEAKER'S TIMINGS?[1)]

S.G. Nooteboom

In running speech acoustic durations of vowels may vary from zero to many hundreds of ms. Much of this variability is predictable from other aspects of speech, such as quantity of the vowel, the following consonant, stress, syllable position etc. In recent times work on speech synthesis, particularly synthesis by rule, has focussed attention on such regularities: precise rules for segment durations seem to be indispensable for generating reasonably good synthesised speech (Mattingley 1966; Flanagan et al.1970; Klatt 1971; Slis 1971). This shows that many of such regularities are relevant to the perception of speech. It is not at all certain, however, that all factors which affect timing in the production of vowels are also relevant to the decoding of speech. The problem to find out which are and which are not is somewhat difficult to tackle, because each factor alone may have little importance where all factors together are indispensable. If we can show, however, that language users somehow know, either consciously or subconsciously, the perceptual effect of a specific timing factor, we may be reasonably sure that, if the need arises, they can bring this knowledge to bear on the decoding of speech and that thus this factor contributes to the intelligibility of speech. That human listeners can be surprisingly sensitive to small variations in duration, also in running speech, has been shown by Huggins(1968). This reasoning led to the following question, which is central to this paper: what do Dutch language users know of the perceptual effect of timing factors in the production of Dutch vowels?

To give an example, if vowels before a fricative sound are a few ms longer than before a plosive sound, does, then, a language user somehow know this: is knowledge concerning this durational effect stored in the language user's brain? Such questions may be tackled with an experimental approach inspired by an earlier investigation of Dutch vowel quantity by Cohen, Slis and 't Hart(1963). Although there is a vowel quantity opposition in Dutch, many speakers of Dutch do not know consciously that there is a systematic difference in vowel length. This may be explained by the fact that the quantity difference is accompanied by a rather strong difference in quality. It can be shown, however, that if subjects are asked to adjust the control settings of a speech synthesiser for the time characteristics of isolated synthetically generated Dutch vowels, they make a systematic difference between long and short vowels in absolute durations as well as in decay time. In this way the internalised knowledge Dutch language users have about the linguistic fact that some vowels are perceptually long and others perceptually short can be brought to the fore even when this knowledge is completely subconscious. In the perceptual experiments described in this paper a similar method has been used with vowels embedded in synthetically generated words.

I will first discuss the results of an experiment concerning the effect of the postvocalic consonant on vowel duration both in production and in perception. Secondly I will discuss some experimental results concerning the effect of syllable position and number of syllables in the word on the duration of a stressed vowel. Finally I will raise some questions concerning the status of such durational regularities within linguistic phonetics.

In discussing vowel durations, several phoneticians have made a distinction between 'articulatorily' or 'physiologically' conditioned and 'learned' variations in duration(House 1961; Delattre 1962), the first being automatically caused by the limitations of the speech organs, the latter resulting from the language system as acquired by the language user. I will now present some experimental evidence concerning durational variation which may be considered 'physiologically conditioned'. The experiment was performed by Slis and Van Katwijk(unpublished material). In fig.

1 the effect of the following consonant on the duration of a vowel is demonstrated for the diphthong /ɛi/ and the long vowel /e:/ in monosyllables of the form /hVC/. The crosses connected by solid lines refer to mean vowel durations in monosyllables spoken twice each by ten subjects. The durations were measured from spectrograms and checked auditorily with an electronic gate. It may be seen that if the vowel is not followed by a pause, its duration may vary within a range of about 25-30 ms owing to the following consonant. For short /I/ and /i/, not shown here, this range has been found to be markedly less. Notice that these physiologically conditioned variations in vowel durations, being rather small side-effects of the workings of the speech organs, essentially do not result from the perceptual intentions of the speakers. One is inclined to say that they happen in spite of the perceptual intentions, and that they are not under voluntary control. The circles connected by dashed lines refer to vowel duration adjustments in synthetically generated monosyllables. The adjustments were made with a knob with which the vowel duration could be altered continuously. They were made twice for each monosyllable by the same ten subjects as in the spoken versions. Although the quality of the synthetic speech was rather poor, there is a definite correlation between the spoken and the adjusted vowel durations. Especially in the word with the diphthong the durational effect of the following consonant is nicely duplicated. For words with the short vowels /I/ and /i/ this experiment gave no significant result, presumably because the effect of the postvocalic consonant was too small and the variation too strong. For the diphthong and the long vowel these data demonstrate that somehow the subjects know the perceptual effect of the following consonant. It is interesting to note that they were not aware of the systematic differences they made either in speaking or in adjusting the vowel durations.

I will now give some examples of the effect of syllable position and number of syllables in the word on the duration of the stressed vowel. Fig.2 shows the durational build-up of nonsense words with varying number of syllables as measured with lip contacts. The words were spoken twenty times each by one subject. Note that, although the durations of the stressed long and stressed short vowels do not overlap, they vary considerably. You may further see that there is a considerable lengthening of the final syllable. This lengthening is not only to be found in prepausal position, but rather seems to be an attribute of the word in Dutch. With respect to the effect of number of syllables these data look very similar to those found in the literature, e.g. data from Tarnoczy as cited by Lehiste(1970,p.40), and results obtained by Lindblom(1968). The general formulation of this effect is sometimes given as follows: the duration of segmental sounds decreases as their number in the word increases. Notice, however, that the major effect concerns a stressed syllable in word initial position.

In fig.3 one sees exemplified the effect of the number of syllables preceding a stressed syllable on the duration of the vowel in that syllable. This vowel is not shortened at all and neither is the rest of the word. If this is representative of the durational rules in normal Dutch, it would seem that the effect of the number of syllables goes in one direction only. Whereas the number of following syllables has a shortening effect on segment durations, the number of preceding syllables has no such effect. Similar results have been obtained for Swedish by Lindblom and Rapp (1972).

These demonstrations of some timing factors in the production of vowels show that, apart from the effect of coarticulation with adjacent consonants, overall timing patterns seem to exist which result from an interplay of vowel quantity, stress, and position of the syllable in the word. The effect of position is different for stressed and unstressed syllables. We may again raise the question: do Dutch language users know the perceptual results of these timing factors, either consciously or subconsciously? In probing the internalised knowledge of Dutch language users with respect to this question I used an experimental set-up which may be briefly described as fol-

lows. A terminal analog segment-by-segment speech synthesiser, IPOVOX II, is connected with a special purpose electronic memory. This memory can contain the information for a number of different words(or, if necessary, longer stretches of speech). The input for the memory is a punch tape which is generated by a computer programme for synthesis by rule (Slis and Muller 1971). With the controls of the memory a desired stimulus can be selected which is then synthesised repeatedly. The synthesiser is provided with a special feature which makes it possible to change the duration of one selected segment of the word continuously by means of a knob. A subject, hearing the synthesised word over a pair of head phones as often repeated as he wishes, can be asked to adjust the duration of the selected segment, e.g. the stressed vowel in the word, with some criterion mentioned in his instruction. The relation between the position of the knob and the vowel duration is changed before each individual adjustment. The duration preferred by the subject can be read from an electronic counter by the experimenter. Having found already that even small effects of the postvocalic consonant on vowel durations come about in preferred perceptual durations, one would be surprised if such effects as those due to syllable position and number of syllables in the word did not emerge. And indeed they do, as may become apparent from fig.4. Here the durational build-up of three synthesised Dutch words is presented schematically. The stressed vowel is in the third, second or first syllable. Three naive subjects were asked to adjust the durations of the stressed vowel in the word they heard until the whole word sounded as natural as possible. They started from absurdly short and absurdly long initial durations in turn for the three words in succession until a total of ten adjustments was reached for all three words. The durations of the stressed vowels, represented by the black areas, are found by averaging over all adjustments of all three subjects. One may see that there is a substantial effect of the position of the vowel in the word. Note that this effect might be interpreted as the effect of the number of syllables following the stressed syllables. In that case the effect is the same as the one shown in fig.5. This diagram demonstrates the classical effect of the number of syllables in the word on the duration of the vowel in the initial stressed syllable. These results were obtained in the same way as those represented in the former figure. Since these results were obtained with synthetic speech, this time the effect cannot be due to some production mechanism for a mental program for the production of a word into actual speech movements. It must rather be ascribed to the presence of some internal representation of how a word would sound if spoken by a human speaker.

Fig.6 shows the effect of the number of syllables preceding the stressed vowel on its preferred duration. These data were again obtained in the same way. The earlier finding in articulatory measurements that the shortening effect of the number of syllables in the word is one-way only is confirmed in these perceptual experiments. It is as if the mechanism to which this effect is due can only look forward.

One of the reasons for using a method in which subjects could freely handle a knob to find a preferred duration was that in this way both conscious and subconscious knowledge could, as unhindered as possible, affect the behaviour of the subjects. In this respect it is interesting to know whether the subjects knew what they did. Therefore I asked after each experimental session the subject whether he thought he had made systematic differences between the vowel durations in the different positions. One of the subjects knew in each case rather precisely what he had done. The other two subjects either thought that they had made no difference at all or had another impression which was completely at variance with what they really had done.

Thus far I have presented evidence of a few timing factors in the production and perception of Dutch vowels. These factors fall into two major categories, those due to the following consonant, which may be thought to be conditioned by the universal limitations of the speech apparatus, and those due to such factors as syllable position and number of syllables in the word. Let us now consider for a moment what the place of these durational regularities in linguistic phonetics may be. I assume that the

effect of the postvocalic consonant on vowel duration, in so far as this effect is physiologically conditioned, automatically follows from the way the human speech organs are organised. Thus, if a model of the behaviour of the speech organs were included in the general linguistic theory, as has sometimes been proposed(e.g. Ladefoged 1967), the effect of the postvocalic consonant would presumably be accounted for. This, however, would not be sufficient, because it would not account for the data showing that language users have an implicit knowledge of the perceptual result of these durational dependences. Assuming that this knowledge is not innate we may conclude that somehow the perceptual result of physiologically conditioned (and supposedly universal) variation is learned in the process of language acquisition. This makes the opposition between physiologically conditioned and learned durational variation somewhat unclear. Note, however, that the existence of perceptual knowledge of physiologically conditioned effects can provide a powerful explanation for the origin of some particular phenomena in languages. Once small universal effects are known by the individual speakers of a language, in principle it is possible that they will be exaggerated and acquire a language particular function in linguistic communication. An example may be provided by the vowel lengthening before a voiced stop in English. This is a language particular phenomenon, but its origin possibly is related to the fact that there is a much smaller universal effect of the voicing of the postvocalic consonant on vowel duration. If this reasoning is valid the interaction between knowledge concerning universal aspects of speech and knowledge concerning language particular aspects of speech should be modelled in a general phonetic theory or perhaps in a partial phonetic model, and so strengthen the explanatory role of phonetics within linguistic science.

The relation between language universal and language particular aspects is even less clear for those durational variations which depend on syllable position and number of syllables in the word. In many, perhaps in all languages there is a tendency towards lengthening of a prepausal syllable, and it seems reasonable to assume that this is a universal tendency of human speech. In Dutch we also find, however, a lengthening of the final syllable of a word in non-prepausal position. The same has been found for Swedish by Lindblom(1968). This does not seem to be universal in the sense that it is present in all languages of the world. The same holds for the shortening effect of the number of syllables in the word. This effect has been attested in many languages but not in all. Lehtonen (1970) e.g. obtained data for Finnish in which this effect was absent, which may perhaps be explained by the high functional load on quantity patterns in Finnish. We still may assume that such effects as the lengthening of the word final syllable and the number of syllables in the word are universal in some weaker sense of the word. I tentatively propose that some of these effects will be present in all human speech unless they are counteracted by language particular requirements on segment durations, due e.g. to quantity patterns. Notice, however, that if such effects really are to be considered universal we should be able to explain them from properties of the human speech production system, in the same way as it seems in principle possible to explain the effect of the postvocalic consonant on vowel duration from the organisation of the speech organs. As long as we have no insight into the possible cause of such universal tendencies it seems difficult to find out which regularities actually found in particular languages derive from universal tendencies and which derive from language particular requirements. We have seen e.g. that in Dutch the effect of the number of syllables in the word is one way only. Does this derive from some universal tendency in human speech or is it a language particular phenomenon of Dutch? I leave the question open. Whether universal or not, the effects of syllable position and number of syllables in the words clearly belong to the perceptual knowledge Dutch language users have about the sound structure of Dutch words, and it seems reasonable to suppose that this knowledge may be brought to bear on the decoding of speech. Supposedly it may help in dividing the incoming speech signal into words.

I hope that the experimental evidence and speculations presented in this paper may

contribute to the discussion concerning the status of durational regularities within phonetics. I also hope to have shown that the method of having subjects adjust the control settings of a speech synthesiser may be useful in probing the knowledge of language users concerning some perceptual dimension of speech. Naturally research of this kind may in its turn also help to improve the rules for speech synthesis and thus improve the usefulness of speech synthesis as a tool in speech research.

Institute for Perception Research
Eindhoven

Notes

1 The same research has been reported upon more extensively in Nooteboom 1972.

Figure 1 Durations of the Dutch vowels / i/ and /e:/ in monosyllables of the form /hVC/ as a function of the following consonant. Values are means over ten subjects times two realisations.

Figure 2 Durational build-up of nonsense words with varying number of syllables, spoken in isolation.

Figure 3 Durational build-up of nonsense words with varying number of syllables preceding the stressed vowel, spoken in isolation.

Figure 4 Adjustments of stressed /a:/ in three different positions in three-syllable synthetic words. The values are means over 3 subjects times 10 adjustments.

Figure 5 Adjustments of stressed /a:/ as a function of the number of following syllables in synthetic words. The values are means over 3 subjects times 10 adjustments.

Figure 6 Adjustments of stressed /a:/ as a function of the number of preceding syllables in synthetic words. The values are means over 3 subjects times 10 adjustments.

Figure 1

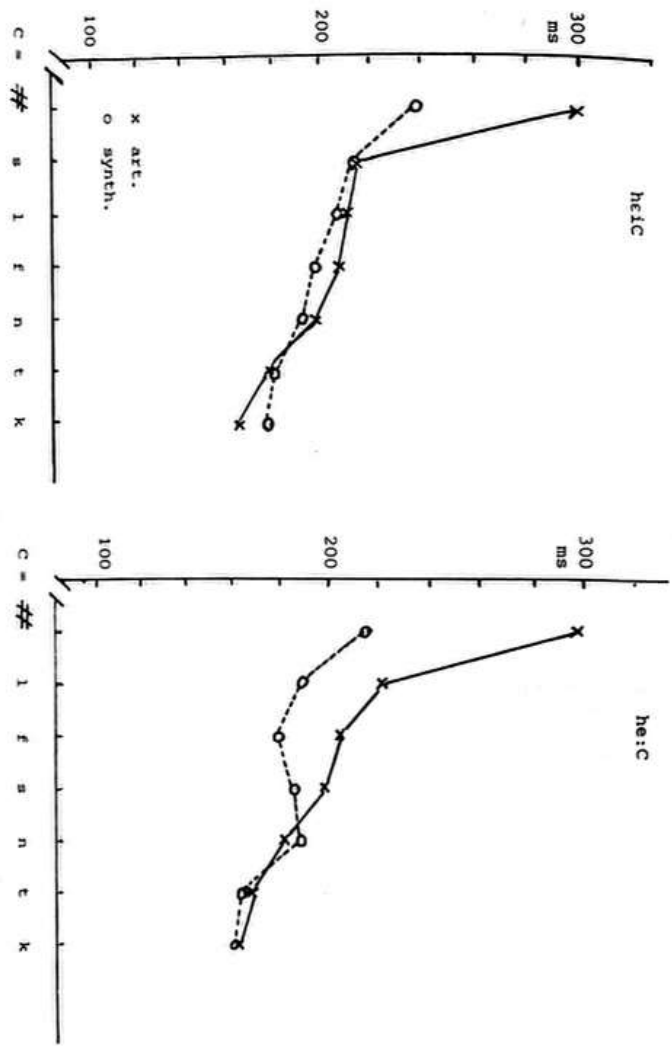

hɛiC
300
ms
200
100
x art.
o synth.
C = # s l f n t k
heːC
300
ms
200
100
C = # l f s n t k

Figure 2

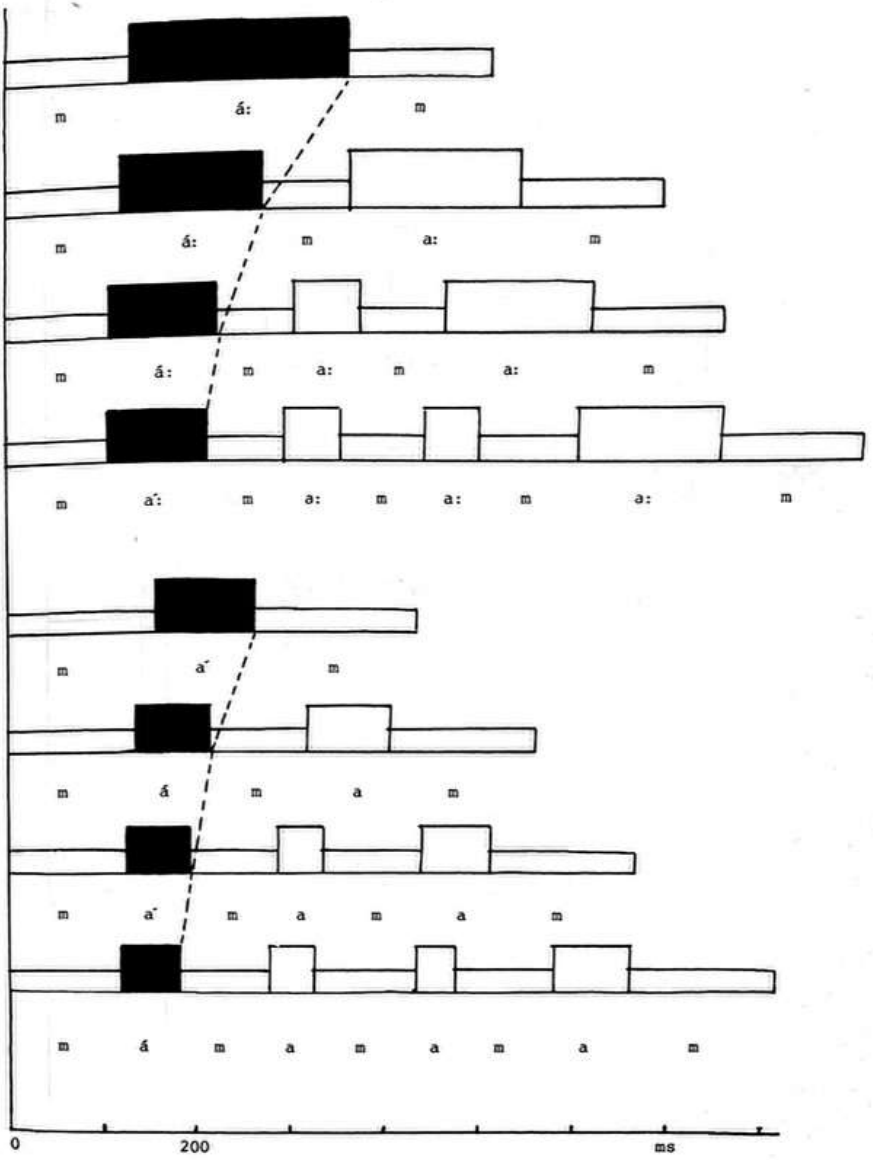

m á: m
m á: m a: m
m á: m a: m a: m
m á: m ə: m ə: m ə: m
m á m
m á m a m
m á m a m a m
m á m a m a m a m
0
200
ms

Figure 3

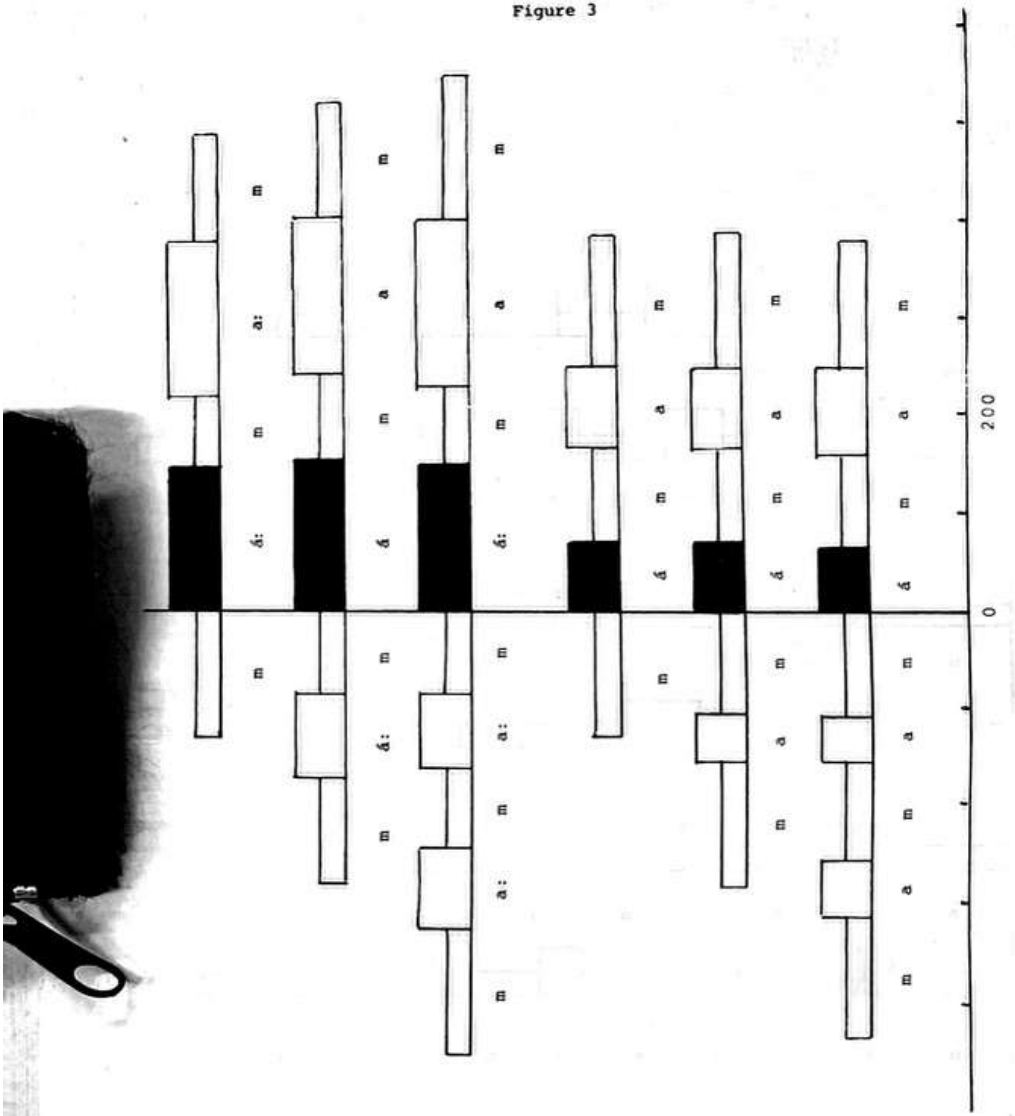

m
á:
m
m
a:
m
m
á
m
m
a
m
m
á:
m
m
a:
m
m
á
m
m
a
m
m
á:
m
m
a:
m
m
á
m
m
a
m
m
á:
m
m
a:
m
m
á
m
m
a
m
0
200

Figure 4

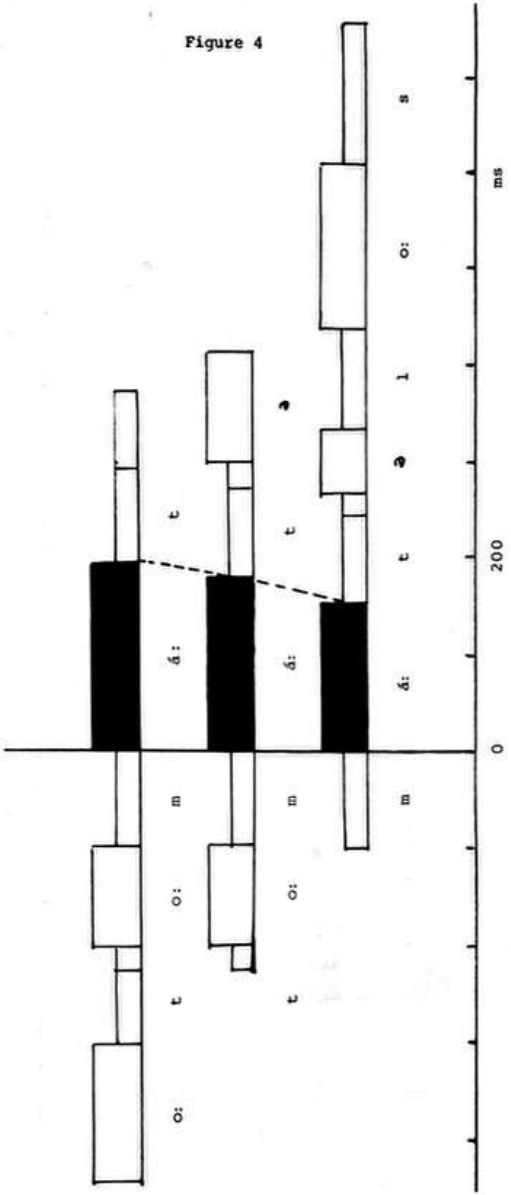


Figure 5

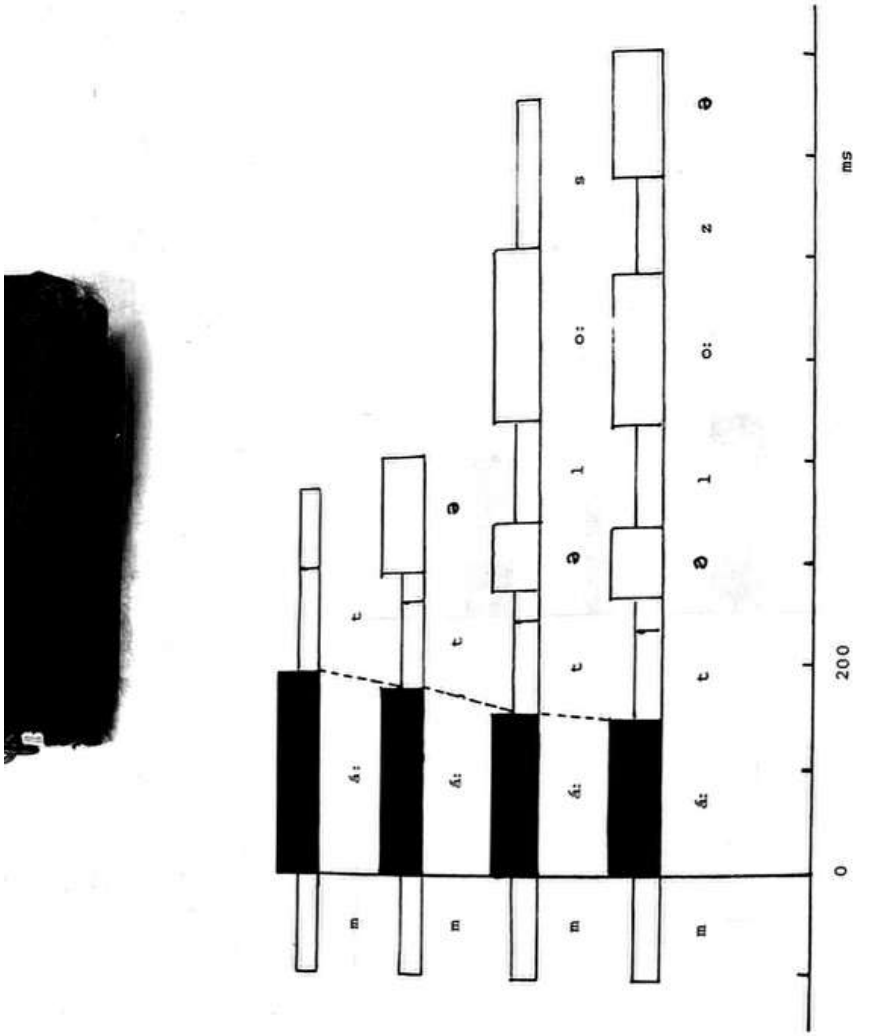
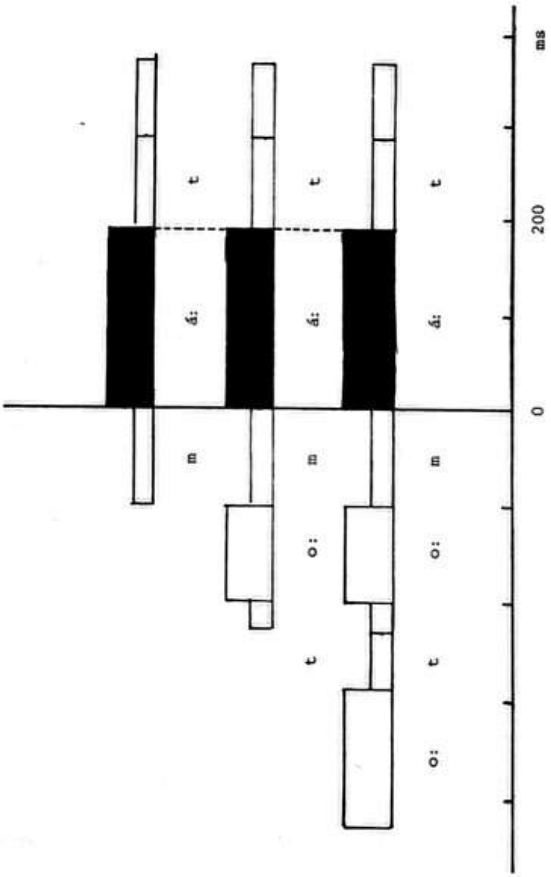


Figure 6



THE NECESSITY OF INSERTING "SPEAKER" AND "HEARER AS BASIC CATEGORIES OF A PRACTICABLE GRAMMATICAL MODEL

Werner Abraham

On whatever grounds linguistics after 1965 has criticised, refuted and modified the *Aspects*-model all of this post-Aspects linguistics can, I believe, be characterized by one common denominator: that there is hardly ever such a thing as one unambiguous reading of a sentence, or, in other words, the understanding of what reaction a sentence is to provoke depends on linguistic as well as extra-linguistic information concomitant with the utterance of this very sentence. This aspect is identical with saying that there is no 'normal' reading of a sentence but, rather, that 'normal reading' is a function of all linguistic and extra-linguistic (co-situative) implications that the participants of a speech discourse may justly have. To illustrate what I mean I shall list some such implications (the first 5 are taken from Grice (1968):

1 What is being communicated is true.
2 It is necessary to state what is being said: it is not known to other participants, or not utterly obvious. Further, everything necessary for the hearer to understand the communication is present.
3 Due to (1), in the case of statements, the speaker assumes that the hearer will believe what he says.
4 With questions, the speaker assumes that the command will be obeyed. (See Labov (1970,p.208) for a more detailed list of preconditions for an utterance to be seriously intended as an order, or a request for action).

These are what I would call purely linguistic implications independent of the knowledge the discourse participants may have about each other. (Note that they are ideal assumptions: any of these implications may be violated to result, for example, in lying, small talk, tall stories, any type of riddle, etc. Such insights, however, do not shake the basic validity of these implications since any conscious characterization of a discourse as belonging to one of the devious types must be grounded on such normal assumptions about discourse). In addition to these, there is a common property attached to any discourse (Abraham(1971)):

6 All discourse participants have in advance, and in any case develop and constantly modify in the course of the discourse, certain expectancy norms about the rest of the discourse participants. Such expectancy norms build up along lines such as social belonging, range of general and special knowledge, vernacular, idiosyncratic verbal behaviour, general and special positions taken with regard to argumentation by other participants, etc.

Evaluations of this order are derived not only from explicit wording but also - and by no means secondarily - from the presuppositions derivable.

My claim in this paper is that within this wholly opaque depiction of factors facilitating the interpretation of a sentence there are, above all, the categories 'speaker' and 'addressee' that mediate a structuring and understanding of a linguistics of discourse. I shall substantiate this claim by means of a number of examples, and I shall conclude my arguments with a statement on the role of these categories in didactic grammar(s) and the teaching of stilistics as a field that has been greatly neglected in our attempts to integrate modern linguistic methods into language teaching.

1 It is fairly well known what the status of honorifics is: they may be part of a proper name, but in any case, and especially when employed freely, they are used in accordance with certain expectations about the addressee higher in rank or with a

better starting position in an argument; their function is to ascertain that the addressee be willing to comply with discourse implications (4) and, in part, with (3): the addressee should be willing to listen and react according to fact. Apparently there are two kinds of honorifics: one is when the speaker uses a form the purpose of which is to exalt the addressee. Note that such forms are found also in the range of modals:

7 Sehr geehrter Herr X!
8 Honorable Mr. Snarf!
9 Wenn Sie so lieb sind/wären...
10 Könnten Sie das und das tun?
11 Sie müssten dann das und das tun

(11) is not a case of irreality but reports on facts obliging the addressee to do so and so, where, however, the speaker purposely depicts a situation to be mastered by the addressee at free will. Going hand in hand with this type is the form that humbles or debases the speaker himself in comparison to the addressee or things connected with him. Hence such letter endings like *hochachtungsvoll* or the historical *gehorsamster Diener*, or else:

12 Ich bin so frei (das und das zu tun).
13 Honorable Mr. Snarf have some of my humble apple pie?(R.Lakoff(1971b),p.5).
14 Dürfte (darf) ich hoffen/wissen/wünschen/feststellen/bemerken...(conjoinable are a number of what Habermas calls 'representatives' and 'regulatives'(Habermas(1971),p.111 ff.).

R. Lakoff(1971b) has pointed out that, like the rest of the modals, *must* is in fact an amalgam of several meanings which, although related, are differentiable, any of which might be primary in a given instance:

15 The speaker is higher in rank than the superficial subject of *must*, which in orders is identical with the addressee. He can impose an obligation on him.
16 The thing the addressee is told to do is distasteful to him so that he must be forced to do it against his will.
17 Something untoward will happen to the addressee if he does not carry out the instruction.

(15) is paramount in orders where the speaker is of higher rank than the addressee; (17) is applicable to our sentence (11) or to its corresponding indicative form. Our examples show that there are uses of modals that reflect the relative status of speaker and addressee and as such are parallel to the use of honorifics.Note incidentally that there are also other facts involving modals and implications on reactions of the speaker:

18 My girl must be home by midnight.
19 My girl has to be home by midnight.

As noted by Larkin(1969) by using (18) the speaker takes responsibility for the obligation - for many speakers at least -, whereas by using (19) he devests himself of such responsibility; he is merely reporting an obligation. Note that in context such interpretations can be brought to light (examples taken from Lakoff(1971b),p.24:

20 *My girl must be home by midnight - I think it's idiotic.
21 My girl has to be home by midnight - I think it's idiotic.

2 In school grammars conversational particles such as *well, why, really, golly,* German *wohl, ja sowas (óha), na ja,* are usually, if mentioned at all, defined as 'meaningless' elements. This is invariably so because such grammars do not focus on the grammar of discourse (dialogue) and the developing and meeting of arguments, on the one hand, and

stilistics, on the other. It is quite evident that they have their specific distributional rules and hence can be inappropriately used. It is therefore within the sphere of linguistics to define the conditions of their appropriate usage.This appropriateness of usage seems to be connected, in the case of some such particles at least, with the conversational implications cited above. As has been shown by R. Lakoff(1970a) *well* serves notice that something has been left out of the utterance that the addressee would need in order to understand the sentence. This may be something that the hearer can supply himself from co-situative information or knowledge that speaker and addressee commonly share, or else something that the speaker himself promises to supply shortly. Hence in (23), unlike in (22), it is signalled by the speaker of (23) in response to (22) that some qualification of an otherwise complete answer 'yes' is necessary to provide all information:

22 Did tou kill your wife?
23 Well, yes.

It is expected that the respondent be further interrogated by the speaker of (22) in order to establish the kind of extenuating circumstances that the latter implied. Such continuation could be (24) (e.g. by a judge):

24 What do you mean by 'well, yes'?

or

25 What sort of extenuating circumstances are you about to plead?

Note also the German use of *wohl* which, in one of its typical occurrences, is followed by an explicative *denn*:

26 Es hat wohl keinen Sinn... Denn sobald wir angreifen, fallen sie uns in den Rücken.

The connection with the conversational postulates is that this usage of *wohl/well* marks a violation of rule (2), second part: without the *denn* or any implication to be drawn from the co-text, something in the course of the communication would be missing for the addressee to understand the whole communication. By inserting the particle, however, the speaker avoids the communication to be aberrant in that he warns the addressee to wait for, or provide himself, further information, the suppressing of which would be a violation of the conversational expectancy norm.

What, then, is the interpretation of *why*? It indicates that the speaker is surprised at what the addressee has said, and as such it is fairly well comparable to German *na so was*, *Moment einmal*, rudely, *oha*. What it suggests in connection with the conversational implications is that perhaps the prior speaker has violated rule (1) (in the case of a statement) or (2) (in the case of a question). Usually, after such a particle of surprise, we would expect a question as to the missing link, or else a counter statement or reproach.

3 Tag-questions are, particularly in the well-known Western languages like French, Italian, and German, fairly restricted in use, and their abundance and mysterious usage is typically English. See the following sentences:

27 Leave, won't you!
28 John left, didn't he?

Clearly, in (28) the function of the tag is to suggest that the speaker is not at all certain he is right: in contrast to rightout demanding agreement or acquiescence from the addressee in the case of the mere statement (without the tag), the speaker is also

asking for agreement, however leaving open the possibility that he won't get it. It requests belief for an expression of certainty, thereby suggesting that rule (3) of the conversational implications may not hold. All this does not seem to be equally applicable to tags with imperative forms, as in (27). All we may say is that (27) is a 'softened' version of its tagless equivalent. Looking, however, at conversational rule (3) we see what is softened: (27) gives the addressee the option of obeying or not, exactly like the tag in (28), which allowed the addressee the option of believing (or agreeing) or not. As in the case of the conversational particles *well* and *why*, they signal the violation of a normally ironclad rule. Note, incidentally, that the clichéed tags in other Western languages are of one common type questioning the facts reported on: *nicht wahr* or *gelt* in German, *vero*(derived from è vero o no?) in Italian, *n'est ce pas* in French. They cannot be tagged on to imperatives since the imperative does not report on fact:

29 *Geh hinaus, nicht wahr!

Clearly, this is a question of clichées. Note that in certain Alemannic dialects (Montafon) there exists a tag to an order whereas in Standard German there is no equivalent:

30 Gang ussi, odr̤?

(Note also that the intonation distributed over the tag is rising in (30); this is altogether different from an *odr̤*-tag with even intonation which indicates that the sentence is interrupted (usually intended as a threat)). Note also, that, when an imperative form is such that it allows the interpretation of fact reporting this type of tag is acceptable:

31 Du sollst hinausgehen, nicht wahr?

4 In classical transformational grammar of the *Aspects*-type the conditions on the generation and interpretation of structures like X *guesses/supposes/believes* Y are complied with when, for X, the selectional rule [+human] holds. It can be shown, however, that such verbs of cogitation used in the first-person-singular present tense do not describe acts of thinking but, rather, that they are means of softening a declarative statement:

32 Peter believes that Mary is Protestant.
33 I believe that Mary is Protestant.

(33) expresses the speaker's feeling that the fact reported on in the complement of the verb is a probability rather than a certainty. If we apply a truth predicate to the complement proposition it would be:

34 PROBABLE (Mary is Protestant)

Such, however, is not the interpretation for (32) which reports on the certainty of the complement of the verb as judged by Peter. Hence:

35 $\text{CERTAINTY}_{\text{Peter}}$ (Mary is Protestant)

In other languages this difference of interpretation may be mirrored by different overt structures. See the Latin examples(which are from R. Lakoff(1971b),p.21):

36 Marcus Publium interfecit quod uxorem suam corrupisset.
37 Marcus Publium interfecit quod uxorem suam corrupit.

The presence of the subjunctive indicates that the speaker is not prepared to take

responsibility for what is stated to be the reason for the killing of Publius. In English translation one might want to exemplify this Latin subjunctive by using *guess* which in turn is not found in Latin in this sense:

38 I guess Marcus killed Publius because he raped his wife.

Note what German would do in such a case:

39 Marcus tötete Publius, weil dieser seine Frau vergewaltigt haben soll.

So far we have dealt with shifts of person reference that resulted in different interpretation thus ruling out a selectional restriction as mentioned above as an adequate rule of grammar. In the following examples, however, the result is not a different interpretability but altogether ungrammaticality. As I have stated elsewhere(Abraham (1971)) the following rules (among others) govern the use of the ethic dative in German:

R(40) The personal form of the ethic dative may not be a third person.

R(41) There are co-occurrence restrictions between the subject person and the object (ethic dative) person of the sentence such that the two person categories, whether they be marked singular or plural, are exclusive of one another.

Hence more explicitly:

R(40i) object {i} ≠ object $\{i_3\}$
where 'object' is the speaker/addressee (ethic dative) category, 'i' stands for one of the three persons, and the subscript '3' stands for third person singular or plural.

R(41i) subject $\{i(^{sg}_{pl})\}$ ≠ object $\{i\ (^{sg}_{pl})\}$

Rule R(41i) has to be further qualified in such a way that the grammar does not exclude such versions as (42) which is perfectly possible in an inner monologue (i.e. where speakers address themselves as an addressee).

R(41ii) If the superficial forms *dir* and *mir* have the features [[+Addressee], [+Subject person]] the pertinent structures are acceptable under the function of the 'inner monologue'.

Hence, the following cooccurrences are ruled out as unacceptable in dialogue:

42 *Ich bin mir ein Lehrer.
43 *Wir sind mir Lehrer.
44 *Ich bin ihm ein Lehrer.

whereas we rate as acceptable:

45 Das ist dir ein Kerl.
46 Du sollst mir nur keinen Hippie lieben.

and so forth. Under qualification R(41ii) the following structures become possible:

42i Ich bin mir ein Lehrer.
42ii Du bist dir ein Lehrer.
42iii Ich bin dir ein Lehrer.

5 In pedagogical as well as theoretical grammars it is usually stated that 'verba dicendi et sentiendi' cannot take *whether*-complement(see, for example, Brinkmann

(1962),p.596 or Kummer (1968),p.57. For Brinkmann *ob* (*whether* in English) can only follow a negated *wissen* (*know*) in the matrix sentence. Hence:

47 Peter weiss nicht, ob die Medizin ihm hilft.
Peter does not know wehther (or not) the medicine will do him any good.

Among the many exceptions to this rule (see Abraham(1969), p.123 ff.), we shall put forward only what seems to be in direct contradiction with Brinkmann's and Kummer's observations:

48 $^{(K)}$ $_{(K)}$Peter weiss (genau), ob die Medizin ihm hilft.
Peter knows (precisely) whether or not the medicine is good for him.

The superscript 'K' is indicative of a contrasting accent connecting such an utterance with some preceding statement in which the same matrix verb is negated. Compare:

49 $_{(K)}$(Nobody knows whether or not the medicine will do him any good but)
Peter knows whether or not the medicine will do him any good.

(There are, of course, several alternatives to the sentential connector *but*.) As becomes obvious from other examples the feature [uncertainty] with regard to the content of the proposition of the embedded sentence can be predicated of any of the three categories represented in the matrix sentence or the related context sentence:'Speaker', 'All' and 'Subject' of the matrix sentence; 'All' defines the participants of, or people interested in, the situation described by the complement sentence, including the addressee, but exclusive of speaker and subject of the matrix sentence; this set of participants is implied, by way of what in logics is called a presupposition, through the contrasting accent. Note the distribution of the feature [uncertainty] for any of the sentences cited:

50 $^{(K)}$
51 $_{(K)}$John found out whether or not that was a mistake.
I reported whether or not there was a mistake.

	Speaker	All	Subject
48'	$\pm$	+	-
50'	$\pm$	+	-
51'	-	+	-

In case such contrasting accent is missing (thereby failing to raise the necessary implications of presuppositions), the sentence is ungrammatical:

52 *Peter knows whether or not the medicine will do him any good.

52'	-	ø	-

It may be worthwhile to look, in this context, at the following first-person-singular sentences in which the speaker coincides with the matrix subject:

53 *I forgot how extremely difficult it is to find a cab in this place.
54 I had forgotten how extremely difficult it is to find a cab in this place.

This is not a difference of grammaticality to be found with other grammatical persons:

55 He forgot how extremely difficult it was...
56 He had forgotten how extremely difficult it was...

In (55) and (56), the speaker is not identical with the matrix subject. In (53), however, the predicate *extremely difficult* implies that the maker of the statement including this predicate has knowledge about this property. Since in I speaker and maker of the statement coincide, other than in (55) and (56), there is a logical contradic-

tion yielding, in this case, ungrammaticality. In (54), however, the temporal distance of experience between the speaker *I* and the *I* as subject of 'forget' renders grammaticality since the property *extremely difficult* can be predicated by the speaker leaving disknowledge to the subject alone.

6 Post-Aspects linguistics has become quite familiar with what by Ross and Sadock have been called hyper-sentences. For example, a number of sentences can be interpreted much more plausibly when the assumption is made that they depend on a declarative structure(Ross(1970)). My point here is that certain other structures necessitate the assumption of 'hypo-sentences'in order to be interpreted correctly, all of which involve the category of the speaker. I suggest that it is by means of such tacitly inserted hypo-sentences that so-called 'false' tenses are interpreted correctly by the hearer:

57 The animal you saw WAS a chipmunk: see, there he is running up a tree.
58 That thing rustling in the bushes over there WILL no doubt BE a chipmunk: let's wait till it comes out.

(The examples are taken from R. Lakoff(1970b),p.839). The 'false' tenses are not logically those of the time of occurrence of the action in question. I suggest, then, that this falsity of tense is reconciled by the insertion, before the colon in either sentence, by (59) and (60), respectively:

59 which you/we did not know then, but *I* can tell you now since see, ...
60 as soon as it can be seen by *us* ...

Quite similarly, the so-called future of propability can be explained. Consider the following(see again Lakoff(1970b),p.840):

61 Those mangos will be three for a dollar.

Note that any paraphrase expliciting the probability interpretation fails:

62 *Those mangos are probably three for a dollar.

The future tense is to be explained by way of the following hypo-structure:

63 if you decide to buy them which *I* have no way of knowing yet.

It seems thus that, in order to account for tense-uses like these, we must consider not only the overt elements of the sentence and the time of the utterance, but also the point of view of the speaker of the sentences. That is, the choice of the tense is in part based on what the speaker feels his function to be relative to the reported event. Let us look at some more examples all of which are purposely taken from R. Lakoff's paper(1970b) since I provide a somewhat different approach:

64 The boy you spoke to had blue eyes.
65 The boy you spoke to has blue eyes.

The suggested hypo-sentence for (64) is (66):

66 I did and do not see him any more.

The speaker's knowledge about the colour of the boy's eyes was acquired prior to his conversation with the addressee; at the time of the utterance, he had no new information. Now see the hypo-sentence for (66), (67):

67 as I found out later/as I know now.

For the speaker of (65), the information about the colour of the boy's eyes is new, almost contemporaneous to the time of the utterance of (65), and in any case later than the time of the act of speaking to the boy. Hence, the speaker may use the present tense. For classical transformational grammar which does not foresee bound variables in its set of rules the interpretations of (64) and (65), on the one hand, and (68) and (69), on the other hand, should be identical - which is contrary to fact:

68 The boy I spoke to had blue eyes.
69 ?The boy I spoke to has blue eyes.

Obviously (69) is possible only under the interpretation that the speaker had kept his eyes closed at the time of his speaking to the boy and had gained knowledge of the boy's blue eyes only later - an unexpected reference which makes the sentence non-normal. Note that such a dubious acceptability does not exist in German:

70 Der Junge, mit dem ich sprach, hatte blaue Augen.
71 Der Junge, mit dem ich sprach, hat blaue Augen.

Note that the insertion of appropriate hypo-sentences may be of such restricted contextual function that their shifting into other contexts yields discontextualized sentences:

72 What I just stepped on was a kitten(but he dashed away.)
73 What I just stepped on is a kitten.(Poor thing, there he lies with a broken toe.)

When the parenthesized hypo-sentences in (72) and (73) are exchanged the result is out-of-context sequences. Let us consider one more of R. Lakoff's examples:

74 George Washington happened to be an honest man.
75 George Washington happens to have been an honest man.

In the first of the two sentences, (74), the speaker of the sentence cannot be interpreted as being involved; there is no reference of the speech act made. In (75), on the other hand, 'happen' functions as an example in contrast to some prior conflicting statement or assumption of the present time, as for example:

76 George Washington was not an honest man.

(75) is a dispute to the contention in (76) to its contrary. If taken as a logical predicate, the past in (74) can be explained to involve both speech act and historical event, whereas the present tense in (75) is predicated of the speech act and the past of the historical event. In semi-formal description:

R(74) PAST (happen)

where PAST ranges over the description of both the speech act and the historic event.

R(75) PRESENT (happen) + PAST

where PRESENT ranges over the speech act whereas PAST covers the historic event.

7. We have learned through Austin(1962) and Searle(1969) that the type of illocutionary function of a speech act may override the interpretation which is attached to the superficial syntactical form of a sentence in isolation. That is to say, a sentence of the form of an interrogative may actually be employed as a threat, a sentence characterized as a request by the introduction of *please* may in fact be a harsh imperative combined with sarcasm (as when a captain asks in a clear command situation

a private to 'please' shoulder his gun). The function of such illocutionary acts is solely interpretable on the basis of the extra-linguistic co-text. In the following examples, however, this function is provoked by the superficial structure of the sentence. Compare R. Lakoff(1970b),p.845 ff.):

77 John will die tomorrow at 9 A.M.
78 John dies tomorrow at 9 A.M.

(77) is to be understood as a prediction, for example, of a doctor, who is familiar with John's illness and has no way of stopping its course. In (78), on the other hand - which, in English pedagogical grammars for Germans, is a paradigm of an ungrammatical cooccurrence of present tense and *tomorrow* -, the propositional content is uttered as a threat, or a warning, of the speaker; contrary to (77), the accomplishing of its content lies in the hands of the speaker (who, for example, is presupposed to be an executioner). It is under similar co-texts that the following sentences are grammatical and have different readings as compared to the corresponding structures in the future tense:

79 I leave tomorrow.
80 He leaves tomorrow.

In both sentences, the hypo-sentences would be something like *and no one can stop me* the only difference being that, in the first hypo-sentence, the complement of 'stop' involves the subject I, whereas in the second sentence it involves the speaker of the utterance as the one controlling the action of the subject of (80).

8 One final point has to be made with regard to the description of the lexicon. Due to an observation made by Fillmore(1970),p.262, the arguments of a predicate such as RESEMBLE must include 'experiencer', which, if not made explicit, refers to the speaker of the sentence. Compare the following:

81 Your brother resembles a horse.
82 $\text{RESEMBLE}_{\theta 1}$ (experiencer=speaker, 'brother', 'horse')

Incidentally, for its unreflexive equivalent REMIND - see above all SICH ERINNERN vs. JEMAND ERINNERN in German - the 'experiencer always has to be made explicit in English. The German verb, however, is actualized by the same rule as above, where the deleted experiencer always is the speaker. Compare:

83 He reminds me of a horse.
84 *He reminds of a horse.
85 Er erinnert (mich) an ein Ross.

It is obvious that for an interpretation of COME the locations of speaker and addressee are relevant. Hence, COME is appropriately used when one of the following locative conditions is satisfied (P= the locative adverb used or presupposed with COME):

R(86) P designates the place where the speaker of the sentence is at the time of the utterance.
R(87) P designates the place where the addressee is at the time of the utterance.
R(88) P designates the place where the speaker is/will be at the time of the utterance.
R(89) P designates the place where the addressee is/will be at the time of the utterance.

Violations of these conditions yield ungrammatical uses of COME; compare:

90 *Fred came where Harvey was, and then Harvey came where Fred was.

Such conditions are, of course, not universal. Compare the German KOMMEN where an interlinear version of (90) is altogether acceptable since the German verb oscillates between the English reading and another one, somewaht like VERSETZT WERDEN('to be shifted to a different position').

9 Conclusion and perspectives.

In sections 1 to 8 I have attempted to show that, in order to incorporate interpretations of illocutionary force, the explanation of ordinary sentences must include the participants of the speech act itself. In traditional grammar such observations have been subsumed under the term 'deixis'. We have dealt here with the following types of deixis: person deixis as reference to the speaker and the addressee, time deixis as reference to the time of the speech act, place deixis as reference to the locations of the speaker and the addressee, and discourse deixis as reference to portions of the utterance itself. Within person deixis, we considered the respective social status of the participants of the speech act, the knowledge of the speaker about the real world and the co-text of the speech act, his lack of desire to commit himself to a position, etc. Within smaller range we have also cast light on the differences that these contextually and co-textually linked phenomena make overt in different languages. Although it may justly be claimed that they have no place in universal grammar they have nevertheless been shown, I believe, to be language-particular rules of major order. That is to say, for a child who is to acquire competence in his native language it cannot be held to be negligible to understand and reapply infallibly the rules of person deixis. Thus, extra-linguistic rules of a language may well be regarded as essential for a competent mastering of a language as the hard-core, purely linguistic rules. This, of course, is equally true for second-language learning and, more generally, for grammars set up for didactic reasons. Furthermore, it seems that reference to extra-linguistic conditions can be relegated to the set of o p t i o n a l rules (stylistic rules) only in a grammar with sentence domain; our examples have demonstrated that such rules cannot be discarded with as o p t i o n a l in a linguistics that aims at explaining the structure of discourse. Thus, it will provide explicitness within the study of s t y l i s t i c s , a field which has remained so deplorably bare of explicit linguistic parameters. Judged against this background of the general tendency of modern linguistics to include so many extra-linguistic and implicational factors for the explanation of linguistic structures certainly such systems as propagated by structuralism of old as well as of the Chomskyan type seem highly inadequate. On the other hand, there is little hope, at present, that some such satisfactory model of a more comprehensive type can be found. It appears to me that, instead of seeking the linguistic fortunes in amassing the descriptive factors without close control as to how these factors are interdependent we had better, for didactic as well as theoretical purposes, delimit our efforts to the sentence domain and the 'normal' interpretation of a sentence. These I regard as fundamental linguistic units. While we certainly have reason to advocate the expansion of linguistics into the domain of discourse and textual analysis within the range of didactic purposes it remains, for the very same didactic purposes, a desiderate to investigate more deeply by way of linguistics and to motivate more consistently by way of pragmatics and a theory of norms, the 'core grammar' of languages the descriptions of which have been the goal of traditional grammars as well as the Chomskyan type of grammar.

Excursus: on categorization within a discourse grammar.

Quite obviously, it would be necessary in this context to categorize such entities as 'content unit' ('argument', 'intended communication') within text or discourse as well as characterize categorially how an argument is followed up by a discourse partner.

It seems to me that one could suggest the following categories: 'affirming' or 'denying'

the validity of the content of a communication or argument with such subdivisions as:
affirming-expanding (affirmation plus adding of new information),
affirming-restricting (affirmation plus restriction of the information just given),
affirming-paraphrasing;
denying-expanding,
denying-restricting,
denying-substituting (denial plus substitution of the information just given).

In other words, these categories make discrete the goals of particular communications (and, in a wider sense, also the goals of particular actions) of speaker (actor)and addressee (by way of verbal communication as well as non-verbal action). Of course there remains the question how to delimit one unit of information within a text (texteme: this may be a sentence, but may also exceed the grammatical sentence domain). I suggest that this be the 'rules of identification and predication' in predicate calculus. Let us draw the necessary conclusions from the following sentence:

91 This boy crossed the street.

According to the rule of identification, the question has to be clarified as to whether or not 'this boy' can be identified by the discourse participant(s) or addressee(s) or reader(s) of a text. This question is again to be split up into the check on the identifiability of 'boy' as well as 'this boy' (whether it can be identified by pointing at the object, or else by referring the addressee to the previous(discourse) text). Second, according to the rule of predication, a check is required on whether or not it is agreed on to call the action of the identified object 'cross the street' and whether or not this action happened at a time previous of that of the speech act or the time of the report being written. This question, again, is further analysable into a check on the identifiability of 'cross', 'street' and 'the street'. Introducing the notion of 'componential analysis of the lexicon of a language' we can now account for the above-mentioned categories of arguments within a discourse text: let K_m^n be a component of semantic markers (of some order of complexity) where the subscript $_m$ denotes the lexical item the component is characterizing, and where the superscript is used to enumerate the components for each lexical item such that

THIS BOY: $K_1^1 + K_1^2 + \ldots + K_1^n$

CROSS: $K_2^1 + K_2^2 + \ldots + K_2^m$

THE STREET: $K_3^1 + K_3^2 + \ldots + K_3^1$

We can envisage the check by the addressee to run over each of these components with the following responses possible:

check on THIS BOY:

correct, but to be expanded:	$K_1^1 + K_1^2 + \ldots + K_1^n + K_1^{n+i} \ldots$	hyponymy
correct but to be restricted:	$K_1^1 + K_1^2 + \ldots + K_1^{n-i} \ldots$	hyperonymy
correct and paraphrasing:	$K_1^1 + K_1^2 + \ldots + K_1^n \ldots$	synonymy(equivalence)
not correct, to be expanded:	(see above under 'correct')	
not correct, to be restricted:	(see above under 'correct')	for $1 \leq i \leq n$
not correct, to be substituted:	$K_4^1 + K_4^2 + \ldots + K_4^r$.	

What, then, is the function of 'correct/not correct', which obviously, cannot be motivated by means of the componential mapping. I suggest that these two categories relate the addressee's/answerer's expectation to the degree of compliance with this expectation by the speaker. Such expectation is established through the topic of the discourse-text and the components of the co-text that bear on the text in question. The concept of 'expectation' as used here comprises presupposition as established through the context (which would bear on the coherence of the text) as well as all the pertinent elements of co-textual description which, in addition to the contextual conditions, may become relevant also in discourse. (For an extensive discussion of presupposition as the structuring concept within a text see Kummer(1971a,b).

Our initial assumption was that discourse is a means to reach agreement over an interpretation of a communication. Consequently, the notions of agreement, partial agreement, disagreement, and partial disagreement will play a decisive role within the structure of discourse. These notions can be further analysed by means of such meaning relations as hyponymy, hyperonymy, and equivalence, and, in second instance, by the notion of 'expectation'. Needless to say, that the latter concept, though necessary and intuitively plausible as it seems, is not yet the key itself to the 'terra incognita' that I have tried to illustrate but rather a still unanalysed descriptor for it.

Department of German
University of Groningen

INDUCTION AND LINGUISTICS

S.de Mey

1. In this paper[1)] I shall attempt to give a critical discussion of Chomsky's ideas on induction as they are expressed in Chomsky (1968a) and Chomsky (1972). These ideas represent the theoretical framework into which syntactic investigations have to be fitted. For a Chomskyan grammar to be interesting, and therefore adequate, it is necessary for it to provide insight into the way the human mind works.

2. It may not be immediately clear that 'induction' is a key notion in Chomsky's thinking. The term 'induction' itself does not occur very frequently in his writings. In Chomsky (1972), for instance, it occurs only in quotations. It is rather paradoxical to call a term which is hardly used a key notion. The solution, however, is simple. To Chomsky, the word 'induction' has an unfavourable ring. To him, 'induction' and 'innate mechanisms' are complementary terms: whoever uses the term 'induction' denies the existence of innate mechanisms. Conversely, whoever believes in innate mechanisms does not believe in induction. There is, to my mind, no reason why we should adopt Chomsky's use of the term 'induction'. On the contrary, there are at least two reasons for us to use the term in a neutral way. The first reason is that Chomsky introduces the term 'abduction' (Chomsky 1968a,p.79). It is advisable, however, not to indulge in any proliferation of unusual terms. The second reason is more important. There is no phenomenon for which the term 'induction' can be said to stand. The term has been used in so many ways as to have no precise meaning, except for contexts in which a precise meaning is explicitly assigned to it. My suggestion, then, would be to use the term 'induction' in a very broad and neutral sense. It is applicable to the problem posed by the relation between generalizations and data. Taken in this sense, 'induction' is an important problem, not only for Chomsky but for linguistics in general. In paraphrasing Chomsky's ideas I shall use the terms 'induction' and 'abduction' in his sense.

3. Generalizations constitute a problem to the extent that they are meant to be valid not only for cases which are well supported by the data, but also for cases for which there are no data. We may wonder, therefore, what exactly justifies our confidence in generalizations. As Russell once put it (quoted by Chomsky (1968a, p.60)) 'Either, therefore, we know something independently of experience, or science is moonshine'.

4. Any discussion of induction is complicated by another factor. Thus one may or may not leave the psychological aspects out of consideration. To Chomsky the psychological side of the problem is of paramount importance. In modern methodology, however, a formal or logical account is the more generally accepted approach. As far as I can see, a psychological account, if feasible, would render a methodological one superfluous. Occasionally though, a methodologically-conceived induction problem crops up in Chomsky (Cf.Chomsky 1968a,p.77).

5. The point that I am trying to get across is that Chomsky's mentalist doctrine is a difficult one. It should be the principal task of any commentary to shed light on this issue. In the next section an attempt will be made to reproduce Chomsky's ideas as accurately as possible and subsequently, to confront them with modern views on induction.

6. Let us start with the psychological side of the matter. Rather than call Chomsky's linguistic doctrine psychological, it should be called mentalistic. As I understand the terms 'mentalistic' and 'psychological', a mentalistic theory is at once more general and more abstract. It is more abstract in that it relates the structure of language with the structure of the mind. It is more general in that

it concentrates on what is common to all men, instead of concentrating on what is peculiar to an individual's learning of his language. In Chomsky (1971,p.56-58), a distinction is made between 'the choice of grammar on the basis of data' and 'the way knowledge of language is acquired'. The first of these, it would seem to me, is the typical object of a mentalistic theory.

7. A linguistic theory is a theory in which the principles are expounded according to which the grammar that people choose is organized. In this way a linguistic grammar provides insight into the way the human mind works. It is Chomsky's conviction that only a rationalistic theory can be right. Empiricism has proved a blind alley, and the above quotation from Russell testifies to this. It will therefore be necessary to dwell a while on the differences between empiricism and rationalism, and, consequently, on those between induction and abduction. The following four statements may be said to summarize Chomsky's theory of knowledge.

A We do in fact know something independently of experience, and science is not moonshine.
B Three elements are to be distinguished in the acquisition of knowledge: 1) the innate structures of the mind; 2) the genetically-determined maturational properties; 3) interaction with environment, or experience.
C The part which innate mechanisms play in the acquisition process can, for the time being, be properly studied only through the study of speech acquisition.
D The part played by experience can be properly understood only if we know the contribution made by the innate mechanisms.

It is easy to see which conclusions may be drawn from this theory. We should not, as was the custom under empiricism, describe the role of experience in the acquisition of knowledge in general. On the contrary, we must study the role of innate mechanisms in the more limited case of language acquisition. Every human acquires a knowledge of his mother-tongue that goes far beyond the knowledge that could ever be inferred (say by a device which modern science enables us to construct) from all the language to which he was exposed since his birth. Besides, speakers of the same language acquire more or less the same grammar. Obviously, speech acquisition proceeds along lines that are the same for all human beings. Since language has no existence outside the mind, the generalizations the linguist finds when he describes a language must, perforce, correspond to governing principles. These principles are collectively called 'a transformational grammar', with the term 'grammar' used in a systematically ambiguous way, to refer both to the linguistic grammar and to the internalized grammar.

8. What are the relations between transformational grammars and induction? The human mind is endowed with a set of innate mechanisms. It is thus narrowly restricted as to the possible hypotheses it can spontaneously come up with when stimulated by experiential data. Now the traditional inductive problem was that there are infinitely many hypotheses compatible with a fixed set of data. It is unlikely that our mind scrutinizes and checks an infinite amount of hypotheses. By assigning to the mind innate restrictions on possible hypotheses Chomsky makes it probable that acquisition of knowledge takes place by testing hypotheses against experiential data. Moreover, the relatively short period within which human beings learn to speak can be further explained by assuming the difference between the possible hypotheses to be great. An important difference between acquisition of knowledge and speech acquisition is constituted by the fact that everybody learns to speak. This difference however, is relativized by Peirce (from whom Chomsky borrows this theory), who points to the ease with which great discoveries have been made by scientists, thus emphasizing the similarities between discoveries in general and the natural process of speech acquisition: 'How few were the guesses that men of surpassing genius had to make before they right-

ly guessed the laws of nature'.

9. We are now in a position to compare Chomsky's views on induction and abduction. Both induction and abduction are cases of theory construction stimulated by experience. In both cases the hypotheses are underdetermined by the data. The diffeence, however, is that in the case of induction certain properties of the objects under observation are generalized in accordance with the canons of induction, whereas in the case of abduction the generalizations, which are latently present in the mind, will become active on external stimulation. More often than not the stimuli are degenerate, as they do not faithfully mirror the objects they emanate from. This induces the assumption that the human mind possesses some kind of perfect knowledge[2)] of the objects under the stimulation of which the generalizations evolve in the mind. Parallel to the differences between induction and abduction are the differences between an empiricist and a rationalist account of the acquisition of knowledge. Empiricists try to keep the innate part as small as possible: it is only the canons of induction that are innate. Moreover, there is a qualitative difference between that which both approaches regard as innate: the rationalist 'perfect' knowledge of the objects is rejected by the empiricists. The main problem, of course, is whether Chomsky's distinction between induction and abduction is defensible. Harman (1967) has pointed out, and rightly so to my mind, that an empiricist worth his salt can incorporate into his inductive canons all those matters that Chomsky claims to be innate. Given the tentative nature of the theories concerned it cannot be denied that it would be possible to devise a system of inductive canons which is extensionally equivalent to Chomsky's theory.

10. It has often been remarked that empiricism and rationalism differ as to the importance both approaches attach to theory construction in science. Empiricists, according to many people, show no interest in theoretical devices. To them theories are useful tools for the exhibition of data. It is not altogether clear to what extent Chomsky himself would subscribe to this view. He has, quite rightly, pointed out that the anti-theoretical currents in the philosophy of science have been very short-lived indeed. It was mainly empiricist philosophers of science that initiated the study of theoretical devices. This matter, incidentally, is easily confused with an otherwise unrelated problem. This problem relates to the question as to how to interpret non-observable, i.e. theoretical terms in scientific theories, once they have been admitted. There is the realistic viewpoint according to which all theoretical terms should stand for something real. Over against this realism we find a host of other interpretations: pragmatist, fictionalist, instrumentalist, eliminatist. Whether Chomsky could be called a realist, is hard to say. He defines 'competence' as an abstract system underlying linguistic behavior. If 'competence' here stands for something real, 'abstract' should mean: unobservable. Unless 'unobservable' is construed as 'as yet unobservable, but in principle accessible to investigation', there is the further problem of explaining real but unobservable entities. Any further discussion of this point would have no direct bearing on the subject, so that I must refer the interested reader to Block (1972) and Lyons (1970).

11. Chomsky does not treat language acquisition differently from the acquisition of knowledge in general. In both cases hypotheses are tested against a set of data. Speakers of a given language acquire a more or less identical grammar. In Chomsky's explanation of this fact (if fact it is) the induction problem, however, has been solved. Due to restrictions on possible hypotheses only one grammar can be acquired on the basis of data pertaining to a specific language. Chomsky claims this to be an empirical hypothesis about language acquisition. Given the parallel between speech acquisition and the acquisition of knowledge in general it is not astonishing to find that Chomsky's theory has an analogon in an already existing theory of induction. There have been, on the part of older philosophers of science, many efforts to justify induction. Their main concern

was not to determine which theory had to be inferred from a given set of data, but rather to show, once a theory had been found inductively, what kind of process induction is. The more confidence-inspiring an account of the nature of induction is, the more justified we are in using inductive procedures. There were two favourite approaches. The ontological approach takes the world to be a collection of regular processes. That is why we are justified in generalizing from our data once we have discovered parts of the pattern. According to the psychological approach, the one relevant in this context, the mind is so structured as to perceive regular patterns. Such a justification of induction is not very popular today. The reason is that an infinite regress threatens to invade our argument. How do we know that the world is built on a regular pattern? How do we know that the mind has a natural tendency to perceive regularities? These are generalizations, and as such they can be discovered only by induction. Against Chomsky the charge of circularity of argument can even more easily be maintained. Once it is assumed that there are restrictions on the hypotheses the mind can discover, it is natural to conclude that the mind is constrained in such a way as to assume exactly that it is constrained in this way.

12. In relation to the alleged analogy between language acquisition and the acquisition of knowledge in general yet another point should be dealt with. Harman (1967) claims that Chomsky confuses knowing-how with knowing-that here. Chomsky has rejected this criticism, and Harman's point has not, on the whole, got a good reception. Even so, the essence of Harman's point has, to my mind, never been refuted. Suppose we build a robot which is meant to acquire speech. If it does learn to speak, the theory of language acquisition that guided us during its construction will be confirmed. But grammar, as we have seen already, is not a theory about language acquisition. According to Chomsky (1971,p.57) a theory of syntax must be placed in the context of a richer investigation of how people acquire knowledge of their language. Though syntax is an independent part of any theory of language acquisition, it cannot, as a result, be tested independently of such a theory. This brings out the real nature of Chomsky's theory of mind. It is correct to say that syntax is an empirical theory of the structure of the language described. Unfortunately 'structure of language' is a rather vague term. 'Structure' may be anything described by a grammar. Any further interpretation of 'language structure', however, would lack empirical support. It is tied to the particular assumptions we have been willing to make. Chomsky's contention that the mind is constrained as to the possible rules of language may sound convincing, but as long as we have no direct access to LAD (language acquisition device) it must remain un unverifiable hypothesis.[3]

13. If, on the basis of quite heterogeneous linguistic data, speakers of a language develop an identical grammar, some kind of mechanism must be assumed to account for this. Such a mechanism is called an evaluation procedure. Due to the systematically ambiguous use which Chomsky makes of the term 'grammar', the term 'evaluation procedure' is ambiguous in exactly the same way. It stands both for the internal mechanism and for the linguist's theory of such an internal procedure. Since an evaluation procedure guides native speakers in their inferring a grammar from the data, it is an inductive procedure. Generally speaking, however, it is a conceptual impossibility to place on the same footing both a theory and its inductive procedure. It is as though we devise the solution to a problem that proves its own correctness. Therefore, let us have a somewhat closer look at the way induction has been treated in modern methodology. Modern theories of induction are theories about theories, not parts of theories. It may be possible to construct an empirical theory in which the mind is equipped with some kind of restricted induction procedure. However, if we want to avoid inconsistencies, this induction procedure should have no truck with the relation between the data and the generalizations of this particular theory. There is, so to speak, room for yet another kind of induction. But this time it is not (part of) an empirical theory, it is

a formal theory. Far from shedding any light on the delicate problems at issue, the systematically ambiguous use of terms like 'grammar' and 'theory' tends to obscure them.[4)]

14. So far we spoke about induction in a psychological or mentalistic context. At this point it may be worth while to turn to a formalistic conception of induction. Once justificatory accounts of induction have been rejected, at least three other developments can be distinguished:

A The logic of confirmation. There is a strong tendency for philosophers of science to view methodology as a formal science. Many scientists, however, are inclined to conceive methodology as an 'angel of revenge', or, more prosaically, as a set of canons one has to observe in order to become a good scientist. This normative point of view has been ousted by a descriptive one. Science, according to this view, is a set of statements, the properties of which can be specified in a formal way. Consequently, methodology can only 'call' a statement acceptable that is acceptable already. Methodology thus conceived cannot approve of or add anything to science. The logic of confirmation fits into this context. Supposing a theory is supported by a set of data, how could we describe the logical relation between the observation sentences and the lawlike sentences.

B The problem of induction may be tackled from a heuristic point of view. Suppose there are two theories neither of which is in conflict with the data available. Which of these two will it be best to tentatively accept? The advice usually given is: either take the stronger, or the simple one. Leaving aside the difficulty involved in defining such notions as 'strength' and 'simplicity', it is a most unsatisfactory situation that we must make do with a theory that may, eventually, prove incorrect. Methodology is concerned with statements, not with actions.

C In the sixties much attention was devoted to inductive probability. Along with the heuristic approach referred to, it shares the tendency to look for differences between two theories both of which are supported by the data. But instead of settling on an all-or-none solution, it aims at finding a measure function so as to compare theories as far as their 'degree' of probability or reliability is concerned. In this way, use may be made of the already-existing probability calculus. Hosts of problems, however, beset probability theories, as may be gathered from Kyburg (1970). The chief problem is, how to empirically interpret the formal parameters. Does a difference in degree of probability belong to reality, to the mind, to science or to logic? All of the theoretically conceivable lines of reasoning have been followed up, so far without any conclusive answer. For the time being it is unlikely that a solution for the problem of linguistic generalizations is at hand.

15. In the course of this paper I have raised a number of points related to the question of induction. My point has been to show that Chomsky's theory leaves much unexplained as to the relation between grammar and the mind. Unclarity invites interpretation. The points I have raised are indicative of interpretations that are not viable anyway. It may not be superfluous to discuss such an unviable interpretation. Evers (1971a,p.365) construed Chomsky's hypothesis of LAD as an empirical theory: "... (in this way) the hypothesis becomes testable. If it appears that the description of a language can be accomplished almost completely with the aid of categories which are also found in other languages, the hypothesis of a capacity for language acquisition has been confirmed. However, if a natural language should be found which makes an almost exclusive use of other categories and of rules of a completely idiosyncratic kind, the hypothesis about the capacity for language acquisition has been falsified." The difficulties I encounter in this interpretation may be schematically represented as follows. I assume that:

1 theories consist of two parts:

- observation sentences: sentences in which our data have been expressed as directly as possible.
- lawlike sentences, which contain the explanation of the data.

2 every explanatory theory is underdetermined by the data.
3 it is a normal empirical procedure to accept a theory that is not disproved by the data, though underdetermined by them.
4 induction is a theory about this underdetermination.

Now three different theories are relevant:

I a theory about the mind: its observation sentences contain data about language behavior. Among the theoretical terms are 'innate mechanisms' and 'evaluation procedure'. One of its theorems states that there is an innate inductive procedure that guides the discovery of a grammar that is more or less identical for all the native speakers.

II a theory about human languages: its observation sentences contain data about all languages. Among its theoretical terms are the names of the categories and rules of universal grammar. One of its hypotheses states that all human languages can be described by the same set of universal categories and rules. It comprises an evaluation procedure.

III a theory about the relation between language structure and language acquisition: its observation sentences comprise statements about universal grammar. Its explanatory sentences describe a set of innate mechanisms. One of its theorems states that in all languages the categories of universal grammar reflect the innate mechanisms that fulfil a function in language acquisition.

Apparently a type-III theory is what Evers is after. His claim can be paraphrased in the following way: the moment we have tested a type-II theory and found it trustworthy, we have confirmed a type-III theory as well. Simple though it may sound, the point Evers is trying to make is extremely complicated. Let us therefore have a closer look at the facts. Suppose we take particular type-I, type-II and type-III theories and call them (i), (ii) and (iii) respectively.

(ii) can be analysed as follows:
(iia) the universal grammar consists of the following categories and rules: ..... (to be specified).
(iib) the universal grammar contains all the categories and rules that are necessary to describe every possible human language.
(iic) the evaluation procedure is as follows: ..... (to be specified).
(iid) the universal grammar that is selected (respectively, valued highest) by the evaluation procedure is the grammar specified by (iia).

(iii) can be analysed as follows:
(iiia) the categories and rules of the universal grammar specified by (iia) can be explained as the reflection of the innate restrictions on possible grammatical hypotheses that operate in the construction of internalized grammars. That is, there is an explanatory relationship between (i) and (ii).
(iiib) the universal grammar specified by (iia) is a model of these constraints.

Only (iib) is an empirical hypothesis. Note that there is a difference between (iib) and the claim that there is a universal grammar which is sufficient to describe all possible human languages. The latter claim is difficult to falsify. Some such claim, however, seems to be what is referred to in the quotation from Evers. (iid) is not an empirical hypothesis. The evaluation procedure is a logical reconstruction of the universal grammar specified by (iia). The logic presumably used is the logic of confirmation referred to in Chomsky (1968a,p.77). It is easy to think of other type-II theories that differ essentially from (ii). Let us take one of them en call it (ii'). (ii) and (ii') differ either in that the universal grammars specified by (iia) and

(iia') are not identical or in that the evaluation procedures specified by (iic) and (iic') are not identical. What we need is a procedure which picks out the linguistically more satisfactory grammar of the two, but none such procedure is known to exist. Even if (iib) is confirmed, though, connecting (ii) with (iii) is just a question of tying up loose ends: what other purposes does universal grammar serve, if it does not provide a model for language acquisition? In no case, therefore, can (iii) be called an empirical theory. Both (iiia) and (iiib) are based on the claim that language has no existence outside the mind. What is needed to falsify this hypothesis, however, is absolutely unclear to me.

16. It is inevitable that in an article like this the terms 'induction' and 'inductive' should be used rather frequently. It is impossible, though, to use them in a previously determined sense. For this reason I shall, in conclusion, sum up the main uses here.

1 In contexts that are meant to paraphrase other peoples' ideas the terms involved are used in accordance with the authors' intentions.
2 Further, there are three groups of 'meanings'.
   A This group can be subdivided according to the presuppositions made:
      A 1 There is only one theory which explains the facts in a correct way.
      A 2 There are infinitely many theories compatible with a given set of data.
      The induction problem for A can be formulated in either of the following ways:
      I How do we detect (I-A 1) the one correct theory, or, alternatively, (I-A 2) the infinitely many theories?
      II Suppose we know (II-A 1) the one correct theory, or, alternatively, (II-A 2), the infinitely many theories, how do we describe the relationship between the theorie(s) and the data? Again there can be two ways of description involved, an intuitive one and a formal one.
      I represents a problem for the science involved, II represents a methodological problem.
   B^1 With this group of 'meanings' it is presupposed that there is an infinite set of theories compatible with a given set of data. The induction problem for B^1 is to find out whether there is a property which singles out from all the other theories one and only one theory that can be considered the most trustworthy one. This version of the induction problem is a heuristic problem, and, consequently, a problem for the science involved.
   B^2 There is an alternative version which runs as follows. Suppose we do know a formal property that selects one and only one theory, how is this property to be interpreted and how are we to know that the theory selected is the most dependable one? This version of the induction problem seems to be at once a scientific and a methodological problem.
   C With this group of 'meanings' it is presupposed that there is a theory which explains the facts in a correct way. It is further presupposed that this theory can somehow be found. Consequently, the induction problem is to select from the many possible ways the one procedure that can legitimately be called the inductive procedure. This version of the induction problem is a metaphysical, rather than a methodological problem.
   C is meant as a reconstruction of the problem of justifying induction, B^2 of the problem of probability logic, B^1 of the problems of strength and simplicity, A II of the logic of confirmation. A II represents the every day uses of the terms in question.

Department of Linguistics
University of Groningen

Notes

1 Many thanks are due to A.J. van Essen of the Institute of Applied Linguistics at Groningen who edited my English. I am responsible for any remaining mistakes.

however. Although I am not quite sure he agrees with my interpretation of Chomsky I am grateful to E.J. Reuland for his insightful comments on this paper.

2 As far as I know, the term 'perfect knowledge' is not used by Chomsky. I have coined the expression, however, in order to use it in contrast to 'degenerate data'.

3 Cf for a further elaboration De Mey (to appear).

4 It is my impression that Chomsky's conception of evaluation procedures per se is correct, but that the relationship he establishes between evaluation procedures and innate restrictions operative in the construction of internalised grammars is mistaken. Cf Chomsky (1965,p.37ff) and section 15 of this paper.

SOME REMARKS ON THE DEVELOPMENT OF THE NOTION 'TRANSFORMATION'*

Eric Reuland

One of the jobs a general theory of human language has to do is to characterize as narrowly as possible the set of possible grammars of natural languages. It meets this requirement among other things, by defining the notion 'possible rule of a human language'. It is expected that this will favour gaining a better understanding of what distinguishes natural language from other sign systems, and so of the child's language acquisition device. The above represents about the staple view of generative grammarians and in what follows I shall assume that this is a reasonable objective. I must, however, make one reservation. The terms 'rule' and 'grammar' do not primarily refer to a formal notion of rule and a formal notion of grammar. In this context they are meaningful only if one wishes to express the idea that the general theory determines what conditions must be met by a set of descriptive statements about a language if it is to count as a description of that language. What is establishes should be in agreement with our intuitions as to what a language description is. The general theory states which regularities in the language material observed are also regularities of the language in question.[1] I do not propose to go into what regularities are, nor how we find them. This belongs to the problem of induction in general and is beyond the scope of this article. I assume we find them one way or another.

When formalizing a theory one naturally chooses a procedure that works smoothly, but it is not the case that a translation schema and a formal system which don't work smoothly should consequently be wrong. If a theory possesses some correct formalization it has at the same time infinitely many, of which a great number will not work smoothly. We make a choice on subjective grounds. Such a subjective choice is made e.g. if it is required that every rule of the formal system corresponds to a regularity in the informal theory and vice versa. But such a restriction has no other status but that of a voluntarily accepted rule of a game. Only if we regard it as such, and are willing to obey it, may we neglect in our discussions the difference between 'formal rule' and 'regularity in the phenomenon under review.'[2] It is important, however, to be constantly aware of the ambiguity which is thereby introduced. It may not be superfluous to give a simple illustration of this difference. When studying e.g. the Dutch language, one might come to the conclusion that it exhibits among other things the regularity of agreement of person and number between subject and verb. When we attempt to formalize a description of this phenomenon by means of a context-sensitive rewrite system (C.S.R.) we find, as is well-known, that this regularity cannot be represented by one rule, whereas that can be done to the regularities that an intransitive verb agrees with its subject and that a transitive verb agrees with its subject. Therefore C.S.R. formulation is inadequate if and only if we want to stick to the one-to-one-principle. Henceforth I shall stick to this principle, unless otherwise stated.; consequently I shall use the terms 'rule' and 'grammar' with both meanings. The term 'sentence' also may be used as referring to elements of a formal language, as well as referring to the phenomena we describe with it. For both sentences and their formal representations the rule of the game is comparable. After these introductory remarks I will pass on to the main problem.

What is meant by 'possible rule of a human language' is in fact best exemplified by the impossible rules which are found in the literature. From the examples it will become clear that when people use the word 'rule', in fact regularities are meant. Our discussion will be oriented towards the question as to how we may determine the nature of possible transformational rules. It is also the examples known from the literature that bear principally on this problem. As for the base component, it is almost universally assumed that a constituent structure grammar of one of the known types is reasonably adequate; so we may be justified in concluding that not many problems exist here. Of course, there is the discussion concerning the importance of dependency relations

or the question of whether trees should be 'directly' generated(McCawley(1968a)), but these play no comparable role. The notion 'possible abbreviation of a set of base rules' may be an exception to this; we won't go into it, however.

Chomsky(1965,p.55) gives some examples of impossible rules. Thus it must be impossible to formulate as a transformation the mirroring of an arbitrary string (i.e. replacing a string $a_1 \ldots\ldots a_n$ by the string $a_n \ldots\ldots a_1$). The same holds true for interchanging the (2n-1)th and 2nth words in a string of arbitrary lenghth, or placing a new symbol in the middle of a string with an even number of symbols. We now quote Chomsky(1965,p. 56):'Hence one who proposes this theory would have to predict that although a language might form interrogatives, for example, by interchanging the order of certain categories (as in English), it could not form interrogatives by reflection, or interchange of odd and even words, or insertion of a marker in the middle of a sentence'. Lakoff(1970b,p. 5) too, presents some examples of impossible rules, which amount to the same. E.g. the logically possible rule that in some natural language imperative sentences are the mirror-images of the corresponding declaratives.

The above examples demonstrate that what are called impossible rules here are rules of which the impossibility is caused by their prediction of the existence of regularities in the relations between sentences which are not language-like. That is to say, they are such only if they are translated into regularities in accordance with the one-to-one-principle. Chomsky(1965,p.56) assumes a relation between possible rules and the way the child's language acquisition is supposed to work. If we combine this, there is the apparent suggestion that the child, when confronted with a certain amount of language material, will only recognize as linguistically relevant, the relations between sentences belonging to a specific set, viz. the relations which may be expressed by a single possible rule, and that he extrapolates in conformity with such rules. To summarize: transformational relations are relations between sentences, therefore it must be possible to express constraints on transformational rules in terms of what are 'linguistically significant' relations between surface-structure forms. This interpretation, which holds that examples given do indeed concern impossible transformational relations is confirmed by Chomsky(1964b,p.132), where he says that one wouldn't allow into a grammar a transformation which would associate pairs of sentences like 'John saw the boy' and 'I'll leave tomorrow', but 'only such rules as express genuine structural relations between sentence forms, as, for example, active-passive, declarative-interrogative, declarative-nominalized sentence, and so on'.

The view of transformations as means to express relations between sentences is, at first sight anyhow, rather at variance with the idea we may have distilled from the bulk of recent literature. The staple answer it provides to the question of what transformations are and what they do, is that they map constituent structure trees on to constituent structure trees, and that a sequence of transformations defines a mapping of deep structures through intermediate structures on to surface structures. Deep structures and intermediate structures, however, are in a way more 'abstract' than surface structures.[3] They are theoretical constructs, use and form of which are justified by the fact that they may be used to describe certain regularities. Naturally it would not be possible for us to have the same kind of intuitions about the relations between such constructs, as we have about the relations between sentences. A theory concerning possible relations between sentences, contains theoretical terms (i.e. formulations of transformations) and observation terms (with some good will: sentences). So, in principle, such a theory would be testable.[4] A theory concerning possible relations between abstract structures contains only theoretical terms (viz. formulations of transformations and abstract structures), and would therefore not be testable in this form.[5] To provide for their empirical interpretation, one cannot, of course, use the rules one has found to link the abstract structures to observation terms, for that would involve vicious circularity. The question as to whether it is in fact reasonable to use the notion 'possible rule' also in connection with these relations, would therefore appear to be justified. It might be possible to answer the question in the affirmative,

if some independent connection could be established in some way or other between all transformational derivation stages of a sentence and observation terms (in this case, sentences of the language). This is tantamount to saying that for any postulated relation between abstract structures there has to be an equivalent relation between sentences (their forms, of course, need not be alike). Only the latter, however, have an intuitive value. It would, therefore, contrary to current linguistic practice, be natural to investigate these in the first place. If one looks at the literature it seems often the case that this condition is met, for we regularly read in syntactic descriptions about sentence 'a' as being derived from sentence 'b' by way of sentence 'c'. But what one does mean to say is that structure 'A' is derived from structure 'B', via structure 'C', where 'A', 'B', and 'C' are 'underlying structures' of respectively the sentences 'a', 'b', and 'c', and are 'similar' to them. But this 'being similar' is precisely the connection we are looking for, and has, to my knowledge, as yet nowhere been formulated. It would seem that Chomsky(1965,p.125) believes, that it is actually possible to assign to underlying structures sentences, which, so to speak, represent them directly. While discussing a certain syntactic proposal he remarks that this would imply that 'in a set of syntactically related structures with a single network of grammatical relations (for example, 'for us to please John is difficult', 'it is difficult for us to please John', 'to please John is difficult for us', or 'John is difficult for us to please'), each member is directly related to the underlying abstract representation, and there is no internal organization - that is, no order of derivation - within the set of structures. But, in fact, whenever an attempt to account for such structures has actually been undertaken, it has invariably been found that there are strong reasons to assign an internal organization and an inherent order of derivation among the items constituting such a set'. Chomsky must have failed to notice that the connection at issue is not as trivial as it might possibly seem. It certainly deserves to be made explicit. Even if this condition could be met, some problems which cannot be solved in this way would, nevertheless, remain. For this method only applies in the case of optional transformations. This is so because only in this case can we relate the differences in structure before and after the application to differences in form between sentences, viz. sentences which differ exactly in that in the generation of the one a certain transformation applied, whereas in the generation of the other it did not. Obligatory transformations must have been applied (if possible), if the output is to be grammatical. Therefore the structures before and after the application are correlates of the same sentence. So we would not be able to distinguish between possible and impossible rules for this category. On account of this problem, it seems desirable to probe somewhat deeper into some aspects of transformations, more specifically into the relation between optional and obligatory transformational rules, and how their differences developed.

The first publications on transformations are Harris(1946) and Chomsky(1957). They developed the concept in close cooperation, but elaborated it along different lines. In cases like these, it is always a rather precarious undertaking to try to eliminate unclarities or even to make additions where they seem called for, by comparing the concepts.Yet the procedure may be defensible, especially in this case, if sufficient care is exercised. On several occasions Chomsky himself had emphasized the similarity between the two concepts. Chomsky(1964b,p.128) introduces 'his' transformations by saying that he will add to the grammar a set of operations of the type that has been called grammatical transformations by Zellig S. Harris. In fn. 23 he describes Harris' notion of transformation informally, and adds that his approach bears little formal resemblance to Harris' conception, but that it was suggested by the same observation. In Chomsky(1962,p.211,212,223) he states that what he does do developed directly out of Harris' work. He remarks that Harris' general framework is different from his, but he implies that technically the conception is very similar to Harris'. All in all there are sufficient reasons first to say something about Harris' conception of transformation and then about Chomsky's pre-Aspects model. After that some remarks will be made on the consequences of the changes introduced by Katz & Postal(1964), and Chomsky(1965).

I shall now give a brief rendering of the way in which Harris(1946) introduces his transformations. For the sake of simplicity I shall use a slightly different notation. The changes are not essential. Linguistic transformations can be viewed as equivalence relations between sentences or certain constituents of sentences. We begin with a set of sentences of a language, each provided with an analysis into constituents. From the constituents classes are formed, so one may say that a certain sentence is a case of a certain sequence of constituent classes. If Ak is a sentence or constituent which is analyzed into constituent parts that are successively members of the classes B1.... Bn, then the 'form' or set A of all Ak is called a construction of B1.....Bn. For instance, the sentence 'the dogs are funny' is an element of S; its form can be represented as 'NP1 B2 A1'. 'The dog is funny' has as its form 'NP2 B2 A1'; 'is' is a member of the same form class as 'are'. This is possible because they are described as variants. When A is a construction of n constituents B1.....Bn, we say that A is met by a certain n-tuple of members of these constituents, for instance b1.....bn, such that every b is a member of B with the same index, if that sequence actually occurs as an instance of the construction A. So, a construction like 'NP t V NP' is met by the triples 'the bomb, killed, people' and 'people, saw, the bomb' and by many others, but not by the triple 'music, heard, hydrogen', for instance. Now it may often happen that a language has various constructions that contain the same constituents (in a different order, or with various materials added), for instance 'NPi t V NPj' and 'NPj is V en by NPi' (people are killed by the bomb). In cases like these, where two constructions are met by the same n-tuples of members of their constituents, the two constructions are said to stand in a transformational relationship. For example, the triples that meet 'NPi t V NPj', also meet, in reverse order, 'NPj is V en by NPi'(the bomb is seen by the people); and triples which can hardly occur in the former construction hardly occur in the latter('music, heard, hydrogen','hydrogen was heard by music'). Thus'NPi's V ing NPj' is a transform of that string, because it is met by the same triples ('the bomb's killing people', 'people's seeing the bomb'). On the other hand 'NPi t V NPj' and 'NPj t V NPi' are not transforms of each other. It is true that we find 'the old man sought death' vs. 'death sought the old man', but we neither find 'the bomb saw people' nor 'people killed the bomb', though 'people saw the bomb' and 'the bomb killed people' do occur. So, not all triples that meet the one construction also meet the other. In Harris' theory sentences which stand in a transformational relationship to each other do not always have the same meaning. But it is often the case that a transformation correlates with a regular difference in meaning (e.g. active-passive).

As described here transformations define equivalence relations between sentences. Or, more precisely, between constituents in general, because of the fact, that there is also a transformational relation between 'John's arriving early' and 'John's early arrival', which are both NP's. This can only happen, however, if there exists also a sentence to which they are equivalent; in this case 'John arrived early'. So for every transformational equivalence class of constituents it must be true that at least one of its members is a sentence. Besides the 'unary transformations' discussed thus far, there are also so-called 'binary transformations'. These describe the equivalence between a pair of sentences and a 'compound' sentence. Thus 'John's arriving early amazed us' is described as the 'sum' of 'John arrived early' and 'it amazed us'. It is in this context that equivalence relations between certain constituents and sentences play a part.

In the above argument things are presented in such a way that the totality of sentences is treated as given (generated by some grammar, but this need not concern us here), and that the transformations define equivalence relations in that set. It is clear that within this framework such a notion as 'possible transformation' is definable, and that it is also of an empirical nature. Harris also presented this view of transformation in a different form. Though in that form it remains essentially unchanged, it reminds us more clearly of that of Chomsky(1957). In Harris' words(1964):'transformational analysis describes sentences as composed of sentences, rather than of parts which are

not themselves sentences. We now want to analyze sentences into sentences, and these again into sentences, until we reach certain elementary sentences which are not further analyzable into sentences. Every sentence of the language can be represented in a unique way (except in some cases with regard to order) by a sequence of elementary sentences with unary and binary operators on sentences and operators. This implies that we can represent the whole language by a finite set of elementary sentences, which are called 'kernel sentences', with their sentence forms, and a finite set of unary and binary transformations'. The similarity to Chomsky's model is obvious. Differences, amongst other things, may be found in the fact that Harris does not recognize 'obligatory transformations'. A transformational derivation of a complex sentence is represented in Harris' theory at every level by a set of expressions that are themselves pairs consisting of a sentence from the language (which may or may not be itself complex) and its sentence form. Here too, the empirical nature of the notion 'possible transformation' is guaranteed. As a matter of fact, it is not very likely that Harris would be much interested in the definition of this notion. When making certain choices he clearly prefers to be guided by considerations of elegance and economy. As compared with Harris, Chomsky(1957) does not yet show a fundamental difference of view as to the question what it is that one wants to do with grammars and a language theory. Yet, certain problems posed there seem to be motivated by the search for such things as possible rules. Besides making by his grammar the statements concerning the sentences of the language he wants to make, Chomsky there already wishes to characterize the system of the grammar itself. For him it is no longer sufficient that the totality of the sentences (possibly with structural descriptions) be characterized in some arbitrary manner. The way a system works that generates the sentences of a natural language becomes important. Chomsky considers transformations to be characteristic of such a system. The most far-reaching difference for our investigation is, however, primarily technical. The phenomenon of 'concord' is described by Harris using the concept 'positional variant'. If we consider the sentences 'the dog is funny' and 'the dogs are funny', we note that 'the dog' belongs to category 'NP2', 'the dogs' to category 'NP1' (the difference as to index represents the difference between singular and plural, Harris(1946)), but 'is' and 'are' are both members of category B2, and are thus described as positional variants. Their selection is determined by the relevant NP-category. The phenomenon of concord - and several other phenomena of a similar nature, such as do-support(Chomsky 1957,p.62) - is, as was pointed out already, not formalizable by a C.S.R. without loss of generalization. The next 'natural' [6] extension of the possibilities of the grammar gives us a so-called unrestricted rewrite system (U.R.S.). If such a component, which allows for 'deletions' and 'permutations', is added to the grammar without conditions limiting its role, the grammar ceases to be a C.S.R., and is only to be classified as a U.S.R. And to say that a grammar of a human language can be described by a U.R.S. is to say no more than that it can be described at all.Similarly, if we add a U.R.S. component under some restricting condition, we are up against the problem, that derivations no longer can be represented in the form of trees, at least if we stick to the usual conventions. This is a problem, in as much as at the syntactical level Chomsky wants to give an interpretation to this tree structure, namely, that the syntactic units are hierarchically structured. When, at a particular level, he has no need for a hierarchical structure, he apparently admits without scruples a U.R.S.-like component in his grammar.(Cf. Chomsky(1962),fn.15, where he discusses phonetic realization rules).

Transformations are means to enlarge the expressive power of the system, allowing the linguistically relevant hierarchical sentence structure to remain manifest. In Chomsky (1957) phenomena such as concord are described by what he calls obligatory transformations. These transformations however do not define equivalence relations on sentences, but on 'abstract' sequences of symbols. Of these it is true that, depending on the way the equivalence classes are defined, either all of them correspond to the same sentence or in every equivalence class there is only one sequence which is considered to correspond to a sentence. In the foregoing it was argued that it is not a defensible position that somebody should have intuitions about possible relations between such se-

quences of symbols; at least no intuitions that could be part of the object of a theory of language. To introduce these rules as transformations is to make the definition of 'possible transformation' impossible. Anyhow, by the introduction of obligatory transformations the optional ones, too, must be formulated as defining relations on abstract sequences. To the insight that may be gained into the way obligatory transformations work one might wish to add that within every equivalence class, they also define a relation order. If we should want to interpret this addition as linguistically significant, we would find ourselves up against similar problems as were discussed above.

We might also introduce the obligatory transformations of Chomsky's (1957) type in a different way, namely, as defining relations between parts of sentences. Thus they express that, if a sentence starts with 'the dog', 'is funny' is a possible continuation, and 'are funny' is not; 'barks' is and 'bark' is not. - The fact that at this level it is easier for us to formulate the relations concerned in terms of the usual more 'abstract' surface structure representation of sentences, as e.g. 'the dog SING BE SING funny' does not constitute a problem -. Similarly, a transformation like 'do-support' falls within this schema: constituents that begin with 'Af' cannot be directly preceded by the boundary symbol '$', but can be by '$ do'. By introducing them in this way it is made clear that these 'transformations' have a function comparable to the one of rewrite rules. Just like rewrite rules they define 'syntagmatic relationships'. The other obligatory transformation in Chomsky(1957) can also be represented in this manner.

It is not yet clear what a model which furnishes all the generalizations we were used to making would have to look like, if it is to meet the above conditions. A model that accounts for at least the concord relations, might take the following shape. A context-free (or sensitive) rewrite system generates as well as possible an approximation of the set of 'kernel sentences'. Let us call this set the set of 'pro-sentences'. 'As well as possible' means that at least all kernel sentences are generated and besides just those 'non-sentences' which cannot be prevented without generalizations being missed. Thus 'the dogs are funny' is a member of the set, but so is 'the dogs is funny'. The concord transformation, then, operates in this model as an output condition: only those elements of the set can be sentences which meet the condition that, if they are analyzable as '...NP Vb...', they are also analyzable as '...X1 NUMa PSNb X2 V NUMa PSNb...', where 'a' and 'b' vary over values for person and number, the other symbols having their usual interpretation. This type of output conditions may probably be so formulated as to characterize the set of sentences by the intersection of all sets of pro-sentences that meet the output conditions. On this set of kernel sentences then the transformational relations may subsequently be defined. If the Harris(1946) or the Chomsky(1957) model revised along these lines would make it possible to state the generalizations that we consider interesting, the problem could be solved. For the notion 'possible output condition' in this sense would be capable of characterization in terms of surface structure. Claims about it would be, in a reasonable sense of 'empirical', subject to empirical control.

Katz & Postal(1964) however, changed the transformational model rather radically, and not for nothing. Optional, 'meaning-changing' transformations, such as 'active-passive', 'declarative-imperative' and 'declarative-interrogative', together with the transformational relations they described, were abandoned in favour of obligatory transformations like 'Pass', 'Imp' and 'Q', operating on certain symbols in deep structure representations. At the same time, a development that had begun earlier, was completed in that the binary transformations, after having undergone at an earlier stage,a change in character by the introduction of dummy-symbols in the matrix sentences, were now dropped altogether. Already after these alternations, it had actually become impossible to describe them as defining equivalence relations on 'sentences'. Surely, 'Pass', 'Imp' and 'Q' no longer define equivalence relations on sentences. They now define what a sentence should look like if in its deep structure there occurs "Pass", "Imp" or "Q"; also a kind of syntagmatic relationship. But the problem of how to establish defining

criteria for possible rules has even become a little more difficult. Though rules such as 'concord' or 'do-support' could still be formulated in terms of the constituents that are present in surface structure, "Pass", "Imp" and "Q", however, never manifest themselves in a purely surface constituent form. They manifest themselves in certain properties of the sentence form as a whole. But these are only describable in relation to other sentence forms; and that has just been done away with. In support of their proposal Katz & Postal(1964) present a number of syntactic arguments as well as some of a methodological nature. I shall not go into the latter type of arguments, except for remarking that I fail to see how the way they handle such notoriously problematic concepts might serve any useful purpose in a linguistic discussion. Thus we shall confine ourselves to (some of) their syntactic arguments. The syntactic motivation for the alteration of the passive transformation contains, among other things, the following points (they may also be found in Chomsky(1965,p.104)). Firstly, verbs only admit of passivization if they can occur along with a 'manner adverb'. 'Pass' is then described as falling within this category. Secondly, rules for derived constituent structure may so be described in a more uniform way. As for the first argument, one may rightly remark that intuitively the solution does not seem to have any explanatory power. It is not at all clear what passives should have to do with adverbials. In order to correctly generate the sentences with this kind of adjunct we must subdivide the verbs according to their possessing the property of co-occurring with it or not. So, this pair of properties characterizes two subsets of the set of verbs. One of those subsets may then be further characterized by its members having at the same time the property 'occurs in the passive voice', if we want to treat the properties as different. Or else, if we wish to describe it as one phenomenon, we change the structural analysis of the passive transformation in such a way that it operates on a property of the verb[8], namely 'co-occurs with manner adverbs'. This proposal would also solve a third point, the problem of the pseudo-passives. As regards the second point: why something wich is called a 'general condition' in Chomsky(1957,p.73) is called 'ad hoc' in Chomsky(1965,p.104) is nowhere made clear[9]. We formulated the property of the verbs in question in terms of surface structure. If this could be done for all syntactic properties, we should also be able to define 'possible syntactic property'. It would not seem unreasonable to regard such information about morphemes in surface structure as lexical and therefore as accessible for the formulation of syntactic connections. In this way transformations may be formulated in terms of surface structure. An argument similar to the one given here with regard to the passive transformation may also be supplied for the imperative transformation, and probably for the other ones too. Should this approach meet with objections, there is yet another consideration. We cannot assume on 'a priori' grounds that all the regularities in the language are uniform. That is to say that there is no reason to assume that categories which play a characteristic part in the formulation of one kind of regularity, necessarily do so in the formulation of another. In my opinion this is true of the relation between transformational and constituent structural regularities, as well as of that between syntactic and semantic structures. It is as detrimental to assume on 'a priori' grounds that this uniformity exists, as it is to assume on such grounds that it does not exist.

I would like to conclude with a piece of speculation. It is precisely the assumption of the uniformity mentioned above, which has induced us to invent more and more abstract structures, so as to describe more and more regularities, of an ever-smaller range. I have the impression that my dissatisfaction with some aspects of the changes, which in fact marked the beginning of current developments, has the same cause as Lakoff's objections to 'arbitrary syntax'(Lakoff(1971)), although, as far as I am able to make out at the moment, 'natural syntax' even offers fewer possibilities. It would also seem to be akin to Chomsky's and the other lexicalists' dissatisfaction, as expressed in e.g. Chomsky(1972a,6.5.1). The requirement that all rules must be capable of formulation in terms of surface structure, seems to me more radical than what they propose. The proposal should be examined as to its feasibility. Besides, further investigation of the consequences of an elaborated lexicalist point of view for the formulation of the notion 'possible rule of a human language' is of the utmost impor-

tance, it seems to me.

Department of Linguistics
University of Groningen

Notes

*I wish to express my gratitude for the invaluable and stimulating help and advice I received from my colleagues Sjaak de Mey and Arthur van Essen.

1 As it is, in any limited corpus we may postulate as many regularities as we wish. If we enlarge the corpus of material, many of these patterns will not persist. The general theory contains a hypothesis about the question as to which regularities will persist, no matter how large we take our corpus.

2 See also Chomsky(1964b),fn.26.

3 For the rest, these surface structures are still 'abstract' enough. It is true that this use of the word 'abstract' seems to be sanctioned by tradition - and that is the reason why I just fall in - but it may give rise to misunderstandings. I shall not pursue this question here any further.

4 It is of course possible to challenge the distinction between observational and theoretical terms. If it is replaced by a distinction between terms one takes for granted and those one does not, nothing is, of course, changed in the above argument, if one takes it as binary. If one does not interpret it as binary, but as representing two opposite poles of a moving scale, nothing essential changes; as the concepts called 'theoretical' here will undoubtedly all appear at the 'fuzzy' end of the scale. There are numerous problems here, but for the present I shall leave it at this.

5 I am indebted here to Sjaak de Mey. Cf. his 'Induction and Linguistics'(this volume).

6 The notion of naturalness is a very difficult one, if it isn't devoid of any strict meaning at all. One of the relevant problems is that 'natural expansions' of a system need not be extensionally equivalent for different extensionally equivalent formulations.

7 I write here 'U.R.S.-like', because the component added is probably only as to form unrestricted, not-contextsensitive. There is no recursiveness in the rules, so the class of grammars with a similar component is extensionally equivalent to the class of grammars without one.

8 Cf. Chomsky(1972a),p.41.

9 Sometimes constructions and operations which play a crucial role in an argument for a fundamental change in the theory, are at a later stage subjected to a totally different analysis. It is remarkable that as a rule very little attention is paid to the question as to whether a version of the original argument could also be given with the revised notions. It is not obvious that this will always be the case. It seems to me that several questions which have been asked with respect to e.g. the passive transformation, and which have lead to proposals to split it up, can only be asked in a framework for which the original formulation is needed to establish it.

THE SEMANTIC REPRESENTATION OF MANNER ADVERBIALS*

Simon C. Dik

0 Introduction

In this paper I will be concerned with a number of problems connected with the semantic representation of manner adverbials such as *wisely* in:

1 John answered the question wisely

It is possible to enumerate some preliminary requirements that a semantic representation of a sentence like 1 must meet.

A. A semantic representation for 1 must provide a basis for explaining the selection restrictions of adverbials such as *wisely*. I.e., it must be such that it becomes clear why sentence 1 is well-formed, while the following sentences are not well-formed:

2 *John knew the answer wisely
3 *John became aware of the problem wisely
4 *The machine was humming wisely

At the same time, the semantic representation for 1 must be such as to show in what respect *wisely* differs from certain other adverbials which can occur in some of the positions in which *wisely* cannot occur. E.g.:

5 John became aware of the problem quickly
6 The machine was humming mysteriously

B. A semantic representation for 1 must be such as to show the difference between *wisely* in 1 and *wisely* in:

7 Wisely, John answered the question

Traditionally, *wisely* in 7 is distinguished from *wisely* in 1 in terms of the difference between 'sentence adverbial' and 'verb phrase- or predicate adverbial'. This, however, does not tell us very much about the semantic implications of this difference. In the semantic representations for sentences like 1 and 7 this difference must be made more precise.

C. A semantic representation for 1 must enable us to explain the behaviour of 1 under negation. Specifically, it must allow us to explain the fact that the sentence

8 John didn't answer the question wisely

can only be used to express that John answered the question, but didn't do so in a wise manner, and not to express that John didn't answer the question at all. In this respect, 8 is different from:

9 Wisely, John didn't answer the question

which can only be used to express that John didn't answer the question, and that he was wise in not doing so.

D. A semantic representation for 1 must indicate precisely what part of the semantic content of 1 is modified by the adverbial. I.e., it must show what or who precisely is said to be 'wise' when sentence 1 is used. It must also show what kind of modifi-

cation is involved, i.e., what kind of relation holds between 'wise' and that part of the content of 1 to which 'wise' applies.

There are many more problems connected with the semantics of manner adverbials, but in the present context I will be mainly concerned with the points mentioned above. There is a rapidly growing body of literature on the general problem of the semantic representation of adverbial modifiers. In my opinion, the most insightful studies of this problem are Greenbaum (1969) and Bartsch (1972), which have been a source of inspiration for much of what follows here.

1 The definition of the notion 'manner adverbial'

If one tries to define the sense in which the term 'manner adverbial' is generally used,[1] the best one can arrive at is something like 'A manner adverbial is a constituent which functions semantically in such a way as to characterize the manner or way in which a certain activity is carried out or in which a certain process goes on'. Different criteria are proposed for determining whether a constituent meets this rather vague definition. One of these criteria is whether a constituent can be questioned with *how*, where *how* should not be followed directly by some adjective or adverb as in *how long*? or *how often*? Thus, we have:

10a How did John answer the question?
b (John answered the question) *wisely*
11a How did Mary dance?
b (Mary danced) *beautifully*
12a How does John write?
b (John writes) *illegibly*

Another criterion is, whether a constituent is of the form *in a ... manner/way*, or can be paraphrased in this form.[2] This second criterion generally leads to the same results as the first one, witness:

13 John answered the question *in a wise manner/way*
14 Mary dances *in a beautiful manner/way*
15 John writes *in an illegible manner/way*

In some cases, the two criteria do not seem to run quite parallel. Thus, it is decidedly strange to answer a question with *how* by means of an adverbial like *reluctantly*, although the phrase *in a reluctant manner* seems possible:

16 John goes to school reluctantly
17 ?John goes to school in a reluctant manner
18a How does John go to school?
b ??(John goes to school) reluctantly

Even more questionable is the possibility of answering 18a with adverbials like *happily* or *willingly*. In the case of these adverbials, however, the paraphrases *in a happy manner* and *in a willing manner* also are of very questionable acceptability. We shall see later on that there are a number of other reasons for distinguishing *reluctantly*, *willingly*, *happily*, and the like from the class of manner adverbials.[3]

As has been argued by several authors, the class of manner adverbials delimited by means of the two criteria mentioned is semantically not homogeneous. Although all manner adverbials can be said to characterize the manner in which an event goes about, they do so in different ways, i.e., they characterize the manner of the event in terms of different aspects of the event. *Wisely* in 10b, for instance, tells us something about the manner in which John answered the question in terms of a property John had at the time of answering the question. *Beautifully* in 11b tells us

something about Mary's manner of dancing as such. And *illegibly* in 12b tells us something of John's manner of writing in terms of a property of the product of that activity.[4] These differences manifest themselves in the different (near-) paraphrases which can be associated with 10b, 11b, and 12b:

19 John was wise in his manner of answering the question
20 Mary's dancing was beautiful
21 What John writes is illegible

The different manner adverbials also have different selection restrictions, as is evident from:

22a The machine works beautifully
b *The machine works wisely
c *The machine works illegibly
23a *John speaks illegibly
b *John reads illegibly

In part, these selection restrictions are self-explanatory (*illegibly* requires an activity in which something is produced that can be read, etc.). In part, they require a clarification of certain fundamental semantic notions which have a much wider bearing.

2 The selection restrictions of manner adverbials

In order to get a clearer picture of how the selection restrictions of manner and other adverbials could be formulated, it is profitable to start with a discussion of the distinction between Stative and Non-Stative verbs and adjectives as established in Lakoff (1966). Notice that Lakoff used these terms for a syntactic subdivision, cross-classifying the categories of verbs and adjectives, and defined in terms of a number of different, but coinciding syntactic criteria. Lakoff's results can be briefly summarized as follows:

	STATIVE		NON-STATIVE	
	know	*tall*	*slice*	*careful*
a can occur in true imperative	-	-	+	+
b can occur in progressive	-	-	+	+
c pro-form 'do something'	-	-	+	+
d complement of *persuade*, etc.	-	-	+	+
e occurrence with manner adverbs which take animate subject (like *enthusiastically*)	-	-	+	-
f occurrence with 'for someone's sake'	-	-	+	+
g pro-form 'do so'	-	-	+	-

Further, Lakoff noted that in constructions like 'clause X instead of clause *y*', X and *y* must both contain Non-Statives, as in:

24 I listened to the music instead of slicing the salami

Lakoff then goes on to show that the syntactic distinction between Statives and Non-Statives partially reflects a semantic distinction: 'In an overwhelming number of cases, STATIVE verbs and adjectives have the semantic property NON-ACTIVITY, and NON-STATIVE verbs and adjectives have the semantic property ACTIVITY. There are very few exceptions to this generalization, and they seem to fall into classes. For example: CLASS 1: *remain, stay, keep, ...*
CLASS 2: *sit, stand, huddle, squat, ...*

And there are undoubtedly other such cases. What is interesting about the exceptions to this generalization is that they are all cases of semantically NON-ACTIVE verbs that are syntactically NON-STATIVE. So far as I have been able to tell, there don't seem to be any exceptions that are semantically ACTIVE and syntactically STATIVE.'

In a footnote, Lakoff notes that the semantic status of Non-Stative adjectives is much cloudier than that of Non-Stative verbs: 'Adjectives like *careful, fair, foolish, polite, nasty*, etc. seem to be interpretable as both ACTIVE and NON-ACTIVE. Compare

John is being foolish

and

John is foolish

In the former, "foolish" is ACTIVE and in the latter, "foolish" is NON-ACTIVE. Although the dual character of these adjectives seems to be regular, I do not claim to understand it.' (Lakoff 1966,p.12-13).

It is clear that in the paper just summarized Lakoff still took the point of view that syntax is somehow basic with respect to semantics. In such a view there is no objection to having a clear-cut syntactic distinction which only partially reflects semantic differences. In an approach, however, which takes semantics as basic and tries to explain syntactic phenomena as far as possible in semantic terms (cf. Venneman 1972), one would rather have clear-cut semantic distinctions, and one would try to show to what extent these are reflected in syntactic constructions. This means that two kinds of criticism of Lakoff's distinction of Stative and Non-Stative verbs and adjectives are possible. Internal criticism, based on the theoretical point of view that Lakoff took in developing the distinction. And external criticism, based on the alternative, semantic point of view.

One internal criticism is that not all the syntactic criteria adduced by Lakoff are equally relevant for verbs and adjectives. This is especially important in the present context, since criterion e, involving manner adverbials like *enthusiastically, carefully, masterfully*, only applies to verbs. I.e., we find no constructions like:

25 *John was careful enthusiastically
26 *John was foolish masterfully

This shows that the selection restrictions of these adverbials cannot be simply stated in terms of the notion 'Non-Stative'.[5]

A second internal criticism is, that the criteria used in some cases do not lead to an unambiguous conclusion. Consider the verb *dissolve* in a sentence like:

27 The substance dissolved

The following sentences are completely normal:

28a The substance is dissolving
b What the substance did was dissolve
c The substance dissolved instead of turning red

This would suggest that *dissolve* is a Non-Stative verb. The following sentences, however, are decidedly abnormal:

29a *Substance, dissolve !
b *I persuaded the substance to dissolve
c *The substance dissolved enthusiastically

d *The substance dissolved for my sake
e *The substance dissolved, although I told it not to do so

This would suggest that *dissolve* is a Stative verb. And this is no isolated fact. The same distribution can be found for sentences like *The sky darkened, John fell down*, etc. and many other cases. This suggests that Lakoff's criteria fall into different groups, and that certain expressions are sensitive only to some of these groups.

If we now take the external, semantically-based approach to the Stative-Non-Stative distinction, it is evident immediately that it is impossible to explain the syntactic facts in terms of a simple distinction between the semantic properties 'Activity' and 'Non-Activity'. Lakoff himself has demonstrated the lack of fit between these semantic properties and the syntactic facts, and the phenomena that I have mentioned above only add to this. One might, of course, accept a certain amount of arbitrariness in the syntactic facts, but there is evidence that this is not so in this area, at least not to this extent.

In his study of Russian stative adjectives and verbs, for instance, Miller (1970, p.494) found that on the basis of different criteria, partly parallel to those of Lakoff, it was necessary to make a three-way distinction of the following kind:

30 Stative: *ponimat'*, 'understand', *schastliv*, 'happy', etc.
Static : *stojat'*, 'stand', *lezat'*, 'lie', *sidet'*, 'sit', etc.
Active : *pisat'*, 'write', *igrat'*, 'play', etc.

Miller's Static verbs are precisely parallel to those verbs in English which, though semantically Non-Active, do not syntactically behave like Statives. One of the differentiating properties that Miller mentions is that certain manner adverbials (like *energichno*, 'energetically') only occur with Active verbs, while certain others (like *lovko*, 'skilfully', *nebrezno*, 'carelessly') occur with Active and Static, but not with Stative verbs.

These various facts suggest that there is more to be said about the semantic phenomena behind these various syntactic subclassifications than can be expressed in terms of the simple dichotomy into Activity and Non-activity. I will now suggest some fundamental semantic notions which may carry us a bit further in explaining the syntactic phenomena.

Let it be agreed on that a basic component of semantic structure is the simple proposition, consisting of one or more terms designating things, and a predicate designating a property of a thing, or a relation between two or more things. Now what is it that a simple proposition designates? I shall say that a simple proposition designates a "Situation" (State of Affairs, Sachverhalt). And I suggest that there are two fundamental properties by which Situations can differ from each other: they are either "changing" or "unchanging" Situations (±Change), and they are either "controlled" or "uncontrolled" Situations (±Control). A proposition '$\phi(x)$' designates an unchanging Situation if and only if the thing designated by the term x has the property designated by the predicate ϕ at any point of time during the stretch of time that the Situation is taken to endure; otherwise it designates a changing Situation. A proposition '$\phi(x)$' designates a controlled Situation if and only if it is possible for the thing designated by x to determine whether or not that Situation will be present.[6]

In terms of these notions, we can define the following further notions:

An *Activity* is a controlled, changing Situation.
A *Process* is an uncontrolled, changing Situation.

A *Position* is a controlled, unchanging Situation.
A *State* is an uncontrolled, unchanging Situation.

This can be summarized in the following display:

31 TYPES OF SITUATION

	+ Control	- Control
+ Change	ACTIVITY	PROCESS
- Change	POSITION	STATE

Let us see what we can say about the syntactic facts mentioned earlier in this section in terms of the semantic distinctions which we have just made.

The true imperative and verbs like *order, persuade, promise* etc. are compatible only with + Control Situations. This is due to by now well-known pragmatic presuppositions connected with the speech acts involved. Thus, we have, for instance:

32a John promised to do the job (Activity)
b John promised to remain where he was (Position)
c *The machine promised to work (Process)
d *The apple promised to be red (State)

Of course, it is possible to force an interpretation on sentences like 32c and 32d. The way we have defined the selection restriction for *promise* etc. allows us to say - correctly, so it seems - that one necessary step in such interpretation processes is, that the feature +Control is associated with a proposition that normally designates -Control Situations. The possibility of interpreting a sentence like:

33 Substance, dissolve !

is dependent on just this step. The expression *for someone's sake* also requires + Control Situations; apparently it implies intentionality on the part of the subject. It seems that the progressive form and *do something* are compatible with + Control and with + Change Situations, witness:

34a John was answering the question (+Control, +Change)
b What John did was answer the question
35a John was lying on the sofa (+Control, -Change)
b What John did was lie on the sofa
36a The substance was dissolving (-Control, +Change)
b What the substance did was dissolve
37a *John was knowing the answer (-Control, -Change)
b *What John did was know the answer

It may even be that the apparent variation in acceptability between the sentences of 34-36 could be explained in terms of whether only one or both the features mentioned are present.[7]

Now let us look at the problem of adjectives like *foolish*. Compare:

38a John is foolish
b John is being foolish
39 John promised to be foolish

My contention is that the only difference between 38a and 38b is that the former is normally interpreted as -Control, whereas the latter can only be interpreted as + Control (i.e., as a Position). Furthermore, 39 can only be interpreted in terms of +Control on account of the selection restriction of *promise*. The fact that some adjectives can be more easily interpreted in terms of +Control than others is due to the difference between inherent and non-inherent properties. Thus, since *tall* normally designates an inherent property, it is more difficult to interpret:

40a John is being tall
b John promised to be tall

than to interpret 38b and 39. The only possibility for interpreting 40a-b, however, is to assign the feature +Control to the situation of being tall (e.g., an actor in a play could promise his director to be tall in playing a certain role).

Let us now go back to the matter of adverbials, and see whether their selection restrictions can be defined in terms of the same semantic notions.

Adverbials of speed like *quickly* and *slowly* are often classified as manner adverbials. I believe this is not entirely correct, since the manner and the speed with which an activity is carried out or with which a process goes about may be distinguished. So much is clear, that adverbials of speed require +Change Situations. This requires some comment, since it "seems" as if they are compatible also with -Change Situations. However, in a sentence like:

41 John knew the answer quickly

it is not expressed that the State of John's knowing the answer was quick, but that this State was quickly reached with respect to some reference point. Thus, 41 is synonymous with:

42 Quickly, John knew the answer

whereas the most usual interpretation of sentence 43a is not synonymous with 43b:

43a John wrote down the answer quickly
b Quickly, John wrote down the answer

Thus, these adverbials of speed have two possibilities: either they may indicate the speed with which an Activity is performed or a Process goes on (and in that use they require +Change), or they may indicate the distance in time between a certain reference point and some Situation (and in that use they are unrestricted with respect to Change). This dualism is also the source of the ambiguity of a sentence like:[8]

44 John will do the job in a minute

Turning now to true manner adverbials, we observe that for 'manner' in general the same selection restrictions hold as for the progressive form and for *do something* (cf. sentences 34-37). I.e., 'manner' is compatible with +Control and with +Change Situations. Consider:

45a John answered the question in a wise manner (+Co, +Ch)
b John answered the question wisely
46a The machine was humming in a mysterious manner (-Co, +Ch)
b The machine was humming mysteriously
47a John was lying on the sofa in an elegant manner (+Co, -Ch)
b John was lying on the sofa elegantly

48a *The table was red in a strange manner (-Co, -Ch)
b *The table was red strangely

Just as in the case of the progressive and *do something*, manner adverbials fit in most naturally with Activities, which have both selectional features for which manner adverbials are sensitive. However, not all specific manner adverbials can occur in all the combinations in which manner adverbials can occur in general. It seems possible, indeed, to arrive at a further subcategorization of manner adverbials in terms of the semantic features that we have distinguished. Thus, we have:

I Manner adverbials which are compatible with +Control and with +Change situations. E.g. *peacefully*:

49a John answered the question peacefully (+Co, +Ch)
b John was lying on the sofa peacefully (+Co, -Ch)
c The clock was ticking peacefully (-Co, +Ch)
d *The table was red peacefully (-Co, -Ch)

II Manner adverbials which are compatible only with +Control. E.g. *recklessly*:

50a John climbed the mountain recklessly (+Co, +Ch)
b John hangs from trees recklessly (+Co, -Ch)
c *Moss hangs from trees recklessly (-Co, -Ch)
d *The machine worked recklessly (-Co, +Ch)

III Manner adverbials which are compatible only with +Change. E.g. *rhythmically*:

51a John moved his arms rhythmically (+Co, +Ch)
b John's arm moved rhythmically (-Co, +Ch)
c *John hangs from trees rhythmically (+Co, -Ch)
d *Moss hangs from trees rhythmically (-Co, -Ch)

IV Manner adverbials which are compatible only with +Control, +Change. E.g. *energetically*:

52a John moved his arms energetically (+Co, +Ch)
b *John's arm moved energetically (-Co, +Ch)
c *John was sitting in his chair energetically (+Co, -Ch)
d *The table is red energetically (-Co, -Ch)

It seems to me that in this way we have systematically accounted for the following facts:
No manner adverbial can modify expressions designating States.
Some manner adverbials, like *peacefully*, can modify expressions designating Activities, Processes, or Positions.
Some manner adverbials, like *recklessly*, can modify expressions designating Activities and Positions.
Some manner adverbials, like *rhythmically*, can modify expressions designating Activities and Processes.
Some manner adverbials, like *energetically*, can modify expressions designating Activities.[9]

I shall now turn to some other problems connected with the semantic representation of manner adverbials. In this, I hope to further demonstrate the validity of the semantic distinctions which have been made so far.

3 Manner adverbials and 'sentence adverbials'
The term 'sentence adverbial' is a cover-term for a rather heterogeneous class of

adverbials which have in common that in some sense they modify the whole rest of the sentence in which they occur. By means of syntactic and semantic criteria, quite a few subcategories of sentence adverbials must be recognized, as has been demonstrated most clearly by Greenbaum (1969) and Bartsch (1972). In the present context I shall restrict myself to those sentence adverbials which also occur as manner adverbials. Some examples are *wisely, foolishly, recklessly*,etc. In fact, most, if not all, manner adverbials can also function as sentence adverbials. In English, the difference between manner and sentence adverbials is in general not signalled by the form of the adverbial, but there are differences in the positions which the two groups can take and in the intonational contours of the sentences in which they occur. Sentence adverbials tend to have a position in the beginning of a sentence, and are often set off from the rest of the sentence by 'comma intonation'. Manner adverbials tend to have a position toward the end of a sentence, and are not usually set off from the rest by intonational breaks. These differences are not absolute, so that in certain cases ambiguities may arise. The difference is clear-cut, however, in the following cases (where a comma indicates 'comma intonation'):

wisely as a sentence adverbial:
53a Wisely, John answered the question
b John, wisely, answered the question
c John answered the question, wisely
wisely as a manner adverbial:
54 John answered the question wisely

In languages like German and Dutch, the difference between sentence and manner adverbials is in most cases signalled by the form of the adverbials themselves. The translations of 53 and 54 would be:

55a *Klugerweise* beantwortete Hans die Frage
b *Wijselijk* beantwoordde Jan de vraag
56a Hans beantwortete die Frage *klug*
b Jan beantwoordde de vraag *wijs*

There are many differences between sentence and manner adverbials. Sentence adverbials cannot be questioned with *how?* and cannot be paraphrased by means of *in a ... manner/way*. Sentences with sentence adverbials have a great number of paraphrases which are not appropriate for manner adverbials:[10]

57a Wisely, John answered the question
b For John to answer the question was wise (of him)
c That John answered the question was wise (of him)
d It was wise for (of) John to answer the question
e To answer the question was wise of John
f Answering the question was wise of John
g John was wise to answer the question
h John was wise in answering the question
i John did wisely to answer the question
j John did wisely in answering the question
k John's answering the question was wise

In particular 57k is interesting, since there is another type of nominalization corresponding to *wisely* as a manner adverbial:

58a John answered the question wisely
b John's answering of the question was wise

Sentence and manner adverbials may occur within the same sentence, and are not seman-

tically dependent on each other:

59a Wisely, John answered the question wisely
b Wisely, John answered the question foolishly

Sentence and manner adverbials may also differ in selection restrictions. This seems to be the case, at least, for *wisely*. As a manner adverbial, *wisely* must be classified as requiring (+Control, +Change) Situations. I.e., it belongs to the same class as *energetically*, class (IV) of section 2 above. As a manner adverbial, then, it does not seem to be compatible with Positions. It does not seem possible to interpret *wisely* in the following sentences in terms of 'in a wise manner':

60a *John remained in England wisely
b *John sat on the fence wisely

As a sentence adverbial, however, *wisely* is compatible with Positions, witness:

61a Wisely, John remained in England
b Wisely, John sat on the fence

It is not compatible, however, with -Control Situations (i.e., Processes and States):

62a *Wisely, the sky darkened
b *Wisely, the table was red

Thus, we can classify the sentence adverbial *wisely* as requiring a +Control Situation.

A number of facts discussed by Greenbaum (1969,p.154 ff.) confirm this hypothesis. Greenbaum points out the following facts:

63a Wisely, he had a drink (+Co, +Ch)
b *Wisely, he had a cold (-Co, -Ch)

In the case of verbs which have both an 'active' and a 'non-active' meaning (I would say +Control and -Control, respectively), *wisely* selects the former:

64a Wisely, the judge received (i.e., accepted, took in) the bribe (+Co, +Ch)
b *Wisely, the judge received (i.e., was bestowed with) the praise (-Co, +Ch)
65a Wisely, he tasted (i.e., brought himself in a position to experience the taste of) the wine (+Co, +Ch)
b *Wisely, he tasted (i.e., experienced the taste of) the wine (-Co, -Ch)

Greenbaum further notes that by suitable 'contextualisation' the following sentences are possible:

66 Wisely, he had a cold when he was supposed to be at the meeting
67 Wisely, he tasted the wine in the soup. He didn't want to offend his hostess

In these cases, however, the implication is that he 'pretended' to be in a certain State. I.e., 66 and 67 can only be interpreted if the State involved is assigned the feature +Control, so that it shifts to a Position. A little bit different is Greenbaum's example:

68 Wisely, the book costs only ten shillings

Here, the feature +Control also plays a role (in Greenbaum's terms: 68 implies 'human action'), but this feature is in this case not assigned to the State described

in the sentence as such, but arrived at by interpreting this State as due to a controlling force not mentioned in the sentence.

A very interesting difference between sentence and manner adverbials is connected with their behaviour under negation. The facts which must be accounted for are the following:

a if a sentence containing a manner adverbial is negated, the manner adverbial is semantically always within the scope of the negation;
b if a sentence containing a sentence adverbial is negated, the negation is semantically always within the scope of the sentence adverbial.

Thus, sentence 69 always has the meaning symbolized in 70a and never that symbolized in 70b, while sentence 71 always has the meaning symbolized in 72a and never that symbolized in 72b:

69 John didn't answer the question wisely
70a =neg(wisely(John answer the question))
b ≠wisely(neg(John answer the question))
71 Wisely, John didn't answer the question
72a =wisely(neg(John answer the question))
b ≠neg(wisely(John answer the question))

The fact that manner-*wisely* cannot have neg in its scope is easily explained. 70b would have to mean something like 'in a wise manner, John didn't answer the question'. But something one doesn't do, one cannot do in some manner. More precisely, manner-*wisely* requires, as we have seen above, an Activity. But the negation of a proposition describing an Activity does not itself describe an Activity. The same holds with respect to Processes and Positions. Therefore, no manner adverbial tolerates a negative proposition in its scope. As soon as a proposition is negated, the selection restrictions for manner adverbials have vanished.

In this way, however, we seem to run into problems if we want to explain the behaviour of the sentence adverbial *wisely* under negation. For we saw that:

i manner-*wisely* is compatible only with Activities, but sentence-*wisely* is compatible with Activities and Positions.
ii sentence-*wisely* can have a negative proposition in its scope, but a negative proposition describes neither an Activity nor a Position.

How can these seemingly incongruous facts be fitted into the pattern which we have been developing so far? In order to answer this question, we must have a closer look at what precisely is designated by sentence adverbials of the *wisely* type. This can in part be read off from the various paraphrases of sentence-*wisely* which we have noted above under 57. And it is further clarified by some suggestive remarks of Greenbaum's: 'they (i.e., adverbials like *wisely*, *rightly*) are primarily concerned with an evaluation of the Subject with respect to the action or state described in the clause'.(1969,p.103). And they 'will co-occur with clauses where some decision by an animate being is implied.' (154). Indeed, in a sentence like

73 Wisely, John answered the question

wisely does not really tell us something about the Activity that John undertook, but it comments on the very fact that he undertook that Activity: it comments on John's choice of undertaking the Activity of answering the question.[11] However, choosing or deciding to undertake a certain thing is itself an Activity. And the outcome of that Activity is that one either does something or that one doesn't do something. In view of this, we can say: sentence adverbials like *wisely* express an evaluation of the choice on the part of the controlling subject to either do or not do something, i.e., to either effectuate or not effectuate a certain Activity, or to take or not to take a certain Position. This choice, which underlies any controlled Situation, itself has the features +Control, +Change, i.e., is itself an Activity. The

outcome of this choice can be described either by a positive or by a negative proposition. This analysis of the semantics of sentence-*wisely* has the desirable consequences that we can now say that the selection restriction of *wisely*, in both its functions, can always be formulated in terms of (+Control, +Change), and that it explains why sentence-*wisely* can take negative propositions in its scope.

The only thing left to be explained is the fact that sentence-*wisely* itself cannot be in the scope of a negative element. In this respect, there is a difference between sentence 73 and its near-paraphrase 74:

74 It was wise of John to answer the question

since 74 can be negated in two ways, of which only one corresponds to the negation of 73:

75a It was wise of John not to answer the question
b It was not wise of John to answer the question

I believe that this problem, which I will not further discuss here, is correctly solved by Bartsch (1972,p.52) in terms of the difference between performative and constative. If we interpret 74 as performative in the sense that a speaker, by uttering 74, pronounces his judgement about the choice of the controlling subject underlying the Activity described, then it is understandable that this act of pronouncing judgement, like other illocutionary acts, cannot itself be negated.[12]

The difference between sentence and manner adverbials can thus be provisionally indicated in terms of the frames:

76 *sentence adverbial*:
speaker judges that it be F of controlling subject x to choose/decide (not) to do *y*
77 *manner adverbial*:
controlling subject x do *y* in a G manner

All adverbials that are based on adjectives which can occur both in the place of F in 76 and in the place of G in 77, can function both as a manner and as a sentence adverbial. For a number of adverbials, such as *wisely*, *foolishly*, *cleverly*, *shrewdly*, *strangely*, etc. this is quite clearly the case. In other cases it is less evident whether an adverbial can have both functions. Thus, the difference between:

78a John sliced the salami carefully
b Carefully, John sliced the salami

is not so clear-cut as in the case of *wisely*, etc. This can be said to be due, however, to the fact that *careful* is a less usual thing to predicate of a choice or decision. Still, the following sentences appear to be possible:

79a It was careful of John to slice the salami
b John was careful to slice the salami
c Carefully, John didn't slice the salami

so that Bartsch (1972,p.171) and Vennemann (1972,p.8) seem to be correct in their claim that in this respect there is no essential difference between *carefully* and *wisely*. This claim is reinforced by the fact that if we replace the adverbial *carefully* by the closely related *carelessly*, the difference in function comes out more clearly, witness:

80a John sliced the salami carelessly

b Carelessly, John sliced the salami
81a It was careless of John to slice the salami
b John was careless to slice the salami
c Carelessly, John didn't slice the salami

Therefore, any analysis in which the sentences 78a and 78b are assigned the same fundamental semantic representation must be rejected.

4 Manner adverbials and 'subject adjuncts'

In the beginning of section 2 of this paper I mentioned the fact that such adverbials as *willingly* and *happily* are different from manner adverbials in that they cannot be questioned with *how?* and cannot be paraphrased by means of the expression *in a ... manner*.[13] In this section, I will discuss the status of the class to which *willingly* belongs. For ease of reference, I shall use Greenbaum's term 'subject adjuncts' for this class (cf. Greenbaum 1969,p.156 ff.).

Subjects adjuncts are different from manner adverbials. That they also differ from sentence adverbials of the class of *wisely* etc. is clear when one compares the sentences of 57 above with the following:

82a Willingly, John answered the question
b *For John to answer the question was willing (of him)
c *That John answered the question was willing (of him)
d *It was willing for (of) John to answer the question
e *To answer the question was willing of John
f *Answering the question was willing of John
g John was willing to answer the question
h John was willing in answering the question
i *John did willingly to answer the question
j *John did willingly in answering the question
k *John's answering the question was willing

As it turns out, 82g and 82h are the only correspondences which *wisely* and *willingly* have in common. Moreover, as far as 82g is concerned, this common property is only apparent. For a closer look at the pairs 83 and 84 shows that the relation between these sentences in each case is not the same (this is shown by Greenbaum 1969, p.156 for *reluctantly*):

83a Wisely, John answered the question
b John was wise to answer the question
84a Willingly, John answered the question
b John was willing to answer the question

The difference is that in 83a-b and in 84a it is implied that John indeed answered the question. In 84b, however, this is not implied. The difference between *wisely* and *willingly* is also seen when one compares 59a-b with the following sentences:

85a *Willingly, John answered the question willingly
b *Willingly, John answered the question unwillingly

Sentence-*wisely* and manner-*wisely* were shown to be comments on two different and independent aspects of an Activity or Position: the choice of such an Activity or Position (and this choice itself was seen to be an Activity), and the manner in which an Activity was effectuated. From the evidence given above we must conclude that subject adjuncts like *willingly* neither comment on the former, nor on the latter aspect. Therefore, neither 76 nor 77 can be an approximation to their semantic representation.

A reasonable paraphrase of a sentence like 82a would be something like:

86 John answered the question while he was willing to answer the question

Similar paraphrases can be given for the following sentences:

87a John disappeared happily
b John disappeared while John was happy to disappear
88a Sally became a lady unknowingly
b Sally became a lady while Sally did not know that she became a lady
89a John was cheated unwittingly
b John was cheated while John was not aware that he was cheated

In general, then, subject adjuncts of this type conform to the following schema:

90 *subject adjunct*:
subject x be involved in Situation *y* while x be *H* to be involved in *y*

Thus, the subject adjunct expresses x's attitude toward or disposition with respect of being involved in Situation *y*.

The Situation *y* may, in these constructions, designate an Activity (as in 82a), a Process (as in 87a and 88a), a Position, as in:

91 Unknowingly, John sat beside the most dangerous criminal in town

and perhaps even States, as in:

92 Unknowingly, John is the biggest fool in town

In short, subject adjuncts are compatible with any type of Situation, as long as the subject participating in that Situation is identical to the subject of the subject adjunct.[14]

So far, we have shown that it is necessary to distinguish at least three semantic classes of adverbials, the members of each of which comment on a certain aspect of a Situation described in terms of a certain property of the subject participating in that Situation. Provisionally, we set up the following schemas as approximations to the semantic representations of the sentences in which adverbials belonging to the three classes concerned occur:

93 *sentence adverbial*:
speaker judges that it be F of controlling subject x to choose/decide (not) to do *y*
94 *manner adverbial*:
controlling subject x do *y* in a *G* manner
95 *subject adjunct*:
subject x be involved in Situation *y* while x be *H* to be involved in *y*

In order to arrive at a further refinement of these formulations, it is necessary to look at certain phenomena concerning the behaviour of these different classes in passive constructions.

5 Adverbials in passive constructions

Lakoff (1970a) has shown that adverbials like *carefully* and *willingly* behave differently in the passive. Consider his examples:

96a Harry was carefully sacrificed by the tribe

b Harry was willingly sacrificed by the tribe

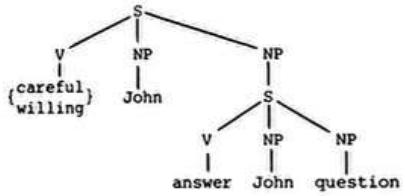
Sentence 96a is unambiguous. The property of being careful can only be assigned to the tribe, not to Harry. 96b, however, is ambiguous. It can either mean that Harry was sacrificed by the tribe while he was willing to be sacrificed, or that Harry was sacrificed by the tribe while the tribe was willing to sacrifice him. In order to see how this difference could be handled, I shall now first briefly describe Lakoff's way of accounting for it. Then, I shall present some criticisms of Lakoff's account. And finally, I shall try to explain the difference in terms of the framework which has been developed in this paper.

In several publications[15] Lakoff has suggested that the sentences

97a John carefully answered the question
b John answered the question carefully
c John willingly answered the question

be analysed in terms of the same fundamental semantic structure which can be represented as:

98



The fact that *carefully* always applies to the underlying subject, in passive no less than in active constructions, is accounted for by saying that the predicate *careful* conforms to the Like-Subject Constraint. I.e., that the subject of the complement of *careful* must be the same as the subject of *careful*, in the underlying structure. This, however, is not the case for *willing*, for then it could not be explained that *willingly* in 96b can describe a property of Harry's, the derived subject. For this reason, Lakoff formulates another constraint for the predicate *willing*, to the effect that its subject must be identical to "some" NP in the complement. I shall here refer to this constraint as the 'Like-Something Constraint'. This implies that *willing* can occur in two underlying frames:

99a willing(x, ϕ(x, y))
b willing(y, ϕ(x, y))

The former would underlie 'the tribe was willing to sacrifice Harry', and the latter would underlie 'Harry was willing for the tribe to sacrifice him'. By a process of adverb lowering both of these underlying structures could finally result in the ambiguous surface structure 96b.[16] In order to avoid the same ambiguity being defined for active constructions, Lakoff has to add a global condition on the process of adverb lowering, to the effect that this process can only be applied if a Like-Subject situation occurs at "some" point in the derivation, i.e., either in the underlying representation or at a later point after passivization (Lakoff 1970a,p.7-8).

This approach of Lakoff's must be criticized on several accounts: Firstly, his undifferentiated underlying structure obliterates the three-way distinction between sentence adverbials, subject adjuncts, and manner adverbials. Moreover, the analysis suggests that the constructions with the adjective in predicative position and the construction with the corresponding adverbial (resulting from adverb lowering) are

synonymous, which is not the case, at least not for sentence adverbials and subject adjuncts. Thus, all of the following sentences (except perhaps 101a-b) have different semantic implications, as we have seen earlier in this paper. These differences must be somehow expressed in terms of their underlying semantic representations.

100a John was careful to answer the question
b Carefully, John answered the question
101a John was careful in answering the question
b John answered the question carefully
102a John was willing to answer the question
b John answered the question willingly

Secondly, the Like-Something Constraint does not seem to be applicable to *willing*, in view of the fact that we have sentences like:

103 Harry was willing for the tribe to sacrifice his friend

It is in fact only for the constructions with *willingly* that the Like-Something Constraint would be needed. As far as correct output is concerned, however, this Constraint is superfluous for these constructions if there is also a global condition on adverb lowering, since this condition would filter out any underlying structure which would not have the Like-Something property. One the other hand, if one were to formulate only the global condition in terms of Like-Subject for constructions with *willingly*, then there would be no hope left for arriving at a uniform semantic explanation for the behaviour of *willingly*, since the identity of subject would be partly a matter of underlying semantic representation, and partly a matter of derived structure.

In view of these facts, one gets a strong feeling that Lakoff's account of the difference between *carefully* and *willingly* cannot be correct. It seems at least worthwhile to look for an alternative with fewer undesirable consequences. I will now suggest such an alternative.

Let us first look at one of the best examples of a Like-Subject verb, viz. *try*. Few people would doubt that the Like-Subject constraint applies to underlying structures in which *try* occurs:

104 Bill tried to arrest Jones
105a *Bill tried for the police to arrest Jones
b *Bill tried for Jones to be arrested by the police

Still, we have:

106 Bill tried to be arrested by the police

One could, of course, loosen the Like-Subject constraint on *try* to a global condition to the effect that underlying structures with *try* can only come to the surface if a Like-Subject situation obtains at some point in the derivation. As in the case of *willingly* this would imply that there is no uniform semantic explanation for the well-formedness of 104 and 106 as against the lack of well-formedness of 105a-b. Still, it seems clear that the relation between a predicate like *try* and its possible complements is semantically constrained. In fact, 106 can only be interpreted if Bill is assigned control over his being arrested by the police, which shows that the semantic features which I have discussed earlier in this paper play a role here.

Now, such problems as these would be much simpler if the subject of a passive sentence were available "as a subject" at the level of semantic representation. That is, if the passive construction would not be transformationally derived. This is

less out-of-the-way than it may seem to be at first sight. A common notion of logic is the notion 'converse relation', where the converse $\breve{R}$ of the relation R is defined through the following equivalence:

107 $R(x, y) \equiv \breve{R}(y, x)$

And very often, the passive construction of natural language is given as an example of an expression indicating a converse relation. It has been argued by Bar-Hillel (1969) that this notion of converse relation should be incorporated into the semantic description of natural languages.

This could be done, e.g., in the following way: something like rule 107 is entered into the semantic description (or into semantic theory), not as a rule generating semantic structures, but as a rule specifying the relationship between different semantic structures. For instance, we could have the semantic rules produce both structures like 108a and structures like 108b, which would then be related by the linguistic equivalent of rule 107:[17]

108a arrest(police, Bill)
b $\breve{\text{arrest}}$(Bill, police)

This would have the effect that, at the level of semantic structure, we dispose both of the structure underlying active sentences, and of that underlying passives. On the other hand, the relationship between the two would be duly indicated. In a case like *try*, then, we would get underlying semantic structures like:

109a try(Bill, arrest(Bill, Jones))
b try(Bill, $\breve{\text{arrest}}$(Bill, Jones))
c try(Bill, arrest(Jones, Bill))
d try(Bill, $\breve{\text{arrest}}$(Jones, Bill))

Due to the Like-Subject constraint on *try*, only the first two would be accepted as well-formed, and would eventually lead to:

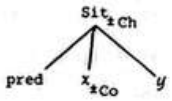
110a Bill tried to arrest Jones
b Bill tried to be arrested by Jones

and these are precisely the two possibilities that we find with *try*.

It must then further be expressed that whereas 110a is perfectly natural, 110b can only be interpreted if Bill is assigned a certain control over his being arrested by Jones. Here we can make use of the Situation-feature +Control which we have introduced earlier. In order to clarify this, we must have a closer look at the relation between the notion Control and the passive construction.

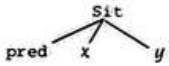
So far, we have spoken rather vaguely about Situations being characterized by the features ±Control and ±Change. It is not impossible that there are advantages in regarding these notions as relevant for Situations (i.e., propositional contents) taken as wholes. At least in the case of the notion Control, however, it is evident that this notion could be just as well be thought to apply to one of the arguments of the proposition designating the Situation involved. I.e., we could take something like the following structure as defining +Control and -Control Situations:

111

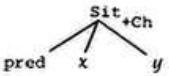


In this way it is more clearly indicated that an Activity is a Situation controlled by the subject, and a Process a Situation not controlled by the subject. A further simplification of 111 is possible by stipulating that an element not marked +Change or +Control is -Change or -Control, respectively. This gives us the following four basic structures:

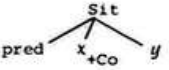
112a State:



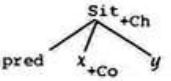
112b Process:



112c Position:



112d Activity:



In terms of these basic structures, we can reformulate rule 107, which relates active and passive, as follows:

113 $pred(x_{(+Co)}, y) \equiv \overset{\smile}{pred}(y, x_{(+Co)})$

This rule, in combination with the four basic structures, now effectively tells us the following:

If an active sentence describes a State-of-x with respect to *y*, the corresponding passive sentence describes a State-of-*y* with respect to x:

114a Everyone knew the story
b The story was known by everyone

If an active sentence describes a Process-of-x with respect to *y*, the corresponding passive sentence describes a Process-of-*y* with respect to x:

115a The machine sharpened the knives
b The knives were sharpened by the machine

If an active sentence describes a Position-of-x with respect to *y*, the corresponding passive sentence describes a State-of-*y* with respect to a Position-of-x:

116a John slept on the sofa
b The sofa was slept on by John

If an active sentence describes an Activity-of-x with respect to *y*, then the corresponding passive sentence describes a Process-of-*y* with respect to an Activity-of-x:

117a Bill arrested Jones
b Jones was arrested by Bill

Returning now to 110a-b, we can say that the predicate *try* not only obeys the Like-Subject constraint (i.e., the subject of the complement of *try* must be identical to

the subject of *try*), but also the Controlling-Subject constraint (i.e., the subject of the complement of *try* must be a controlling subject). Now, the underlying structures of 110a and 110b are as follows:

118a try(Bill, arrest(Bill$_{+Co}$, Jones))
b try(Bill, arrest(Bill, Jones$_{+Co}$))

I.e., 118a conforms to both the Like-Subject constraint and the Controlling-Subject constraint, and can be interpreted right away. 118b, however, does not conform to the Controlling-Subject constraint, and can be interpreted only if the feature +Control is added to *Bill*, the subject of the complement, although normally *Bill* would, in this converse structure, have the feature -Control. Thus, 118b can be interpreted only via the intermediate interpretational stage:

119 try(Bill, arrest(Bill$_{[+Co]}$, Jones$_{+Co}$))

The feature enclosed between square brackets can be thought of as transferred from, or imposed by, the selection restriction holding for *try*. This would, so it seems, correctly express the interpretational difference between 110a and 110b.

Returning now to the difference between *carefully* and *willingly* (cf. sentences 96a-b), we can say that *careful* obeys both the Like-Subject constraint and the Controlling-Subject constraint, whereas *willing* obeys neither of these constraints. That the Like-Subject constraint is not applicable to *willing* was shown with sentence 103 above. That there is a difference between *careful* and *willing* with respect to Control seems correct in view of:

120a George was willing to be the bad guy
b Sally was willing to become a lady
121a George was careful to be the bad guy
b Sally was careful to become a lady

The sentences 120 do not seem to impose any special interpretation on the State of 'George's being the bad guy' and on the Process of 'Sally's becoming a lady'. The sentences of 121, however, can be interpreted only on condition that this State and this Process are assigned the feature +Control, just as in the case of *try* in the structure 118b. The same difference can be observed with respect to the passive:

122a George was willing to be sent to the front line
b George was careful to be sent to the front line

In 122b, but not in 122a, it is implied that George did something in order for 'his being sent to the front line' to come about. The underlying structures for 122a and 122b are then as follows:

123a willing(George, send to front line(George, X$_{+Co}$))
b careful(George, send to front line(George, X$_{+Co}$))

and only the latter structure requires the intermediate stage:

124 careful(George, send to front line(George$_{[+Co]}$, X$_{+Co}$))

If we start now from the following structures:

125a The tribe sacrificed Harry
b sacrifice(tribe$_{+Co}$, Harry)

126a Harry was sacrificed by the tribe
b sacrĭfice(Harry, tribe$_{+Co}$)

it is clear that, since *willing* is not subject to the Controlling-Subject constraint, the following constructions provide no special problem:

127a The tribe was willing to sacrifice Harry
b willing(tribe, sacrifice(tribe$_{+Co}$, Harry))

128a Harry was willing to be sacrificed by the tribe
b willing(Harry, sacrĭfice(Harry, tribe$_{+Co}$))

The predicate *careful*, however, since it requires Controlling-Subject, can only be substituted for *willing* in construction 127, as in:

129 The tribe was careful to sacrifice Harry

Substitution of *careful* for *willing* in 128 leads to a construction which can only be interpreted if Harry is assigned Control over his being sacrificed by the tribe:

130 Harry was careful to be sacrificed by the tribe

which, of course, is rather unnatural in this case, although it is not impossible.

As far as *willingly* is concerned, then, we must combine what has been found here concerning the predicate *willing* with the general schema 95 which was suggested earlier as an approximation to the semantic representation of constructions involving subject adjuncts. We then arrive at the following analyses for sentence 131:

131 Harry was willingly sacrificed by the tribe
132a sacrĭfice(Harry, tribe$_{+Co}$) & willing(tribe, sacrifice(tribe$_{-Co}$, Harry))
b 'Harry was sacrificed by the tribe while the tribe was willing to sacrifice Harry'
133a sacrĭfice(Harry, tribe$_{+Co}$) & willing(Harry, sacrĭfice(Harry, tribe$_{+Co}$))
b 'Harry was sacrificed by the tribe while Harry was willing to be sacrificed by the tribe'

Carefully, on the other hand, could only result from a structure corresponding to 132, since in a structure like 133 the Controlling-Subject constraint would not be met.

The difference between *willingly* and *carefully*, then, is in this analysis represented as due to the fact that only *carefully* obeys the Controlling-Subject constraint which, as we saw earlier, is independently required for predicates like *try*. This result could only be obtained by assigning actives and corresponding passives different semantic structures at the level of semantic representation. The relation between these different structures, however, was shown to be expressible by means of an equivalence rule of the form 113.

In this last section I have on purpose refrained from suggesting semantic representations for sentences with *carefully* in its two different functions. It has become apparent in preceding sections that such semantic representations must be different from those involving adverbials like *willingly*. I will now turn to the question of how the semantic representation of *carefully* in its manner-function might be approached.

6 The hidden manner

We have seen above that manner adverbials such as *wisely* are compatible only with +Control, +Change Situations, i.e., with Activities. And we have informally paraphrased manner adverbials of this type in terms of the schema: *x* do *y* in a *G* manner, where *G* is an adjective corresponding to the adverbial concerned. This suggests that the operand of such adverbials (i.e., that which is modified or qualified by them) is something like 'the manner in which an Activity is carried out'. Let us see how this can be made more precise.

It is profitable to first have a look at some proposals which have been made concerning the operands of manner adverbials. Reichenbach (1966,p.301 ff.) has suggested two alternative approaches to the analysis of manner adverbials. I shall not here go into his first proposal, which has been shown to be inadequate by several authors.[18] Reichenbach's second proposal (*ibid.*,p.307), however, comes closer to being a correct account. This proposal is as follows.

Reichenbach paraphrases sentence 134a as 134b:

134a Annette dances beautifully
b Annette dances and her dancing is beautiful

where 'her dancing', he says, should be regarded as the description of the 'event' of Annette's dancing. 'This interpretation offers the advantage of a very simple conception of adverbs, namely, as adjectives referred to the event indicated by the sentence.' In symbolizing this analysis, Reichenbach makes use of 'event variables'. For any proposition *p*, the definite description $(\iota v)p^*(v)$ indicates 'the event described by p, where *v* is a variable ranging over events'. Simplifying somewhat, we can write Reichenbach's analysis for 134a-b as follows:

135 $\text{dance(Annette)} \;\&\; \text{beautiful}((\iota v)(\text{dance(Annette)})^*(v))$

There are two problems with this analysis of Reichenbach's: in the first place, he does not distinguish between 'fact' and 'event', and therefore does not provide a means for distinguishing the operands of semantically quite different adverbs like *beautifully* and *unfortunately*, as in:

136 Unfortunately, Annette dances

This criticism is made by Bartsch (1970,p.27-8, 1972,p.82-3), who refers to Vendler (1967) for the criteria by which 'fact' and 'event' can be distinguished. Bartsch further notes (1972,p.82) that it must be possible for us to distinguish between:

137a Peter saw Annette's dancing
b Peter saw Annette dance

This difference cannot be expressed in terms of the distinction between 'fact' and 'event' since, according to Vendler's criteria, a fact can never be the object of a verb like *see*. We must say, therefore, that the object of *see* in 137b is the event of Annette's dancing. But what, then, is the object of *see* in 137a? According to Bartsch, it is the Activity ('Vorgang') of dancing in which Annette is engaged. According to this view, we need fact-, event-, and activity-variables in our formal representation of the semantics of sentences. Bartsch's analysis of sentence 134a is then modelled on the following paraphrase:

138 Annette is engaged in a dance-activity and that dance-activity is beautiful

More formally expressed, this comes out as follows:

139 (∃t)(be engaged in(Annette, t) & dance-activity(t) & beautiful(t))

In this way, it is possible to distinguish symbolically between 'the activity of dancing in which Annette is engaged', 'the event of Annette's dancing', and 'the fact that Annette dances'. As we shall see, however, Bartsch's analysis does not completely solve the second problem connected with Reichenbach's proposal.

This second problem is noted by Reichenbach himself (1947,p.307-8): it concerns the fact that in analyses along the lines of 135 it is not properly expressed that it is Annette's way of dancing which is said to be beautiful. There is nothing in 135 which prevents us from replacing the event-predicate *beautiful* by any other predicate which can be applied to an event, even if such a predicate has nothing to do with the way in which Annette danced. Reichenbach tries to make up for this by adding a formula in which it is expressed that there is a relation of implication between her dancing and the beauty of the event of her dancing. What he means precisely by this is not altogether clear to me. He says explicitly, however, that the implication should be "added" to an analysis like 135, so that the complete analysis of a sentence like *Annette dances beautifully* would be as informally represented in:

140 Annette dances and the event of her dancing is beautiful and if she dances then the event of her dancing is beautiful

As far as this is interpretable at all, however, it seems that in 140 two senses of the original sentence have been mixed up, viz. the sense that Annette is now dancing beautifully, and the sense that Annette is a beautiful dancer. In any event, the fact that Annette's 'manner' of dancing is involved is expressed no more clearly in 140 than in 135. For instance, even in terms of 140 Reichenbach could not distinguish between adverbials like *beautifully* and *quickly*, although the latter clearly does not modify the manner, but the speed of the activity involved. And in this respect Bartsch's analysis does not provide any advantage over Reichenbach's. Although she says explicitly (and correctly) that the predicates corresponding to manner adverbials should be applied to the manner or way in which an activity is carried out (1970,p.27), the operands in her final analysis are not manners or ways, but the activities themselves (as in 139).

These considerations seem to point in the direction of the correct (and, indeed, rather trivial) solution: in the semantic representation, the predicates corresponding to manner adverbials should be applied directly to the 'manner' of the activity as such. This means that this manner must be explicitly represented in the semantic structure. 'Manner' would then be a basic element in semantic representations.[19] In order to see how this can be done I should like to advance the following thesis:

All +Control and all +Change Situations (i.e., all Activities, Positions, and Processes) have an implicit manner in which they are carried out or go on.

This can be seen from the following facts. As soon as we have described a +Control or a +Change Situation, there is no point in adding the information that that Situation was characterized by some manner.[20] Nor is there any way of denying that it was characterized by some manner:

141a *John answered the question in a manner
b *John answered the question, but not in a manner
c *Did John answer the question in a manner or didn't he?

In these sentences, *in a manner* should be taken as uttered in a completely neutral way. We can have sentences like:

142 John answered the question in a manner ... (!) (you wouldn't believe it)

but such a sentence gives more information than that there was some manner in which John answered the question. In general, we can say that as soon as we have described a +Control or a +Change Situation, we can only add information about the manner of that Situation if we say more than just that there was some manner of that Situation. This shows that the manner as such is implied in the Situation.

This is confirmed by the fact that the following discourse is well-formed:

143 John answered the question. 'The' manner in which he did it, however, was rather rude

In Karttunen's terms (1969) we can say that the description of an Activity establishes the manner of that Activity as a discourse referent. There is no point in discourses like:

144 *John answered the question. He did it in a manner. The manner, however, was rather rude

All this means that, using δ as a variable over situations, m as a variable over manners, Co and Ch for 'Control' and 'Change', and writing M_x for 'the manner of x', we can formulate the following redundancy rule:

145 $(\delta)(Co(\delta) \vee Ch(\delta) \longrightarrow (\exists m)(m = M_\delta))$

This rule can be thought to operate as follows. At certain points in the specification of semantic representations, Situations are developed along the lines of the schema's 111 and 112. If these Situations involve the features +Co or +Ch, then rule 145 associates a manner with them. This manner is then available as an argument for further predications. Only if further predicates are assigned to it is it expressed in the final surface structure. This could lead to the following analysis of the sentence *Annette dances beautifully*:

146 s_1 (dance(Annette)) s_1 & beautiful(M_{s_1})

in which it is correctly expressed that it is the manner of Annette's dancing which is said to be beautiful.

The same procedure could be followed for *speed*. Indeed, it seems correct to say that any +Change Situation implies a certain speed. We can therefore formulate a redundancy-rule similar to 145 for the category of speed, so that adverbials like *beautifully* and *quickly* can be properly distinguished. Such a description would also explain immediately why the former can be paraphrased in terms of 'manner', and the latter in terms of 'speed'.

A precise formalization of the type of description intended here would require considerable elaboration and perhaps some modification of what has been said here. I trust however, that the general principle has been sufficiently clarified. I would like to conclude the present discussion with some remarks on the different ways in which the manner-constituent introduced by means of redundancy-rule 145 can be further specified.

The analysis roughly represented in 146 appears to be a correct approximation to the semantic structure of *Annette dances beautifully*, inasfar as it is indeed Annette's 'manner' of dancing which is said to be beautiful in this sentence. However, such analyses are not possible for all manner adverbials. I.e., it is not the case for

all manner adverbials that the adjective corresponding to the adverbial can be directly predicated of the manner implied in the Situation described[21]. This can be seen most clearly, perhaps, in a sentence like:

147 John writes illegibly

Although *illegibly* can be paraphrased with *in an illegible manner*, it would no doubt be incorrect to conclude from this that it is the manner in which John writes which is said to be illegible. What we want to express, rather, is that the manner in which John writes is such that what he writes is illegible. This means that a more complex characterization of the manner-constituent implied in 147 is necessary. For our present purposes we could give the following approximation:

148 $s_1(\text{write}(\text{John}, X))_{s_1}$ & $(\text{illegible}(\iota x)(\text{write}(\text{John}, x)))^*(M_{s_1})$

Here, X indicates the unspecified object of *write*, and the manner of John's writing is characterized by the proposition that what he writes is illegible. Thus, a whole proposition serves as the predicate of the manner-constituent. This is indicated, after Reichenbach, by means of the asterisk. It seems that a similar procedure must be followed in the case of a sentence like

149 John answered the question wisely

Although we can say that John's manner of answering the question was wise, this seems to be short for: the manner in which he answered the question was characterized by his being wise. The analysis of 149 would then look like:

150 $s_1(\text{answer}(\text{John}, \text{question}))_{s_1}$ & $(\text{wise}(\text{John}))^*(M_{s_1})$

In this way, the unity of all manner adverbials is captured through the fact that they are all developed from specifications of the manner-constituent which is derived, by means of redundancy-rule 145, from the Situation described in the sentence. And the differences within the class of manner adverbials are captured through the fact that they are developed from different specifications of this manner-constituent.

8 Summary

a Manner adverbials are those adverbials which can be questioned with *how* and which are of the form *in a...manner/way* or can be paraphrased in this form.

b If we cross-classify Situations (i.e., those things which are designated by simple propositions) with respect to the features ±Change and ±Control, we can define the selection restrictions of manner adverbials in general by saying that they either require +Change or +Control Situations.

c It is also possible to subclassify the class of manner adverbials in terms of these basic features. Some of them are compatible with all Situation-types with which manner adverbials in general are compatible (i.e., with Activities, Processes, and Positions). Some require +Control Situations (i.e., Activities or Positions). Some require +Change Situations (i.e., Activities or Processes). And some require +Control, +Change Situations (i.e., Activities).

d Manner adverbials differ in a number of semantic and syntactic ways from sentence adverbials, even though a number of lexical items, like *wisely*, can occur in both functions.

e The difference in selection restrictions between *wisely* as a manner adverbial and *wisely* as a sentence adverbial is only apparent. In the latter function, *wisely* should be interpreted as a comment on the decision or choice of some controlling subject to do or not to do a certain Activity or to be or not to be in a certain Position. Since the decision or choice itself is an Activity, we can say that *wisely*, no matter how it functions, always requires an Activity.

f This also explains the different behaviour of manner-*wisely* and sentence-*wisely*

under negation: a negative proposition can describe the outcome of a decision or choice, but it does not itself describe an Activity.

g Subject adjuncts like *willingly* differ in a number of semantic and syntactic ways from both manner adverbials and sentence adverbials. Unlike *wisely*, *willingly* does not require a +Control Situation in its complement.

h For a number of reasons it is profitable to have the structure underlying passive sentences available at the deepest level of semantic representation, and not to derive the passive from an underlying active structure by transformation.

i This can be achieved by adapting the logical notion of "converse relation" to linguistic purposes.

j The essential difference between active and passive is, that the subject of a passive structure is never a controlling subject. This implies that the passive corresponding to an Activity-expression itself describes a Process, while the passive corresponding to a Position-expression itself describes a State.

k In terms of this theory of the passive the difference in behaviour between *wisely* and *willingly* in passive constructions can be explained. Since *wisely* requires a controlling subject, it cannot normally be made to apply to the subject of a passive construction. *Willingly*, which does not require a controlling subject, cán apply to the subject of a passive construction.

l The operand of manner adverbials is not an event or an activity, but the "manner" associated with the Situation concerned.

m This "manner" is implied in any Activity, Position, or Process, and can be introduced by means of a redundancy rule.

n All manner adverbials agree in that they contain a qualification of this hidden manner-constituent. They can be subclassified, however, on the basis of the type of qualification that they involve.

Department of Linguistics
University of Amsterdam

Notes

*I am indebted to Norval Smith for suggesting a number of corrections with regard to content and style.

1 For a survey of traditional and more recent accounts of adverbials, see Nilsen (1972).

2 Cf. Katz & Postal(1964), Platt & Platt (1972).

3 Cf. Greenbaum (1969), Kuroda (1970), and section 5 below.

4 Kraak & Klooster (1968), p.203 ff., discuss a number of interesting phenomena connected with this three-way distinction. Platt & Platt (1972) suggest a method of expressing such semantic differences between different manner adverbials. See further section 7 below.

5 It is probable that the ungrammaticality of sentences like 25-26 is due to some Surface Structure constraint, since it is possible to say things like *John was being foolish in a masterful way*. I.e., Non-Stative adjectives do not exclude "Manner" as such, but are incompatible only with one-word manner adverbs.

6 The ±Control distinction is similar to the difference between "Agentive" and "Non-Agentive" subjects as discussed, e.g., in Lyons (1968), p.356-7. Notice, however, that for a Situation to be "controlled" it is not necessary for the subject to be "active" in any sense.

7 As far as the progressive is concerned, this cannot be the whole story, witness sentences like *The corpse was lying on the sofa* which clearly does not describe a Position (in my sense of the term), but a State. I will not pursue this matter any further in the present context.

8 Cf. Fodor (1972).

9 Perhaps there are also adverbials which are only compatible with Processes; *convulsively* might be an example. Cf. *John's arm twitched convulsively* vs. **John twitched his arm convulsively*.

10 Cf. Greenbaum (1969),p.153 and Wilkinson (1971),p.425. There may be slight semantic differences between these alternative constructions, and also differences in acceptability. On the whole, however, the sentences 57 provide an excellent paradigm for characterizing sentence adverbials of the *wisely*-type.

11 Wilkinson's idea (Wilkinson(1970),p.436-7) of postulating a head noun "action", "act" or "deed" in the complement of sentence-*wisely* (parallel to the Kiparsky's FACT for true factive predicates (Kiparsky & Kiparksy (1970)) cannot be maintained in the light of the phenomena discussed above. Although a paraphrase like *John's act of answering the question was wise* seems correct for 73, little sense could be made of expressions like *John's act of not answering the question* or *John's act of sitting on the fence*. It is not the Activity expressed in the complement which is commented on by *wise, wisely* and the like, but the Activity (i.e., the choice or decision) which has led to the Situation described in the complement.

12 In this connection it is relevant that sentence-*wisely*, unlike manner-*wisely*, cannot occur in questions and imperatives.

13 Cf. Kuroda (1970), Greenbaum (1969),p.171-3. As further examples belonging to this class Greenbaum gives *miserably, sadly, painfully, resentfully, reluctantly*, and *proudly*.

14 This identity of subject requires some modification. Cf. section 6.

15 Lakoff (1970a,1970b,1972a).

16 Other syntactic realizations are possible for these underlying structures, some of them unambiguous (depending on the place of *willingly* in the sentence). These other possibilities will be left out of account here, since they do not affect the main argument.

17 Further rules would then specify *arrest* as *be-arrested-by*.

18 Cf. Bartsch (1970, 1972); Parsons (1972).

19 Van Riemsdijk (1971) gives some further arguments for introducing an explicit "Manner" into the underlying structure of manner adverbials.

20 The idiomatic expression *in a manner* meaning 'in some sense', 'to some extent' is, of course, not relevant here.

21 Platt & Platt (1972) give a more detailed account of the semantic differences involved here. They recognize as many as six semantic subclasses of manner adverbials.

DIACHRONIC ASPECTS OF IDIOM FORMATION

Jan G. Kooij

1.0 Publications by Weinreich(1966, 1969), Chafe(1968) and now Makkai(1972) have put the problem of idiom formation in the focus of attention. Given a grammar that generates a syntactic description and a semantic interpretation for the regular phrase *He kicked the bucket*, it is impossible to have the same device generate a semantic interpretation for the phrase *He kicked the bucket* 'He died', in the same manner. This difficulty is caused by the specialized meaning of the second phrase and also by its syntactic deficiency: **He was kicking the bucket*. Various proposals have been made to remove the difficulty; one proposal is to take the idiomatic phrase as an unanalyzable whole. Since, however, such phrases are more often than not syntactically regular in some respects, they cannot be regarded as completely unanalyzable: *NP's kicking the bucket*, for instance, is grammatical.

Idioms and phraseological units are a recurrent problem in generative descriptions. Similar problems arise in the description of compounds and of adjective-noun phrases (for the latter, see Weinreich 1969). It is now customary to restrict the term 'idiom' to highly idiosyncratic and unpredictable semantic specialization. But since it is notoriously difficult to distinguish full idioms and semi-idioms, idioms can more profitably be regarded as the end point on a scale of semantic specialization. A semantically based grammar is in a position to keep semantic and syntactic considerations apart; one might, therefore, expect such a grammar to be more capable of solving the problems of idiom formation. Generative semantics, too, has its difficulties with semantic specialization. Recent discussions of the generative semantic description of verbs such as *kill* and *remind* indicate that the underlying semantic structures proposed for these verbs are not equivalent with the meaning of the verbs. To give one example, the Dutch phrase x *doodt y* 'x kills y', is not equivalent to 'x causes y to become not alive' since one can cause somebody's not being alive without directly affecting him physically, and the latter is a presupposition of the meaning of *doden* 'to kill'. Similarly, the phrase x *vermoordt y* 'x murders y', carries presuppositions that *doden* 'to kill' lacks: 'x causes y to become not alive by directly affecting him physically by wilful, premeditated, and illegal action'. Of these three semantic structures, the first one is the least marked, and the third one is the most highly marked, and their respective morphological realizations often cannot be used interchangeably.

Semantic specialization is a common feature of natural languages: relationships between semantically similar structures such as the one pointed out above, are present everywhere. If such relationships are to be described by a system of rules, the rules must be capable of changing meaning. If one chooses another device, the device must be capable of accounting for equivalences and non-equivalences of related semantic structures.

1.1 At this point I will leave the synchronic problems of idiom formation and turn to its diachronic aspects. I will use the term 'idiom' in a wider sense than Weinreich (1969) does. I will speak of idiomaticity of a structure B whenever a structure B shows a semantic specialization in comparison with a structure A to which it is equivalent in other respects. I will show, in particular, that in the course of a change in the language, semantic specialization can take the following form. Given a syntactic structure B, representing an older stage of the language, and a syntactic structure A which is used to express the same grammatical relation R, but which represents a newer stage of the language. When these two structures co-exist, the B-type structure readily undergoes a semantic specialization, so that, in those cases, B is idiomatic as compared to A. This development has two consequences: (1) Whereas both the constructions B and A can still be used to express the general relation R, only B can be used to express the special relation R'; eventually, this will cause a split between R and R', so that, for the expression of R, the change in the direction of the newer construction A will

be accelerated; (2) Because the older construction, B, develops a meaning which A has not, B will not disappear as soon as it might have otherwise, or it will not disappear at all. My conclusion will be that the phenomenon of semantic specialization and of idiom formation is one factor in language change. Also, discussions on the synchronic (non-)equivalence of near-synonymous structures B and A, may throw some light on factors that contribute to language change. The differences between B and A that are the subject of such discussions may, in fact, reflect a change in progress, instead of just being stylistic or marginal.

2.0 The case in point are Indirect Object constructions in Dutch. Much like in English, German, and other I-E languages, in Dutch a relation such as 'transfer of z by x to y' can syntactically be expressed in two ways:

B	x geeft y z	'x gives y z'
A	x geeft z aan y	'x gives z to y'

The construction without a preposition preceding the Indirect Object is labelled B, because it is this construction which represents the older stage of the language where the grammatical relation involved was expressed by case markings. I will use the term 'Dative' as a cover term for Indirect Object constructions both with and without a preposition preceding the IO. Following Van den Toorn(1971), we can, first of all, divide the verbs that take a Dative into two classes:

1 a class of verbs that denote 'transfer' or a converse relation: *geven* 'give', *lenen* 'loan', *ontnemen* 'take away from'.
2 a class of communication verbs denoting a speech act: *zeggen(aan)* 'say to', *schrijven(aan)* 'write to', *een telefoontje geven* 'to give a call', *een waarschuwing geven* 'to give a warning'.

In a number of cases, the constructions B and A can both be used in sentences containing these verbs or verbal expressions. But in not a few cases, only one of the two can be used, namely B. Van den Toorn, for instance, makes the following observations:

1 the preposition *aan* is usually absent when the IO is [-Animate]:

?Hij gaf water aan de planten
'He gave water to the plants'

and also when the DO is [-Concrete]:

?Hij gaf een klap aan Jan
He-gave-a-blow-t-John = 'He hit John'
*Hij gaf een verfje aan de deur
He-gave-some-paint-to-the-door = 'He painted the door (coll.)'

2 With verbs of communication, the preposition can, normally, be used, as in:

Hij gaf een waarschuwing aan Piet
'He gave Peter a warning'

but it can hardly be used in

?Hij gaf een telefoontje aan Karel
He-gave-a-telephone-to-Charles ='He gave Charles a call'

3 A different situation obtains with Indirect Objects that have the preposition *voor* 'for' (That this is a separate class of Indirect Objects was already noted in Fillmore(1965). In Dutch, the preposition is no longer omissible for most speakers:

?Hij kocht haar een hoed
'He bought her a hat'

and it is certainly not omissible when the IO is [-Animate]:

*Hij kocht de bibliotheek een eerste druk
'He bought a first printing for the library'

From the above, we can see that the Dative in Dutch has split into a Dative of transfer and of communication on the one hand, where the preposition is still often omitted, and a Benefactive case on the other hand, where the preposition is almost always present. Within all three subclasses, however, the presence vs. absence of the preposition is, at the same time, governed by features of semantic specialization to which I will pay closer attention now.

I Transfer
B as well as A
1 Hij gaf (aan) Piet het boek
'He gave the book to Peter'
2 Hij verkocht (aan) Piet een auto
'He sold a car to Peter'
3 De brief werd (aan) hem bezorgd
'The letter was delivered to him'
4 Hij gaf (aan) hem een horloge kadeau
'He gave him a watch for a present'

B only
1' Hij gaf de deur een verfje
He-gave-the-door-some-paint ='He painted the door (coll.)'
2' Hij verkocht Piet een klap
He-sold-Peter-a-blow = 'He hit Peter'
3' Hij bezorgde me een hoop moeite
He-delivered-me-a-lot-of-trouble = 'He made a lot of trouble for me'
4' Dat geef ik je kadeau
That-I-give-you-for-a-present = 'You can skip that'

In all examples, the same verb is used both in the unmarked and in the marked expression. The preposition is absent when the construction with the two Objects does not have the meaning of an actual transfer, and when the IO is an affected Object rather than a receiver. Even when there is transfer on the part of the Subject, the preposition tends to be absent when the Indirect Object cannot be regarded as an actual receiver, like in the example

5' Hij gaf de planten water
'He gave water to the plants'

This is a fairly regular specialization of the construction B; the same feature, 'no actual transfer', plays a role in a variety of sentences. Notice that the tendency to keep the two meanings apart by using alternative constructions is especially strong when there is a potential ambiguity. Thus, one will say

6' Hij gaf z'n paard de sporen
He-gave-his-horse-the-spurs = 'He spurred on his horse'

rather than

6 ?Hij gaf de sporen aan zijn paard

since (6) is potentially, though somewhat oddly, ambiguous. On the other hand, the A construction is used in a sentence like

7 Hij gaf voedsel aan het gerucht
He-gave-food-to-the-rumor = 'He forstered the rumor'

but (7) is not potentially ambiguous. The idiomatic expressions are sometimes syntactically irregular; one cannot freely choose a determiner for the DO in (6'):

6'a *Hij gaf z'n paard sporen

The tendency to make a syntactic distinction between the specialized and the non-specialized meaning in some cases, may, in turn, cause the distinction in other cases. A sentence like

8' De dokter gaf hem tranquillizers

can be translated as 'The doctor gave him tranquillizers' but is more accurately translated as 'The doctor prescribed tranquillizers for him', where no actual transfer is implied. The semantic specialization of the B-type constructions is, at the same time, an illustration of the well-known development of Accusative-Dative relations into relations where the original Dative is the Accusative and the original Accusative is a fixed complement to the verb.

II Communication

B or A

9 Hij gaf (aan) Karel een waarschuwing
'He gave Charles a warning'
10 Hij vertelde (aan) Karel de waarheid
'He told Charles the truth'
11 Hij zei (aan) Karel niets
'He didn't tell Charles anything'

B only

9' Hij gaf Karel een telefoontje
He-gave-Charles-a-telephone = 'He gave Charles a call'
10' Hij vertelde Karel de waarheid
He-told-Charles-the-truth = 'He told Charles what he really thought of him'
11' Die man zegt me niets
That-man-doesn't-tell-me-anything = 'I can't relate to that man'

Like actual transfer of objects, transfer of messages, in a wide sense, in Dutch can be expressed both with and without a preposition preceding the IO. When there is a potential ambiguity between the 'transfer-meaning' and the 'communication-meaning', as in (9'), the A construction is avoided. Apart from that, the situation is quite similar to the one in class I. The preposition tends to be omitted when the sentence does not express transfer of a message, the IO is more directly affected, and there is a closer semantic relation between the verb and the DO. The same specialization is present in

12 Hij vertelde dat verhaal aan de kinderen.
'He told that story to the kids'
12' Hij vertelde de kinderen een verhaaltje
'He told the kids a story (e.g. he read them from a story book)'

As is the case in (9'), the idiomaticity of (12') is also signalled by another feature, namely the diminutive form of the DO.

III Indirect Objects taking the preposition *voor* 'for'

Here the situation is more complicated. With actual Benefactives, the opposition between constructions with and without a preposition hardly exist any more, since Benefactives normally take a preposition. There are sentences, however, where there is still opposition between IO's with and without *voor*, 'for', and where the B-type constructions show a regular semantic specialization. The Dative involved is only vaguely related to the notion 'benefactive'; a better label would be 'experience' (Van den Toorn(1971),p.38).

A only
13 Dat is te moeilijk voor hem.
'That's too difficult for him'
14 Het is hier te koud voor mij
'It's too cold for me here'
15 Het is te ver voor ons
'It's too far for us'

B only
13' Dat is hem te moeilijk
That-is-him-too-difficult = 'He finds that too difficult'
14' Het is me hier te koud
It-is-me-too-cold-here = 'I find it too cold here'
15' Het is ons te ver
It-is-us-too-far = 'We find that too far'

As the translations show, the B-type constructions express or presuppose a subjective opinion of the person who is the IO, whereas the A-type constructions express the opinion of the speaker. Thus, I can make the assertion

13' Dat is hem te moeilijk

only when I've been told that the person referred to by *hem* finds something too difficult. But I can make the assertion

13 Dat is te moeilijk voor hem

whenever it is just my opinion, or my guess, that something will be too difficult for the person referred to by *hem*. And though both in (14) and (14'), the speaker and the IO are the same person, there is still a contrast between the two sentences. Sentence (14) presupposes an objective evaluation of the facts on the side of the speaker, whereas (14') only expresses his personal opinion, which can very well be at odds with the actual facts.

A counterexample to the formulation of the difference between the two types of constructions is provided by the sentence

16' Die jurk is je te klein
That-dress-is-you-too-small = 'That dress doesn't fit you'

which conveys the opinion of the speaker, not of the IO. However, (16') is still different from

16 Die jurk is te klein voor je
'That dress is too small for you'

since one will use the former, but not the latter, when one can actually see that somebody's dress doesn't fit because she's wearing it, and not when one is just guessing about sizes. Unlike what we saw in classes I and II, here the B-type construction and the A-type construction mutually exclude each other. In classes I and II, the semanti-

cally unmarked relation R can still be expressed both by B and A, whereas B is used for the semantically marked relation R'. Here, however, the semantically marked meaning, conveying a subjective opinion only, is exclusively expressed by B, whereas the less marked meaning, conveying an objective opinion, is exclusively expressed by A. This, then, is one example where there is a split both semantically and syntactically between the constructions B and A.

2.1 The above is a simplification in some respects, because the choice of prepositions in sentences denoting transfer is governed by more factors[1]. As a picture of semantic specialization of Indirect Object constructions in present-day Dutch it is, I believe, basically correct. It would not be too difficult, however, to add examples to each set of examples where the difference in meaning between B-type constructions and A-type constructions is more difficult to judge. Nor will all native speakers agree on all examples given so far. But that is not disturbing. We can safely assume two things: (1) As far as the semantically unmarked Dative constructions are concerned, the A-type construction will eventually win in Dutch[2], (2) There is a definite tendency in Dutch to specialize the meanings of the older, B-type constructions, both along definable semantic dimensions, as in the case of 'affected indirect objects' and in a more idiosyncratic way. This latter development is in perfect accordance with the general tendency to lexicalize differences between co-existing morphological forms that originally had - or basically still have - the same meaning.

As long as these two developments are still in progress, which is the case especially with the Dative of 'transfer', there will be a number of cases where differences between B-type sentences and A-type sentences are felt to be idiosyncratic, individually determined or stylistically determined. But, as it has been most eloquently defended by Labov (1972), it are precisely those differences that eventually may become a contributing factor to a change in the language. In this connection, it is interesting to note that the majority of the semantically specialized B-type sentences have another feature which they all share: they belong to a more informal or colloquial level of speech. A full-scale investigation of the use of these constructions and of speakers' judgements, therefore, may very well give us an idea of how semantic specialization and idiom formation can affect a change in grammatical systems.

Department of Dutch Language and Literature
Leyden University

Notes

1 For instance, Indirect Objects containing new information are often preceded by *aan*, and Indirect Objects which are anaphoric pronouns, as a rule are not preceded by a preposition. See Kooij(1972).

2 This development is also important typologically: the change B ⟶ A represents a change from OV to VO word order. For an interesting interpretation of such changes, see Vennemann(1972).

AGAINST CONJUNCTION REDUCTION

A. Blom

1 Introduction

I will present six arguments against conjunction reduction. In the course of the argumentation it will become clear that it is impossible to give a relevant definition of the notion 'transformation of a natural language' and that it is impossible to define the notion 'ambiguity' in a meaningful way when conjunction reduction is contained in the transformational component and when the interpretive apparatus presupposes its existence. The banishing of conjunction reduction from grammar thus seems welcome and will be advocated on the basis of the weak syntactic motivation of this rule (3), the impossibility to formulate the agreement transformation upon which the rule crucially depends (4), the weak semantic motivation of the rule (5), the problematic derived structures of it (6), the dubious processes of pruning and relabeling which accompany it (7) and the undesirable derivation of conjunction reduction of non-constituents (8). In (2) I will give a brief survey of the operation of conjunction reduction as formulated by Ross(1967b,6.1.2.3), and in (9) I will sketch some perspectives of a grammar without conjunction reduction.

2 Conjunction reduction as formulated by Ross

2.1 Extraction of identical elements: the directionality constraint

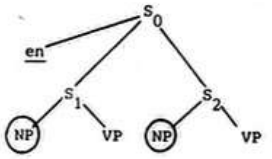
Conjunction reduction is the transformation by means of which constituent conjunction (and conjunction of non-constituent, see (8)) can be derived from sentence conjunction. Ross(1967b,6.1.2.3) formulated conjunction reduction as a bidirectional extraction of identical constituents:

a $\quad [\underline{\text{and}} - [X\text{-}A]^{n}_{B}]_{B} \longrightarrow \text{opt} \quad [1 \;\; 2 \;\; 0\,]_{B} \# 3$

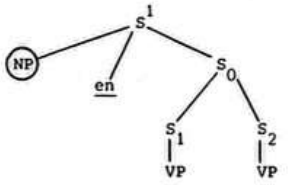
b $\quad [\underline{\text{and}} - [A\text{-}X]^{n}_{B}] \longrightarrow \text{opt} \quad 2 \# [1 \;\; 0 \;\; 3\,]_{B}$

The identical constituents are Chomsky-adjoined to the conjoined node and 'superimposed' during the process: only one identical element remains. The direction in which adjunction takes place depends on the position of the constituent in the tree: right-branching identical constituents are adjoined to the right, left-branching identical constituents are adjoined to the left of the conjoined node. I will call this the directionality constraint on conjunction reduction.[1)]

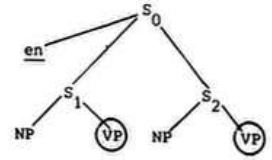
2a



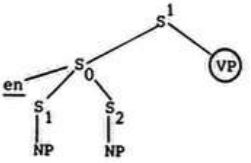
2b



3a



3b



2.2 The left/rightmost condition

Only leftmost or rightmost constituents in a conjunct can undergo adjunction, this in order to prevent adjunction of the identical verbs in the structure underlying 4a to the left of the conjoined S node, resulting in the ungrammatical affirmative sentence 4b:

4a Jan eet een appel en Piet eet een peer.
Jan eats an apple and Piet eats a pear.
4b *Eet Jan een appel en Piet --- een peer.

I will call this the left/rightmost condition on conjunction reduction. The only transformation that can be applied to the structure underlying 4a is gapping, a deletion transformation by means of which 5 is derived:

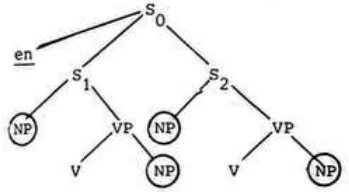
5 Jan eet een appel en Piet --- een peer.

2.3 The highest identical constituent condition

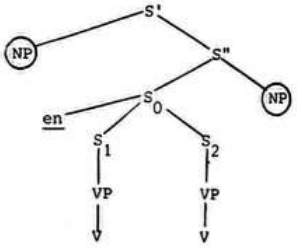
If a conjunction contains more than one pair of identical elements the highest constituents have to be extracted and adjoined first: every subsequent adjunction results in a new node which ends up between the original conjoined node and the node created last. This I call the highest identical constituent condition on conjunction reduction.[2] Thus the subjects in 6a end up higher in the derived structure 6b than the direct objects, which is desirable:

6 Mijn oom verkoopt en repareert fietsen.
My uncle sells and repairs bicycles.

6a



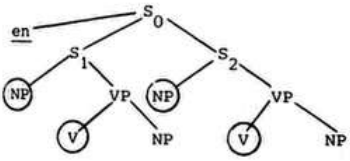
6b



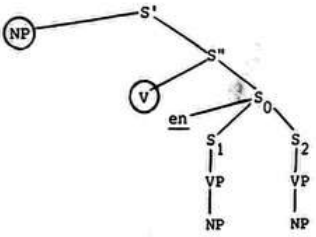
In 7a the subjects and the verbs are extracted and adjoined successively in order to yield the correct derived structure 7b:

7 Mijn oom verkoopt fietsen en kinderwagens.
My uncle sells bicycles and prams.

7a



7b



The same condition tells us that in 3a the whole VP's should be extracted: the V's and the NP's should not get separate treatment.

2.4 V nodes

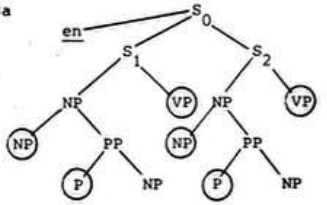
In the derivation of 7 it is clear that conjunction reduction extracts V nodes as well as NP and VP nodes: otherwise this very simple case of constituent conjunction could not be derived. Conjunction reduction is applicable to all major categories, at least.

2.5 Pruning

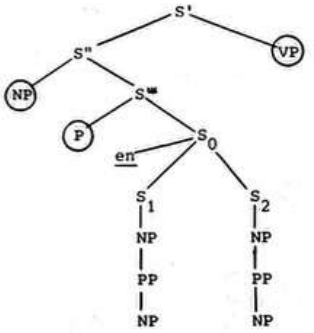
In order to obtain the correct derived structure in 2b and 3b we need pruning of the non-branching S_1 and S_2 nodes, and in order to obtain the correct derived structure in 6b and 7b we need pruning of the non-branching VP nodes. But clearly this is not all: non-branching NP and PP nodes have to be disposed of as well, if we are to arrive at the correct derived structure in 8b:

8 De kampioenen in boksen en zwemmen hebben hun medailles verkocht.
The champions of boxing and swimming sold their medals.

8a



8b



2.6 Relabeling

In order to obtain the correct derived structure in 2b and 3b S_0 must be relabeled VP. This relabeling principle can be formulated as follows:

9 Any node A that immediately and exhaustively dominates the string [and-B^n] must be relabeled B.

In order to obtain the correct derived structure in 6b and 7b S" must be relabeled VP. This relabeling principle can be formulated as follows:

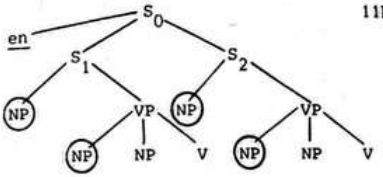
10 Any node that immediately and exhaustively dominates the string [V - NP] must be relabeled VP.

2.7 Conjunction of non-constituents

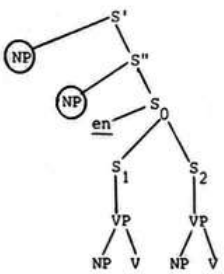
Sentence 5 gives us an example of conjunction of non-constituents, because *Piet---een peer* is not a constituent. Sentence 11 gives us an example of a conjunction of non-constituents derived by means of conjunction reduction:

11 Zolang hij Marie kadootjes geeft en snoepjes voert.
As long as he Marie presents gives and cookies feeds.
(=as long as he gives Marie presents and feeds (her) cookies)

11a



11b



2.8 Alternative hypotheses

The existence of conjunction reduction has been contested from two diametrically opposed points of view within transformational theory. Adherents of the 'phrase structure hypothesis', like Dougherty(1968), hold that constituent conjunction should be generated in the base and that conjunction of non-constituents should be derived by means of a deletion rule. Adherents of the 'deletion hypothesis', like Tai(1969) and Koutsoudas(1971), hold that all conjunction should be derived by means of a deletion rule called 'coordinate deletion'. Because constituent conjunction cannot be accounted for by deletion, Tai formulates a separate regrouping transformation. Koutsoudas denies the existence of constituent conjunction altogether. The following arguments, alternatively in favour of generation of constituent conjunction in the base and of deriving conjunction of non-constituents by means of deletion, have convinced me that the phrase structure hypothesis is to be preferred.

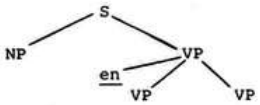
3 Conjunction of derived constituents

The strongest argument in favour of conjunction reduction of derived constituents is the one based on the existence of examples like 12, derived from the structure underlying 12a, on the assumption that 12b is the derived structure of 12:

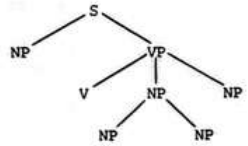
12 Hij is verwaand en moeilijk tevreden te stellen.
He is conceited and difficult to please.

12a Hij is verwaand en het is moeilijk hem tevreden te stellen.
He is conceited and it is difficult to please him.

12b



12b



The conjunction of 12b cannot possibly be generated in the base because one of the VP's is not a deep structure constituent but derived by means of it-replacement. This argument presupposes an ordering of conjunction reduction after a cyclic transformation like passive and each-movement, witness 13 and 14, derived from structures underlying 13a and 14a, on the assumption that the derived structures look like 12b and 14b:

13 Hij wilde niet lopen en werd naar huis gedragen.
He didn't want to walk and was carried home.

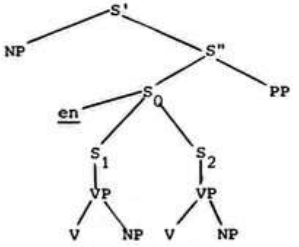
13a Hij wilde niet lopen en iemand droeg hem naar huis.
He didn't want to walk and somebody carried him home.

14 Zij gaven hun ouders en elkaar kadootjes.
They gave their parents and each other presents.

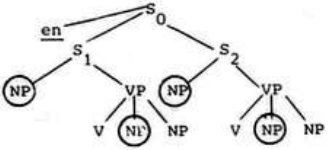
14a Zij gaven hun ouders kadootjes en ieder van hen gaf de ander kadootjes.
They gave their parents presents and each of them gave the other presents.

This ordering is confirmed by the fact that an intrinsic ordering holds between conjunction reduction and cyclic transformations in general: it is easy to see that in any structure like 2 whatever cyclic transformations are applicable will apply in the S_1 and S_2 cycles, whereas conjunction reduction will not be applicable until the S_0 cycle has been reached. I even think it may savely be said that there is an intrinsic ordering between most movement transformations and conjunction reduction: conjunction reduction applies after them. There is a certain logic in this ordering. Apart from the cases in which conjunction reduction is crucially dependent on a precedent reordering of the constituents by a movement transformation, as in 12, 13 and 14, many cases can be quoted in which conjunction reduction changes the base structures so drastically that the movement transformation we are considering no longer applies. To see this, we only have to look at 11, derived from 11a through dative-movement, V-final and conjunction reduction. Should this latter transformation apply first, the result would be 15, an impossible input for dative-movement, which rule could never attach the PP between the V and the NP in the leftmost VP:

15



16

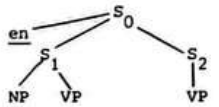


So dative-movement should apply before conjunction reduction, giving 16. However, 16 is not a possible input for conjunction reduction because the identical indirect objects are on a middle branch. V-final has to shift the verbs to the rightmost position in their VP's before conjunction reduction can be applied. Note that it does not help to suppose a basic SOV order for Dutch sentences: 17 then becomes problematic if conjunction reduction is not ordered after dative-movement and V-second:

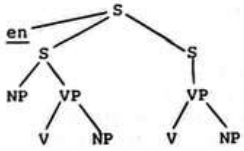
17 Hij geeft Marie en verkoopt Anneke een fiets.
He gives Marie and sells Anneke a bicycle.

Owing to the fact that I have been able to construct cases like this for whatever relevant movement transformation [3] came into my mind I came to the conclusion that conjunction reduction should follow movement transformations, whether they are cyclic or not. Taking this for granted, however, we are now confronted with a difficulty arising in connection with the derived structures of 12-14: how can we prove that these are cases of constituent conjunction and not of deletion, as in 18(in stead of 12b) and in 19(in stead of 14b)?

18



19



The derived structure of conjunction reduction cannot be argued on the basis of joint transportation of constituents: this transportation must have taken place before the conjunction was created. It could be said, for instance, that in 12b the VP's can undergo VP-shift together. VP-shift, however, somehow triggers(i.e. precedes) V-final, shifted VP's having the V in final position in Dutch. V-final precedes conjunction reduction, so a fortiori VP-shift has to precede it. If no well-founded choice [4] can be made between 12b and 18 or 14b and 19 conjunction of derived constituents does not constitute convincing evidence for conjunction reduction: the existence of conjunction of derived constituents simply can be denied.

4 Subject-verb agreement

Conjunction reduction depends crucially on the operation of a subject-verb agreement rule adapting the number of the verb in 20a, derived from 20b, to that of the conjoined subject:

20a Jan en Piet *willen* blokfluit spelen.
Jan and Piet want to play the recorder.
20b Jan *wil* blokfluit spelen en Piet *wil* blokfluit spelen.

The subject-verb agreement in normal sentences is brought about by means of a cyclic transformation applicable to the string:

21 $[\ \text{NP V X}\ ]_S$

If agreement is not taken care of in the cycle, to be exact before transformations like wh-movement, V-final, subject-verb inversion and there-insertion, which disturb the order of elements in 21, several agreement rules will have to be formulated, as the subject cannot be recovered by a single rule. In declarative sentences the NP immediately to the left of the verb has to be selected, as in 22:

22 I e d e r e e n *stopt* haar snoepjes toe.
Everybody gives her candy.

In questions and topicalized sentences the NP immediately to the right of the verb has to be selected, as in 23 and 24:

23 Wie *kunnen* k i n d e r e n helemaal vertrouwen?
Who are children able to trust?
24 Bonen *eet* i k graag.
Beans like I(=Beans I like).

In sentences containing the element *er* an NP somewhere to the right has to be selected, as in 25:

25 Er *vliegt* 's zondags vaak e e n v l i e g t u i g over Amsterdam.
There flies on sundays often a plane over Amsterdam.

It must be clear from these examples that subject-verb agreement is in the cycle and precedes the aforementioned transformations. Note that this cyclic agreement rule cannot bring about the necessary adaptations in the output of conjunction reduction: by the time conjunction reduction applies, the agreement in the conjuncts has been established. The agreement rule that follows conjunction reduction must be one of those late agreement rules which apply to verbs which have already undergone the cyclic agreement rule: Akmajian(1970) and Babby(z.j.) make use of them in problematic cases. The ordering of conjunction reduction given in section 3 implies that this late agreement rule follows all movement transformations mentioned above, and that this rule operates on strings like 26-29:

26 *J a n e n P i e t *stopt* haar snoepjes toe.
Jan and Piet gives her candy.
27 *Wie *kan* J a n e n P i e t vertrouwen?
Who is Jan and Piet able to trust?
28 *Bonen *eet* J a n e n P i e t graag.
Beanes likes Jan and Piet(see 24).
29 *Er *vliegt* 's zondags vaak een v l i e g t u i g e n e e n h e l i -
k o p t e r over Amsterdam.
There flies on sundays often a plane and a helicopter over Amsterdam.

We are in the same quandary as in 22-25: it will be very difficult if not impossible to formulate this rule. The same problem accompanies the deletion hypothesis, particulary Koutsoudas' version of it, which has no regrouping: the subjects in 26-29 are not even dominated by the same NP node. In the phrase structure rule hypothesis this problem does not exist: the number agreement in 26-29 is taken care of by the cyclic agreement transformation.

5 The semantic motivation of conjunction reduction

The semantic motivation of conjunction reduction is based on the characteristic difference in meaning between sentences containing so-called symmetric predicates and sentences containing normal predicates. Sentences 30 and 31 can be structurally distinguished and 31 and 32 structurally related by generating the conjunction in 30 in the base(phrasal conjunction) and deriving 31 from 32 by means of conjunction reduction:

30 Mijn neefje en mijn nichtje vormen een komisch duo.
My nephew and my niece are a comical duo.
31 Mijn neefje en mijn nichtje soleren vanavond.
My nephew and my niece are soloists this evening.
32 Mijn neefje soleert vanavond en mijn nichtje soleert vanavond.

Symmetric predicates can now be distinguished from other predicates by means of a subcategorization feature which allows only conjoined NP's as subjects: due to the fact that subcategorization features refer to deep structure elements, transformationally derived conjoined subjects are automatically excluded. By subcategorizing determiners like *each* and *both* for singular NP's, they will not occur in sentences like 30:

33 *Mijn neefje en mijn nichtje vormen ieder een komisch duo.
My nephew and my niece are each a comical duo.
34 Mijn neefje en mijn nichtje soleren beiden vanavond.
My nephew and my niece are both soloists this evening.

Two divergences from the standard theory should be noted: 1° lexical insertion of elements like *each* and *both* can take place after conjunction reduction has applied and NP conjunction has been created, as it is not clear where these elements are to be placed in 32; 2° to maintain the differentiation between sentences like 30 and 31 when they contain plural subjects, these plural subjects have to be derived from conjoined NP's.[5] However, many sentences containing a non-symmetric predicate hardly allow a sentence conjunction paraphrase, e.g. 36 is not an adequate paraphrase of 35:

35 Jan en Piet duwden het paard samen de lift in.
Jan and Piet pushed the horse together into the elevator.
?(=Together, Jan and Piet...)
36 ?Jan duwde het paard samen de lift in en Piet duwde het paard samen de lift in.

A solution to this problem has been suggested in Lakoff & Peters(1969). They extend

the interpretation of phrasal conjunction to 'connected events' and oppose this reading to a reading 'independent events' related to transformationally derived conjunction. The interpretation of sentences containing symmetric predicates is now a subcase of the connected events interpretation. There are several reasons why this extension of the interpretation of phrasal conjunction is disastrous. In the first place every sentence containing a non-symmetric predicate and a conjoined subject will have two possible deep structures, amking it ambiguous. In many cases, this ambiguity can only be justified by very far-fetched contexts. Some of Lakoff and Peters' examples definitely require mental gymnastics. The connected events reading of 37:

37 John and Mary are heavy.
38 John and Mary are careful.

implies that John and Mary's weights are considered together, the connected events reading of 38 wants us to think that they are careful when making love or something old-fashioned like that. Secondly, the semantic characteristics of sentences containing symmetric predicates can no longer be predicated from deep structure: a phrasal conjunction tells us that we have a connected events reading, only the lexical specification of the particular verb can tell us whether we have a symmetric predicate or not. Thirdly, some transformationally derived conjunctions seem to have a connected events reading which cannot be explained if this reading is restricted to phrasal conjunction having nothing to do, as is likely, with the particular verb:

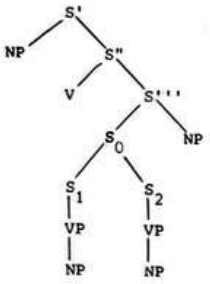
39 Jan duwt en Piet trekt het paard de lift in.
Jan pushes and Piet pulls the horse into the elevator.

Lakoff and Peters try to relate the semantic pecularities of sentences containing symmetric predicates or determiners like *each* and *both* to the deep structural properties of the conjoined subjects in these sentences. Consequently, every sentence containing a subject conjoined to a non-symmetric predicate is ambiguous. The only way out, it seems to me, is to relate the semantic interpretation of these sentences to the very elements which impose a special interpretation upon it: symmetric predicates and determiners like *each* and *both*.[6)] But if these semantic characteristics are no longer related to the deep structure properties of conjoined NP's there is no reason why phrasal conjunction should exist side by side with transformationally derived conjunction: conjunction reduction can no longer be semantically motivated.

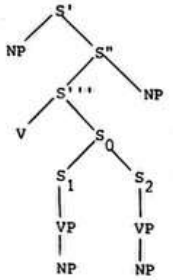
6 A problem connected with the derived structure of conjunction reduction
Conjunction reduction may apply more than once in the same cycle. When there are two pairs of identical elements that do not form a constituent, as in 6a and 7a, they are extracted in two steps: two new nodes, S' and S", are created in 6b and 7b. When the successively extracted elements were originally dominated by the same node the derived structure will differ from the input structure: they do not end up under the same node. The derived structure of 40, in which VP dominates V, NP and PP, will be 41 or 42 but not the correct one, in which the original dominance relations are preserved:

40 Hij toont zijn vrouw en zijn kinderen zijn ware aard.
He shows his wife and his children his true character.

41



42



It is interesting to note that parallel difficulties arise when identical elements are successively deleted by means of the extended version of gapping, used in Tai (1969), Koutsoudas(1971) and Jackendoff(1971a). Ross' version of gapping only deletes verbs, therefore the problem does not arise. The extended version of gapping, however, is supposed to delete verb and indirect object successively in 42, but doesn't succeed in doing so because the indirect object is not left-branching in both conjuncts after deletion of the verb in the right conjunct:

42' Jij geeft Marie een pan en ik --- een zeef.
You give Marie a pan and I --- a sieve.

This fact flies in the face of the deletion hypothesis:very simple cases of constituent conjunction cannot be derived.[7] In this section, the derived structure of conjunction reduction is found to have a serious shortcoming: conjunction reduction can never bring more than two constituents together under one node.

7 Pruning and relabeling

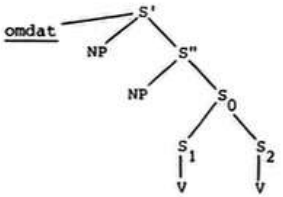
In the third chapter of his dissertation Ross introduces a condition on the well-formedness of derived trees by means of which any embedded S that does not branch is pruned. According to Ross this deletion should be thought of as operating throughout the derivation: it is formulated in the linguistic theory, not as one of the ordered rules of grammar. If this rather dynamic output condition were able to carry out the necessary corrections in the output structures of conjunction reduction, the formulation of this transformation would be simplified: one aspect of the radical changes this rule brings about in base structures, the deletion of nodes, could be kept outside the grammar. At the same time conjunction reduction would constitute extra evidence for S-pruning as Ross notes in section 3.1.9. This, however, is very unlikely. As we saw in 2.5, the pruning that follows conjunction reduction will have to affect NP, VP and PP nodes as well as S nodes, and even this will not be the end: pruning of practically every node must be possible. Should such an extended pruning principle be formulated in the linguistic theory, no non-branching node would be left in derived structure at all. Ross already notes some problems regarding NP-pruning and suggests that, besides branching properties, the question whether nodes still dominate their head should be taken into account. This version of pruning,adopted by Evers(1971b), will not do for conjunction reduction: every non-branching node will have to be deleted, as we saw in 2b and 3b, regardless of the fact that it still dominates its head.

The same problem arises in connection with relabeling, crucially dependent on pruning. Principle 9 therefore does not mention conjunctions and is not automatically restricted to trees derived by means of conjunction reduction, if relabeling were formulated in the theory. Besides, 9 is only one example of the many principles we will need: to change the S" node in 42 into VP we need a relabeling of nodes that dominate the string [NP VP]; to change the S" node in 43 into VP we need a rela-

beling of nodes that dominate the string [NP V]:

43 ...omdat Jan z'n fiets poetst en lakt.
...because Jan his bicycle washes and paints.

43a



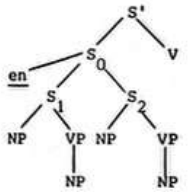
To change the S''' node in 41 into NP we need a relabeling of nodes A that exclusively dominate nodes B without mentioning the conjunction. This principle has now become too powerful to be formulated in the theory: it should be restricted to the output of conjunction reduction lest every S dominating [NP VP] is changed into VP and every VP dominating two NP's into NP, as in 44, where the V has been preposed by subject-verb inversion:

44 Gaf hij $[[\text{Marie}]_{NP}[\text{een boek}]_{NP}]_{VP}$?
Gave he Marie a book(= did he give...?)

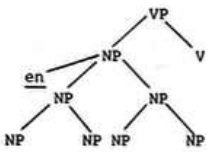
Pruning and relabeling therefore have to be formulated in the grammar as subrules of conjunction reduction: if conjunction reduction is in the grammar, pruning and relabeling are. This transformation now has extraordinary power, chancing dominance relations, deleting and relabeling nodes, thereby taking over the most important functions of the base component: to determine the structural properties and labeling of constituents. These theoretical objections against conjunction reduction should suffice to seal the doom of this transformation, but I cannot refrain from adding an empirical objection: even now the relabelings cannot be carried out satisfactorily. A point in case is 45a, where S_1, S_2 and S_0 (dominating subject and object) become NP's and S' becomes VP, as in 45b:

45 ...omdat Jan z'n fiets en Piet z'n auto schoonmaakt.
...because Jan his bicycle and Piet his car washes(=because Jan washes...)

45a



45b



Generally speaking, conjunction of non-constituents is a problem in connection with relabeling: if relabeling does take place, we will get derived structures like 45b, if it does not, we will get derived structures like 45a, with the verb in a peculiar position, or like 11b, where we do not even get a VP. But even in cases of constituent conjunction unwanted relabelings will take place: the S node in 12b, for instance will be relabeled VP.

8 Conjunction of non-constituents

Arguments that conjunction of non-constituents should not be derived by means of con-

junction reduction are an effective weapon in the hands of opponents to this transformation: not deriving them means giving up this transformation in its present form. Conjunction of non-constituents repeatedly arises in the course of successive applications of the rule and it is impossible to know beforehand whether a constituent conjunction or a conjunction of non-constituents will be the final result. I am not convinced however by the arguments Dougherty(1968) adduces: contrary to what he claims, the fact that conjunction of non-constituents is incompatible with respective constructions(witness 46), with plural reflexives(witness 47) and with the pronoun *each other*(witness 48), is perfectly predictable: these sentences will not be derived at all.

46 *John shot and Bill turned on a cow and the radio, respectively.
47 *John hit and Bill shot themselves.
48 *John hit and Bill shot each other.

Sentences 46 and 48 would have to be derived from structures without any identical element or with identical elements on different branches:

46' John shot a cow and Bill turned on the radio.
48' John hit Bill and Bill shot John.

If 47 is derived by means of conjunction reduction the reflexive is not dominated by the same S node as the antecedents, in the derived structure: the plural reflexive cannot arise.

My first argument against deriving conjunction of non-constituents by means of conjunction reduction would be the dubious nature of the derived structure. Whether pruning and relabeling take place or not, the results often are questionable(see section 7). My second argument would be that no possible syntactic justification for the derived structure presents itself as long as no transformation can be found that crucially depends on structures like this. Note that the agreement transformation does not apply to these structures: in 45 the agreement between subject and verb must be established before extraction of the verb: 45a does not correspond to the structural description of subject-verb agreement. Thirdly there is a serious overlap between conjunction reduction and the extended version of gapping in whatever formulation. In section 2.4 we saw that conjunction reduction should be applicable to V nodes, as gapping is. It is easy to show that some version of gapping, applicable to the nodes conjunction reduction is applicable to, is indispensable. In the next three sentences a VP, a NP and a PP have been gapped:

49 Jan [groef een gat]$_{VP}$ in de voortuin en Piet ... in de achtertuin.
Jan dug a hole in the front garden and Piet ... in the back garden.
50 ...omdat jij [een zeef]$_{NP}$ aan Henk geeft en ik ... aan Marie ...
...because you a sieve to Henk give and I to Marie(=because you give a sieve to Henk and I to Marie)
51 Vouw jij [van je programma]$_{PP}$ een bootje en ... hij ... een reuzenzoutvat?
Fold you of your program a boat and ... he ... a giant saltcellar(=Do you fold your program into a boat and he into a giant saltcellar)?

This means that for all instances of conjunction of non-constituents derived by means of conjunction reduction an alternative derivation by means of gapping in possible: a structural ambiguity that cannot be interpreted because the deep structures are the same. There are of course sentences which can only be derived by means of gapping: sentence 5 is a case in point. Gapping has to be in the grammar anyhow. The sentences which can be derived by means of conjunction reduction but not by means of gapping are those containing constituent conjunction: in sections 5,6 and 7 we have seen that they can be generated in the base as well. The conclusion is that there is no reason at all why conjunction reduction should exist side by side with gapping

(which has to be in the grammar to account for sentences like 5) and the base rules generating constituent conjunction(which have to be in the grammar to account for the symmetric predicates).

9 Perspectives

A grammar containing conjunction reduction is without doubt a very powerful one. It is not possible to restrict the operations a transformation can perform in a meaningful way if conjunction reduction is contained in the grammar, changing dominance relations, deleting nodes and relabeling nodes. Insertion of lexical material by means of transformations is unavoidable. The differences in meaning this grammar forces us to distinguish are so subtle that it is often very difficult to find them at all. A grammar without conjunction reduction lets base rules, gapping and interpretation rules jointly replace conjunction reduction, denying the existence of conjunction of derived constituents. Exactly how the gapping rule and the interpretation rules are to be formulated is by no means clear. The latter grammar is much less powerful: a strict differentiation of the functions of the transformational and the base components is possible and a more precise definition of the notion 'transformation of a natural language' is no longer excluded a priori; lexical material can be present at deep structure level(see however note 4); subject-verb agreement is no longer a problem; the distinction between connected events and independent events is no longer made in every sentence containing a conjoined subject to a non-symmetric predicate(see however note 6); pruning and relabeling can be banished from grammar as before.

Notes

1 The directionality constraint was formulated by Ross(1967c) in connection with his gapping rule. It is automatically implied in his formulation of conjunction reduction: no variable occurs to the right of a right-branching or to the left of a left-branching identical element.

2 The highest identical constituent condition was formulated by Tai(1969,4.2).

3 Dative-movement, Passive, V-final, subject-verb inversion, dislocation, wh-movement, topicalization, it-replacement, each-movement.

4 The sentence

i John and Bill liked the play and were disappointed by it, respectively.

(McCawley 1968c) could be an indication that constituent conjunction has to arise transformationally in some cases: when deriving i by means of deletion from

ii John and Bill liked the play and John and Bill were disappointed by it.

the position of 'respectively' in deep structure becomes a problem(semantically ii is a problem too). The same objection could be raised against transformational derivation of i from iii:

iii John liked the play and Bill was disappointed by it.

in which case not only the position of 'respectively' is problematic but also the subject-verb agreement and the two conjunctions(2 x 'and'). Note that deriving i from iii implies derivation of plural NP's from conjoined ones, to account for sentences like i containing a plural subject.

5 See objections in Dougherty(1968c), McCawley(1968c) and Dik(1968).

6 It could be said that we loose something by giving up this distinction, a gap that will have to be patched up by means of interpretation rules. Sentences containing a conjunction and an indefinite NP often give rise to an ambiguity we might want to account for in the grammar: i is ambiguous between a reading according to which they own the dog together and another according to which two dogs are owned:

i Jan en Piet hebben een hond.
Jan and Piet have a dog.

Indefinite NP's are a problem for conjunction reduction too. Note that the ambiguity does not arise when the indefinite NP is in subject position, as in ii:

ii Three rules on this page are explicit and easy to read.

Lakoff(1970c) simply blocks conjunction reduction for indefinite NP's, because this transformation would change meaning if ii were derived from iii:

iii Three rules on this page are explicit and three rules...
Lakoff doesn't give any alternative derivation of ii(note the derived VP, excluding generation in the base), and it doesn't seem to bother him that the ambiguity of i cannot be accounted for. If ii is derived by means of gapping the possibility that transformations change meaning has to be accepted.

7 Jackendoff's solution of the problem is to formulate gapping as deletion of a string, not of a variable. This has the obvious drawback that the strings that can be deleted have to be more or less explicitly mentioned.

A NOTE ON THE ROLE OF 'BLEEDING ORDER' IN DIACHRONIC SYNTAX

C.J. Conradie

The concepts of a 'feeding' and 'bleeding' order between rules, and their respective tendency to be created and eliminated diachronically, were developed in Kiparsky(1965) and (1968). It seemed possible to formally characterize this directionality of reordering by employing the concept of the utility of rules in a grammar, cf. the claim that 'rules tend to shift into the order which allows their fullest utilization in the grammar'(Kiparsky(1968),p.200). Without giving any theoretical argument, Kiparsky assumed reordering in this direction to be a case of simplification(1968,p.177,196, 200). Thus the following claims have been made(implicitly or explicitly):

a There is a functional (as against formal) difference between the two types of reordering.
b Both types of reordering have the psychological process of simplification through imperfect learning as a common denominator - which again implies that the grammar itself has explanatory power as regards the direction of diachronic change.

Kiparsky includes a discussion of the concept of simplification in relation to morphological and syntactic phenomena in his 1968 paper, which suggests that his paradigm for phonological change is intended to be applicable to these fields as well. Traugott(1969) demonstrates, with reference to the history of English, that the Kiparskyan paradigm is indeed applicable to syntax, but with the possible exception of the phrase structure rules. She notes an 'inverse relationship between simplification and elaboration of grammatical structures and increases or decreases in the number of surface patterns available', which may be of interest 'for assumptions about why language changes'(p.20); but as she limits her discussion to changes in the grammar itself (in contrast to their effect on the surface), it is clear that she attaches no explanatory or motivational value to the former. The truth of (b) above, i.e. the explanation of change with reference to the grammar only, has been greatly relativized by e.g. Bever and Langendoen(1972) in their study on the role of perceptual constraints on the development of the relative clause during the entire history of English. (Perceptual strategies are assumed to be employed by a listener in order to penetrate directly to deep relations on the basis of external strings, in other words, to recognize sentence and clause boundaries, determine the relation among clauses in the same sentence and among phrases in the same clause). Finally, Kiparsky himself (1972) partakes in the falsification of (b) by noting a number of conditions under which some of his earlier grammatical predictions fail to apply, for example the tendency of allomorphy in paradigms to be eliminated, for semantically relevant information to be retained in the surface structure, etc.(p.195). (Note that when he states that these phonological and morphological conditions are of a 'functional' nature, he is clearly using this term in another sense than in 1968).

As far as (a) above is concerned, the difference between the two types of reordering seems to be vindicated in new ways: Kiparsky(1972, p.213) states that feeding order is often implemented at the expense of paradigmatic uniformity. On the other hand, the elimination of bleeding order is often employed to further paradigmatic uniformity(p.209). One possible interpretation that can be given is that the elimination of bleeding orders may have to be functionally (as from now, in the sense of Kiparsky (1972)) motivated, while in the case of the establishment of a feeding order, the grammatical simplification achieved may be a sufficient motivation itself. This interpretation implies the prediction that - given functional motivation to this effect - reordering into bleeding order may also be expected. Kenstowics and Kisseberth(1971) present a number of examples in phonology where the existence and maintenance of bleeding orders seem to be the 'natural and expected' situation: rules of stress reduction, assimilation and neutralization seem to depend on surface syllabic structure

and remain fairly close to the surface even though they may be bled by higher rules such as epenthesis, copying, metathesis and deletion, which may be responsible for changes in syllabic structure and create contexts which bleed these rules. Thus it seems that certain rules may be typologically excluded from diachronic reordering.

A few syntactic examples which involve bleeding orders will now be discussed.

I According to Sweet (Davis 1965,p.61) the typical S O VP order of dependent clauses in Old English occurs 'very commonly' in co-ordinate clauses after 'and'/'ac'(especially if the subject is identical to that of the main clause, in which case it is not expressed. We may translate his example literally(maintaining the OE ordering of constituents):

> and (they) nine ships captured, and (they) the others put-to-flight;
> and heathen men first over the water stayed.

If we take S O VP to be the underlying order for OE (cf. Closs 1965), then the S Finite Vb or X Finite Vb S order of principal sentences must be obtained by transformations of Finite Vb Transportation (creating S Finite Vb O order) and S Finite Vb Inversion. In a grammar generating the above example, we expect the following ordering of transformations:

1 Conjunction
2 Finite Vb Transportation
3 S Finite Vb Inversion

with 2 and 3 applicable to the first sentence to the left of 'and'/'ac'. Note that this ordering constitutes a bleeding of 2 and 3. We may assume that this bleeding order was eliminated in later grammars by reordering 1 to a position below 3. Elimination of this bleeding order serves the purposes of perception by relieving 'and'/'ac' of their disambiguating burden.

II Klima(1964)(in a paper comparing synchronically co-existent styles, but with diachronic undertones) explains the change from 'The man whom John saw' to 'The man who John saw', with -m retained in 'The man to whom John gave it' by a reordering of the Case Marking Transformation, which we may restate as

i $\quad X \begin{Bmatrix} V \\ Prep \end{Bmatrix} N Y \xrightarrow{OB} 1\ 2\ 3\ 4$ (3 = [+case])

to a position lower than the Relative Clause Transformation (and the process of preposition movement), which we may render as

ii $\quad X\ [_{NP}\ NP[_{S}\ Y\ (Prep)\ NP\ Z]_{S}\ ]_{NP}\ Q \xrightarrow{OB} 1\ 2\ 5\ 3\ 4\ 0\ 6\ 7$ (5 = [+pro, +wh])

and

iii $\quad X\ \begin{bmatrix} NP \\ +pro \\ +wh \end{bmatrix}\ Y\ {}_{PP}[\ Prep\ ]_{PP}\ Z \xrightarrow{OP} 1\ 4{+}2\ 3\ 0\ 5$

Note that, in as far as this analysis holds true, the reordering of (i) to a position below (ii) and (iii), constitutes the creating of a bleeding order: Case Marking does not apply sentence-initially, except after a preposition. (V is retained in the SD of (i) for *him, her*, etc.). The following Mod. Eng. sentences (examples e - g are Langendoen's), remain acceptable when the bracketed parts are removed:

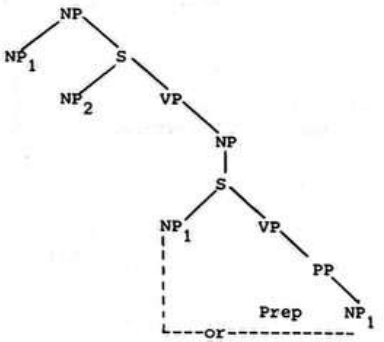
a I know who(m) Peter phoned up.

b This is the book (which) the rector gave him.
c This is the man (who(m)) my father gave the book to.
d At the speed (at which) he was going, he could not stop.
e I don't think I'll be able to recognize the person (who(m)) they expect me to meet this afternoon.
f I just spoke to the man (who) everyone hopes will oppose the mayor in the next election.
g ...the man (who(m)) everyone hopes the President will appoint...

If a perceptual strategy utilizing the surface sequence

X NP_1 NP_2 VP Y
[±wh] [-wh]

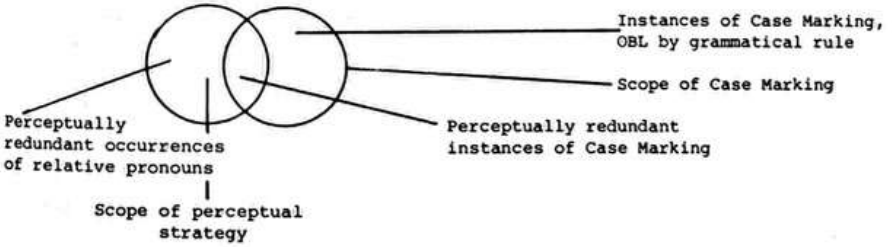
(cf. Bever(1970a),p.337 for a partially similar strategy) as clue to deep structural relations, is able to lead a hearer to expect deep structures like the following:



then the surface strings (a-g) above will be assigned the correct deep structure whether the bracketed parts are present or not; in other words, in (c) above, either *the man - my father*, or *who - my father* or *whom - my father* may be interpreted as NP_1 - NP_2. Note that Case Marking is only one of the grammatical processes relating to the optionality in (a-g)(Relative Clause Reduction would be another), whereas at least one aspect of Case Marking does not fall within the scope of the perception strategy, viz. the obligatory application of Case Marking after prepositions, as in

the mayor to whom she took exception.

Expressed schematically, the relation is the following:



Note that the *-m* in *to whom* is in fact perceptually redundant, and has been eliminated in some dialects of Eng.(cf. Traugott(1969),p.15), but is not redundant through the mechanism of the putative strategy discussed here. If the above analysis holds true, then it is clear that grammatical process and perceptual strategy overlap but are not to be identified with each other in the case outlined above(whereas they may overlap in the case of *to whom → to who*). If we are to assume further that perceptual strategies may aid speakers in editing their own speech, for example when switching to another style, the following examples of hypercorrect *whom* may be taken to demonstrate that grammatical process and perceptual strategy may overlap without being identical (examples from Fowler(1968),p.709):

> The German people, whom Hitler had determined should not survive defeat, did survive.
> Your reviewer, whom I suspect does not like this book.
> The girl whom you wish was a boy.

This would seem to strengthen Bever and Langendoen's claim that the two systems must be defined and studied independantly in order to understand their interaction, and that 'we have available independently motivated theories of linguistic structure and speech performance'.

III In OE adjectives and participles lost their inflection in predicative function before it was lost in attributive function(cf. Brunner(1965),p.236; Herold(1968),p.41, note 4; Davis(1965),p.43 for evidence that can be interpreted in this way). In the following feature copying rule [+inflection] abbreviates features referring to gender, number and case:

X	$[_S$	Y	N	Z	[+Adj]	Q	$]_S$	R							
			[+inflect]												
1		2	3	4	5	6		7	⟶	1	2	3	4	5	6 7
														[+inflect]	

This transformation is followed by the Adjective Preposing Transformation, which inserts adjectives or participles in attributive position. At the time when predicative adjectives etc. had lost their inflection, we may expect a mirrored version of what is essentially the same feature copying rule, to be reordered to a position after the Adjective Transformation:

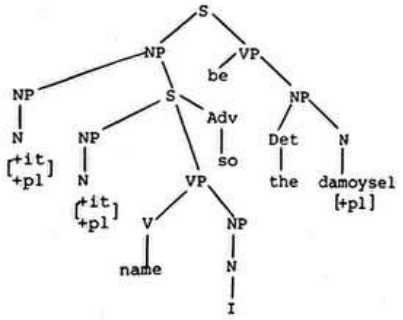
x	$[_S$	Y	N	Z	+Adj	Q	$]_S$	R							
			[+inflect]												
1		2	3	4	5	6		7	⟶	1	2	3	4	5	6 7
														[+inflect]	

Thus even after the reordering, attributive sequences remain inflectionally intact, in contrast to predicative sequences. An interesting, though not exact, parallel to this situation may be found in Mod.Eng., where adjectival groups are subject to ordering restrictions when in attributive position, but not when they occur predicatively; relatively more 'nounlike' adjectives tend to be ordered closer to the head noun(cf. Bever(1970a), 321 ff. for references and discussion). This prevents a segmenting strategy which seeks the boundary between NP and VP, from coming to a premature segmentation. Depending on the way the perceptual needs of ordered languages carry over to inflected languages, it may be possible to show that the attributive inflection mentioned above, was relatively more tenacious because of functional reasons.

IV Traugott(1969),p.16-17, quoting the following Middle Eng.sentences where BE is realized as a plural, considers verb-agreement to precede it-placement in ME, but to apply to surface structure subjects in later periods:

It *ben* the damoyseles that so name me.
It *ben* nat ye that speken.

Taking a deep structure like the following to underlie the first example



we may slightly reformulate Traugott's analysis of the reordering as obtaining between Number Agreement and Extraposition, with Number Agreement blocked when [+it] and VP are adjacent in Mod.Eng. to produce

It is the damsels who call me this.

but, in case Extraposition does not apply,

Whoever call me this are the damsels.

According to Bever and Langendoen(1972),p.66-67, sentences like

It's/There's a boy wants to see me.

are in the absence of a relative pronoun, incorrectly segmented, by certain perceptual strategies, as

There is $_{S}$ a boy wants to see me $_{S}$

but are still acceptable to some speakers because this segmentation is appropriate to the meaning of the sentence and the presence of *there* uniquely characterizes the statement as existential. It seems to me that the blocking of Number Agreement on BE after *it* can be explained in a similar way, i.e. on the ground of functional redundancy. The fact that the presence of the relative pronoun in sentences like the above is becoming increasingly obligatory (for reasons not relevant here), thus forcing the correct segmentation, only confirms the redundancy of Number Agreement immediately after *it*.

V Case Marking(cf. II above) is reordered to a position below Conjoining in substandard American English (Klima(1964)), giving *He and me left* (as against *He left, I left*). The accusative forms are taken as underlying for this style, and Case Marking is considered to be limited to the position immediately before the finite verb. (Another example of the same reordering , but then with the nominative forms of the pers. pronouns taken as underlying, may be (substandard?) Afrikaans: By *ek* en *jij* word nie gekuier nie - lit. Nobody visits (at) I and you (passivized), instead of By *my* en *jou*, etc.). The functional motivation of this reordering is not clear to me; even in the case of unconjoined pers. pronouns the distinction between nominative and accusative

has been lost in many languages.

Concluding remarks

Note that - barring example I - the grammar changes sketched in the above examples all amount to an reordering into bleeding order; in each case the lowered rule becomes applicable to fewer contexts than before, so that rule utilization (in the sense of Kiparsky(1968)) decreases. In Mod.Eng. Number Agreement has lost at least one context (cf. ex. IV) and had become dependent on the prior application of Extraposition; in substandard Eng. (V), Case Marking has likewise lost contexts. As regards the loss of inflection on Old.Eng. adjectives/participles predicatively used, it remains to be shown that the reordered agreement rule has retained its identity after the reordering. For most of the instances of reordering discussed, it was possible to make at least a suggestion as to where the explanation may be sought.

It is evident that the rules that are bled in II - V are typologically similar in that all involve the specification or copying of morphological features; it seems a feasible hypothesis that reordering towards a bleeding order may be one of the mechanism by which inflection is eliminated from incipient fixed order languages. But rather than assuming with Bever and Langendoen(1972,p.84) that there is 'continual evolutionary pressure for a language to maximize the recoverability of deep structure relations', I will assume, negatively, that grammars, once they are 'on the move', rid themselves of the redundant utilization of rules, while maintaining the required minimum of perceptual clarity for their output.

THE GUILLOTINE PRINCIPLE

Arnold Evers

i Dutch grammar contains a rule of Clitic Placement.

ii This rule is upward bounded, e.g.

1 Wij {adviseerden / verboden / beloofden / etc.} Jan [onze tante (er) van te overtuigen]$_S$

Clitic Placement

We {advised / forbade / promised} John [to convince our aunt 'there-of']>

iii If the complement verb has left the complement-structure, the clitic is allowed to do so too, e.g.

2 Omdat wij Jan [onze tante er van - -]$_S$ {hielpen / leerden} overtuigen

Clitic Placement Predicate Raising

Because we {helped / taught} John to convince our aunt 'there-of'>

3 Omdat wij [Jan onze tante er van - -]$_S$ {hoorden / lieten} overtuigen

Clitic Placement Predicate Raising

Because we {heard / let} John convince our aunt 'there-of'>

4 A complement that has undergone Predicate Raising cannot undergo Extraposition. A complement that has undergone Equi NP Deletion only, must go into Extraposition. These facts suggest that Predicate Raising causes S-pruning.

iv The complement structure of *adviseren*, cf (1)
does not lose its head
does show loss of branching } does not undergo S-pruning

The complement structure of *horen*, cf (3)
does lose its head (Predicate Raising)
does not show loss of branching } does undergo S-pruning

These facts can easily be extended to analogous cases in German. They prove that Dutch and German need a principle which states:

'an S, that has lost its head (i.e. its V-constituent), does not survive'

Such a principle was obviously proposed in an unpublished paper by Kuroda (see Ross 1967,p.56). I have been informed that it was referred to as the 'Guillotine Principle'.

v The relation between Clitic Placement, Extraposition and Predicate Raising can not be explained by Ross' pruning principle (Ross 1967b,p.26) which says:'an unbedded S that does no longer branch should be pruned'. On the contrary, Dutch and German grammar show the disappearance of S-labels that do branch and the survival of S-labels that do not branch. We may say that these grammars constitute an exact falsification of Ross' pruning principle and a confirmation of Kuroda's principle.

Department of Linguistics
University of Utrecht

ON TRANSPARENCY

Ger J. de Haan

In 'Conditions on Transformations'(Chomsky(1970)) Chomsky is concerned with conditions on the function of transformational rules. One of these conditions, the 'Subjacency-condition', makes the domain in which transformations can apply, local. Chomsky offers the following definition for the notion 'subjacent':

1 B is subjacent to A if and only if A is superior to B and there is at most one cyclic category C such that C contains B and does not contain A.

Chomsky' formulation of the Subjacency-condition is then:

2 No (extraction)rule can involve X,Y X superior to Y, if Y is not subjacent to X.

In a slightly different version Chomsky maintains (1) and (2), replacing only in (1) the notion 'containing' by 'L-containing'. The notion of 'L-containing'will be defined as (3):

3 category A L-contains category B, if and only if A properly contains B and for all CA, if A contains C and C contains B, then A=...C..., where ... contains a lexical item.

In addition to the Subjacency-condition Chomsky discusses some conditions which make the domain in which transformations can apply, even more local, such as the 'Specified Subject-condition'. This condition can be formulated as:

4 No rule can involve X,Y in the structure ...X...[$_{\alpha}$...Z...-WYV...]... where Z is the specified subject of WYV, and where the notion 'specified' has the following subcases:
i Z is not controlled
ii Z is controlled by a category not containing X.

In this case too, Chomsky brings up an alternative formulation, which consists of (4), subcase (ii) replaced by

5 Z is controlled by a category not containing X, where X is a possible controller.

Chomsky suggests modification (5) of the Specified Subject-condition - to which we will refer as the PC-version - because of the following derivations:

6a It is tough for me [$_S$COMP PRO to stop Bill from [$_S$COMP PRO looking at Harriet]$_S$]$_S$

⇓ Tough-movement

b Harriet is tough for me to stop Bill from looking at.

7a It is tough for me [$_S$COMP PRO to stop [$_S$COMP Bill's looking at Harriet]$_S$]$_S$

⇓ Tough-movement

b *Harriet is tough for me to stop Bill's looking at.

The derivation of (7b) from (7a) is blocked by the Specified Subject-condition, subcase (i). But the same condition, subcase (ii), will block wrongly the derivation of (6b): here we have a specified subject Z(=PRO, controlled by *Bill*, a category not containing

X(=*it*)). A specified Subject-condition with PC-modification (5) permits correctly the derivation of (6b) from (6a) by Tough-movement, because X(=*it*) is not a possible controller. In this respect, sentences such as (6b) provide evidence for the PC-version. According to Chomsky this argument is weakened by the fact that in (6a-b) Tough-movement violates the Subjacency-condition. Because Chomsky apparently gives much weight to this condition, he suggests a different analysis for this type of sentences, replacing Tough-movement by a rule called PRO-replacement. This rule PRO-replacement moves on the first cycle of (6a) *Harriet* into the PRO-position: on the next cycle *Harriet* is moved from the embedded PRO into the higher PRO with no violation of the Specified Subject-condition; and on the final cycle (6b) is derived by It-replacement, substituting *Harriet* for *it*. Compare:

8a It is tough for me [$_S$ COMP PRO to stop Bill from [$_S$ COMP PRO looking at Harriet]$_S$]$_S$

⇓ Pro-replacement

b It is tough for me [$_S$ COMP PRO to stop Bill from [$_S$ COMP Harriet looking at]$_S$]$_S$

⇓ Pro-replacement

c It is tough for me [$_S$ COMP Harriet to stop Bill from looking at]$_S$

⇓ It-replacement

d Harriet is tough for me to stop Bill from looking at.

When Tough-movement is replaced by PRO-replacement, it must be borne in mind that this rule will never violate the Specified-Subject-condition, since the structures to which PRO-replacement applies, are not of the form to which the Specified Subject-condition applies. Sentences such as (6b) do no longer provide evidence for the PC-version. Therefore, arguments pro or contra PRO-replacement are arguments contra or pro this modification of the Specified Subject-condition.

The arguments which Chomsky presents for PRO-replacement are few and unclear, apart from the evidence based on the Subjacency-condition. But since Chomsky is apparently unwilling to give up this condition, he concludes: 'it seems reasonable to make the tentative assumption that PRO-replacement operates (...) and finally, that we can dispense with the qualification (161) [here (5)] and preserve the principle (81) [here(2)] of adjacency on extraction' (Chomsky 1970, p.40). However, Chomsky's tentative conclusion may be attacked because of the following two reasons. First, it is possible to give a direct argument in favour of the PC-version. Compare the structures

9a COMP you counted on [COMP$_1$ PRO doing what]
b COMP you counted on [COMP$_1$ your son's doing what]

and the sentences

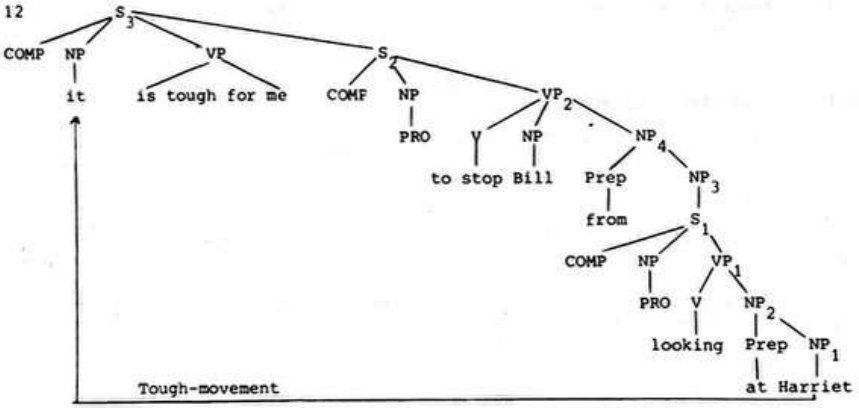
10 What did you count on doing?
11 What did you count on your son's doing?

Chomsky claims that the COMP$_1$'s in (9a,b) are empty - this means that WH-movement can not put the WH-element in these COMP$_1$'s - and furthermore that sentences such as (11) are ungrammatical (except, perhaps, for a few marginal idiomatic expressions) and are to be excluded by the Specified Subject-condition. Sentences such as (10) are grammatical and they must be derived from structures like (9a), the WH-element being moved by WH-movement not via COMP$_1$, but directly into the COMP of the matrix sentence. This movement, however, will be blocked by a Specified Subject-condition without PC-modi-

fication, because the PRO subject in (9a) is not controlled by X (=COMP) but by *you*. The grammaticality of (10) provides an argument in support of this modification:COMP is not a possible controller, so in (9A) WH-movement is permitted. This argument pro the PC-version is not, like Chomsky's, based on Tough-movement, so that the argument against Tough-movement and pro PRO-replacement, making use of the Subjacency-condition, does not affect our argument supporting the PC-version.

Secondly, it is possible to revaluate Chomsky's subjacency-argument against Tough-movement in terms of the notion of L-containing. I will show that in the relevant derivation (6a-b) Tough-movement does not violate the Subjacency-condition, modified along the lines of the notion L-containing. If we accept the L-containing version, then all the arguments pro PRO-replacement have disappeared, and we can maintain Chomsky's original argument pro the PC-version of the Specified Subject-condition based on Tough-movement in (6a-b). Chomsky claims that Tough-movement violates the Subjacency-condition in view of the following intermediate structure of (6b):

12



On the other hand, Tough-movement violates the L-containing Subjacency-condition, if there is more than one cyclic category between X(=*it*) and Y(=*Harriet*), L-containing *Harriet*. With respect to the notion L-containing it should be noticed, that Chomsky does not consider prepositions and items like *it* as lexical items: we add COMP- and PRO forms to this collection of non-lexical items. Then we can make some interesting observations:

i between X and Y we have the categories NP_2, VP_1, S_1, NP_3, NP_4, VP_2, and S_2;
ii VP_1 and VP_2 are not relevant, since they are not cyclic nodes;
iii NP_3 does not L-contain NP_1: NP_2=...NP_1, and NP_4=...NP_3, where ...(=Prep) does not contain a lexical item;
iv NP_3 does not L-contain NP_1: NP_3=...S_1..., where ...(=$\emptyset$) does not contain a lexical item;
v S_1 and S_2 do not L-contain NP_1: S_1=...VP_1 and S_2=...VP_2, where ...(=COMP PRO) does not contain a lexical item.

Given a correct interpretation of the relevant notions, I conclude that there is not a single cyclic category between X(=*it*) and Y(=*Harriet*), L-containing Y, in other words Tough-movement does not violate the L-containing version of the Subjacency-condition. My conclusion is, that Tough-movement in combination with the PC-version of the Specified Subject-condition and the L-containing Subjacency-condition is, as opposed to Chomsky's assumptions, compatible with the facts presented in Chomsky(1970), which are

restated here.

In his discussion of the A-over-A principle in 'Language and Mind'(Chomsky 1968a),p. 40-47, Chomsky claims that there are phenomena in English which seem to indicate, that in certain cases the A-over-A principle does not apply: i.e. that there are rules operating on a category A, which in its turn is dominated by another category A. Compare:

13a John thought (that)$[_{NP}[_{S}$Bill had read$[_{NP}$the book$]_{NP}]_{S}]_{NP}$

b $[_{NP}$What$]_{NP}$ did John think (that) $[_{NP}[_{S}$Bill had read$]_{S}]_{NP}$

14a you would approve of $[_{NP}$seeing $[_{NP}$Bill$]_{NP}]_{NP}$

b $[_{NP}$Who$]_{NP}$ would you approve of $[_{NP}$seeing$]_{NP}$

15a He saw $[_{NP}$a picture of $[_{NP}$Bill$]_{NP}]_{NP}$

b $[_{NP}$Who$]_{NP}$ did he see $[_{NP}$a picture of$]_{NP}$

In these cases NP's are extracted from NP's. Chomsky proposes that in a framework making use of the A-over-A principle, provisions should be made, in English grammar at least, for assigning the property 'transparent' to some NP's dominating NP's. He notices that the relevant NP's are indefinite and/or have a propositional character. Chomsky wonders whether transparency is a property of a category A dominating a category A, or a property of a series of constructions reducible to different unknown principles. It is possible to conceive some conditions in 'Conditions' , particularly the Specified Subject-condition and the Tensed S-condition, not as locality but as transparency principles. The transparent nature of some categories would then generally be independent of the A-over-A principle. The choice between the Subjacency-condition and its L-containing version is also relevant to the notion transparency. The Subjacency-condition restricts the domain of extraction rules to adjacent cycles. In the L-containing version however, the domain of these rules can be unlimited, unless two or more L-containing cyclic categories block the rules. In this case it is no longer natural to look upon the condition as a locality principle.Not L-containing categories would be transparent and two or more L-containing cyclic categories non-transparent. We could then immediately raise two questions: why do two or more L-containing cyclic categories block rules while one does not; and why is it that such a transparency condition does block extraction rules and not rules such as Each-movement. We will try to answer these questions in turn.

The requirement of the LC Subjacency-condition that there may be at most one LC category that is cyclic between X and Y of a rule, is mainly determined by derivations of the following type:

16a COMP he believed $[_{S}$COMP John saw who$]_{S}$

WH-movement

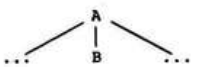
b COMP he believed $[_{S}$who John saw$]_{S}$

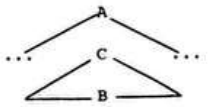
WH-movement

c Who did he believe John saw.

In (16b-c) the WH-element is moved from one COMP-position into another COMP-position: this movement must be allowed, while there is, according to definition (3), one LC cyclic category between these COMP's.

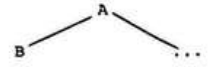
The two subcases which definition (3) handles, can be represented diagrammatically as

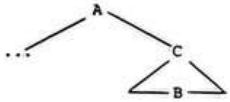
17a 

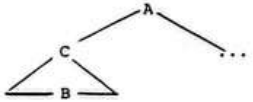
b 

or equivalently,

18a 

b 

19a 

b 

If ... contains a lexical item, then A L-contains B in all structures above. Let us refine the notion L-containing in such a way that we can distinguish between (18a), (19a), and (18b), (19b): (18a) and (19a) may be said to be Left-L-containing (LLC) and (18b) and (19b) Right-L-containing (RLC). From the derivation (16a,b,c) it might be tentatively concluded that rules extracting certain elements across one LC cyclic category only do so with respect to RLC categories. Therefore we assume that in English RLC categories are transparent, as opposed to LLC categories. The LC Subjacency-condition can be replaced by the following transparency condition:

20 No rule can involve X,Y, X superior to Y, in the structure ...X...[$_{\alpha}$...Y...]... where α is a cyclic category LL-containing Y.

This condition no longer says that there may be at most one LC cyclic category between X and Y, but expresses the assumption that there may be none LLC cyclic category between X and Y.

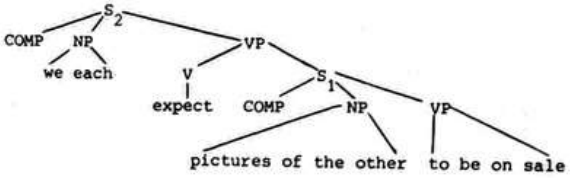
Let us now turn to the second question: the Subjacency-condition is supposed to be a restriction on extraction rules and not on rules such as Each-movement, because of derivations such as the following:

21a COMP we each expect [$_{S}$ COMP [$_{NP}$ pictures of the other(s)]$_{NP}$ to be on sale]$_{S}$

⇓ Each-movement

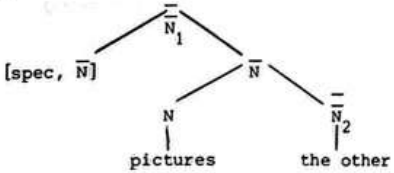
b COMP we expect [$_{S}$ COMP [$_{NP}$ pictures of each other]$_{NP}$ to be on sale]$_{S}$

On the third cycle Each-movement apparently is not blocked by the Subjacency-condition, although there are two cyclic categories, S and NP, between X (=each) and Y (=the). From the intermediate structure, corresponding to (21a):

22 

it is easy to infer that S_1 does not LL-contain Y. So, according to condition (20), this cyclic category does not block Each-movement. If we assume, furthermore, that the NP *pictures of the other*(s) in (22) must be analyzed as (following essentially Chomsky (1967b)) (23):

23



in which only $\bar{N}$ is a cyclic category, it is easy to see that $\bar{\bar{N}}_1$ does not LL-contain Y and therefore, again according to condition (20), does not block Each-movement. In summary, condition (20) permits derivation (21a-b), so for the moment there is no reason to suppose that condition (20) is exclusively a restriction on extraction rules and not on rules such as Each-movement.

In structure (24):

24 ...X...[$_{\alpha}$...Z...-WYV...]...

where Z is the subject of α and contains a lexical item, α LL-contians Y, according to (19a). So it is clear, that the Specified Subject-condition and condition (20) have a considerable amount of overlap. Both conditions allow the derivation (25a-b):

25a COMP we saw [$_{NP}$pictures of who]$_{NP}$

⇓ WH-movement

b Who did we see pictures of?

and preclude

26a COMP we each expect [$_{S}$COMP Bill to shoot the other(s)]$_{S}$

⇓ Each-movement

b *We expect Bill to shoot each other.

It seems to me that it is correct to subsume these two separate conditions under one general transparency condition by maintaining condition (20), dropping the Specified Subject-condition (4), and slightly modifying the definition of the notion 'L-containing'. This modification is necessary, since this new condition must block the following derivation, exactly like the Specified Subject-condition:

27a COMP we each told Bill [$_{S}$COMP PRO to kill the other(s)]$_{S}$

⇓ Each-movement

b *We told Bill to kill each other.

If we want condition (20) to do the same job as the Specified Subject-condition with respect to (27a-b), then some aspects of this latter condition should be incorporated in the definition of the notion L-containing. Consequently, we can finally formulate the new transparency condition as:

28 No rule can involve X,Y, X superior to Y, in the structure ...X...[$_{\alpha}$...Y...]... where α is a cyclic category LL-containing Y, where category α LL-contains Y, if and only if

i α properly contains Y such that α=WYV, and

ii for all C $\neq\alpha$, if α contains C and C contains Y, then α=PCQ, where W,P contain a lexical item, or are controlled by a category not containing X, where X is a possible controller.

Department of Linguistics
University of Utrecht

REFLEXIVIZATION: LOCAL, GLOBAL, OR INTERPRETIVE?*

MAC Huybregts

[It will be argued in this paper that reflexivization can not be a syntactically motivated transformational rule. Consequently, while both global and interpretive theories are compatible with a non-transformational source for reflexive pronouns, it is only interpretive theories that derive support from it.]

0 In order to explain the (un)grammaticality of sentences like

1 Beulah$_j$ expects herself$_j$ to be tough for Hephzibah to tattoo.
2 *Beulah$_j$ expects herself$_j$ to be tough for Hephzibah to tattoo.
3 Beulah$_j$ is expected to believe herself to be tough for Uriah to stop Hephzibah from tattooing.
4 *Beulah is expected to believe herself$_j$ to be tough for Uriah to stop Hephzibah$_j$ from tattooing.

we will show that it is necessary to assume, either

i that the Cross-Over Constraint is a principle of (universal) grammar, and
ii that reflexive pronouns are transformationally introduced, and
iii that Tough Movement is a syntactically motivated transformational rule, and
iv that the complements of *tough*-like predicates are full infinitival clauses,

or

v that (i) is false, and
vi that either (ii), or (iii), or (iv), or any combination of them is not true.

The former position is defended by Postal(1971). I take the latter position. In particular it will be shown that from the failure of the Cross-Over principle to apply in cases where Tough Movement is alleged to have applied some corollaries follow which indicate that it can no longer be maintained that assumptions (ii), (iii), and (iv) are true simultaneously. From the correctness of assumptions (iii) and (iv), the falseness of assumption (ii) can be logically inferred. We could, then, represent the logic of the case formally as follows, where 'p', 'q', 'r', and 's' stand for assumptions (i), (ii), (iii), and (iv) respectively:

Claim: In order to explain (1)-(4), it is necessary that
$(p \wedge (q \wedge r \wedge s)) \vee (-p \wedge -(q \wedge r \wedge s))$.

Argument:
a $(p \wedge (q \wedge r \wedge s)) \vee (-p \wedge -(q \wedge r \wedge s))$
b $-p$
c s
d r

---

e $\therefore -q$

Obviously, from the truth of the premises (a)-(d), it is possible to derive the truth of conclusion (e) by a sequence of valid inferences[1]; in what follows we will in fact substantiate our claim that there are some empirical facts of English grammar that disassumption (i), and which support assumptions (iii) and (iv). In other words, we will argue that the truth of premises (b), (c), and (d) can be most plausibly established. It will be apparent from what follows that the basic premise (a) is both a necessary and sufficient pre-condition for the argument to go through. The part of the logical

formula on the left-hand side of the disjunctive symbol expresses the position taken up by Postal, whereas I contend that the proposition to the left of the main logical connective is false and the expression to the right of this connective is true.

1 Postal(1971) postulates a principle of universal grammar prohibiting certain crossings of coreferential NP's under complex conditions[2]. Postal's Cross-Over Constraint can be seen to have been applicable in the derivation of some of the following sentences:

5a Uriah$_i$ tattooed himself$_i$.
b ?Uriah$_i$ was tattooed by himself$_i$.
c *Himself$_i$ was tattooed by Uriah$_i$.
6a Beulah$_i$ is annoyed with herself$_i$.
b ?Beulah$_i$ is annoying to herself$_i$.
c *Herself$_i$ is annoying to Beulah$_i$.
7a Beulah talked to Uriah$_i$ about himself$_i$.
b ?Beulah talked about Uriah$_i$ to himself$_i$.
c *Beulah talked about himself$_i$ to Uriah$_i$.
8a It seems to Uriah$_i$ that he$_i$ is a bully.
b ?Uriah$_i$ seems to himself$_i$ to be a bully.
c *Himself$_i$ seems to Uriah$_i$ to be a bully.
9a It is tough for Beulah$_i$ to tattoo herself$_i$.
b ?Beulah$_i$ is tough for herself$_i$ to tattoo.
c *Herself$_i$ is tough for Beulah$_i$ to tattoo.

In (5b,c)-(9b,c) Passive, Psych Movement, About Movement, It Replacement, and Tough Movement have applied respectively. Notice that these rules are all constant movement rules. Further, the b-sentences are only marginally deviant whereas the c-sentences are crashingly ungrammatical. Postal asserts that the subtle deviance of (5b)-(8b) must be explained in terms of violations of the Cross-Over Principle. The totally ungrammatical c-sentences of (5)-(8) involve ordering violations[3] of these constant movement transformations relative to Reflexivization (perhaps in addition to Cross-Over violations; however, by themselves these c-sentences provide no evidence one way or another for the existence of a Cross-Over Constraint; for that matter, as Postal correctly observes, if ordering violations are taken to yield more severe types of deviancy than Cross-Over violations, it could just as well be maintained that it is only ordering violations that are involved in the derivations of the c-sentences). Therefore, only phenomena of the type of the b-sentences seem to offer justification for postulating a Cross-Over Constraint. Alternatively, one could quite plausibly claim that the ill-formedness of the c-sentences of (5) through (8) is due to a violation of the primacy conditions on Reflexivization[4]: the reflexive pronouns both preceding and commanding their antecedent NP's.

However, the (9b,c) sentences yield a different picture altogether:the ill-formedness of (9c) must be explained in terms of Postal(1971) as due to a simple Cross-Over violation, whereas the mild deviancy of (9b) is due to a severe ordering violation. Contrary to the cyclic principle of rule application, Reflexivization has not yet operated at the derivational stage where Tough Movement applies: on the matrix sentence, Tough Movement precedes the application of Reflexivization on the embedded cycle due to a violation of the principle of cyclical ordering[5]. Alternatively and equivalently, the subtle deviance of (9b) may be explained in terms of a violation of the structural conditions on Reflexivization, the reflexive pronoun (embedded subject) bearing all relevant primacy relations to its antecedent on the first cycle (i.e. the object NP to be repositioned by Tough Movement later on in the derivation). Consequently, we derive the following chart:

	X ... himself$_x$(?)	Himself$_x$ ... X ( )
(5)-(8)	Cross-Over violations	Ordering violations
(9)	Ordering violations	Cross-Over violations

In terms of Postal's conception of the syntactic structure of these sentences, the deviance of (9c) must be explained in exactly the same way as the deviance of (5b) through (8b), and the ill-formedness of (9b) must be due to the same kind of violation as in (5c) through (8c). However, the b-sentences of (5)-(8) are only slightly deviant as opposed to (9c), and the c-sentences of (5)-(8) are crashingly ungrammatical as opposed to (9b). Since all the c-sentences are intuitively felt to be ill-formed in the same way, they should be accounted for uniformly. This apparently can not be done in terms of a Cross-Over Principle that makes wrong predictions about the relative ill-formedness of (5b,c)-(9b,c). Consequently, since the Cross-Over explanation for Tough Movement sentences is in conflict with intuitions that native speakers have on the degree of ill-formedness, and since it is impossible to account for (5b)-(8b) and (9b) on the one hand and (5c)-(8c) and (9c) on the other hand in a uniform way, it would seem that the Cross-Over Constraint should be rejected[6].

We have shown, then, that assumption (i) must be given up, i.e. that premise (b) is true. Therefore, let us now turn to the other assumptions. Note that (2) and (4) are just other instances of the same type of deviance exemplified by ungrammatical (9c). It is obvious then that in order to explain (2) and (4) on a par with ungrammatical (5c)-(8c), over against well-formed (1) and (3), it must be conceded that positions (ii), (iii), and (iv) can not be maintained simultaneously:

ii reflexive pronouns are transformationally introduced,
iii Tough Movement is a syntactically motivated transformational rule,
iv the complements of *tough*-like predicates are full infinitival clauses.

Notice that if one of these positions will be given up, the other two being maintained, it is possible to offer a principled and uniform explanation for (2), (4), (5c)-(9c), viz.

a in terms of ordering violations, or violations of the structural conditions on Reflexivization if (iv) is given up,
b in terms of violations of the structural conditions on Reflexivization if (iii) is given up,
c in terms of either an interpretive filter or some derivational constraint (see section 4 below) if (ii) is given up.

However, there is evidence for the correctness of positions (iii) and (iv). The arguments that will lead to establishing the truth of these assumptions are taken up below.

2 Most transformational writings assume an S source for the infinitival complement of *tough*-adjectives[7]. However, Bresnan(1971) analyses the complement structure as a VP rather than S. Her arguments are based on selectional restrictions holding between the matrix verb and the prepositional *for*-phrase, cf. (10), absence of *there*-insertion, cf. (11), and the transformational behavior of *tough*-complements under S Movement, cf. (12):

10 It is easy for{*the girl / *the Kama Sutra} to please Uriah.

11a *It will be tough for there to be some actresses eager to please perverse producers.
b *It will be tough for some actresses for there to be eager to please perverse producers.
c It will be tough for some actresses to be eager to please perverse producers.

12 *For Uriah to delight in the Kama Sutra will be tough.

The first two arguments can be shown to be consistent with a sentential structure of the complement of *tough* while the third argument can be simply refuted. It is well-known that there are selectional properties of *for* indicating that *for* is not a complementizer but part of a prepositional phrase belonging to the matrix clause. The *for*-phrase being part of the main clause is perfectly compatible, however, with the position that the complement of *tough*-predicates is a full infinitival clause, and that EQ-NP Deletion obligatorily applies to the complement subject under identity with the controller NP of the prepositional phrase. This position is reinforced by the existence of selectional restrictions holding between the NP of the *for*-phrase and the complement predicate, cf:

13 *It is easy for Hephzibah to surround the village.

Similarly, the impossibility of inserting *there* in (11) may just as well be due to obligatory coreferential complement subject deletion: since *there* is cyclically inserted into subject position under a number of conditions (one of them saying that the derived subject at a derivational stage prior to *there*-insertion be an indefinite NP)[8], *there*-insertion could not have applied to yield either (11a) (insertion of *there* into matrix prepositional phrase would have violated the structural description of the rule) or (11b) (insertion of *there* into subject position would have violated the structural index of the rule because the complement subject is a controlled, i.e. anaphoric, NP)[9]. Finally, the non-occurrence of (12) is irrelevant for substantiating the claim that the complement of *tough* does not behave as a sentential constituent since this fact could once more be explained by obligatory EQ-NP Deletion. Indeed, as a number of linguists have shown independently[10] there do exist parallel sentences which unequivocally demonstrate the sentential character of the complement structures. Thus consider

14a For his wife to delight in the Kama Sutra will be tough for Uriah.
b It will be tough for Uriah for his wife to delight in the Kama Sutra.
15a For juvenile suitors to drop in is pleasant for lusty widows.
b It is pleasant for lusty widows for juvenile suitors to drop in.
16 It would be easier for Beulah for Uriah to go and buy a copy of the Kitaab-Alf-Lailah-wa-Lailah than for her to do it herself.

Thus while the first two arguments are neutral with respect to a sentential character of the embedded complement, it is sentences such as (14)-(16) that are not compatible with a VP source for the infinitival complements of *tough* adjectives. This argument, then, establishes the correctness of the claim that the complements of *tough*-like predicates are full infinitival clauses.

3 Recently, Postal and Ross(1971) have argued on the basis of sentences like (17) for a Tough Movement hypothesis, and consequently against a conceivable alternative to the effect that non-subject NP's of complement predicates are deleted under identity with matrix subject NP's (i.e. Tough Deletion hypothesis)[11].

17 Getting himself to make love to Beulah was tough for Hephzibah to imagine Uriah being willing to consider.

Under a Tough Deletion hypothesis, EQ-NP Deletion would have to be needlessly complicated or else supplemented with an otherwise unnecessary deletion rule to account for the missing agent in subject clauses of sentences such as (17). Akmajian(1972), however, argues that sentences like (17) must be analysed on a par with sentences containing *too*-Adj-Complement or Adj-*enough*-Complement structures in the derivation of which a reordering rule would have been completely unmotivated(consider (18))[12].

18 Getting himself to make love to Beulah was just crazy enough for Hephzibah to imagine Uriah being willing to consider.

Therefore, such a complication as was hinted at above will be necessary for independent reasons. Consequently, Postal and Ross's argument for the existence of a reordering transformation moving embedded nonsubjects into matrix subject position apparently has been shown to be inconclusive since EQ-NP Deletion must be reformulated so as to apply to sentences like (18), deleting the agent NP of the subject clause under identity with the embedded controller *Uriah*. However, it can be demonstrated beyond any reasonable doubt that Akmajian's analysis does not really show that (17) is necessarily derived by means of some sort of Tough Deletion. More importantly, it is possible to give positive arguments strongly suggesting that there is a transformational rule of Tough Movement indeed.

A Tough Movement sentences are strange in that they do not reveal any selectional restrictions holding between their subject NP's and *tough*-predicates. They do show selectional restrictions holding between their subject NP's and complement predicates. Thus consider (19).

19 The{*criminal / crowd} will be tough for the police to disperse.

The absence of selectional restrictions between superficial subject NP and *tough* predicate in (17), and the existence of these restrictions holding between superficial matrix subject and embedded predicate will be explained under a Tough Movement analysis. Notice that under a Tough Deletion analysis each *tough*-predicate must be included in the lexicon twice, one entry positively subcategorized for subject complementation (S — PP), and another entry positively subcategorized for object complementation (NP — PP S). In addition, these latter entries must be lexically marked with SD features requiring that the structure index of the complement nonsubject deletion rule be met. Sentence (20) will this make this amply clear.

20 The Kama Sutra will be pleasant for Beulah to read{[∅ / ?it / *the Daily Mirror]}

Note that (17) differs crucially from (18) in that:

i In (18) there are selectional restrictions between subject and predicate that are totally lacking in (17).

ii The nonsubject of the embedded clause in (18) is not necessarily coreferential with the matrix subject[13]. Thus consider (21)-(24).

21 Uriah was poor enough for there to be people to take pity on his family.

22 The fiscal policy was just crazy enough for the electorate to support the opposition.

23 The audience was too fanatic for the match to be continued.

24 This ghastly crime must be brutal enough for the mob to cry for vengeance.

Consequently, the powerful device of 'positive absolute exceptions' will not be needed at least for the type of sentences discussed in Akmajian. These two differences point out sufficiently, I presume, that it is in general wrong to think that whatever transformational machinery is necessary to account for *tough* sentences is independently called for to solve cases like (18). What follows is more important, however.

iii The deletion rules operative in (17) and (18) would have been subject to different conditions under a Tough Deletion analysis for (17). The rule applicable in the structure underlying (17), irrespective of whether it is a reordering or a deletion rule, must in particular satisfy the condition that the

complement sentence does not contain a (specified) subject. Thus consider (25)-(26).

25a For his wife to delight in the Kama Sutra will be tough for Uriah.
b It will be tough for Uriah for his wife to delight in the Kama Sutra.
c *The Kama Sutra will be tough for Uriah for his wife to delight in.
26a For there to be mice in the refrigerator is impossible[14].
b It is impossible for there to be mice in the refrigerator.
c *The refrigerator is impossible for there to be mice in.

Since there are no selectional restrictions holding between the matrix predicate and the *for*-phrase in (18), these prepositional phrases not being datives as opposed to those in cases like (17), it must apparently be assumed that the general subject condition[15] does not hold for the deletion rules suggested in Akmajian(1972). Therefore, if Tough Deletion were a rule of grammar it would be a rule different from the complement non-subject deletion rule operative in (18). Since the deletion rules assumed to be relevant to (17) and (18) would be different rules after all, nothing is gained by a Tough Deletion analysis. Under a Tough Movement analysis, however, the facts of selectional restrictions are naturally accounted for, and the powerful and inadequate notion of absolute exceptions can be easily dispensed with[16].

B A second argument for the plausibility of a Tough Movement hypothesis involves noun phrases that do not appear as deep subjects but which do occur in subject position in passive sentences. Also, some verbal idiomatic expressions contain fixed object NP's that appear as surface subjects in passive sentences only. Passive as a movement rule offers an explanation for these facts. *Tough*-sentences appear to behave exactly like passive sentences in this respect. Thus consider

27 Ways of dealing with the pollution problem will be tough to think up.
28 A girl to live with was easy for Uriah to find.
29 A man to do the job won't be hard to look for.
30 Admittance is tough to deny her.
31 Liberties are easy to take with grass widows.
32 The law will not be easy to lay down to his daughter.
33 Tabs will be hard to keep on black sorcerers.
34 ?Use will be hard to make of illegal methodes.

Consequently, these sentences receive a natural explanation under a reordering analysis (Tough Movement hypothesis) only.

C The lexicalist hypothesis provides a natural explanation for an otherwise puzzling asymmetry in well-formedness of derived nominals such as

35 *Beulah's toughness to tattoo.
36 Beulah's eagerness to tattoo.

But for a lexicalist hypothesis, the ungrammaticality of (35) could not have been explained in other than ad-hoc and unrevealing ways. These examples force the conclusion that the level at which a general account can be given of the (un)grammaticality of derived nominals must be a level prior to the application of transformational rules[17]. The lexicalist hypothesis, then, satisfactorily explains the difference between (35) and (36): (35) differs from (36) in that it is not a base-generated derived nominal. Ungrammatical (35) is derivatively explained as a nominal transformationally derived from a transform (i.e. a structure resulting from the application of Tough Movement), contrary to the lexicalist hypothesis. Hence the ungrammaticality.

D To conclude, in Postal(1972c) another argument has been presented in favor of a Tough Movement analysis. Postal claims that picture noun reflexivization is subject to the constraint that the reflexive pronouns be commanded by their antecedents in the

cycle where Reflexivization applies; therefore, sentences like (37) are explained under a Tough Movement hypothesis only.

37 That picture of himself$_i$ was tough for Beulah to imagine Uriah$_i$ being willing to sell.

However, this argument depends vitally on the *for*-phrase not being a deep structure constituent of the matrix sentence[18] since otherwise cyclic pruning due to EQ-NP Deletion and Raising (cf. Postal(1971),13C, note 9) would have pruned all S nodes except the root S, thus making (37) consistent with both the Tough Movement and the Tough Deletion analysis. Perlmutter(1971) has observed that pruning should take place at least after Reflexivization on the last cycle has taken place. Consider (38).

38 *I believe Bill to have recommended myself.

In (38), after *Bill* has been raised into the matrix sentence, pruning due to loss of branching applies and Reflexivization can not be prevented from applying to the clausemate NP's I. Therefore, if Perlmutter is right then (37) may indeed be taken as an argument in favor of a Tough Movement analysis irrespective of whether the *for*-phrase is a dative to *tough*-predicates or not.

In this section we have presented arguments forcing the conclusion that Tough Movement exists. Thus assumption (iii) is validated. Since we have shown that assumption (i) must be rejected (see section (1)), and the correctness of assumptions (iii) and (iv) is borne out by empirical fact (see section (3) and (2) respectively), it follows that Reflexivization can not be a syntactically motivated transformational rule: assumption (ii) must be false[19]. If the position is given up that reflexive pronouns are transformationally introduced, we can give a uniform explanation for data such as (1)-(9), viz. in terms of an interpretive rule accounting for obligatory coreference assignments to pairs of surface NP's (NP, reflexive pronoun) within the general framework of an extended standard theory(cf. Chomsky(1969)). An alternative explanation for these cases can be offered in terms of a derivational constraint applying at late derived structure with a global environment referring to one or two other levels (cf. Lakoff(1970d, 1971)).

4 Summarizing, we have shown that from the non-workability of the Cross-Over Constraint in cases where Tough Movement is alleged to have applied, it must be concluded that a uniform explanation for certain antecedent:anaphoric pronoun pairs can only be given if positions (ii), (iii), and (iv) are not simultaneously maintained (section 0 and 1). Furthermore, the correctness of claims (iii) and (iv) seems well-established (section 2 and 3). Therefore, the position muse be given up that reflexive pronouns are transformationally derived. Given the conclusion that reflexives are not transformationally introduced, and given the alternatives made available by the unrestricted descriptive latitude of present linguistic theory, Reflexivization is either a Global Derivational Constraint referring to late derived structure or an Interpretive Rule. Thus from the non-transformational source for reflexives it does not necessarily follow that Interpretive Semantics is the only logically possible way of dealing with them since Generative Semantics could always claim that Reflexivization is a derivational constraint of a global type. However, the conclusion of this paper fits nicely in an interpretive framework. Interpretive Theory claims that the input to the Semantic Component are pairs of deep structures and corresponding surface or shallow structures, and that coreference is assigned at late derived structure (i.e. Pro-forms are present at deep structure). Global Theory is neutral with respect to Reflexivization being a transformational rule (i.e. Pro-forms are not present at deep or rather logical structure) or a global rule (i.e. Pro-forms are present at the most remote structure). Therefore, since Global Theory is consistent with the presence of reflexive pronouns at deep structure but also with the non-occurrence of reflexives at deep structure (if this could be established as a fact of the language), it derives no support from the conclusion that reflexives are not transformationally derived. Consequently, the non-transforma-

tional source for reflexives gives strong empirical support to the Interpretive Hypothesis, from which facts such as (2) and (4) follow. Moreover, if Interpretive Theories are conceived of as 'restricted global theories', theories referring for interpretation to the levels of deep structure, shallow structure or surface structure exclusively, it will be clear, that Reflexivization as a global derivational constraint in the sense of Lakoff(1970d, 1971) falls within the domain of 'restricted global theories'.

Department of Linguistics
University of Utrecht

Notes

* This paper is a slightly revised and expanded version of my paper 'A Non-Transformational Source for Reflexives', which was written in the fall of 1972. I would like to thank Arn Evers, G. de Haan and H. Schultink for their comments on a preliminary draft of that paper. The author is solely responsible for remaining inadequacies.

1 See the end of section (3), especially note 19.

2 Cross-Over VI will be given below for the convenience of the reader:

Despite the fact that $\underline{P}$ is a member of $\underline{S}$, $\underline{T}$ may not apply to $\underline{P}$ if the application path of $\underline{T}$ with respect to $\underline{P}$ is such that this path contains an NP_j coreferential with NP_k and both NP_j and NP_k are pronominal virgins and either:
a $\underline{T}$ is a variable movement rule.
b $\underline{T}$ is a constant movement rule and NP_k and NP_j are both clausemates and peers (Postal(1971),p.164).

3 This is true for (8c) only if we assume that (8c) involves Psych Movement (cf. Postal(1971),chap.22) extrinsically ordered within the cycle: Raising ⟶Psych Movement⟶ Reflexivization; (8b) will then be ruled out by the Cross-Over Constraint applying to Psych Movement. Given the formulation of Cross-Over in note 2 (condition b) it is necessary for Postal to assume that *seem* is a Psych Movement verb.

4 Cf. Langacker(1969):NP^a may be used to pronominalize NP^p unless NP^p bears all relevant primacy relations to NP^a.

5 The choice between the reflexive and nonreflexive pronoun in (9b) is merely dependent on considerations like the following: Are *tough*-adjectives psychological verbs (Postal(1971),chap.13c)? Is the *for*-phrase a deep structure constituent of the matrix sentence (Jackendoff(1969); Kimball(1971); Bresnan(1971))? Notice that if both questions are answered negatively the nonreflexive pronoun will be derivatively generated. Otherwise the reflexive pronoun will show up. However, these questions just like the question of whether Tough Movement applies to the output of Extraposition (Rosenbaum(1967)) are immaterial to this part of the argument, viz. the refutation of Cross-Over.

6 Postal(1972a) rejects Cross-Over with respect to 'variable movement rules'(WH-movement) in favor of a global constraint on pronominalization. Similarly, one could replace Cross-Over with respect to 'constant movement rules' by a general global statement checking primacy relations between stipulated coreferent NP's in semantic representation against those holding between their corresponding nodes at the end of the first cycle on the innermost S containing these nodes (or perhaps at shallow structure). Note that such a reformulation does not avoid the difficulties of lack of parallelism (see section 1).

7 Cf. Ross(1967), Postal(1971), Jackendoff(1969), and Chomsky(1970). The conclusions of this section (section (2)) were independently arrived at by Berman and Szamosi (1972:appendix).

8 The cyclical nature of *there*-insertion and the indefinite character of the superficial subject will be sufficiently illustrated by sentences such as
i There was believed to be a virgin massacred by the voodoos.
ii There was a virgin believed to be massacred by the voodoos.

9 *There* can not be inserted into controlled subject position as will be clear from

(i)-(iv), where (iv) contains (ii) as an embedded sentence:

(i) Many pimps are on the dole nowadays.

(ii) There are many pimps on the dole nowadays.

(iii) Many pimps want to be on the dole nowadays.

(iv) *Many pimps want there to be they/them on the dole nowadays.

Since *there*-insertion is cyclic (iv) poses a problem for non-interpretive theory. Compare (iv) with (v)

(v) Many pimps want there to be a shortage of cops.

10 Cf. for example Jackendoff(1969), Kimball(1971), Chomsky(1970), and Berman and Szamosi(1972).

11 Tough Movement was first introduced by Rosenbaum(1967,p.107). Ross(1967,6.1.3.3) argued against a reordering rule in favor of a deletion hypothesis. Nonetheless, Tough Movement has been assumed in a number of recent studies, eg. Jackendoff (1969), Chomsky(1970), and Bresnan(1971), who prefers to speak of Object Shift.

12 Cf. also Ross(1967,6.1.3.2) and Jackendoff(1969,chap.2,12e).

13 This was pointed out already in Jackendoff(1969).

14 As is pointed out by Berman and Szamosi(1972), *impossible* takes a prepositional phrase optionally.

15 For the general character of this constraint on the power of transformations see Chomsky(1970), especially statement (159). For present purposes, it is immaterial whether Tough Movement obeys the 'possible controller' alternative (161) of the specified subject constraint , or whether we accept Chomsky's restatement of Tough Movement as a composite rule (PRO Replacement on the embedded cycle and It Replacement on the matrix cycle). This latter alternative is shown to be wrong in Huybregts (1972). Suppose Tough Deletion were a rule of grammar; Then it is clear that the specified subject condition should be reformulated in order to account for (25c) and (26c).

16 Cf. Perlmutter(1971,p.125). For those speakers of English who find *tough*-sentences with a pronominal rest left behind grammatical (cf. (20)) the absolute exception approach will not even work since if a lexical item is marked for the structural description of a transformational rule it must undergo that rule.

A different approach in terms of deep structure constraints is excluded since this would involve an extension of the '(un)like subject' input conditions to 'like non-subject' constraints for which there is no independent motivation. More importantly, these conditions would be of an unprecedented type since they require that some non-subject that may be 'indefinitely far down' in the tree be identical with the deep subject of the *tough*-predicate. Consequently, while there are many problems involved in the correct structural description of either Tough Movement or Tough Deletion, there are serious additional problems for a Tough Deletion analysis that have no correlates elsewhere in the grammar.

17 Cf. Chomsky(1967b):'...it follows from this hypothesis [i.e. the Lexicalist Hypothesis] that transforms should not undergo processes that give derived nominals'(p. 204).

18 For opposing views see Jackendoff(1969), Kimball(1971), Bresnan(1971), and Chomsky (1970). Postal and Ross(1971), however, consider the *for*-phrase to be part of the matrix sentence, their argument being compatible with both positions. Notice that last-cyclic application of pruning actually proves Postal wrong in assuming that Cross-Over works clause internally with respect to constant movement rules (cf. condition b). If we assume that the derivation of (4) proceeds as follows

1° Cycle: Reflexivization (Hephzibah$_j$),

2° Cycle: EQ NP (Hephzibah$_j$),

3° Cycle: (i) EQ NP (Uriah), Tough Movement (herself$_j$), Psych Movement (Uriah, herself$_j$) if *tough* is taken as a psychological verb,

(ii) EQ NP (Uriah), Tough Movement (herself$_j$) if *tough* takes a prepositional *for*-phrase,

(iii) Tough Movement (herself$_j$) in all other cases,

4^{o} Cycle: Raising (herself$_j$),
5^{o} Cycle: Raising (Beulah)$_j$, Passive (SOMEONE, Beulah),
then on the third cycle Tough Movement applies across higher clause boundaries moving the reflexive two sentences up. Extraposition (cf. note 5) is omitted in this account. We have also ignored the difficulty that the 'pronominal virgin' provision of Cross-Over causes to sentences involving Tough Movement due to the cyclic principle (see Postal(1971),chap.12D).

19 The validity of the argument can be verified by going through the steps of the following derivation.

a	$(p \wedge (q \wedge r \wedge s)) \vee (\neg p \wedge \neg(q \wedge r \wedge s))$	
b	$(p \longrightarrow (q \wedge r \wedge s)) \wedge ((q \wedge r \wedge s) \longrightarrow p)$	(a), Biconditional Law
c	$(q \wedge r \wedge s) \longrightarrow p$	(b), Simplification
d	$\neg p$	
e	$\neg(q \wedge r \wedge s)$	(c),(d), Modus Tollens
f	$\neg q \vee \neg r \vee \neg s$	(e), De Morgan's Law
g	$(\neg q \vee \neg r) \vee \neg s$	(f), Associative Law
h	$\neg s \vee (\neg q \vee \neg r)$	(g), Commutative Law
i	s	
j	$\neg q \vee \neg r$	(h),(i), Disjunctive Syllogism
k	$\neg r \vee \neg q$	(j), Commutative Law
l	r	
m	$\neg q$	(k),(l), Disjunctive Syllogism

Here, the lines of the derivation (a), (d), (i), and (l) are the premises of section O. Notice that (c) is the conclusion that Postal(1971) accepts. However, the present argument proves this conclusion wrong.

DUTCH AS A SOV LANGUAGE

Jan Koster

1.0 In Dutch and German, the position of the (finite) verb in main clauses differs from that in subordinate clauses. The unmarked order of the former is Subject Verb Object (SVO), while the latter exhibit a SOV pattern. Therefore, a fundamental problem in Dutch and German grammar is the establishment of the basic word order. In this paper I want to show that the underlying order of Dutch is SOV. The SVO pattern of main clauses is the result of a last cyclical rule of Verb Placement.

1.1 Since Bach(1962) and Bierwisch(1963), it has been assumed that German is a SOV language. A consequence of this analysis is, that the word order in subordinate clauses is considered more basic. This conclusion is compatible with the idea that on the last cycle a broader class of transformations applies, namely the class of root transformations(Emonds 1970). As for the word order, Dutch is similar to German in that the verbs are in final position in subordinate clauses. Also as in German, declarative main clauses have the finite verb in second position. If the word order of subordinate clauses is basic, then we have to postulate a root transformation of Verb Placement which puts the (finite) verb in second position.

Ross(1967c) arrived at a different conclusion as a consequence of his analysis of Gapping. He claimed that German should be SVO, for reasons which do not all concern us here. If we assume SVO order for German and Dutch, we need a transformation which moves the verb to final position in subordinate clauses. This transformation (Verb Final, cf. Ross 1967a) applies on every cycle except the last one. This is a dubious result, since there are many examples of transformations which apply only on the last cycle, but none which apply on all cycles except the last one. Another dubious consequence of Ross' analysis was that Gapping should be an 'anywhere rule'. This is also a very exceptional phenomenon, if it can be justified at all. According to Ross(1967c), Gapping can apply forward and backward, depending on the input of the rule. In subordinate clauses of German and Dutch, we find both forward and backward Gapping (2b and 2a, respectively):

1 Weil ich das Fleisch aufass, und meine Mutter den Salat aufass, wurden wir beide krank.
Because I the meat up ate and my mother the salad up ate became we both sick(=
Because I ate up the meat, and my mother ate up the salad, we both got sick).

2a Weil ich das Fleisch, und meine Mutter den Salat aufass, wurden wir beide krank.

b Weil ich das Fleisch aufass, und meine Mutter den Salat, wurden wir beide krank.

The same holds for Dutch. Ross explained these facts by the directionality principle[1], and by the assumption that Gapping, as an anywhere rule, can apply before or after Verb Final. Thus, we have the following patterns in (2)a and (2)b:

2a' SO + SOV
b' SOV + SO

Pattern (2)a is the result of backward Gapping on the output of Verb Final, while (2)b comes from forward Gapping and subsequent application of Verb Final. Under Ross' assumptions these patterns can only be derived if the base order of German (and Dutch) is SVO, because the explanation depends on a rule of Verb Final.

An interesting alternative analysis is given by Maling(1972). She argues that forward Gapping occurs in any word order (SVO, SOV or VSO). Backward Gapping only occurs when the verb is in absolue final position. She proposes to account for this single case of backward Gapping by the independently motivated rule of Node Raising[2]. One addi-

tional assumption is that 'Node Raising and Gapping are ordered after any movement rules which affect the linear position of the verb'. In this way Gapping becomes a superficial process which allows no conclusion about deep structure order. Maling gives two arguments (due to Ross) to demonstrate that 'backward Gapping' is a case of Node Raising. One of these arguments concerns the condition on so-called 'backward Gapping' that the verb should be in absolute final position. Thus, 'backward Gapping' is blocked after such rules as Extraposition from NP, which have the effect that the verb is no longer in absolute final position. Since a similar condition holds for Node Raising, it is likely that Node Raising and 'backward Gapping' can be collapsed. Supporting evidence for this argument is found in Dutch. This language has a few more rules than German with the effect of making the verb non-final in subordinate clauses. For instance, Dutch has a rule which moves PP's to the right of the verb[3]:

3a omdat Jan [$_{PP}$ aan Marie] [$_{V}$ denkt]...

because John of Mary thinks(=because John thinks of Mary...)

b omdat Jan [$_{V}$ denkt] [$_{PP}$ aan Marie]...

Forward Gapping is applicable on the output (3)b of this rule ((4)b), but backward Gapping is blocked ((5)b), as predicted:

4a omdat Jan aan Marie denkt en Piet aan Anna...
because John of Mary thinks and Pete of Ann(=because John thinks of Mary and Pete of Ann...)
b omdat Jan denkt aan Marie en Piet aan Anna...
5a omdat Jan aan Marie en Piet aan Anna denkt...
b *omdat Jan aan Marie en Piet denkt aan Anna...

I adopt Maling's analysis and conclude that, based on Gapping, there is no evidence against SOV order for Dutch.

1.2 A second argument against SOV order for German is given by Bach(1971). In an attempt to formulate substantive constraints on transformations, he proposes a universal Question Movement Rule. A property of this rule is the unbounded movement of question words to the left, in the direction of a governing verb. Bach gives examples from German of question word movement in embedded questions, where the governing verb is on the right. Therefore, Bach concludes, German has a rule of Verb Final which moved the verb in the examples from the left to the right. Bach gives examples like:

6 Ich habe, wen Hans geküsst habe, gefragt.

Unfortunately, this sentence is not acceptable in German.The embedded question has to be in extraposed position:

7 Ich habe gefragt, wen Hans geküsst habe.

Again, the same holds for Dutch. Embedded questions are always extraposed to the right of the 'governing verb'. Therefore, the proper German and Dutch equivalents of Bach's examples do not form any evidence for a rule of Verb Final. But even if the examples were right the argument would not be conclusive, because question word movement can be explained by Bresnan's Complementizer Substitution Universal[4]. A SOV base order for German and Dutch does not exclude a clause initial COMP-node.

2.0 All in all, I do not know of any convincing argument a g a i n s t a SOV base for German and Dutch. In the following sections I want to present positive evidence; important generalizations are lost if we do not assume that Dutch is a SOV language.

2.1 Since the earliest transformational studies, it has been assumed that English has a rule of Particle Movement. This rule has the effect of moving the particle of a verb-particle combination around the first NP to the right[5]. This rule relates the a- and b-sentences of (8), (9) and (10), and has the structural description given in (11)[6]:

8a He phoned up the girl.
 b He phoned the girl up.
9a The police brought in the criminal.
 b The police brought the criminal in.
10a *The police brought in him.
 b The police brought him in.

11 PARTICLE MOVEMENT

X V - Prt - NP - Y opt.
1 2 3 4 ⟶ 1 Ø 3+2 4 obl. if 3 is a pronoun

It is important to note that (11) implies there are only two possible positions for Prt: either it immediately follows the verb, or it follows t h e f i r s t NP a f t e r t h e v e r b . Thus, while (12)a is grammatical, (12)b is out, because the Prt (*back*) does not follow the first NP after the verb[7]:

12a We brought our children back some gifts.
 b *We brought our children some gifts back.

Furthermore, particles cannot be moved over an object NP which starts with a preposition. Thus the particle *away* may not be moved over the PP *with her father* in (13)[8]:

13a She did away with her father.
 b *She did with her father away.

In Dutch, verb-particle constructions are as familiar as in English. Sentence (14), for instance, is an equivalent of (15):

14 Hij belde het meisje op.
15 He phoned the girl up.

If we limit our attention to examples like (14), we would conclude that Dutch has a rule of Particle Movement like English: the particle *op* of the verb *opbellen* (phone up) is moved over the first NP after the verb. But a closer examination shows that the Dutch rule must be entirely different. First, the Dutch rule can never be optional:

16 *Hij belde op het meisje.
 He phoned up the girl.

Second, the Dutch 'Particle Movement' only applies in main clauses (obligatorily) and n e v e r in subordinate clauses[9]:

17a *Hij zei dat hij gaf op.
 He said that he gave up.
 b Hij zei dat hij opgaf.
 He said that he upgave(=He said that he gave up)
18a Hij gaf op.
 He gave up.
 b *Hij opgaf.
 He upgave(=He gave up)

Third, if the verb is followed by more than one NP, the particle has to be moved over these NP's as well:

19a *Hij gaf zijn vader terug het geld.
He gave his father back the money.
b Hij gaf zijn vader het geld terug.
He gave his father the money back.

Fourth, a particle can optionally be moved over a prepositional object in Dutch:

20a Hij liep weg van de tafel.
He walked away from the table.
b Hij liep van de tafel weg.
*He walked from the table away.

Particle movement is a simple rule in the grammar of English. It is a minor movement rule (cf. Emonds,1970), in that it has to move a non-phrase node (Prt) over an adjacent NP. Obviously, the Dutch equivalent of Particle Movement would be much more complicated. The rule has to move the Prt over one NP if the verb is followed by one NP, over two NP's if there are two NP's after the verb, etc. Moreover, movement of Prt over a PP has to be optional. There are still more complications if we consider various types of adverbials in Dutch (see below). All problems in formulating a rule of Particle Movement for Dutch arise from the assumption that Dutch is a SVO (or VSO) language, so that direct objects, indirect objects and prepositional objects follow the verb. We can simplify the grammar of Dutch considerably by making the following assumptions:

21a Dutch is a SOV language;
b Dutch has no rule of Particle Movement at all;
c The obligatory root transformation of Verb Placement leaves the particle behind (in the original position of the V).

These hypotheses imply that the difference in word order between main and subordinate clauses can not be accounted for by a rule of Verb Final (Ross,1967a) applying on every cycle except on the last one. Given the fact that particles and the verbs to which they belong have to be separated somewhere in the derivation, we can summarize the alternatives as follows:

22 Dutch is a SVO (or VSO) language. Particles appear at the right of the O (= object); therefore, we need a rule of Particle Movement.
23 Dutch is a SOV language. In this case we have the V (= verb) at the right of the O (= object) to begin with. Particles are left behind (at the right of the O) after the application of a root transformation of Verb Placement.

Let us call (22) and (23) the Particle Movement Hypothesis (PMH) and the Verb Placement Hypothesis (VPH), respectively. I claim that VPH gives the correct explanation of the facts, which implies that Dutch is a SOV language.

2.2 One immediate advantage of VPH (23) is that we can do with one transformation less. If we can account for the distribution of particles by an independently needed rule of Verb Placement, then we do not need a rule of Particle Movement. The PMH demands two rules: Particle Movement and Verb Final.

A second advantage of the VPH is that we can explain why the separation of the particle from the verb is always obligatory in Dutch. The obligatoriness of the separation follows from the obligatoriness of the Verb Placement Rule.

A third point in favor of the VPH is connected to the fact that a rule of Particle

Movement would not apply in subordinate clauses. With the PMH, this is a mere accident. We can state Particle Movement as a root transformation. But that would be completely a d h o c, because the class of root transformations seems to be restricted to rules of a certain type. Particle Movement is no reasonable candidate for the class of root transformations, while Verb Placement is, for reasons to which I'll return below.

The main argument in favor of the VPH lies in the distribution of particles. Recall that Particle Movement, a simple rule in the grammar of English, would be a complicated rule for Dutch. It is hard to specify within one rule which positions the particle can be moved to. In the next section I will show that the full set of environments for Dutch particles is predicted by the VPH. If Dutch is a SOV language, with a root transformation of Verb Placement leaving the particle in the original position of the verb, then t h e d i s t r i b u t i o n o f p a r t i c l e s i n r o o t s e n t e n c e s m u s t b e s i m i l a r t o t h e d i s t r i b u t i o n o f o r d i n a r y v e r b s (w i t h o u t p a r t i c l e s) i n s u b o r d i n a t e c l a u s e s. As we will see, this prediction is completely confirmed.

Particle Movement, on the other hand, can only be stated with several a d h o c additions. This situation decides the issue in favor of the Verb Placement Hypothesis.

2.3 In this section I will present eight different distributional facts of ordinary V's in embedded sentences which correspond exactly to the distribution of particles in root sentences.

2.3.1 The final V in subordinate clauses cannot be followed by an NP:

26a omdat hij het boek kocht..
because he the book bought (=because he bought the book..)
b *omdat hij kocht het boek..
because he bought the book

A particle in a root sentence can not be followed by an NP either:

27a Hij gaf de jongen het boek terug.
He gave the boy the book back.
b *Hij gaf de jongen terug het book.
He gave the boy back the book.

2.3.2 An S obligatorily follows the final verb:

28a omdat ze zegt dat ze droomt..
because she says that she dreams..
b *omdat ze dat ze droomt zegt..
because she that she dreams says

In a root sentence an S obligatorily follows a particle (*aankondigen* = to announce):

29a Hij kondigde aan dat hij zou vertrekken.
He announced that he would leave.
b *Hij kondigde dat hij zou vertrekken aan.
He announced that he would leave (prt)

2.3.3 Dutch has a rule, PP o v e r V, which moves a PP over the final V (optional):[10]

30a omdat hij het boek aan Norval geeft..

because he the book gives to Norval...

If we assume that PP o v e r V applies on the last cycle before Verb Placement (i.e. before the separation of verb and particle), we can explain without a d h o c apparatus that a particle can be placed at either side of a PP:

31a Hij gaf het boek aan Norval terug.
He gave the book to Norval back.
b Hij gaf het boek terug aan Norval.
He gave the book back to Norval.

2.3.4 There is a rule in Dutch which changes P + PRO into $PRO_{loc.}$ + P[11]. For instance, *op het (on it) → erop ('thereon'), *naar het (to it) → ernaar ('thereto'). If these 'PRO-PP's' replace a prepositional object they cannot be moved over the final V:

32a omdat hij eraan dacht...
because he thereon thought(=because he thought of it...)
b *omdat hij dacht eraan...
because he thought thereon...

In root sentences these phrases cannot be moved over a particle:

33a Hij dacht eraan terug.
He thought thereon back(=He thought back on it.)
b *Hij dacht terug eraan.
He thought back thereon.

2.3.5 Predicate adjectives and participles have to precede the final V in embedded sentences:

34a omdat hij de wijnglazen gebroken ontving...
because he the wine glasses broken received(=because he received the wine glasses broken...)
b *omdat hij de wijnglazen ontving gebroken...
because he the wine glasses received broken

In root sentences predicate adjectives and participles should precede particles as well (*afleveren*= to deliver):

35a Jan leverde de wijnglazen gebroken af.
John delivered the wine glasses broken.
b *Jan leverde de wijnglazen af gebroken.

2.3.6 Most adverbs cannot follow the final verb in subordinate clauses:

36a omdat hij zijn werk ijverig deed...
because he his work industriously did(=because he did he work industriously...)
b *omdat hij zijn werk deed ijverig...

Most adverbs cannot follow a particle in a root sentence (*afmaken*= to finish):

37a Hij maakte zijn werk ijverig af.
He finished his work industriously.
b *Hij maakte zijn werk af ijverig.

2.3.7 Some adverbs like *gisteren* (yesterday) and *daar* (there) can follow the verb in subordinate clauses. In that case, there is often a comma intonation between the verb

and the (unstressed) adverb:

38a omdat hij zijn werk gisteren deed...
because he his work yesterday did(=because he did his work yesterday...)
b omdat hij zijn werk deed, gisteren...
because he his work did, yesterday

Exactly the same adverbs can follow a particle in a root sentence:

39a Hij maakte zijn werk gisteren af.
He finished his work yesterday.
b Hij maakte zijn werk af, gisteren.
He finished his work, yesterday.

2.3.8 All kinds of adverbial PP's can follow the verb in subordinate clauses:

40a omdat hij zijn werk met liefde deed...
because he his work with love did(=because he did his work with love...)
b omdat hij zijn werk deed met liefde...
because he his work did with love...

In root sentences adverbial PP's can precede or follow the particle:

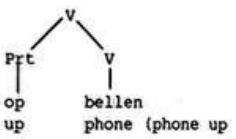
41a Hij maakte zijn werk met liefde af.
He finished his work with love.
b Hij maakte zijn werk af met liefde.
He finished his work with love.

2.4 We have shown so far, that there is complete distributional equivalence between ordinary verbs in subordinate clauses and particles in root sentences. Under the Verb Placement Hypothesis, all peculiarities of particle distribution can be reduced to peculiarities of verb distribution because the particle (in root sentences) keeps the original position of the verb. Under the Particle Movement Hypothesis, on the other hand, all similarities between verb distribution and particle distribution are completely accidental. All idiosyncrasies of verb distribution (in subordinate clauses) have to be repeated in the statement of Particle Movement. Clearly, a generalization would have been missed. I conclude, therefore, that the Verb Placement Hypothesis is correct. Dutch apparently has a root transformation of Verb Placement and no cyclical rule which moves the verb into clause final position (verb Final). In other words, the final position of the verb is basic; Dutch is a SOV language.

3.0 In this section, I want to show that verb-particle combinations are manifestations of a more general phenomenon. As a consequence, the loss of generalization which results from the Particle Movement Hypothesis becomes even more clear.

3.1 We can assume that a verb-particle combination is a compound verb, i.e. a particle or preposition Chomsky-adjoined to a verb:

42



The analysis of the preceding paragraphs is strengthened by the fact that incorporations like (42) are not limited to particles in Dutch. De Rijk(1967b) showed that under certain conditions generic NP's may be incorporated in the verb. A criterion for

such incorporations is the possibility of NP's to occur in the *aan het* -construction, a Dutch counterpart of the progressive. De Rijk claimed, that *aan het* can only be followed by an NP if it is incorporated in the verb. Thus, (43)a, is impossible. The NP is not generic, in which case is cannot be incorporated. Instead, we should have (43) b, where the object comes before the *aan het*-construction:

43a *Karel is aan het de leraar plagen.
Karel is at it the teacher tease(=Charles is teasing the teacher).
b Karel is de leraar aan het plagen.
Karel is the teacher at it tease.

But, if the object is incorporated, it follows:

44a Grace is aan het rijst koken.
Grace is at it rice cook(=Grace is cooking rice).
b Carol is aan het kip braden.
Carol is at it chicken fry(=Carol is frying chicken).

If the *aan het*-construction is a criterion, adjectives may be incorporated as well:

45 Hij is het huis aan het schoonmaken.
He is the house at it clean make(=He is cleaning the house).

The adjective *schoon* (clean) is incorporated in the verb *maken* (to make). A common feature of these incorporated items is that, in general, they cannot be separated from the verb by other constituents (in subordinate clauses). There are possibly a few exceptions to this generalization. For instance, the verb part of the compounded form may be complex by the application of Predicate Raising[12]:

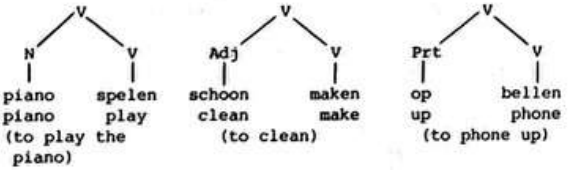
46a omdat hij de kast schoon moest maken...
because he the closet clean should make(=because he should clean the closet...)
b omdat hij piano kon spelen...
because he piano could play(=because he could play the piano...)

The incorporated adjective *schoon* (clean) and the generic NP *piano* are separated from their respective verbs by (modal) auxiliaries. Note, that the same holds for verb-particle combinations:

47 omdat Carol hem op kon bellen...
because Carol him up could phone(=because Carol could phone him up...)

Thus, we have at least the following types of compound verbs:

48



In subordinate clauses the incorporated forms are in general not separated from the verb. But in root sentences, separation is obligatory:

49a *Marie piano speelt.
Mary piano plays
b *Marie schoonmaakt.

Mary clean makes
49c *Marie opbelt.
Mary up phones

Therefore, if we assume that Dutch is a SVO (or VSO) language, we need, in addition to a rule of Particle Movement, a rule of Noun Movement, a rule of Adjective Movement, etc. For each category which can be incorporated in the verb we need a new rule. Again, the idiosyncrasies of verb distribution (in subordinate clauses) have to be repeated in the statement of these rules, because the ultimate positions of the moved categories are similar to the positions of particles. With the Verb Placement Hypothesis, we have only one category to move (the V). At the same time we can capture all generalizations of distributional similarity, because the incorporated elements are all left in the same position after Verb Placement. The VPH explains immediately why incorporated categories of different types are separated from the associated verbs in root sentences, and why this separation is obligatory.

4.0 In German and Dutch, the finite form of the verb is always the second constituent in declarative root sentences. Since we are assuming a SOV base order for Dutch, we have to formulate a transformation which moves the (finite) verb from final to second position in root sentences. The form of this rule will be discussed in the following paragraphs.

4.1 It is not immediately clear, what the rule of Verb Placement will look like. In his discussion of German word order, Roeper(1972) refers to this rule as the 'Verb-Second Transformation'. This rule 'transfers an element from final position to second position in the creation of declarative sentences'[13]. Roeper claims that this rule is ordered after Topicalization, because the reverse order would give the wrong result:[14]

51a Ich den Mann mag → Verb Second
I the man like
b Ich mag den Mann → Topicalization
I like the man
c *Den Mann ich mag
The man I like

The same might be said about Dutch. But I don't believe that the ungrammaticality of (51)c can be explained by rule ordering. In (51)c the verb is preceded by more than one NP, which has to be excluded on independent grounds. Especially in root sentences, there are several transformations with the effect of placing an element in clause initial position. These are transformations like Topicalization, Adverb Preposing and WH-Movement. The impossibility of getting more than one category before the V in declarative root sentences rests on the fact that application of one of the rules just mentioned excludes application of the others. Thus, we can never apply both Adverb Preposing and WH-Movement on the same cycle:

52a *Wanneer met een mes sneed hij de salami?
When with a knife sliced he the salami?
b *Met een mes wanneer sneed hij de salami?
With a knife when sliced he the salami?

The impossibility of having more than one category before the verb has nothing to do with the ordering of Verb Placement. Application of Verb-Second on (52)a and b gives:

53a *Wanneer sneed met een mes hij de salami?
When sliced with a knife he the salami?
b *Met een mes sneed wanneer hij de salami?
With a knife sliced when he the salami?

These sentences are still ungrammatical, which shows that the ordering of Verb-Second is not crucial here. Probably transformations like WH-Movement, Adverb Preposing, and Topicalization can be considered Complementizer Substitution Transformations in the sense of Bresnan(1970b), and Chomsky(1970). If we assume that German and Dutch have an additional Comp. Subst. Transformation of Subject Formation, we can state the effect of Verb Placement as follows:

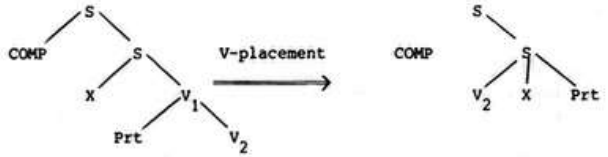
54

The V is placed in initial position in the lower S. We can now explain the ungrammaticality of (51)c by the constraint that only one Comp. Subst. Transformation can apply on each cycle. This constraint is needed on independent grounds[15]. An additional advantage of this analysis is that we do not need a special inversion rule for the formation of yes/no-questions. All we need to add to the grammar is the condition that in root sentences COMP substitution is optional if the COMP is specified as [*o*ζ, +WH][16]. In this way, we can account for different types of questions:

55a Koopt Marie een boek?
Buys Mary a book(=Does Mary buy a book?)
b Een bóek koopt Marie?
A book buys Mary
c Marie koopt een boek?
Mary buys a book?

4.2 A last problem in formulating the rule of Verb Placement has to do with the A-over-A principle. Recall that the rule applies to complex verbs in which particles or other categories are incorporated. These incorporated categories are left behind when the rule is applied. Thus we have:

56

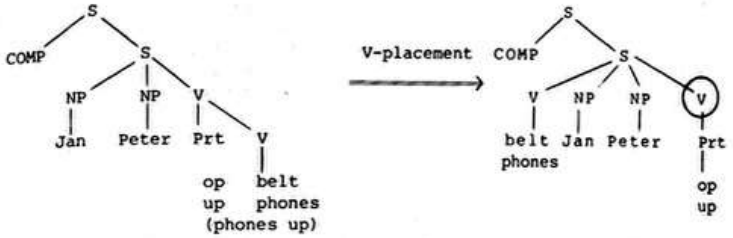


Note that the rule applies to V_2, and not to V_1. Moreover, V_1 has to be pruned. If the A-over-A principle was an absolute condition on rules, the operation shown in (56) would be impossible. But Chomsky(1970) has argued that the A-over-A principle 'does not establish an absolute prohibition against transformations that extract a phrase of type A from a more inclusive phrase of type A'. It should be possible to formulate a more complex rule which effects a non-maximal phrase of type A. This is what we have in the case of Verb Placement. This rule only applies to the tensed part of a complex verb. The finite V has to be marked by a rule of Subject-Verb Agreement. Only V_2 in (56) is marked by this rule. The limitation of Verb Placement to the tensed part of the complex V is not a d h o c . Evers(1971b) convincingly shows that the grammar of Dutch and German needs a (possibly post-lexical) rule of Predicate Raising, which maps structure of type (57)a onto (57)b:

57a

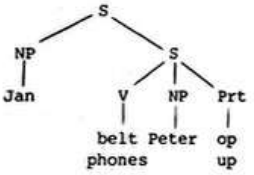
If Verb Placement applies to a structure like (57)b, it is impossible to move the topmost V. Instead, we have to move one of the lower V's. This has to be the tensed V, which is the leftmost V in Dutch and the rightmost V in German. Approximately the same happens in verb-particle constructions The leftmost finite form of the lexical verbs is moved and the V which immediately dominates this form is pruned:

58



After Pruning and Subject Formation (Complementizer Substitution) we get:

59



We can formulate Verb Placement now as (60):

60 COMP - $[_S$ X - V - Y$]_S$ - Z

S.D 1 2 3 4 5 $\xrightarrow{\text{obl.}}$ S.C. 1 3+2 Ø 4 5

This is a root transformation and the V of term 3 has to be tensed.

5.0 In the following section, some interesting data about language acquisition will be referred to. These data seem to agree with the SOV-hypothesis. Finally, some implications of the Verb Placement Hypothesis are suggested.

5.1 Some significant generalizations cannot be captured, if we do not assume that Dutch is a SOV language. This conclusion was arrived at on purely syntactic grounds. Roeper(1972) argues that there are acquisitional data that favor the hypothesis that German has SOV order in deep structure. He cites Park(1970), who noted that over 80 percent of the utterances of some German children at the two-word stage placed the object before the verb. Thus, we have utterances like [17]:

61 Kaffee trinken
Coffee drink

Auto fahren
Car drive

Noppa haben
Noppa have

These data are interesting, because as Roeper remarks, English children consistently

place the verb before the object. The utterances of Dutch children exhibit the same pattern as the examples from German. Also at the two-word stage of German (and Dutch) the verb-final order seems to be basic. Of course, these data can only be suggestive at the present stage of our knowledge about language acquisition.

5.2 The analysis of the preceding paragraphs supports the view that the word order of subordinate clauses is more basic than the order of main clauses. This is due to the existence of root transformations (cf. Emonds(1970)). Verb Placement in Dutch is a root transformation; the existence of a rule like Verb Final (Ross(1967a)) is refuted and we can probably exclude such rules on general grounds. The existence of a rule like Verb Final would force us to assume that besides a class of root transformations, there is also a class of non-root transformations, i.e. rules which apply on each cycle except on the last one.

5.3. Most transformations apply on every cycle (if their structural description is met), with probably one exception, namely the class of root transformations. As a consequence, main clauses exhibit the marked word order, while subordinate clauses have the unmarked order. How can we explain this difference? I expect that an explanation must begin with the recognition of some of the remarkable characteristics of the root transformations. Most of them are preposings of some sort, i.e. rules which move some phrase node to the position of the initial COMP. Although there are several preposing-rules, application of one of these excludes application of the others. There is no other class of transformations with this property. There is only one single rule that shares some features with root transformations. This rule is WH-Movement. If Question Word Movement is not governed by some verb, then the WH-word ends up in clause initial position. WH-Movement excludes other preposing-rules. We know from indirect questions that the movement goes in the direction of a governing verb. Several linguists have proposed an abstract question morpheme which governs the movement of WH-words to clause initial position[18]. Along these lines we might propose an abstract topicalization morpheme which governs preposing-rules. This morpheme would be a prerogative of root sentences, somehow related with the performative. If we make this morpheme part of the clause initial Complementizer, the impossibility of having more than one preposing can be explained in exactly the same way as the impossibility of moving more than one question word in indirect questions. Most root transformations are characterized in this way.

In several languages, preposings trigger a movement of the finite verb to second position. Subject Verb Inversion in English is an instance of this phenomenon. I have no explanation for these verb movements, but the rule of Verb Placement in Dutch fits quite naturally in the general pattern. Recall that Particle Movement would be a root transformation in Dutch. This is an absurdity, if we consider the general properties of root transformations. So, also on more general grounds we have to reject the Particle Movement Hypothesis, and therefore the assumption that Dutch is a VSO or SVO language.

Notes

1 This principle is stated by Ross as follows: "The order in which GAPPING operates depends on the order of elements at the time that the rule applies; if the identical elements are on left branches, GAPPING operates forward; if they are on right branches, it operates backward".
2 This is essentially the rule of Conjunction Reduction, proposed in Ross(1967b). Gapping deletes all but one occurrence of identical verbs, whereas Node Raising raises (by Chomsky-adjunction) a n y clause final identical constituent (including verbs), while the identical, lower occurrences of that constituent are deleted.
3 This rule is discussed in Koster(1972).
4 Cf. Bresnan(1970b) and Chomsky(1970).
5 Cf. Chomsky(1957). See also Fraser(1965) and Ross(1967b).
6 Cf. Ross(1967b),p.28.

7 Cf. Emonds(1970),p.237.
8 Ross(1967b),p.152.
9 In the dictionary form of Dutch verb-particle combinations, particles are on the left of the verb part. This is the form we find in subordinate clauses (cf.(17)b). In root sentences, particles are on the right as the result of a movement rule.
10 See note 3.
11 I.e. a preposition followed by a pronominal NP becomes a locative pro-form followed by a preposition.
12 This post-lexical rule Chomsky-adjoins the V of a sentence to the V of the next higher sentence. The rule is discussed by Evers(1971b). (See also the last section of this paper).
13 Roeper(1972),p.40.
14 Roeper(1972),p.63-64.
15 Already in Chomsky(1964a), it was observed that WH-movement can only be applied once to a constituent of the form S. See also Chomsky(1970).
16 The Dutch complementizer for yes/no questions is *of* (whether). *Of* has to be deleted in root sentences.
17 Roeper(1972),p.42.
18 Cf. Baker(1970).

THE ENGLISH COMITATIVE. A DOUBTFUL CASE?

W.J. Meys

In his article 'The English Comitative Case and the Concept of Deep Structure'[1] John B. Walmsley develops an argument to the effect that the comitative and the instrumental are more or less complementary manifestations of one basic case relation. He suggests that this subdivision can be based on the presence or absence of animacy, the instrumental being typically [-animate], the comitative [+animate]. Basing himself on the assumption that any (simple) deep-structure sentence may not contain more than one instance of any particular deep-structure case relation[2], he points out that the fact that the comitative and the instrumental never seem to occur together in sentences derived from a simple deep-structure sentence, can be taken as evidence that they are indeed complementary manifestations of one case relation. Thus, although we can have either a comitative or an instrumental, as in (1) and (2), we cannot have them both in one sentence, witness (3):

1	The burglar killed the householder with an accomplice.	32b
2	The burglar killed the householder with a crowbar.	
3	*The burglar killed the householder with a crowbar with an accomplice.	36

(The numbers to the right of the examples are Walmsley's). The grammatical sentence (6), by the side of sentences such as (4) and (5), however, would seem to have both a comitative and an instrumental in the deep structure:

4	*She killed her husband with her sister and a hammer.	41
5	*She and a hammar killed her husband with her sister.	42
6	She and her sister killed her husband with a hammer.	43

Walmsley argues that (6) must be derived not from one simple sentence, but must be the result of embedding one deep-structure sentence in another.

Next consider sentences (7)-(9):

7	Paul analyzed the English passive construction with Jennifer.	54
8	Jennifer helped Paul to analyze the English passive construction.	
9	Paul and Jennifer analyzed the English passive construction.	

Walmsley suggests that sentence (7) implies that Jennifer was involved in the analysis - that she h e l p e d Paul. He argues that this appears from the fact that a paraphrase with h e l p is possible, as in (8), and further through the possibility of applying a transformation to produce (9). To my mind, (7), (8), and (9) cannot all mean the same. If (7) indeed implies that Jennifer helped, or assisted Paul in his analyzing activities, then the suggestion, clearly, is that Paul was the 'chief analyzer'. However, although (9) might possibly be used in an imprecise sort of way to a state of affairs in which Paul is chief analyzer, and Jennifer his assistent, it could hardly be maintained, I think, that this is the m e a n i n g of (9) as it stands. Although with two conjoined subject nominals one of the two must of course necessarily precede the other, this need not necessarily imply that the contribution of the person referred to by the first nominal to the action expressed by the verb is more important than that of the referent of the other nominal. Thus, apart from this inevitable difference in 'focus', (10) has essentially the same meaning as (9):

10 Jennifer and Paul analyzed the English passive construction.

I can agree with Walmsley's observation that a possible reading of (7) implies that Jennifer helped Paul, but since this is not, I think, the case in (9) (or (10), for

that matter), we must conclude that, if (9) is a transform of (7), there must be an alternative interpretation of (7) which accords both Paul and Jennifer equal status as analyzers, and, therefore, as a g e n t s . Walmsley's remarks about the relation between (7) and (9) are particularly puzzling in view of what he says about (6), and about the relation between (11) and (12):

11	She came to the funeral with her brother.	6
12	She and her brother came to the funeral.	13

About these he writes (I have used my own numbering):'First of all, it is important to note why a structure such as (11) cannot be convincingly described as being derived transformationally from a conjunction of two deep-structure sentences:

13	She came	12a
14	Her brother came	12b

In our view, it is precisely the comitative function of her brother's coming - the 'accompanying'- which is missing from (12). That is, (12) permits the possibility that each attended the funeral, while making their way to it independently. It is not a complete paraphrase of (11)'. Since Walmsley argues that h e l p and a s s i s t express the comitative function with verbs not involving spatial relations in the same way in which a c c o m p a n y expresses this function when the verbs do involve spatial relations, I fail to see why Walmsley does not, apparently, consider the relation between (7) and (9) to be parallel to that holding between (11) and (12).

Having argued that comitative and instrumental are in complementary distribution, Walmsley discards the idea of treating them as different cases. Hence the 'topicalization' rules which he gives at the end ((61)-(69)) do not contain a separate comitative case, but only the instrumental, plus a feature marking for presence or absence of animacy. Presumably these markings, in combination with the locative or non-locative character of the verb are thought to be sufficient to cover the various topicalization possibilities. Thus Walmsley writes(p.505-506):'So far we have proposed as an example:

15 V + [Object] + [Agent] + [Instrument]
attack the man burglar a hammer

Bearing in mind the distinctions brought about by assigning features [±Animate] to the Instrumental, we can say that if the Instrument is to be topicalized, and if it is marked as being non-animate, then we introduce the pro-form u s e (as Lakoff has shown) to give:

16 [Agent] + use + [Instrument] + to + V + Object 65
[-Animate]
The burglar used a hammer to attack the man

If, on the other hand, the Instrument is animate, the pro-form becomes h e l p or a s s i s t , and we get from:

17 [Agent] + V + [Object] + [Instrument] 66
[+ Animate]
The burglar attacked the man with his accomplice

18 [Instrument] + help + [Agent] + to + V + [Object] 67
[+ Animate]
His accomplice helped the burglar to attack the man

These examples illustrate only what happens when 'non-locative' verbs are involved.

We saw earlier that it is important to treat verbs which are not marked for locativeness and movement separately from those which are so marked. In the latter instance, the pro-form seems to be a c c o m p a n y . A further application of Topicalization Rules will give us from:

19	[Object] + V + [Locative] + [Instrument] Harry went to the station with Jim	68
20	[Instrument] + accompany + [Object] + [Locative] Jim accompanied Harry to the station	69

(End of quote). Now I don't know whether Walmsley intends this set of rules, with examples, as an exhaustive survey of the various possibilities of first-cycle instrumental topicalization, but his remarks on p.506 seem to suggest that he does. One of the conclusions he offers there is that non-animate instrumentals cannot reach surface-structure subject position through first-cycle topicalization alone, although this can be accomplished in a following topicalization cycle, yielding, for instance, *A hammer was used by the burglar to attack the man* from *The burglar used a hammer to attack the man*. I believe that Walmsley's analysis of the case is not sufficiently refined, and that the fact that he has not reached the right kind of generalization is due to undervaluation on his part of the complicated interplay of the comitative and instrumental cases and the features [± Animate](or, rather, as we shall argue below, [± Human]), and [± Locative].

First of all, it would seem that Walmsley's suggestion that the non-animate instrumental cannot reach surface-structure subject position in the first cycle is patently incorrect. Consider (21):

21 Harry went to the station with his umbrella.

It is clear that this sentence is a direct parallel of (19), and I see no reason to bar the locative-comitative topicalization, as (22) seems a perfectly acceptable sentence:

22 His umbrella accompanied Harry to the station.

That we are right in considering *his umbrella* to be an exponent of the same case of which *Jim* is an exponent in (19) appears from:

23 *Harry went to the station with his umbrella with John.

But this does not mean that we accept Walmsley's theory that *Jim* in (19), and therefore also *umbrella* in (21) are instrumentals. Walmsley's analysis seems to suggest that 'true' - i.e. non-comitative - instrumentals do not occur with locative verbs. But this is not correct, witness (24):

24 Harry went to the station by car.

Walmsley himself points out (p.493) that there is no one-to-one relation between deep-structure cases and surface-structure case-markers; in other words, one and the same underlying case relation may be expounded by different prepositions and affixes. I would suggest that *by car* in (24) is a 'true' instrumental; it expresses the means by which Harry reached the station. It could not be a locative, as there is already one (*to the station*), nor an agent, as cars are inanimate, and agents 'typically animate'[3]. Notice now that *by car* could not be a comitative either, as the comitative topicalization does not work here (cf. (25)):

25 *His car accompanied Harry to the station.

(25) is clearly a rather odd sentence; one could force some kind of comitative reading on it, but it is clear that that reading does not correspond to the normal interpretation of (24). Further evidence that *by car* is not comitative derives from the fact that it can be combined with a comitative without yielding an ungrammatical sentence, witness (26) and (27):

26 Harry went to the station by car with John.
27 Harry went to the station by car with his umbrella.

Since the non-animate 'true' instrumental *by car* cannot reach surface-structure subject position through first-cycle topicalization, it seems we must use the normal pattern for non-animate instrumental topicalization, as in (16), yielding (28) from (24):

28 Harry used his car to go to the station.

There seems to be another option, however, due, apparently, to the locative character of the verb, roughly on a par with (20):

29 His car took Harry to the station.

Another of Walmsley's conclusions, namely that topicalization with u s e only applies to non-animate instrumentals (cf. (15), (16)), does not seem to be quite correct either. Thus I would say that *his soldiers* in (30) is a true, animate instrumental:

30 Napoleon attacked Moscow with his best soldiers.

Both the u s e and the h e l p topicalization produce perfectly acceptable sentences; cf. (31) and (32):

31 Napoleon used his best soldiers to attack Moscow.
32 His best soldiers helped Napoleon to attack Moscow.

I believe that the comitative and what I have called the 'true' instrumental sometimes do seem to coalesce into one case-relation when combined with non-locative verbs - which accounts for their mutual incompatibility in (3), (4), (5), etc. When they are construed with locative verbs, however, the very fact that locative verbs have an aspect in common with the comitative, seems to pull them apart, as it were, forcing us to recognize them as two case-relations which can occur together, as in (26) and (27).

The picture thus turns out to be a lot more complicated than Walmsley's analysis suggests. (19) in particular can hardly be called an adequate representation of the various possible combinations of comitatives, 'true' instrumentals, and locative verbs. The feature [± Animate] is a further complicating factor. First of all, as Huddleston has already pointed out [4], the choice of the feature [± Animate] from among the hierarchically ordered triplet [± Living], [± Animate], [± Human], seems a rather arbitrary decision. As far as the present argument is concerned, it appears that animacy or non-animacy does not always determine which topicalization can be chosen, contrary to Walmsley's claim - witness (30)-(32). Thus, depending on whether one interprets *horse* in (33) as a 'true' instrumental or a comitative, a number of possible topicalizations suggest themselves:

33 Harry went to the station with/on his horse.
34 His horse accompanied Harry to the station. (cf. (20))
35 Harry used his horse to go to the station. (cf. (16),(31))
36 His horse took Harry to the station. (cf. (29))

In fact, only (37) seems to be ruled out (although it is certainly not an unintelligible sentence):

37 ?His horse helped Harry to go to the station.

The difficulty here seems to be that h e l p implies active cooperation, i.e. volition, and since we are wont to ascribe volition - free will - to human beings only, what makes (32) acceptable, as opposed to (37), is the fact that *soldiers* in the former is [+Human], and *horse* in the latter is not. It appears that 'true' instrumentals in combination with locative verbs can thus be [+Animate], but not [+Human]. A simple common-sense explanation for this might be that while it is quite possible to use a person as a means to an end in the figurative sense (so, as in (30)-(32) with non-locative verbs), it seems less feasible, except perhaps in some rather strained cases, to use a person to go from A to B in a literal sense[5]. Notice that Lakoff's 'do so' test [6] does not provide a reliable 'discovery procedure' for identifying case relations. Cf.:

38 Harry went to the station with Jim more often than Peter did so with Mary.
(Jim, Mary=comitative, +human)
39 Harry went to the station with his umbrella more often than Peter did so with his walking-stick.
(umbrella, walking-stick=comitative, -human)
40 Harry went to the station by car more often that Peter did so by bike.
(car, bike=comitative, -human)

The test works when the exponents of the case-relations are marked the same way as to animacy, as in (41):

41 *Harry went to the station by car more often than Peter did so with his umbrella.
(car=instrumental, -human; umbrella=comitative, -human)

Since there don't seem to be 'true' instrumentals that are [+Human], there is no such 'pure' test available to establish the comitative character for nominals marked [+Human]. A 'hybrid' test does give the required result, as in (42):

42 *Harry went to the station by bike more often than Peter did so with Mary.
(bike=instrumental, -human; Mary=comitative, +human)

But the following combination is also anomalous:

43 Harry went to the station with Jim more often than Peter did so with his umbrella.
(Jim=comitative, +human; umbrella=comitative, -human)

It seems, then, that the anomaly derives from the fact that a nominal marked [+Human] is contrasted with one marked [-Human], in (43), and since this also plays a role in (42), it renders the 'do so' test useless, in that case, as a way to establish whether the nominals *bike* and *Mary* are exponents of different case relations. In general, it wouls seem, the human/non-human contrast is an interference factor which may not have much to do with case relations at all. We normally use [+Human] and [-Human] nominals in similar functions quite happily without really being aware of it; only when they are used togther, or contrasted, as in the above examples, we become aware of this; their combined use in the same function usually has a somewhat funny, striking effect[7]; witness (44):

44 !?Paul had more success with Jennifer than he had with the English passive construction.

Two more points in Walmsley's article call for some critical comments, I think. The

first one concerns the function of topicalization processes and the idea of consecutive cycles of topicalization rules. On p.506 Walmsley writes that 'having gone through one cycle of Topicalization Rules sentences containing Instrumentals can go through further, more general cycles which may be applied equally to other sentences. It is this later set of rules which can move what has so far been designated the surface-structure object to the subject position, to give:

45 A hammer was used by the burglar... 70

and, of course:

46 Harry was accompanied by Jim... 71

(End of quote). Notice that the passive can thus apply both as a first cycle topicalization and as a topicalization in a later 'more general' cycle. In this connection it is perhaps relevant to refer to what is said in Chomsky(1971) concerning the status of the passive in Fillmore's case theory: 'The grammar then contains two categories of rules. Rules of category I map case systems into phrase-markers.(...) The rules of category II are transformations which generate derivations in the usual way.(...) Thus Fillmore takes the passive rule to be not a transformation of category II, but rather a rule of category I. It would be quite consistent with his theory of case grammar to regard passive as a transformation, rather than a rule mapping case structure onto phrase-markers. There are clear emperical differences between these two proposals concerning the status of the passive. I think that Fillmore's proposal is incorrect, but this is a matter of choice of grammar, not choice of linguistic theory'(p.38). Walmsley talks about the verbs (help, accompany) involved in his first cycle topicalizations of the various kinds of instrumentals as 'lexicalizations' of the underlying case relations. He also presents the passive, which, for instance, turns *The burglar attacked the man* into *The man was attacked by the burglar* as such a first-cycle topicalization. We must assume then, that the first topicalization cycle not only imposes sequential ordering on the underlying order-free representation, but also introduces lexical items in place of underlying semantic elements, and hence, that the rules involved must be rules of category I in Chomsky's sense. It follows that the rule which converts (16) into (45), and (20) into (46) answers Chomsky's description of category II rules, so that the passive in Walmsley's approach is both a rule of category I and of category II. Clearly the operation of category II passivization is dependent on similar case relations as those which trigger off category I passivization. That is, first-cycle topicalizations involving *help, use, accompany* destroy the original case-relations, or so it seems, for category II passivization applies to the resultant strings, such as *the burglar used a hammer, his accomplice helped the burglar, Jim accompanied Harry*, as if they are all Agent-Verb-Object (or Dative) strings like those to which category I passivization applies. Now if the function of topicalization is to 'zoom in' on some case-relation in particular, second-cycle passivization converting (16) into (45) makes sense as a way of focussing on the original underlying instrumental in an even more effective manner than first-cycle topicalization alone. But if passivization is taken to be a topicalization of Object or Dative, it appears that the second-cycle topicalization of *Harry* in (46), by means of the passive, cancels out, or at least counteracts, the first-cycle topicalization of the (comitative) Instrumental (*Jim*) in (20). It seems somewhat difficult to reconcile these two conflicting operations from a functional point of view, unless one would want to entertain the rather unlikely proposition that we have here some kind of built-in language-mechanism, as it were, which allows native speakers to change their mind about what they want to focus on in the middle of the sentence-generating process.

A final remark. The idea of considering h e l p and u s e constructions topicalizations, and the verbs concerned lexicalizations of case relations (thus inverting the derivational relationship assumed in Lakoff(1967), is appealing, in view of the fact that the instrumental (in Walmsley's sense) seemed to lack the possibility of

being topicalized in ways similar to those in which agent, and object could be topicalized. His suggestion to similarly regard a c c o m p a n y constructions as topicalizations of (his) instrumentals in sentences with locative verbs, raises a serious problem, however. Notice that the h e l p t o V and the u s e t o V constructions preserve the underlying verbs: *the burglar used a hammer to attack/hit/clobber/kill*, etc.; *his accomplice helped the burglar to attack/hit/clobber/kill*, etc. The a c c o m p a n y -topicalization, on the other hand, destroys the underlying verb. This does not seem to matter much in the case of a neutral verb like *go*. But what happens if the underlying verb is *come, drive, run, stroll, race*, or what have you? I think we must conclude that Walmsley's argument concerning a c c o m p a n y is entirely ad hoc, made to fit the neutral underlying verb *go* and no other. The core of the argument could be maintained, if we assume that the normal topicalization of the comitative case relation results in constructions such as *Jim accompanied Harry on/during his walk/stroll/drive to the station*, or perhaps constructions like *Jim accompanied Harry in walking/strolling/driving to the station* (cf. Walmsley's (16) and (18) on p.495), and mark (20) as an idiosyncratic comitative topicalization of the verb *go*[8]. Notice, incidentally, that Walmsley's approach corresponds in an interesting way to the remarks in Gruber(1970), about 'kill' and 'cause to die'. Like Fodor (1970), Gruber argues against the usual generative semantics derivation of 'kill' from 'cause to die' (as in, for instance, Lakoff(1970b)), but for different, and, I think, sounder reasons than Fodor's. He argues that in an approach in which post-lexical syntactic structure is seen as largely determined by initial ordering of elements at the pre-lexical level, notions such as Theme (roughly Fillmore's Object case), Instrument, and in particular, Agent are indispensable. But, if this is so, he argues, it is clear that the assumption of a Causative Agent node in the deep structure is enough to make any underlying verb into a causative, without the extra machinery involved in embedding the underlying verb in a higher clause with a c a u s e -predicate. Thus both 'kill' and 'die' could be characterized (roughly) in the lexicon as involving an underlying semantic verb, say DIE, which can be constructed with either a Causative Agent and a Theme, or with a Theme only. In the former case the Causative Agent would end up as the surface subject, and the Theme as surface object (barring, of course, further structural changes such as passive), and the phonological form associated with the verb would then be /kil/. In the absence of an Agent (which, in Gruber's representation covers both the Causative and Permissive Agent, and the Instrumental, for reasons akin to those put forward in Huddleston(1970) - cf.note 3) rules similar to those of Fillmore would see to it that the Theme becomes surface-structure subject, and the phonological form associated with the verb would then become /dai/. Contrasting this approach with the generative semantics one, Gruber writes: 'One possibility that must be considered is that the Agent in the prelexical structure is actually the subject of some verb such as c a u s e . [...] This would solve no problem whatsoever; since we would subsequently have to ask of what nature the subjects of c a u s e and l e t , or their equivalents, are. We decided previously that these subjects were purely Agent, (Permissive or Causative). Hence the question would revolve back on itself. Let us assume, however, that we could set up c a u s e and l e t or such a verb in the prelexical structure as unique unanalyzed verbs. The two types of Agent would be the subjects of these verbs, whereas the rest of the sentence would be some sort of complement to them. It would not be clear, however, how this would differ from assuming that the Agents were simply nodes as generated above. In fact, there does not seem to be any advantage to saying that a verb such as c a u s e or l e t underlies these sentences unless such verbs could be con ructed without the use of the notion Agent'.(Gruber(1970), p.184-185)[9]. If we now relate Gruber's argument to Walmsley's line of thinking, the natural solution for the k i l l - c a u s e t o d i e issue seems to be to similarly assume that the relation of k i l l to c a u s e t o d i e should in fact be inverted, as in the case of u s e X t o s l i c e Y versus s l i c e Y w i t h X . We can then say that c a u s e in c a u s e t o V constructions is a lexicalization (and topicalization) of the underlying Agent case, in the same way in which u s e and h e l p can be looked upon as lexicalizations of the Instrumental case, and a c c o m p a n y as a

topicalization of the Comitative.

Department of Applied Linguistics
Free University
Amsterdam

Notes

1 'The English Comitative Case and the Concept of Deep Structure', Foundations of Language 7(1971), p.493-507.

2 Cf. Fillmore(1968a),p.21, note 26.

3 Huddleston(1970) argues - convincingly, I think - that there are reasons to assume what he calls a Causer Case to deal with non-animate agents, of which 'wind' in (c) is an exponent:
a John opened the door.
b The key opened the door.
c The wind opened the door.
In Fillmore(1968a) 'John' in (a) is considered Agent, and both 'key' and 'wind' in (b) and (c) Instrumentals. 'But this overlooks the fact', Huddleston points out, 'that (b) presupposes some unexpressed Agentive participant, whereas (c) does not'. The difference between 'John' in (a) and 'wind' in (c) is that the former implies intention, volition, and the latter does not. (Cf. our remark concerning soldiers and horse). Hence'John' could be considered as an exponent both of the Causer and the Agentive case, whereas 'wind' is an exponent of the Causer case only.

4 Huddleston(1970), p.504.

5 Notice the following incomplete paradigm:
a Harry went to the station with/(through?) John.
b John accompanied Harry to the station.
c ?Harry used John to go to the station.
d John took Harry to the station.
e John helped Harry to go to the station.
The comitative reading of (a) is all-right, and so is the topicalization based on it, as in (b). The 'true' instrumental reading of (a) does not seem to be possible, or rather, there does not seem to be a proper surface-structure for the instrumental reading. Instead of *through* we could use *with the aid of*, but that is the same as *with John's aid*, in which it is clear that *aid* is the instrument, not *John* himself. (c) is, therefore, not surprisingly, rather odd. (d) and (e) are again perfectly acceptable, but that may be due to the fact that these have the original (putative) instrumental as human agent/subject again, due to the fact that any [+Human]nominal in surface-subject position is bound to be interpreted as agent, because agents are 'typically human'(rather than animate - cf. note 3).

6 Cf. Lakoff(1967), p. 21-22.

7 If the conjoined occurrence of [+Human] and [-Human] nominals in similar functions always has this effect of a certain kind of anomaly, this would seem to cast some doubt on the strength of Fillmore's argument that only nominals representing the same c a s e can be conjoined, for which he adduces sentence (a) as evidence (Fillmore(1968a),p.22):
a *John and a hammer broke the window.
Dougherty, on the other hand, considers sentences such as (b) and (c), - in which words such as *both...and* and *once with...and twice by* create some 'distance' between the two nominals - well-formed.(Cf. Dougherty(1970),p.510).
b Both the key and the locksmith opened the door.
c The door was opened once with a key and twice by the locksmith.

8 Notice that the topicalization of 'true' instrumentals in sentences with locative verbs which I suggested above (cf. (29) and (36)), compares rather favourably, in fact, with Walmsley's a c c o m p a n y -rule, as far as ad-hocness is concerned. Thus *the car drove John to the station, the horse raced John to the station*, etc., are quite acceptable, and if one assumes that they are topicalizations of 'true' instrumentals, they can at least be said to preserve the full semantic content of

the deep-structure verb.

9 Gruber derives another argument against the generative semantics treatment of causative verbs from the fact that causative verbs and analytic causative constructions behave differently with respect to reflexivization and pronominalization. Cf. a - d:

a John caused the ball to roll to him.
b *John caused the ball to roll to himself.
c *John rolled the ball to him. (him=John)
d John rolled the ball to himself.

About these Gruber remarks: '...the restriction that reflexivization occurs only within one clause suggests that it might ordinarily apply before an embedded sentence is made a part of and indistinguishable from the main clause. Hence we would be setting up our basic verb as necessarily an intrinsic part of the would-be embedded clause. Again this approaches setting up the C-Agent and the P-Agent as nodes from the start, generating them directly in the constituent structure' (op. cit., p.186).

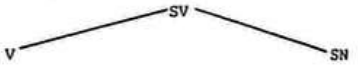
REMARQUES SUR L'INTRODUCTION DE SYMBOLES COMPLEXES

Pieter Th. van Reenen

Introduction

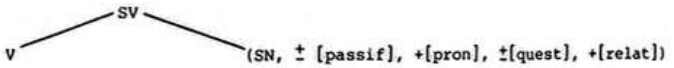
Les arguments avancés dans Chomsky(1967b) ont montré la nécessité de remplacer, dans la partie syntagmatique de la base, la notion de catégorie par celle de trait distinctif, ou marqueur binaire, dont les combinaisons constituent des symboles complexes. Vers la même époque, ou un peu avant, plusieurs linguistes se sont occupés du problème des symboles complexes, en signalant des phénomènes nécessitant, à leur avis, l'introduction de ces marqueurs comme symboles non terminaux. Parmi les différentes propositions, nous nous concentrerons sur celle faite par Maurice Gross. Ce linguiste a souligné à deux reprises - et indépendamment, à ce qu'il paraît, de Chomsky(1967b) - la nécessité d'introduire des symboles complexes: la première fois dans sa 'Grammaire transformationnelle du français'(Gross(1968)), la seconde fois dans ses 'Remarques sur la notion d'objet direct en français'(Gross(1969)). L'argumentation dont se sert Gross dans ces deux publications est presque identique. Comme elle est très concise, nous reproduirons intégralement les deux passages où il en est question. D'abord nous présenterons le passage provenant de Gross(1969). Après un examen de la notion de complément direct tel qu'il se présente dans la structure superficielle, Gross (p.71-72) constate qu'il est 'nécessaire de restreindre l'application des transformations 'passif', 'pronominalisation', 'question' et 'relativation' par rapport au sous-arbre (1), puisque certaines de ces transformations 'peuvent être interdites, selon le verbe V'[1]:

1



Suit alors le passage en question:"plusieurs solutions sont a priori envisageables pour parvenir à ce résultat. On pourrait différencier les cas au moyen de structures d'arbres variées. Chaque transformation serait définie sur une sous-structure particulière et les verbes seraient classés au moyen des sous-structures qui leur correspondent. Une telle approche conduirait à des structures de complément extrêmement complexes, et qu'il n'est pas possible de justifier dans l'état actuel des connaissances. On pourrait utiliser différentes catégories indiquées par des symboles. De même que nous avons opposé un SN (objet direct) à un Dt on pourrait créer autant de nouveaux symboles qu'il existe de configurations d'applications de nos quatre transformations. L'inconvénient majeur de cette solution est qu'elle masquerait le fait qu'il existe toujours des propriétés transformationnelles communes aux différents cas. Une solution qui, à notre avis, mériterait une attention particulière consiste à utiliser des symboles SN dits 'complexes', c'est-à-dire représentants des ensembles de traits distinctifs syntaxiques. Dans la méthode de description de Chomsky [3] (Chomsky 1965, PvR), ce mécanisme n'est pas autorisé, seuls les symboles TERMINAUX complexes sont utilisés. Ainsi Les SN compléments associés respectivement à *valoir*, dans *Ce livre vaut les trois francs que j'ai dû payer pour pouvoir l'emporter* et à *passer* dans *Il a passé la nuit à travailler* pourraient être représentés par les expressions:
(SN, -[passif], +[pronominalisation], +[question], +[relativation])
(SN, +[passif], +[pronominalisation], -[question], +[relativation]);
respectivement". Voilà le premier passage que nous citons. En ce qui concerne la dernière partie, les deux exemples doivent se rapporter à un sous-arbre comme (2). Du moins il nous est impossible de les interpréter autrement.

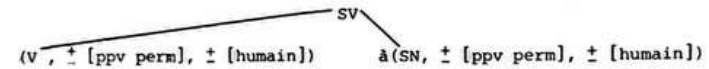
2



Le second passage que nous citerons provient de Gross(1968),p.171-172):"La plus grande

partie de ces données (=les données discutées par Gross dans sa 'Grammaire', PvR) peut être transcrite en termes de grammaire générative, cependant cette formalisation demanderait l'utilisation répétée d'un mécanisme qui nous semble très peu naturel. On peut aisément se rendre compte qu'étant donnés le nombre et la variété des propriétés, les arbres et leurs étiquettes ne décrivent pas les phénomènes de manière adéquate. On pourrait néanmoins accroître énormement la taille du vocabulaire auxiliaire, mais alors la similitude que bon nombre des symboles présentent, serait complètement masquée. L'utilisation des marqueurs binaires attachés aux symboles terminaux et éventuellement, aux non terminaux, semble être une solution beaucoup plus naturelle". Suit encore une exemple, servant cette fois à signaler une difficulté censée inhérente à l'emploi de symboles complexes:"Cependant leur utilisation systématique pose des problèmes délicats; un exemple typique est le suivant: la réductibilité d'un complément 'à N' à une 'ppv' est une propriété liée à la fois au verbe et au complément, c'est-à-dire que tous deux doivent être marqués en vue de l'application de transformations". Jusqu'ici le second passage de Gross. Quant à l'exemple, nous ne sommes pas tout à fait sûr de l'avoir bien compris. Pourtant, en le représentant comme (3), nous croyons ne pas avoir modifié l'intention de Gross:

3



Dans les deux paragraphes suivants, nous discuterons les passages que nous venons d'emprunter à Gross(1968) et (1969). Dans le premier paragraphe nous essayerons d'expliciter l'argumentation de Gross, en signalant plusieurs lacunes. Dans le second paragraphe nous examinerons les exemples. Nous espérons montrer qu'ils font douter de la valeur de l'argumentation de Gross.

Considérations a priori

Comme il apparait des passages cités, l'argumentation de Gross est peu substantielle. C'est la d'ailleurs une caractéristique générale de Gross(1968), ce qui n'empêche pas qu'une fois complétés, les arguments s'avèrent, le plus souvent, très solides (cf. notre compte rendu de Gross(1968):Van Reenen(1973)). D'ailleurs, quant au problème qui nous occupe, remarquons que Gross s'exprime avec toute la prudence nécessaire. Il semble presenter son point de vue comme une suggestion. En outre, à deux reprises, il signale des difficultés allant de pair avec l'introduction des marqueurs binaires (voir ci-dessus et Gross(1969),p.72). C'est ce qu'on ne saurait oublier lorsque, dans la suite, nous examinerons son argumentation. Dans ces deux publications, Gross s'occupe principalament des différents compléments, et de leurs rapports avec le verbe. Pourtant, comme l'argumentation de Gross vise à un but plus général, il doit être permis de la placer et de la discuter dans un cadre embrassant les propriétés syntaxiques en général.

Voici un résumé de l'argumentation de Gross: ayant observé un grand nombre et une grande variété de propriétés syntaxiques caractéristiques des verbes français et de leurs compléments, Gross juge qu'il sera nécessaire d'élargir les possibilités de description offertes par Chomsky(1965). Il affirme qu'a priori on pourrait effectuer cet élargissement de trois manières différentes:

4 en compliquant la structure des (sous-)arbres, sans augmenter le nombre des différentes catégories;
5 en augmentant le nombre des différentes catégories sans compliquer la structure des sous-arbres;
6 en introduisant, dans la partie syntagmatique, le principe nouveau des margueurs binaires comme symboles non pas exclusivement terminaux.

Nous croyons que pour Gross - sans que celui-ci le dise explicitement -(4),(5)et (6) constituent autant de solutions qui s'excluent mutuellement[2]. Mais cela ne saurait être

le cas: comme (6) est seul à introduire un principe nouveau, le choix sera entre d'une part (6) et d'autre part n ' i m p o r t e q u e l l e c o m b i n a i s o n de (4) et de (5). Comparer (6) exclusivement à (4), ou exclusivement à (5), c'est s'occuper des deux cas limites. Par conséquent, ce que Gross doit prouver c'est que (6) est préférable à n'importe quelle combinaison de (4) et de (5). Voyons ensuite les raisons de Gross pour ne pas accepter (4) et (5). Par rapport à (4), il formule les remarques suivantes:

4a Les arbres et leurs étiquettes ne décrivent pas les phénomènes linguistiques, qui sont nombreux et variés, de manière adéquate(1968), et cette solution conduirait a des structures (de complément) extrêmement complexes(1969).

4b Pour cela, il faut considérer (4) comme faisant appel à un mécanisme très peu naturel(1968), et injustifiable dans l'état actuel des connaissances(1969).

Quant à (5) Gross remarque:

5a Cette solution masquerait complètement la similitude presentée par bon nombre de symboles(1968); elle masquerait le fait qu'il existe des propriétés transformationnelles communes aux différents (sous-)arbres ainsi créés(1969).

Essayons de déterminer la portée de ces remarques. Nous avons distingué (4a) et (4b) pour deux raisons. D'abord, parce que (4b) semble servir comme renforcement de (4a) censé insuffisant. Mais surtout, parce que nous croyons la première partie de (4b) superflue, et la seconde partie incorrecte. En effet, la deuxième partie de (4b),loin de constituer un argument contre (4), nous semble plutôt un argument contre (6), puisque c'est (6) - et non pas (4) - qui fait appel à un principe nouveau, qu'il faut justifier pour cela.Autrement dit nous ne voyons pas pourquoi il faut interpréter 'extrêmement complexe' comme 'trop complexe'= 'injustifiable', tant qu'un critère indiquant le passage - sans doute graduel - du premier aux seconds fait défaut. En ce qui concerne la première partie de (4b), nous croyons qu'elle n'ajoute pas d'éléments nouveaux à (4a). En tout cas, il nous semble exclu de considérer 'le mécanisme très peu naturel' de Gross comme l'équivalent du 'caractère techniquement artificiel' dont il est question chez Chomsky(1967b),p.208). Chez Chomsky, le caractère techniquement artificiel se rapporte au fait que dans 'Aspects' 'lexical categories were interpreted both as categories of the base (N, V, etc.) and as features in the lexicon (+N, +V, etc.)' et où la présence du + (ou du -) devant le N ou le V indique donc qu'il s'agit non pas d'une catégorie mais d'une marqueur (feature), tandisque Gross ne formule pas d'opinion sur ce point. D'ailleurs, les exemples de Gross montrent toujours implicitement le caractère 'mixte' de 'Aspects': non pas (+SN, ±marqueur), mais (SN, ±marqueur)(cf.ci-dessus). Quant à (4a), affirmant le caractère inadéquat et extrêmement complexe des structure générées par la partie syntagmatique de (4), nous croyons devoir interpréter les termes 'inadéquat' et 'extrêmement complexe' comme 'moins adéquat' et 'plus complexe', de sorte qu'il faut comprendre que 'la partie syntagmatique de (4) sera moins adéquat et plus complexe que celle de (6)'- toutes choses (=lexique et partie transformationnelle) égales d'ailleurs. Finalement, quant à (5) - où la formulation de 1969 ne semble servir qu'à préciser celle de 1968 - l'implication sera sans doute que 'la partie transformationnelle de (5) sera plus compliquée (c'est là notre interprétation du terme 'masquer') que ne le serait celle de (6)'- toutes choses (=partie syntagmatique et lexique) égales d'ailleurs. Pourtant, ce ne sera certainement pas l'intention de Gross de poser le problème dans ces termes, puisque organiser la partie syntagmatique ou transformationnelle en termes de (4) ou de (5), c'est imposer à la fois une certaine organisation aux parties correspondantes de la composante syntaxique. D'autre part, comme nous l'avons observé, il ne suffit pas de comparer d'abord (6) et (4), puis (6) et (5), mais qu'il faut comparer (6) avec n'importe quelle combinaison de (4) et de (5). Ainsi nous croyons devoir conclure que l'argumentation de Gross ne peut être valable que dans la mesure où elle met en lumière la plus grande complexité d'une composante syntaxique sans symboles complexes non terminaux par rapport à une composante syntaxique où de tels symboles peuvent être introduits avec plus de liberté. Si l'argumentation de Gross montre des lacunes sérieuses, il ne semble pas possible de conclure qu'elle soit incorrecte a priori. En revanche, la question de savoir si Gross a implicitement conçu le cadre de son argumentation comme nous venons de le faire, doit être examinée à l'aide des exemples qu'il a fournis dans les passages que nous avons

reproduits.

Discussion des exemples

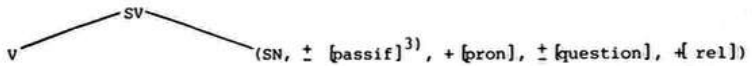
Ce n'est pas qu'après avoir déterminé les limites à l'intérieur desquelles il faut placer l'argumentation de Gross qu'on peut essayer de formuler les conditions qui doivent être remplies pour justifier l'introduction non terminale des marqueurs binaires. Nous croyons que les propriétés examinées par Gross doivent être de nature à satisfaire à (7) et à (8):

7 Les propriétés, pour autant qu'elles constituent des marqueurs binaires, doivent être assignées nécessairement, ou du moins préférablement, à des noeuds non terminaux.

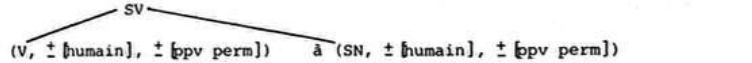
8 Sous tous les autres rapports, ces propriétés doivent respecter la méthode de description de Chomsky(1965).

Or, il ne nous semble pas exclu que, parmi les propriétés mentionnées ou examinées dans Gross(1968) et (1969), il y en ait plusieurs satisfaisant aux conditons (7) et (8). Cependant, malgré bien des efforts, nous n'avons pas réussi à en découvrir. C'est que, en les examinant, nous avons constaté qu'en satisfaisant à (7) elles violent (8) et inversement. En violant (8), elles semblent présupposer l'existence de transformations contribuant à l'interprétation sémantique, ou celle de règles de reécriture dépendantes du contexte, ou peut-être la possibilité de l'insertion lexicale préterminale. Certaines propriétés semblent s'exclure mutuellement. Comme les exemples de Gross, reproduits ci-dessus, ne constituent pas une exception, nous les analyserons en essayant d'illustrer les problèmes que nous venons de signaler. A cette fin, nous reproduirons de nouveau les sous-arbres (2) et (3):

2



3



Expliquons d'abord ce que Gross entend par les transformations (ou plutôt séries de transformations) [pronominalisation], [question] et [relativation] dont l'application ou la non-application dépend du + ou du - précédant le marqueur correspondant. Prenons d'abord [pronominalisation], processus discuté surtout dans Gross(1968),p.50-53, 168, note 6). Dans les phrases (9) est illustré le fonctionnement de deux transformations (il y en a d'autres) faisant partie du processus de la pronominalisation:

9a Le livre vaut trois francs
 b *Il vaut les
 c Il les vaut

La transformation responsable du passage de la structure de (9a) à celle de (9b) s'appelle chez Gross [substitution]. Cette transformation ne s'applique que dans certaines conditions (globalement: la répétition d'un nom déterminé). La transformation responsable du passage de (9b) à celle de (9c) s'appelle chex Gross [ppv perm] (cf. aussi (3) ci-dessus). Elle est très souvent obligatoire après [substitution]. Evidemment, elle s'applique aussi lorsqu'un pronom personnel, élément nominal du lexique, est inséré dans certaines positions de complément. Il nous semble que dans (2) ci-dessus, Gross parle de [ppv perm], plutôt que de [substitution].[4] Dans Gross(1968) et (1969) on ne trouve que très peu d'indications à propos de [question] et de [relativation]. Nous essayerons de nous faire une idée de leur fonctionnement à l'aide du processus de [pronominalisation] que nous venons de décrire. Nous emprunterons aussi des idées à Chomsky (1962) et (1964a), et à Langacker(1965). Par [question]Gross(1969),p.67 entend, parmi d'autres processus, celui de la dérivation d'une structure correspondante à (10c) à partir de celle correspondante à (10a):

10a Le livre vaut trois francs
b *Le livre vaut que?
c Que vaut le livre?

Cependant, comme plus haut, il faut discerner sans aucun doute (au moins) deux transformations: l'une responsable du passage de (10a) à (10b), que nous appellerons [question substitution], et l'autre responsable du passage de (10b) à (10c) que nous appellerons [question perm]. La dernière transformation concernera plusieurs types de compléments. Finalement, considérons [relativation] opérant dans (11):

11a Voilà les trois francs. Le livre vaut les trois francs
b *Voilà les trois francs que les trois francs le livre vaut
c Voilà les trois francs que le livre vaut

Sans aucun doute, il faut discerner une transformation [relativation perm] responsable du passage de (11a) à (11b). Il y aura aussi une transformation [ellipse] pour rendre compte du passage de (11b) à (11c). Il se peut d'ailleurs que, selon Gross, le fonctionnement de [relativation] doive être conçu comme partiellement identique à celui de [question]. La condition d'identité entre deux Ns (cf. Gross(1968),p.104) rendrait compte de la différence entre les deux processus. Toutefois, il est possible que Gross considère les deux processus [question] et [relativation] comme tout à fait indépendants[5].

Les remarques précédentes permettent d'observer un certain nombre de problèmes. Tout d'abord il nous est impossible de voir comment il faut interpréter l'exemple *valoir* (cf. ci-dessus) où le SN suivant *valoir* subit et [ppv perm], et [question] et [relativation]. Par contre, quand on conçoit le marqueur + [question] comme point de départ pour soit la formation d'une question, soit celle d'une relative (cf. par exemple Langacker (1965)), il faut observer que + [relativation] est superflue. D'ailleurs dans ce cas le marqueur - [question] à coté du SN de *passer* contiendrait une contradiction, puisque + [relativation] présupposerait + [question]. Du reste, nous avons déjà vu que Gross entend par [question] la formation d'une véritable question, et non pas celle d'une phrase relative. Par conséquent tous les efforts pour placer ces exemples à l'intérieur du cadre de Chomsky(1965) aboutissent à des contradictions. Un autre problème se pose quand on se demande comment il faut introduire des marqueurs comme ± [ppv perm] et ± [question perm]. Les introduire syntagmatiquement à coté des SNs impliquerait la formation d'indicateurs syntagmatiques incorrects, puisque le SN du sujet ne doit pas recevoir des indications. Pour prévenir l'introduction de ces marqueurs auprès du SN sujet, il faudrait faire appel à des règles dépendantes du contexte. Seulement, dans Chomsky(1965), de telles règles ne sont pas utilisées au niveau du SN[6]. Examinons maintenant les marqueurs ± [substitution] et ± [question substitution]. Le premier dépend, comme nous l'avons vu, de la répétition d'un nom déterminé. Le remplacement du nom par un élément [+PRON] concernera donc, d'après Gross, non pas le SN mais le N. A partir de ce moment, l'élément [+PRON] ne se distinguera plus de l'élément pronominal inséré lexicalement lorsqu'il est question d'un pronom personnel non-anaphorique. Mais alors pourquoi attribuer ± [substitution] (et ± [ppv perm], et [± humain]) au SN? Une telle façon de procéder ne serait justifiée que dans le cas où certains éléments lexicaux devraient être inséré au niveau p r é - terminal. Comme on sait, pareille procédure n'est pas permise dans Chomsky(1965). Des remarques analogues se laissaraient formuler à propos de ± [question substitution] (combinée, oui ou non, avec le processus de [relativation]). Finalement, quant à ± [question substitution], notons que considérer ce marqueur comme une indication transformationnelle, présuppose l'existence de transformations affectant l'interprétation sémantique des structures. De nouveau il faut remarquer qu'une telle convention n'est pas permise dans Chomsky(1965).

Dans la mesure où les exemples de Gross
a sont contradictoires ou
b présupposent la possibilité de l'insertion lexicale préterminale ou

c font appel à des règles dépendant du contexte ou
d font appel à des transformations influençant le sens des phrases, il faut conclure que ces exemples, en ne respectant la méthode de description de Chomsky(1965), violent la condition (8). Cependant, à mesure qu'on les replace dans le cadre de Chomsky (1965), il devient de plus en plus difficile de trouver des arguments pour satisfaire à la nécessité d'assigner les marqueurs à des noeuds non terminaux comme il est exigé d'après (7). En effet, d'une façon générale, il paraît que, pour pouvoir satisfaire à (7), les exemples de Gross doivent violer (8).

Conclusion

Nous terminons cet article en concluant que l'argumentation de Gross ne saurait servir pour démontrer l'insuffisance de la méthode de description offerte dans Chomsky(1965). Les exemples que nous avons examinés semblent indiquer que les lacunes que nous avons découvertes en analysant l'argumentation ne sauraient être considérés comme de simple lapsus. La conception que se fait Gross(1968) et (1969) d'une grammaire générative contenant des symboles complexes non terminaux doit être trés différente de la conception exprimée dans Chomsky(1965), et aussi, de celle esquissée dans Chomsky(1967b). Cela ne veut pas dire que la proposition de Gross serait dénuée de tout intérêt. Au fur et à mesure que la forme de la grammaire générative évolue, la conception grammaticale de Gross pourrait aller jouer un rôle important. Ce qui n'empêche pas que dans ce cas elle devra être formulée avec plus de rigueur qu'elle ne l'est actuellement.

Section de Linguistique Générale
Université Libre
Amsterdam

Notes

1 Dans cet article le lecteur rencontrera les abréviations suivantes:Dt=déterminant; N=syntagme nominal ou bien tête du syntagme nominal(cf. Gross(1968),p.7-8); perm=permutation; ppv=particule préverbale (par exemple: *je, te, ne, y, en*, etc.); pron=pronominalisation; rel=relativation; SN= syntagme nominal; SV= syntagme verbal; V= verbe.

2 M. Gross (communication personnelle) nous fait observer que ce n'était pas son intention de considérer (4) et (5) comme des solutions qui s'excluent. Pour lui, '(4) et (5) sont rigoureusement équivalents, mais à l'intérieur des diverses grammaires génératives (4) et (5) sont des systèmes de formalisation différents, il était donc nécessaire de les distinguer'.

3 Nous écartons le marqueur ± [passif] du SN. Gross ne présente pas d'arguments pour l'introduire à cet endroit. D'autre part, nous ne voyons pas comment on pourrait emprunter un argument au problème posé par la passivisation de *Marie voit son frère* (=*le frère de Marie*).

4 M. Gross(communication personnelle) fait observer qu'il parle en fait des deux. C'est qu'il avait en tête une solution à la pronominalisation telle qu'elle est décrite dans Gross(1973).

5 A propos de ce passage M. Gross (communication personnelle) ajoute les remarques suivantes:"Je pense (comme Kuroda) que les restrictions sur [question] et [relativation] devraient s'expliquer au moyen de la détermination du N sous-jacent à chacun des pronoms (indéfini pour [question], défini(?) pour [relativation]). Pour certains verbes les objets directs ne sont pas déterminés de la même façon, ce qui pourrait expliquer les différences entre [relativation] et [question]".

6 Si nous avons bien compris l'intention de Gross, le sous-arbre (3) doit être mis en rapport avec des phrases comme *Jean pense a elle* (=*Marie*)⇒*Jean lui pense* par opposition à *Jean pense a elle*(=*la vie*)⇒*Jean y pense*. Dans la première phrase, la présence du marqueur + [humain]du SN objet indirect, empêchant l'application de [ppv perm] implique, d'une façon ou d'une autre, la présence de - [ppv perm]. On trouve quelque chose de comparable avec *comparer*, où [ppv perm] ne s'applique jamais quand

le complément est 'à SN'. A l'origine, nous avions l'impression que les problèmes posés par de tels verbes se résoudraient rapidement lorsqu'on adopte le système d'exceptions élaboré dans Lakoff(1970b). Un verbe comme *penser* serait alors accompagné d'une indication que la transformation [ppv perm] ne s'appliquera pas lorsque la description structurale de la transformation correspond à celle de la structure dérivée à ce moment. M. Gross nous a signalé, cependant, qu'une telle solution est justement loin d'être satisfaisante. Voici la façon dont M. Gross (communication personnelle) décrit la situation:"Comme le titre de Lakoff indique, son travail porte sur des e x c e p t i o n s . Or, l'étude systématique de lexique montre qu'il n'existe pas deux verbes ayant le même ensemble de propriétés syntaxiques. Autrement dit, la situation que Lakoff (et beaucoup d'autres) croyait être exceptionnelle est tout-à-fait générale, et elle remet, à mon avis, en cause l'ensemble des procédés de représentation des propriétés syntaxiques tels qu'ils ont été conçus jusqu'à present".

A CASE FOR A TRACE: PREPOSITION STRANDING IN ZŪRITŪŪTSCH

Henk van Riemsdijk

0 Introduction

In the beginning of this paper the exceptional behavior of two Zūritūūtsch prepositions with respect to a variety of grammatical processes in this language, which is spoken in and around Zūrich, Switzerland, will be described. Then, a means of accounting for this exceptional behavior with a single constraint will be proposed. This proposal will involve the use of traces as a coding device in the grammar.

1 Relative clauses

Note the way relative clauses are formed in sentences (1) through (6):

1 də lɔ̈ɔ̈li wo mər æjz uv də grind kɛɛ hæt ɣunt z tsruk ybər
'the idiot WH me one on the head given has gets it back PRT'
(I will take revenge on the idiot who hit me on the head)

2 d tsæjrə wo iɣ uv əm pukəl khaa han iʒ abəkhejt
'the basket WH I on the back had have has downfallen'
(The basket I had on my back has fallen down)

3 iɣ han də theekx wo mər hæend myjzə z uəltsyyg drin iə tuə immər uv də latə khaa
'I have the satchel WH we have had-to the schoolthings it-in inside do always on the plank had'
(I have always hated the satchel that we had to put our school things in

4 dər aŋkxə wo də gɔ̈ti aakɛɛ hæt daz mər ən no ɣɔ̈n æsə hæet gruuzig kʃmɔ̈kxt
'the butter WH the godfather claimed has that one it still could eat has horrible smelled'
(The butter that my godfather claimed was still edible smelled horrible)

5 mər hæend d geltə wo du kfrœ ægət hæʒ ɔ̈b mər dər zi ɣɔ̈nəd pumpə myjzə vurtuə
'we have the tub WH you asked have whether we you it could lend had-to get-rid-of'
(We had to get rid of the tub which you asked whether you could borrow it, i.e. ...which you asked about borrowing)

6 *d lyyt iɣ mit ɔ̈pərtəm kret han wo zi kxænt zind kxæ ʒwwiitsər
'the people WH I with somebody talked have WH them knows are no Swiss'
(The people who I talked to somebody who knows them are not Swiss)

Sentence (1) relativizes into a subject, (2) into an object, (3) into the object of a preposition, (4) into a 'that'-complement clause, (5) into an embedded question, and (6) into a relative clause. The marker of the relative clause, 'wo', is invariable in all these cases. In (1) and (2) the shared nominal doesn't appear. In (3), (4) and (5) it appears in the form of a pronoun. (1) and (2) would be awkward if the pronoun were retained[1], while (3), (4), and (5) would be ungrammatical if it were absent. (6) is out, even though the pronoun has been retained: it is impossible to relativize into a relative clause.

These examples demonstrate that there is no case agreement of the wh-word in Zūritūūtsch relative clauses, and further that there is no movement of the shared nominal. With respect to both of these phenomena relative clauses differ from wh-questions. Wh-questions have case sensitive wh-words in sentence-initial position, which would seem to indicate that the questioned constituent, presumably a pronoun, has moved from its previous position to the complementizer. Prepositions obligatorily move with the question word[2]:

7 zi hæt kfr gət mit wem də hanz ɣœm
'she has asked with whom the John came'
(She asked who John would come with)

Yet another fact confirms the hypothesis that no movement is involved in the formation of Zürítüütsch relative clauses. While it is quite impossible to move question words in complex or coordinated NP's, relativization into these positions yields much better, although not quite acceptable, results:

8a *zi hæt kfrœægət [də briəv tsu wem / the letter to whom] vərʒwundə zig
'she has asked disappeared be'
[tsu wem də briəv / to whom the letter]
(She asked who the letter which had disappeared was to)

b *zi hæt kfrœægət [zini vræw und wɛɛr / his wife and who] vərʒwundə zigəd
[wɛɛr zini vræw und / who his wife and]
(She asked who had disappeared with his wife)

9a ?kxænʒ də maa wo ən briəv tsu im vərʒwundə i
'know-you the man WH a letter to him disappeared is'
(Do you know the man a letter to whom has disappeared)

b??kxænʒ də maa wo zini vræw und ɛɛr vərʒwundə zind
'know-you the man WH his wife and he disappeared are'
(Do you know the man who has disappeared with his wife)

The most natural way to handle relative clauses in Zürítüütsch seems to be, therefore, to derive them from structures like (10):

10 ... NP_i S *wo* ... PRO_i ... S

A rule of PRO-DELETION can then be stated as follows:

11 delete a pronoun under identity with the head-NP of the relative clause, just in case it is an NP which is neither the object of a preposition nor embedded in any complement clause.

Such an analysis fits rather well into a theory of relative clause formation which takes something like (10) to be basic and which provides a set of two transformations from which languages can "choose", the first being PRO-DELETION, generalized to different degrees for different languages[3] and the second PRO-FRONTING[4].

Consider now the sentences (12) through (15):

12 də vrynd wo mər amə̀l [tsuə / to / mit / with] əm zind go tʃuutə hæt khyraatə
'the friend WH we used-to him are to play-socker has married
(The friend we used to play socker with has married)

13 də vrynd wo mər amə̀l zind go tʃuutə [tsuə / mit] əm hæt khyraatə

14 də vrynd wo mər aməl {*tsu / *mit} zind go tʃuutə hæt khyraatə

15 də vrynd wo mər aməl zind go tʃuutə {*tsu / mit} hæt khyraatə

The first fact to notice here is that PP's can appear just to the left of the embedded verb or to its right, i.e. in final position. This fact holds true outside relative clauses as well[5)].

With certain prepositions the S-final position of the PP has the effect of exceptionally allowing PRO-DELETION to operate in PP's. In this case PRO-DELETION may be said to have the effect of stranding the preposition, i.e. it produces structures like $_{PP}[\,P\Delta]_{PP}$. This is true of the prepositions 'mit' (with) and 'ooni' (without) in as far as the latter can occur naturally in relative clauses, e.g.:

16 daz iʒ ən kʃirʒpyjlæwtomaat wo zi naγεεr nõmə γõntəd zii ooni
'this is an automatic-dishwasher WH you afterwards no more could be without'

To find that it is these two prepositions that behave exceptionally is not too surprising, since they do so in other languages as well. The solution at this point, however, is a rather unattractive one: we have to mark the pronoun following 'mit' or 'ooni' in sentence-final position as a positive exception to the rule of PRO-DELETION so that it will undergo the rule even though the normal conditions of application are not met.

2 Idiomatic expressions

There exist in Züritüütsch a number of idiomatic expressions which are elliptic: a noun following a preposition is left out. The prepositions which can occur in such expressions are, again, 'mit' and 'ooni'. We find the following constructions (indicated between the parentheses is the word that might have been deleted):

17 wo biʒ anə mit (əm)?
'where are-you to with it'
(Where did you take it?)

18 γaʒ nyyt maγə ooni (z)
'you-can nothing do without it'

19 iʒ daz {mit / ooni} (zεrvis etc.)?
'is that with/without service'

20 εεr γunt widər ooni (beglæjtig etc.)
'he comes again without companion'

21 dij iʒ gaar nõd ooni (ræjts etc.)
'she is not at all without charm'

It is obvious that such idiosyncrasies have to be stated somewhere in the lexicon. Such a treatment, however, does not explain why the prepositions involved in these constructions are 'mit' and 'ooni'.

3 Gapping

In this section I will assume that the analysis which Blom(1972) proposes for conjunction reduction and gapping in Dutch applies to Züritüütsch as well. In her view no transformation of conjunction reduction exists, the coordination of constituents is generated in the base and two late rules of forward- and backward gapping delete constituents in conjuncts under identity. Consider now a number of cases where gapping

applies in Züritüütsch:

22 ??də hanzli ʒtaat vor ___ und də hæjri hindər əm huuz
'Johnny stands in-front-of and Henry behind the house'

23 *də hanzli ʒtaat vor əm huuz und də hæjri hindər ___
'Johnny stands in-front-of the house and Henry behind'

24 iɣ triŋkxə də kxavi mit ___ und ɛɛr ___ də thee ooni milɣ
'I drink tne coffee with and he the tea without milk

25 iɣ triŋkxə də kxavi mit milɣ und ɛɛr ___ də thee ooni ___
'I drink the coffee with milk and he the tea without'

Notice that in this case as well 'mit' and 'ooni' behave exceptionally. While forward gapping on objects of prepositions is out altogether, backward gapping yields moderately acceptable results. With 'mit' and 'ooni' both forward and backward gapping are possible. The objects of 'mit' and 'ooni' are thus positive exceptions to both gapping rules as well as to PRO-DELETION. The condition that the exceptional behavior is only possible in the position ——]$_S$ has to be added in this case too, witness (26) and (27). (Verbs in sentence-final position can undergo both forward and backward gapping.)

26 *...wil iiɣ də kxavi mit ___ triŋkxə und ɛɛr də thee ooni milɣ ___
'...because I the coffee with drink and he the tea without milk'

27 *...wil iiɣ də kxavi mit milɣ ___ und ɛɛr də thee ooni ___ triŋkxt
'...because I the coffee with milk and he the tea without drinks'

In both of these cases the object of the preposition was gapped in non-final position. That this is the reason for the ungrammaticality of (26) and (27) is confirmed by the fact that when the verb and the object of the preposition are gapped on the same side, the resulting sentence is grammatical, because then the gapping on the object of the preposition occurs in sentence-final position:

28 ...wil iiɣ də kxavi mit ___ ___ und ɛɛr də thee ooni milɣ triŋkxt

29 ...wil iiɣ də kxavi mit milɣ triŋkxə und ɛɛr də thee ooni ___ ___

Therefore, two further exceptions must be added to those discussed in sections 1 and 2: one to forward gapping and one to backward gapping. In every one of these cases we find essentially the same situation. The objects of the prepositions 'mit' and 'ooni' can be deleted in sentence-final position where the objects of other prepositions cannot. It is obvious that we do not want to treat each of these cases as an isolated phenomenon.

4 A surface structure constraint on stranded prepositions

One possible way of describing the behavior of 'mit' and 'ooni' only once in the grammar would be to formulate a rule optionally deleting the object of these prepositions in sentence-final position [7]. This solution is unworkable, however, because the simplification achieved in the statement of the exception is offset by the addition of a number of strange conditions which have to be imposed on the rule deleting the object of 'mit' and 'ooni'. In addition, these conditions would copy the structural descriptions of PRO-DELETION and of the two gapping rules. In fact, the rule would have to be formulated roughly as in (30):

30 Delete an NP in the context $\left\{\begin{matrix}\text{mit}\\ \text{ooni}\end{matrix}\right\}$ ——]$_S$ if

either a) it is a pronoun coreferential with an NP immediately preceding the

clause in question

or b) it is part of a coordinated structure and identical to the corresponding NP's in the other conjuncts

or c) it is part of an idiomatic expression, lexically marked as governing the application of this rule.

In addition to requiring repetition of structural descriptions, (30c) is a case of irrecoverable deletion. Therefore, a rule like (30) is not a solution to be favoured. Another solution, and the one to be defended here, is somewhat more involved. It consists of adding a surface structure constraint blocking stranded prepositions to the grammar of Zürítüütsch[8]. Once this is done we can account for the exceptional behavior of 'mit'and 'ooni' in more or less the following way:

31 *PΔ except in the context $[[\ \begin{matrix}\text{mit}\\ \text{ooni}\end{matrix}\ ]_P \Delta]_{PP}]_S$

The reason why (31) has to be a surface structure constraint rather than a shallow structure constraint is that it has to apply after the gapping rules, that are, presumably, postcyclic[9]. Apart from simplifying the statement of the exceptional behavior of 'mit' and 'ooni' this solution has two other advantages. First, the condition that neither forward nor backward gapping may apply to objects of prepositions can be dropped from the statement of these rules. Gapping being normally optional, every case in which the object of a preposition has been gapped is blocked by the surface structure constraint (31) except for the cases explicitly exempted. Secondly, (31) allows us to improve the formulation of the PRO-DELETION rule:

32 Delete a pronoun under identity with the head-NP of the relative clause, obligatorily if it is a simple NP and optionally elsewhere.

The 'elsewhere' in (32) refers not only to prepositional phrases, but also to more deeply embedded shared nominals. Cases in which PRO-DELETION applies to objects of prepositions will then be filtered out by (31) except for the cases mentioned there. The rule will not, however, apply to more deeply embedded shared nominals if it is taken to be cyclic; Chomsky's adjacency condition[10] will automatically prevent its application in those cases.

5 Prepositions with and without a trace of their object

So far only a few rules have been discussed which have the effect of stranding a preposition. Let us now look at a number of transformations which move NP's. In this section we will examine the interaction between (31) and the movement transformations 'question-word movement', 'passivization' and 'topicalization'. Since the retention of pronominal copies plays no role in these transformations, no sentences in which pronouns are left behind will be presented. The fact that the formation of wh-questions involves a movement rule was discussed in section 1. Now compare (7) with (33):

33a *zi hæt kfrœægət wem də hanz ɣœm mit
b *zi hæt kfrœægət wem də/hanz mit ɣœm
(She asked who John would come with)

It seems that the special provision included in (31) does not apply in (33a). We find a similar situation with respect to passivization (34) and topicalization (35):

34 *də zoliʃt ɣa z kxontsɛrt nŏd kʃpilt wɛɛ rdə ooni
'the soloist can the concert not played be without'
(The concert cannot be played without the soloist)

35 *də zoliʃt ɣa mər z kxontsɛrt nŏd ʒpilə ooni
'the soloist can one the concert not play without'
(Without the soloist one cannot play the concert)

Given the fact that PRO-DELETION and the gapping rules are all deletion rules, while QUESTION, PASSIVE, and TOPICALIZATION are not, the crucial distinction appears to be between movement rules and deletion rules[11]. This causes a serious problem. In surface structure, where constraint (31) applies, it is not possible to distinguish between prepositions that have been stranded by a deletion rule and prepositions that have been stranded by a movement rule. The only way out of this difficulty is to require that constituent structures resulting from these two types of rules possess structural properties which can be distinguished by constraint (31). In recent linguistic literature situations of this type are encountered quite often. The phenomena involved are usually referred to as global. Without going into involved questions of methodology, I will assume that non-global solutions, if well-motivated, are to be preferred. One type of non-global treatment can be employed here which has already received some independent support. In at least three recent articles certain NP-movement rules are claimed to leave pronominal traces behind that are not, ultimately, realized as surface pronouns. Perlmutter (1972) refers to these pronouns as shadow pronouns. In Chomsky (1970) shadow pronouns are assumed to be present after the application of rules such as SUBJECT RAISING. These pronouns can then act as specified subjects with respect to the specified subject constraint. In Zwarts(1973) shadow pronouns are claimed to be left behind as traces of certain movement rules and subsequently to undergo CLITIC-PLACEMENT in order to account for agreement phenomena in French. Perlmutter(1972) makes the same claim in order to account for the distributions of floating quantifiers in French. In addition he proposes as a tentative universal that NP-movement rules leave pronominal traces behind.

If the NP-movement rules in Zürítüütsch referred to above leave shadow pronouns behind that are still present in surface structure[12] (31) can easily be reformulated as (36), giving the correct output. Let ∇ stand for shadow pronouns:

36a $^{*}P\nabla$

b $^{*}P\Delta$ except in the context $[\ [\{^{\text{mit}}_{\text{ooni}}\}]_{P}\Delta]_{PP}]_{S}$

(36a) will now correctly mark (33), (34), and (35) as ungrammatical, while (36b) will take care of the facts outlined in sections 1, 2 and 3. I conclude that the facts about preposition stranding in Zürítüütsch presented here support the existence of shadow pronouns as traces of NP movement rules.

Department of Linguistics
University of Amsterdam

Notes

1 Some informants do, however, accept sentences with retained object pronouns.

2 There is a very interesting exception to this rule. In the case of the question word for 'where' the movement is optional. Significantly, the form of this question word is - in its (usual) short form - identical to the relative complementizer 'wo':

i zi hæt kfrœægət i waaz əz zig
'she has asked in what it be'

ii zi hæt kfrœægət wo z drin zig
'she has asked where it therein be'

3 See Keenan(1972)

4 See e.g. Browne (1972)

5 I will assume that we have here a situation comparable to the situation we find in Dutch. See Koster(1972).

6 Informants are not very consistent as to the backward gapping of NP's from PP's. It seems that - apart from 'mit'/'ooni' - the preposition pair'vyr'/'gægə'(pro/con) gives the best results. I do not know why this is so. Forward gapping, however, is

not possible with this preposition pair.

7 This possibility was suggested to me by Wayles Browne (pers. comm.)

8 Rodman(1972) suggests that an output condition on stranded prepositions in non-final position in VP's may be operative in English.

9 See Blom(1972).

10 See Chomsky(1970).

11 Cleft sentences, incidentally, work just like relative clauses here and have nothing in common with embedded questions. E.g.:

iii ðz iə̯ z ɣind wo mər kɹpilt hænd mit wo ɣoo iʒ
'it is the child WH we played have with WH come has'
(It is the child we played with that has come)

12 Perlmutter(1972) claims that shadow pronouns are deleted by a late deletion transformation, but he offers no evidence for this.

THE GRAMMATICAL RELEVANCE OF CONDITIONS ON RULES

Jan Schroten

0. Introduction

One of the tasks grammarians are facing is to assess the revisions of the language theory at their fruitfulness by applying them to recalcitrant phenomena of a particular language. Chomsky's 'Conditions on Transformations' is a revision of his own theory: it will be argued in this paper that this revision is fruitful, since it offers the possibility of coming to grips with the explanation of a hitherto unexplained phenomenon: the use of Subjunctive and Indicative in modern Spanish.

The outline of the paper is as follows. In the first paragraph, some general observations concerning the use of Subjunctive (henceforth 'Subj.') and Indicative (henceforth 'Ind.') in modern Spanish will be found. In the second paragraph, we will give some reasons why earlier versions of transformational generative grammar fail to explain the use of Subj and Ind in modern Spanish. In the third paragraph, we will study a few grammatical phenomena which are related to the use of Subj and Ind in modern Spanish. It is Rivero(1971) who called attention to the facts, but the explanation she proposes is unsatisfactory for the reasons we will give. We will propose another explanation by hypothesizing that there is a condition on rules of semantic interpretation which makes a crucial use of Subj and Ind.Finally, we will show that the weakness of the proposed explanation can be remedied by making some additional assumptions which capture in an natural way intuitions of native speakers of Spanish.

1. Some general remarks on Spanish Subj and Ind

The Spanish Ind seems to be an essentially independent mood, whereas the Subj is a dependent mood. The Ind is used in main sentences; the use of the Subj is heavily restricted in main sentences. In embedded sentences, both Ind and Subj are found. Usually, the use of Subj in embedded sentences is considered to be dependent on some lexical or grammatical formative in the sentence which directly dominates it (cf. Gili Gaya(1961),par.106). No general criterion has been found which predicts the use of Subj and Ind in embedded sentences. Paraphrasing Gili Gaya(1961), par.107, one might say that traditonal grammars provide us at most with an interpretive criterion which explains particular cases found in writing or in conversation.

2. The explanation of the use of Subj and Ind: some objections to previous approaches

Since Subj and Ind are often found in Spanish complement sentences, we will first show that an essentially syntactic explanation similar to the one Rosenbaum has proposed for English complement sentences runs into unsurmountable difficulties(Rosenbaum 1967). Consider (1), (2). (The verbs between slants have Subj endings; the other verbs have Ind endings).

1a Juan declara que Isabel friega los platos
 b *Juan declara que Isabel /friegue/ los platos
 John declares that Elisabeth washes the dishes
2a *Juan quiere que Isabel friega los platos
 b Juan quiere que Isabel /friegue/ los platos
 John wants that Elisabeth washes the dishes

One might say that *declarar* 'to declare' requires the Ind in its complement sentence, and that *querer* 'to want' requires the Subj; or - in Rosenbaum's framework - *declarar* takes the *que*-Ind complementizer, and *querer* the *que*-Subj complementizer. In deep structure, verbs are in the Ind in all environments; when the *que*-Subj complementizer is placed on a certain complement sentence, the Subj feature will be assigned to its verb. Spanish verbs taking sentential complements are to be subcategorized: some verbs require *que*-Subj complementizers, other verbs, *que*-Ind complementizers.

I shall discuss three objections which militate against this approach. In the first place, the rule assigning the Subj feature to the verb of the complement sentence applies in the cycle of the higher S. This rule thus only affects the form of an element of an S that has already passed the cycle. It seems to me that the theory should not tolerate this kind of rules, since it jeopardizes the cyclic principle (see e.g.Chomsky (1970),p.13). In the second place there is an intuitive objection to this approach. Suppose that Subj were no longer in use in Spanish; in this case, the grammar of Spanish would be much simpler than it is now, without there being any loss at any other level. That is, the Subj-Ind distinction has no real function other than subcategorizing verbs, and the subcategorization of verbs serves only to account for the Subj-Ind distinction. This goes counter to repeatedly expressed intuitions of Spanish grammarians, who stress the point that the Subj-Ind distinction is meaningful in itself.Thirdly, there is no natural way of explaining (3),(4).

3a yo mandé a Isabel que/fregase/ los platos
b *yo mandé a Isabel que fregaba los platos
c *yo mandé a Isabel que /debiese/ fregar los platos
d yo mandé a Isabel que debía fregar los platos
I ordered Elisabeth that she should wash the dishes

Mandar 'to order' requires the *que*-Subj complementizer except when the modal *deber* 'to have to' is present in the complement sentence: in this case *mandar* requires the *que*-Ind complementizer. Rosenbaum's framework allows only of an awkward and ad hoc solution: these facts have to be accounted for by positing some lexical exception feature for *mandar*, in case *deber* is present in the complement sentence. Now this clearly misses the point: intuitively, the Subj in (3)a is substituted by *deber* in (3)d. That is, the syntactic and semantic characteristics of *deber* motivate its exceptional behaviour in (3)c,d. Such a generalization can not be captured by the approach we are discussing.

4a Juan cree que Isabel friega los platos
b *Juan cree que Isabel /friegue/ los platos
John believes that Elisabeth washes the dishes
c Juan no cree que Isabel friega los platos
d Juan no cree que Isabel /friegue/ los platos
John does not believe that Elisabeth washes the dishes

Creer 'to believe', it seems, requires the *que*-Ind complementizer, except when preceded by *no* 'not', in which case it requires the *que*-Ind or the *que*-Subj complementizer. Again, Rosenbaum's framework is inadequate, since the generalization cannot be captured that there is a correlation between the use of Subj and Ind and the characteristics of *creer* and *no*. A grammar of Spanish generating only (4)a,c ought to be more complex than a grammar generating (4)a,c,d. But in the approach we are discussing it will be much simpler. Note that intuitions of native speakers indicate that (4)d is the neutral, or unmarked, counterpart to (4)a, and that (4)c is somehow more marked than (4)d. In this case, Rosenbaum's approach would give us all the wrong predictions. Thus, the purely syntactic approach is theoretically doubtful, intuitively unsatisfactory, and does not account adequately for the data, i.e. intuitions of native speakers. It is evident that we ought to look for another approach .

One might advocate following a purely semantic approach, that is, one might postulate that Ind and Subj , or one of them, are present in deep structures as grammatical formatives. The semantic component would have to interpret these grammatical formatives. I shall now raise two objections against the semantic approach. For one thing, Subj is dependent on other formatives. This fact cannot be stated in a natural way. For example, suppose Ind is interpreted as 'assertion' and Subj as 'uncertainty', that is, these interpretations are imposed on the whole sentence. Why, then, is (5)b ungrammatical?

5a ha venido Juan
(I assert that) John has come
b haya venido Juan
(I think it is doubtful that) John has come

For another thing, no uniform semantic interpretation can be found. Consider, in this respect, the sentences of (6) in which the most common semantic interpretations of Subj, such as can be found in traditional grammars, are given between brackets.

6a el gobierno ordenó que se /pagasen/ los impuestos (obligation)
the goverment ordered that the taxes had to be paid
b el coronel sintió que se /pagasen/ los impuestos (emotion)
the coronel was sorry that the taxes were being paid
c niego que se /hayan/ pagado los impuestos (negation)
I deny that the taxes have been paid
d dudo que se /hayan/ pagado los impuestos (uncertainty)
I doubt that the taxes have been paid

Now, what can be made of a grammatical formative whose semantic interpretations include 'negation' and 'uncertainty', 'emotion' and 'obligation'? And then, if the Subj endings in these sentences are substituted by Ind endings, the resulting sentences are not just semantically different, they are ungrammatical. It seems to me reasonable to conclude that the semantic approach is doomed to failure. The objections to it cannot be as straightforward as those levelled against the syntactic approach, since the semantic approach has not been worked out in detail.

3. Grammatical phenomena related to the use of Ind and Subj in Spanish
In view of the unfruitfulness of earlier approaches, we will not try to tackle the problem itself. Instead, we will analyze a few grammatical phenomena related to the use of Ind and Subj. First of all, I hypothesize that Ind blocks rules of semantic interpretation, and that Subj does not block them. That is, I hypothesize that the grammar of Spanish includes the following condition on rules of semantic interpretation:

Condition: If a rule of semantic interpretation involves X, Y in the structure
... X ...[$_{\alpha}$ ... Y ...]...
(i) where α = Ind, the rule is blocked
(ii) where α = Subj, the rule is not blocked.

('Ind S' and 'Subj S' are shorthand notations for 'a sentence whose verb is in the Ind (Subj) mood'). I have found the following evidence for the condition:

A. Non-intersecting reference of NP's
The grammar of Spanish should incorporate a rule of semantic interpretation, which seeks to interpret two NP's in the same sentence as non-intersecting in reference. In case this is impossible, it assigns 'strangeness' to the sentence (cf. Chomsky (1970), p.10,11). Consider, for example, the sentences of (7).

7a tú os heriste
you (sing.) wounded you (pl.)
b vosotros te herísteis
you (pl.) wounded you (sing.)
c nosotros te herimos
we wounded you (sing.)

The rule of non-intersecting reference of NP's predicts correctly that (7)a and (7)b are strange, since a non-intersecting reference of *tú, os* in (7)a, or of *vosotros, te* in (7)b is impossible. Furthermore, it predicts correctly that *nosotros* in (7)c should

receive an exclusive interpretation: an inclusive interpretation is impossible since *nosotros, te* must be non-intersecting in reference. Now, the same rule applies in case one of the NP's is the subject of a complement sentence and the other NP the subject of the sentence dominating it. Consider, for instance, (8).

8a tú quieres que vosotros /seáis/felices
you (sing.) want that you (pl.) are happy
b vosotros queréis que tú /seas/ feliz
you (pl.) want that you (sing.) are happy
c nosotros queremos que tú /seas/ feliz
we want that you (sing.) are happy

Again, (8)a and (8)b are strange, since a non-intersecting reference of *tú, vosotros* in (8)a, and of *vosotros, tú* in (8)b is impossible, and *nosotros* in (8)c has only an exclusive interpretation. The complement sentences of (8) are Subj sentences; consequently, the rule has not been blocked, as predicted by subcase (ii) of the condition. Subcase (i) of the condition predicts that the rule will be blocked by Ind sentences. This prediction is borne out by (9).

9a tú dices que vosotros sois felices
you (sing.) say that you (pl.) are happy
b vosotros decís que tú eres feliz
you (pl.) say that you (sing.) are happy
c nosotros decimos que tú eres feliz
we say that you (sing.) are happy

Intuitions of native speakers indicate that (9)a and (9)b are not strange, and that *nosotros* in (9)c receives an exclusive or an inclusive interpretation. This is exactly what has been predicted. Note that there is no structural difference between the sentences of (8) and (9) except for the presence of Subj in (8) and of Ind in (9). There seems to be no other natural solution than the proposed condition, which makes a crucial use of Subj and Ind.

B. The scope of 'no'
If an indefinite pronoun such as *nada* 'something/anything' is placed to the right of the verb, then it must be dependent on *no* 'not'. (See Jackendoff(1971b) for a discussion of 'under the scope of' and 'dependent on'.) When a *nada* at the right of the verb is not dependent on *no*, the sentence is ungrammatical. Compare (10)a,b.

10a no veo nada
I do not see anything

b*veo nada
I see anything

Adopting the proposals of Jackendoff, we posit that *nada* is uninterpretable if it is not dependent on *no*. An NP or PP to the right of *no* is under its scope. There is a rule of semantic interpretation which states that an NP or PP under the scope of *no* is preferably dependent on *no*; otherwise, it is not dependent on *no*. Now consider (10)a: the lexical specification of *no* indicates that an NP or PP to the right is under its scope; hence *nada* is under the scope of *no*. The rule of semantic interpretation states that *nada* is preferably dependent on *no*. On the other hand, the lexical specification of *nada* indicates that it is uninterpretable if it is not dependent on *no*. Consequently, it is impossible to force on (10)a the reading that *nada* is not dependent on *no*, and *nada* necessarily will be interpreted as dependent on *no* in (10)a. And, of course, (10)b is ungrammatical since there is no *no* for *nada* to be dependent on. Now consider (11)a,b.

11a Juan no cree que Pedro /haya/ dicho nada
b *Juan no cree que Pedro ha dicho nada
John does not believe that Peter has said anything

In both (11)a and (11)b *nada* is under the scope of *no*. Thus, the grammaticality of (11)a comes as no surprise; (11)b, however, is ungrammatical, notwithstanding the fact that *nada* is under the scope of *no*. There is no difference between (11)a and (11)b except for the Subj in (11)a and the Ind in (11)b. Thus, the rule associating *no* with *nada* applies in (11)a and is blocked in (11)b, just as has been predicted by the condition. Note that if *nada* is substituted by an NP that need not be dependent on *no*, both Subj and Ind complement sentences are correct, as in (12).

12a Juan no cree que Pedro /haya/ dicho la verdad
Juan no cree que Pedro ha dicho la verdad
John does not believe that Peter has said the truth

A quite different explanation of (11), (12) has been proposed by Rivero(1971). She hypothesizes that the deep structures underlying (11)a,b are represented by (13)a,b respectively.

13a Juan cree [Pedro no ha dicho algo]
John believes [Peter has not said something]
b [Pedro no ha dicho algo] & [Juan cree C]
[Peter has not said something] & [John believes C]

The complement sentence of (11)a, but not that of (11)b, is an embedded sentence in deep structure. In the deep structure underlying (11)b there is a place-holder C, which will be substituted by an S by means of a generalized transformation. Two T-rules apply: first, obligatory Neg-Incorporation, which changes *algo* to *nada* if it is under the scope of *no*; then, optionally, Negative-Transportation, which moves *no* from its position in the complement sentence to the pre-verbal position in the dominating sentence, if the verb of the dominating sentence permits Negative-Transportation. *Creer* 'to believe' is one of the verbs permitting Negative-Transportation. Rivero postulates that Negative-Transportation applies after the generalized transformation: in this way, (11)b cannot be derived from (13)b. Consequently, (11)b is ungrammatical since it must have been derived by applying the rules in the wrong order. Furthermore, Rivero claims that the difference in semantic interpretation between (12)a and (12)b can be explained by a difference in underlying structures analogous to (13)a and (13)b. Although Rivero's explanation is attractive in some respects, it does not explain (14).

14a Juan dice que Pedro no ha dicho la verdad
b *Juan dice que Pedro no /haya/ dicho la verdad
John says that Peter has not said the truth
c Juan no dice que Pedro /haya/ dicho la verdad
d Juan no dice que Pedro /haya/ dicho la verdad
John does not say that Peter has said the truth

Recall that Negative-Transportation is optional, and that (14)b is ungrammatical. Moreover, (14)c cannot have been derived by Negative-Transportation, and (14)d must have been derived by this rule. Thus, (14)a, on one reading, derives from the same deep structure as (14)d: the only difference is that Negative-Transportation has not been applied in (14)a and that it has been applied in (14)d. If this analysis is correct, the choice of the complementizer is dependent on the prior application of Negative-Transportation. Otherwise, either (14)c will be derived from the structure underlying one reading of (14)a, or (14)b will be generated. In other words, the explanation is perfectly unilluminating.

Let us return to our explanation of (11)a,b. Note that the condition correctly predicts

that the sentences of (15) are grammatical.

15a yo no quiero que /hagas/ nada
I do not want that you do anything
b yo no mando que /destruyan/ nada
I do not order that they destroy anything
c yo no aplaudo que /construyan nada
I do not applaud that they build anything

Verbs like *quiero* 'I want', *mando* 'I order', and *aplaudo* 'I applaud' do not permit Negative-Transportation. Rivero, in order to explain (15), has to argue that it is Neg-Incorporation that applies across sentence boundaries in (15). It seems to me that the condition captures in a natural way the generalization that the same grammatical phenomenon is involved in (11) and (15). The condition, however, does not explain why (14)b is ungrammatical. We will deal with this problem in the following paragraph. There are other NP's and PP's which behave like *nada*, that is, which are uninterpretable if they are not dependent on *no*. Consider, for instance, *nunca* in (16), *palabra* in (17) and *hasta las once* in (18).

16a Juan no bebe nunca
John never drinks
b *Juan bebe nunca
John ever drinks
17a Juan no dice palabra
John does not say a word
b *Juan dice palabra
John says a word
18a Juan no llega hasta las once
John does not arrive till 11 o'clock
b *Juan llega hasta las once
John arrives till 11 o'clock

In these cases too, *no* can be part of the main sentence, and *nunca*, *palabra*, *hasta las once* part of the complement sentence, except when the verb of the complement sentence is in the Ind. In (19)a, (20)a, and (21)a the rule associating *no* with *nunca*, *palabra*, *hasta las once*, is not blocked by Subj S, but it is blocked by Ind S in (19)b, (20)b, and (21)b.

19a Juan no cree que Pedro /beba/ nunca
b *Juan no cree que Pedro bebe nunca
John does not believe that Peter ever drinks
20a Juan no cree que Pedro /diga/ palabra
b *Juan no cree que Pedro dice palabra
John does not believe that Peter says a word
21a Juan no cree que Pedro /llegue/ hasta las once
b *Juan no cree que Pedro llega hasta las once
John does not believe that Peter arrives till 11 o'clock

C. Consecutio temporum

In certain cases, there is a relation between the tense of the verb of the main sentence, and the tense of the verb of the complement sentence. It is not known what exactly this relation is, but it seems plausible to assume that there is a rule of semantic interpretation assigning 'strangeness' to sentences containing +Past... -Past or -Past... +Past sequences of tenses. This so-called 'consecutio temporum' rule is blocked by an intervening Ind S, but not by an intervening Subj S, exactly as has been predicted by the condition. Grammaticality judgements of native speakers on (22), (23) support this claim.

22a Juan dudaba que Pedro /viniese/
John doubted that Peter came
b *Juan dudaba que Pedro /verga/
John doubted that Peter comes
c *Juan duda que Pedro /viniese/
John doubts that Peter came
d Juan duda que Pedro /venga/
John doubts that Peter comes
23a Juan decía que Pedro venía
John said that Peter came
b Juan decía que Pedro viene
John said that Peter came
c Juan dice que Pedro venía
John says that Peter came
d Juan dice que Pedro viene
John says that Peter comes.

D. Subj in relative sentences

Jackendoff(1971b) calls attention to the ambiguity of (24).

24 Juan busca un cigarro
John is looking for a cigarette

In (24), the indefinite NP *un cigarro* has a specific or a nonspecific reading. On the specific reading, there is a particular cigarette which John has in mind when looking for it. On the nonspecific reading, there is no particular cigarette which John has in mind, but there will be an identifiable referent in case John succeeds in finding a cigarette. The indefinite object NP's of verbs like *buscar* 'to look for' preferably are interpreted as nonspecific, but a specific reading may be forced on them. Normal indefinite NP's, that is, NP's not under the scope of verbs like *buscar*, are interpreted as specific. For example, (25) has only one reading in which *un cigarro* is interpreted as specific, since nonspecificity is not induced by *fumar* 'to smoke'.

25 Juan fuma un cigarro
John smokes a cigarette

Now consider (26) and (27).

26a Juan busca un cigarro que no le envenena
b Juan busca un cigarro que no le /envenene/
John looks for a cigarette which does not poison him
27a Juan fuma un cigarro que no le envenena
b *Juan fuma un cigarro que no le /envenene/
John smokes a cigarette which does not poison him

In (26)a, the object has only a specific reading; in (26)b, it only has a nonspecific reading. It is remarkable that in many cases, if an NP is preferably interpreted as nonspecific, the NP will permit a Subj relative sentence in Spanish, in which case the nonspecific reading is obligatory. A tentative explanation of this fact is provided by the condition on rules of semantic interpretation which we have proposed. Suppose that the relative pronoun *que*, whose antecedent NP is indefinite, is itself indefinite. Then usually it will be interpreted as specific. A nonspecific reading can be imposed on it, if its antecedent, and hence *que* itself, is under the scope of a special lexical or grammatical formative such as *buscar*. The rule of semantic interpretation associating *que* with this formative will be blocked by Ind S. Consequently, *que* in (26)a cannot be associated with *buscar*. Since *un cigarro* in (26)a is under the scope of *buscar*, it is preferably interpreted as nonspecific. But then, it is contradictory to interpret *que* as specific, and its antecedent *un cigarro* as nonspecific. Hence, a non-

specific reading must be forced on *un cigarro*. This accounts for (26)a. In (26)b, the rule of semantic interpretation associating *buscar* and *que* will not be blocked by Subj S: hence, *que* preferably is interpreted as nonspecific; the same goes for *un cigarro*. It would be contradictory to force a specific reading on *que*, and a nonspecific reading on its antecedent. Forcing on *que* a nonspecific reading and on its antecedent a specific reading, is excluded for the same reason. There is, however, no reason why a specific reading cannot be forced upon both *un cigarro* and *que*. But this is an impossible reading. We cannot explain this fact. Neither can it be explained why (27)b is ungrammatical. This is the same problem as in (14)b. We will try to remedy this weakness by making some rather natural additional assumptions.

4. Additional assumptions concerning Ind and Subj

We add some rather natural assumptions to the condition on rules of semantic interpretation:

(i) The Subj is a pro-Modal, that is, a Modal which is controlled by another lexical or grammatical formative, and whose semantic interpretation is dependent on it;
(ii) Sentences containing one or more uninterpretable pro-Modals are ungrammatical;
(iii) Lexical or grammatical formatives controlling pro-Modals impose on them a fixed set of 'modal operators';
(iv) Control is obligatory or optional; possibly, there is a degree of preference associated with each formative which might exert control.

Let us see how this works. *Declarar* 'to declare' does not control the pro-Modal of its complement sentence. If the complement contains a pro-Modal, it cannot be interpreted, and the whole sentence is ungrammatical, as in (1)b.

1b *Juan declara que Isabel /friegue/ los platos
John declares that Elisabeth washes the dishes

Querer 'to want' has obligatory control of the pro-Modal of its complement sentence; therefore, it does not tolerate Ind complement sentences, as in (2)a.

2a *Juan quiere que Isabel friega los platos
John wants that Elisabeth washes the dishes

Now consider a more interesting example, (4).

4a Juan cree que Isabel friega los platos
b *Juan cree que Isabel /friegue/ los platos
John believes that Elisabeth washes the dishes
c Juan no cree que Isabel friega los platos
d Juan no cree que Isabel /friegue/ los platos
John does not believe that Elisabeth washes the dishes

Creer 'to believe' does not exert control; *no* 'not' optionally controls the pro-Modal of the complement sentence. Sentence (4)b is ungrammatical, since the pro-Modal cannot be interpreted. In (4)c, *no* does not control the complement sentence. Hence, if a speaker is committed to the truth of (4)c, he is not committed tot the truth of *Juan cree que Isabel no friega los platos* 'John believes that Elisabeth does not wash the dishes'. But in (4)d, he is, since *no* controls the pro-Modal of the complement sentence. This seems to me a rather satisfactory account of the sentences of (4).

Consider again (26), (27).

26a Juan busca un cigarro que no le envenena
b Juan busca un cigarro que no le /envenene/

John looks for a cigarette which does not poison him

27a Juan fuma un cigarro que no le envenena

b *Juan fuma un cigarro que no le /envenene/

John smokes a cigarette which does not poison him.

The ungrammaticality of (27)b is easy to explain: since the pro-Modal is not controlled by any formative, it is uninterpretable. The problem of (26)b is that its object allows only of a nonspecific reading and does not allow of a specific reading. We have tried to explain (26)b by taking *un cigarro* and *que* to be under the scope of *buscar*. There is a more natural explanation: *buscar* must be associated with the pro-Modal, which then imposes a nonspecific reading on the whole relative sentence. Otherwise, the uninterpreted pro-Modal would cause ungrammaticality. Since the relative sentence is interpreted as nonspecific, the NP to which it has been attached must be interpreted as nonspecific, too. And this is the reason why there is no specific reading of (26)b. We will not pursue this matter any further. It seems to me that the condition on rules of semantic interpretation, if combined with the additional assumptions, works remarkably well.

5. Conclusions

The revision of transformational generative theory proposed by Chomsky(1970) makes it possible to give a uniform explanation of the use of Ind and Subj in modern Spanish. In this respect, it is more successful than other versions of transformational generative theory. Although we have studied only a few grammatical phenomena related to Ind and Subj, the condition on rules of semantic interpretation, which makes a crucial use of Ind and Subj, seems to work remarkably well. Of course, the evidence presented in favour of the proposed condition cannot be sounder than our knowledge of rules of semantic interpretation. Nor will it be the only condition: the 'subjacency condition' and the 'specified subject condition' should be investigated as well.

THE OPTIONAL 'OM' IN DUTCH INFINITIVE CONSTRUCTIONS*

Th.L.M. Walraven

1 The following Dutch sentences contain an infinitive construction. The infinitive constructions are between slants:

1a Hij probeert /weinig te roken/
   He tries not to smoke much
 b Hij weigert /teveel te betalen/
   He refuses to pay too much
 c Hij verlangt/ernaar/overgeplaatst te worden/
   He longs for being transferred
 d Ze hebben er een hekel aan /in een grote stad te wonen/
   They hate living in a big city
 e Het gelukte hem /de brief te vinden/
   He succeeded in finding the letter
 f Het is boeiend /ze te zien spelen/
   It is fascinating to watch them play
 g Ze is erop gebrand /veel mensen te ontmoeten/
   She is keen on meeting many people.

There is an element *om* in Dutch, that can precede an infinitive construction in some contexts. In the above examples all infinitive constructions can be preceded by this optional *om*. That is, the following sentences are grammatical:

2a Hij probeert o m weinig te roken.
 b Hij weigert o m teveel te betalen.
 c Hij verlangt ernaar o m overgeplaatst te worden.
 d Ze hebben er een hekel aan o m in een grote stad te wonen.
 e Het gelukte hem o m de brief te vinden.
 f Het is boeiend o m ze te zien spelen.
 g Ze is erop gebrand o m veel mensen te ontmoeten.

The presence or absence of *om* does not correspond with a difference in meaning. However, if we replace the main verbs in the preceding sentences by some other verbs, it turns out that the optional *om* cannot be present in every context. For example, substitution of *proberen* ('try'), *weigeren* ('refuse'), *verlangen naar* ('long for'), *een hekel hebben aan* ('hate'), *gelukken* (which has the same meaning as 'manage' but occurs in the converse surface structure), *boeiend*[1] ('fascinating') and *gebrand op* ('keen on') by *beweren* ('pretend'), *menen* ('think'), *vertellen* ('tell'), *betreuren* ('regret'), *verbazen* ('surprise') and *trots op* ('proud of'), respectively, is only possible if *om* is not present:

3a Hij beweert weinig te roken.
 b Hij meent teveel te betalen.
 c Hij vertelde me overgeplaatst te worden.
 d Ze betreuren het in een grote stad te wonen.
 e Het verbaasde hem de brief te vinden.
 f Ze is er trots op veel mensen te ontmoeten.
4a *Hij beweert o m weinig te roken.
 b *Hij meent o m teveel te betalen.
 c *Hij vertelde me o m overgeplaatst te worden.
 d *Ze betreuren het o m in een grote stad te wonen.
 e *Het verbaasde me o m de brief te vinden.
 f *Ze is er trots op o m veel mensen te ontmoeten.

In this paper I want to discuss the question, how to formulate the appropriate contexts for the optional presence or obligatory absence of *om* before an infinitive construction. I will leave aside the question of the appropriate contexts for the derivation of an embedded clause into an infinitive construction.

A possible solution for our problem is specifying every verb that takes an infinitive construction as complement positively or negatively for the optional presence of *om*. I want to demonstrate however, that there must be made some generalizations. The observations that I am going to present support the claim, that there is a correspondence between the possibility for *om* to occur before an infinitive construction and some aspects of the internal structure of the clause from which the infinitive construction is derived.

2 The more general problem with which the present question is connected is that of the formulation of the contexts in which complementizers are to be introduced. It is pointed out by Kajita that 'the selection of markers (=complementizers.T.W.) is not totally a matter of idiosyncrasies of individual items either. There are some aspects of the restrictions that can be predicted (in some general terms) from other features of the sentence in which the marker is introduced'[2]. The relevant point for the present discussion is, that Kajita states some correspondences between the choice of a particular complementizer and the internal structure of the clause into which the complementizer must be introduced. In this respect it is necessary to consider for a moment the notion 'embedded clause'(or 'embedded sentence'). In generative-transformational tradition every construction that can be proved to correspond with a subject-predicate construction in the underlying structure, is derived from an underlying structure dominated by S. In Kajita's proposal there are four symbols that can be the topmost node of an 'embedded clause', instead of the one symbol 'S'. Mere subject-predicate constructions are dominated by S_4. If an S_4 is connected with the category Tense, the construction is dominated by S_3. An S_3 may be dominated by S_2, in which case it can be connected with some types of adverbials (e.g. *certainly*, *fortunately*). In the same way S_1 may dominate an S_2 with an (optional) adverbial of another type (e.g. *incidentally*, *frankly*). According to Kajita, verbs that take a sentential complement must have subcategorization features that indicate the function of such a complement and the symbol (S_1, S_2, S_3, or S_4) by which it is dominated. For example, *say*, *think* and *believe* must be positively specified for an S_2-subject and *ask*, *demand* and *request* for an S_3-object. The sentential complements of e.g. *manage* and *begin* must be considered to be derived from S_4. One of the regularties Kajita points out is that the *that*-complementizer can only be assigned to embedded clauses which have been derived from S_2 or from S_3. Therefore the structural analysis of the transformation that introduces *that* must contain the information that the complements in question are dominated by one of these two categories. Another instance of correspondence between the internal structure of an embedded clause and the choice of the complementizer before it has been discussed by De Geest(1972) with respect to complements of 'verba sentiendi' in Dutch. Adopting Seuren's distinction between the categories 'sentence', 'proposition' and 'nucleus' De Geest claims that a *dat*('that')-clause and a 'bare infinitive' as complement of e.g. *horen* ('hear') differ from each other in their underlying structure. The former is derived from an embedded sentence, the latter from an embedded nucleus.

3 The observations that I will present in the following sections show that there are elements which, generally spoken, can occur in infinitive constructions that cannot take *om* , whereas they cannot occur in infinitive constructions in which *om* can occur. I claim that these phenomena can be described adequately in a grammar that derives sentential complements from underlying structures that are dominated by a symbol of a class which has at least three members. I call these three categories Sentence, Fact and Event. The latter two terms are due to Vendler(1967). Probably there are more such categories, since, as far as I know, Event cannot be identified with Seuren's category Nucleus. But this question will be left aside. As far as these three cate-

gories are concerned, an embedded clause can have one of the following underlying structures:

5a $\text{Sentence}^{[\ldots\text{Fact}^{[\ldots\text{Event}^{[\ldots]}\ldots]}\ldots]}$

b $\text{Sentence}^{[\ldots\text{Event}^{[\ldots]}\ldots]}$

c $\text{Fact}^{[\ldots\text{Event}^{[\ldots]}\ldots]}$

d $\text{Event}^{[\ldots]}$

As will be shown below, underlying structures of each of these types can be derived into an infinitive construction if certain conditions are met. It will not be attempted in this paper to formulate these conditions. In other words, the choice of a *dat*('that')-clause, an infinitive construction or a nominalization as the surface representation of an embedded clause will not be discussed. With respect to infinitive constructions I claim that they can only be preceded by *om*, if they are derived from an underlying structure of type (5)d.

4 Beyond the regularities stated above and to be discussed in the following sections, there is another restriction on the occurrence of *om*, which is of a more superficial nature. With respect to this restriction the notion 'extraposition' is relevant. We will not go very deep into the problem of extraposition of infinitive constructions. I only want to present one type of observation from which a conclusion can be drawn about the question whether or not an infinitive construction has been extraposed. This question is not easy to answer if only observations in which the matrix is a main clause are taken into account. E.g. it is not sure if there is any difference in terms of extraposition between sentences (1)a *Hij probeert weinig te roken* and (1)b *Hij weigert teveel te betalen* on the one hand and the following sentences on the other:

6a Hij schijnt /teveel te betalen/
He seems to pay too much
b Hij zit/een pijp te roken/
He sits smoking a pipe.

(Again, the infinitive constructions are between slants). But if we take into account the corresponding *dat*-clauses, the following difference can be noted:

7a ..., dat hij probeert /weinig te roken/
b ..., dat hij /weinig/ probeert /te roken/
8a ..., dat hij weigert /teveel te betalen/
b *..., dat hij /teveel/ weigert /te betalen/
9a *..., dat hij schijnt /teveel te betalen/
b ..., dat hij /teveel/ schijnt /te betalen/
10a *..., dat hij zit /een pijp te roken/
b ..., dat hij /een pijp/ zit /te roken/

In the a-sentences the infinitive construction has been extraposed: it follows after the verb of the matrix. This is not the case in the b-sentences. There the infinitive constructions are, informally spoken, more coherent with their matrix-clauses. The above examples show, that extraposition is possible if *proberen* is the main verb of the matrix, that it is obligatory with *weigeren* and impossible with *schijnen* and *zitten*. With respect to *om* it can be noted that, aside from other restrictions, this element can only occur before infinitive constructions that have been extraposed. Thus, (7)a' is grammatical but (7)b' is not:

7a' ..., dat hij probeert o m weinig te roken
b' *..., dat hij o m weinig probeert te roken.

5 In the following sections arguments will be presented for the hypothesis formulated in section 3. It will be shown that there are four types of contexts in which an infinitive construction cannot be preceded by *om*. These contexts can be characterized as follows:

11a The infinitive construction contains, or may contain, a 'truth value modifying adverbial'.
b The infinitive construction has been derived from an underlying clause with the past tense, or from an underlying clause that occurs in a context where a clause with the past tense can occur too.
c The infinitive construction contains *zullen* ('shall/will').
d The infinitive construction is to be characterized as 'indirect imperative'.

Then it is argued that the relevant differences must be described as differences in underlying structure, which can plausibly be formulated in terms of the categories Sentence, Fact and Event. It is claimed that:

12a The underlying structures of the infinitive constructions indicated in (11)a and (11)b contain the categories Fact and Event (i.e. they are either of type (5)a or of type (5)c).
b The underlying structures of the infinitive constructions indicated in (11)c and (11)d contain the categories Sentence and Event (i.e. they are either of type (5)a or of type (5)b).
c The underlying structures of the infinitive constructions that may be preceded by *om* contain the category Event but do not contain the category Sentence or the category Fact (i.e. they are of type (5)d).

I will call the underlying structures indicated in (12)a 'F-clauses', those indicated in (12)b 'S-clauses' and those indicated in (12)c 'E-clauses'.

6 Consider the following sentences:

13a Hij vertelde me m i s c h i e n overgeplaatst te worden.
b Hij vertelde me dat hij misschien overgeplaatst zou worden.
He told me that he m i g h t be transferred.
14a Hij betreurde het w a a r s c h i j n l i j k teveel te betalen.
b Hij betreurde het dat hij waarschijnlijk teveel betaalde.
He regretted that p r o b a b l y he paid too much.

These sentences contain the modal adverbs *misschien* and *waarschijnlijk* respectively. The meaning of these adverbs can be characterized as 'indicating the truth value of the proposition under their scope'(cf. Schreiber(1971)). They belong to a class of adverbials that I will refer to as 'truth value modifiers'. The a-sentences are ambiguous in that the truth value modifier can be considered to belong to the matrix or to the embedded clause. In the latter interpretation the a-sentences are synonymous to the corresponding b-sentences. Such an ambiguity cannot be assigned to the following sentences:

15a Hij probeerde misschien overgeplaatst te worden.
16a Hij weigerde waarschijnlijk teveel te betalen.

The truth value modifier can only be interpreted as a constituent of the matrix, not as a constituent of the embedded clause. Accordingly only the b-sentences below are grammatical, whereas the c-sentences are not:

15b Hij probeerde misschien o m overgeplaatst te worden.
c *Hij probeerde o m misschien overgeplaatst te worden.
16b Hij weigerde waarschijnlijk o m teveel te betalen.

c *Hij weigerde o m waarschijnlijk teveel te betalen.

Thus, whereas an infinitive construction 'governed' by *vertellen* or *betreuren* may contain a truth value modifier, an infinitive construction 'governed' by *proberen* or *weigeren* may not. On the other hand, the latter verbs tolerate *om* before an infinitive construction, whereas the former do not. These examples illustrate a regularity that can be formulated as follows: an infinitive construction that may contain a truth value modifier cannot be preceded by *om*.

7 Another restriction on the occurrence of *om* can be illustrated by the following sentences:

17a Hij beweert vorige week weinig gerookt te hebben (vorige week ='last week')
b Ze betreuren het vroeger in een grote stad gewoond te hebben (vroeger = 'formerly')
18a Hij probeert (om) vorige week weinig gerookt te hebben.
b Ze hebben er een hekel aan (om) vroeger in een grote stad gewoond te hebben.

We will consider these sentences with regard to the tense of the embedded clauses. I adopt Seuren's opinion about the nature of tenses as categories of the underlying structure. According to Seuren the deep structure tense of an embedded clause can be defined as the relation in time between the moment referred to in the embedded clause and the moment referred to in the matrix. If we call these moments A and B respectively, we can say that the tense of the embedded clause is present, if A and B are identical, past if A precedes B, future if A follows B and universal if the relation between A and B is not specified. Similarly the tense of an unembedded sentence can be defined as the relation in time between the moment referred to in this sentence and the moment of the utterance (It should be noted that this addition is unnecessary if we adopt Ross' performative hypothesis(Ross(1970)). Assuming that a present tense-form in an unembedded sentence represents a present tense in deep structure, we can characterize the tense of the matrix sentences in the above examples as present, for they have the present tense-form. The infinitive constructions contain the time adverbials *vorige week* and *vroeger*, which are deictic adverbials. That is, the moment referred to by them always preceeds the moment of the utterance. Since the moment referred to in the matrix is the moment of the utterance, the deep structure tense of the embedded clause must be characterized as past. Comparing the ungrammatical sentences in (18) with the grammatical ones in (1) that correspond with them (viz. (1)a and (1)d), we can note that the only difference between those sentences is the tense of the embedded clause. Hence it is clear that the ungrammaticality of the sentences in (18)(which sentences are ungrammatical even if *om* is absent) must be described as an effect of the incompatibility of the past tense in the embedded clause and the 'governing' verb. Thus the verbs in (17) (*beweren* and *betreuren*) differ from those in (18)(*proberen* and *een hekel hebben aan*) in that the former tolerate a past tense in their complements, which the latter do not. We have seen in section 1, that these groups of verbs differ also with respect to their compatibility with the optional *om*. The regularity illustrated by the above examples can be formulated as follows: no infinitive construction with optional *om* occurs in those contexts where an infinitive construction with the past tense can occur.

8 To summarize the observations presented in the preceding sections, the optional *om* cannot occur in those contexts, in which an infinitive construction with a truth value modifier or an infinitive construction with the past tense can occur. In my opinion these two regularities need not be stated apart from each other. Both regularities can be accounted for by the same rule, if the possibility of having the past tense and the possibility of containing a truth value modifier are made dependent on the same factor. This can be done, since not only truth value modifiers but also the past tense can only occur in clauses with a truth value. I.e. if a clause contains a truth value modifier or if its tense is past, it is always asserted or presupposed to have a truth value

for a person referred to by an NP in a higher clause. That the occurrence of the past tense is restricted to clauses with a truth value in the sense stated above is a statement that is in accordance with the observations presented by Vendler in 'Facts and Events'(Vendler(1967), chapter 5). As far as they are relevant for the present discussion, Vendler's conclusions can be summarized as follows. There are two major syntactic types or embedded clauses: 'imperfect nominals' and 'perfect nominals'. 'Perfect' and 'imperfect' refer to the degree of syntactic similarity to 'normal' NP's. In the following examples the a-sentences contain a perfect nominal and the b-sentences and the c-sentences an imperfect nominal:

19a J o h n ' s d e a t h surprised me.
b T h a t h e d i e d surprised me.
c H i s h a v i n g d i e d surprised me.
20a J o h n ' s d e a t h occurred at noon.
b *T h a t h e d i e d occurred at noon.
c *H i s h a v i n g d i e d occurred at noon.

Observing the contexts in which perfect and imperfect nominals occur, Vendler notes the following semantic difference: the referents of perfect nominals can be characterized either as 'facts' or as 'events', whereas the referents of imperfect nominal must be characterized as 'facts'. Vendler's claim can be interpreted as a statement that clauses that can be characterized syntactically as imperfect nominals always have a truth value (in the way indicated above). On the other hand clauses that can be characterized syntactically as perfect nominals have a truth value or not, dependent on the context in which they occur. One of the characteristics of imperfect nominals that differentiates them from perfect nominals is that they may contain an auxiliary, including the past auxiliary 'have'. Since it is impossible to express the past tense in a nominalization (or infinitive construction) without this auxiliary, this implies that Vendler's perfect nominals, which are nominalizations and at the same time can not contain 'have', cannot be derived from a past clause. Connecting the characterization of imperfect nominals as having a truth value with the observation that only imperfect nominals can be derived from a clause with the past tense, we have the same statement as I formulated above: only clauses with a truth value can have the past tense. It can be inferred from this, that if clauses with a truth value are marked as such in the underlying structure, we can restrict the expansion of Tense into Past in terms of that marker. A possible way of marking a clause as having a truth value is postulating a category Fact in the underlying structure. Fact dominates the category (or categories) that represents the modal operator together with the category that represents the proposition under the scope of this operator. Now the expansion of Tense can be constrained to the effect that Past can only be chosen if there is a dominating category Fact. Perlmutter's device of deep structure constraints may be appropriate to carry out this restriction, but I cannot, at this moment, present a detailed proposal. Both the occurrence of a truth value modifier and the possibility to choose the past tense depending on the presence of the category Fact, it is possible now to account for the incompatibility of the optional *om* with both a truth value modifier and the past tense by a single condition. This condition states that *om* can not be introduced before an infinitive construction that is derived from an F-clause (type (5)a or (5)c).

9 However, it is not sufficient to block the introduction of *om* only if the infinitive construction is an F-clause in its underlying structure. The ungrammaticality of the sentences (21)d and (22)d cannot be accounted for by this condition:

21a Hij beloofde me de volgende dag terug te komen.
b Hij beloofde me de volgende dag terug te z u l l e n komen.
c Hij beloofde me o m de volgende dag terug te komen.
d *Hij beloofde me o m de volgende dag terug te z u l l e n komen.
22a Het bestuur besloot een vergadering uit te schrijven.

b Het bestuur besloot een vergadering uit te z u l l e n schrijven.
c Het bestuur besloot o m een vergadering uit te schrijven.
d *Het bestuur besloot o m een vergadering uit te z u l l e n schrijven.

(The sentences in (21) can roughly be translated as 'He promised me to return next day' and those in (22) as 'The committee decided to convocate a meeting'). These examples show, that an infinitive construction 'governed' by verbs like *beloven*('promise') and *besluiten* ('decide') may contain either *zullen* (the b-sentences) or *om* (the c-sentences), but that it is impossible to have both *om* and *zullen* in the same infinitive construction (the d-sentences). It should be noted that the class of verbs that tolerate both *zullen* and *om* in their infinitival complements is very small. The general pattern is that *om* cannot occur in contexts where *zullen* can occur. This can be illustrated by the following examples:

23a Hij beweert volgende week weinig te z u l l e n roken(volgende week = 'next week')
b Hij vertelde me overgeplaatst te z u l l e n worden.
24a *Hij probeert (om) weinig te z u l l e n roken.
b *Hij verlangt ernaar (om) overgeplaatst te z u l l e n worden.

As we have seen in section 1, an infinitive construction governed by *beweren* or *vertellen* cannot be preceded by *om*. It is shown in (23), that such an infinitive construction may contain *zullen*. On the other hand we have seen that *proberen* and *verlangen* tolerate the optional *om*. It is shown in (24), that these verbs do not tolerate the presence of *zullen* in their infinitival complements. How can we describe the observations about *beloven* and *besluiten*?First, it can be argued, that the occurrence of *om* before an infinitive construction with *zullen* (examples (21)d and (22)d)cannot be prohibited by the condition outlined in the preceding section. It would be possible to do so if the infinitive constructions in (21)b and (22)b could be characterized as F-clauses and those in (21)c and (22)c not. But in fact neither the infinitive constructions in the b-sentences not those in the c-sentences are F-clauses. As has been pointed out by Austin(1967) and Searle(1969) complements of verbs that mean 'promise' or 'decide' cannot be conceived to have a truth value. Perhaps it is this semantic property that is distinctive for the class of verbs that tolerate both *om* and *zullen*, in comparison with those that tolerate *zullen* but not *om*. Of course it would be possible to account for the ungrammaticality of (21)d and (22)d by blocking the introduction of *om* before infinitive constructions that contain *zullen*. But it will be argued below, that by doing this we would miss a generalization. Instead I propose to account for the mutual exclusion of *om* and *zullen* in terms of a factor that at the same time makes it possible to have *zullen* and impossible to have *om*. I will not discuss here the problem arising with respect to the semantic characterization of *zullen*. The only remark I want to make concerns the conditions for its occurrence in infinitive constructions. We noted already, that it is insufficient to restrict the occurrence of *zullen* to infinitive constructions that have been derived from an underlying F-clause with the future tense. My proposal is to block *zullen* in infinitive constructions that have been derived from an E-clause (type (5)d). In fact the conditions must be narrowed, since it is not possible to derive every S-clause into an infinitive construction with *zullen*. This further restriction must account for the fact that infinitive constructions cannot contain *zullen* if they are 'indirect imperatives'. We will return to this matter below.

In my proposal the category Sentence functions to distinguish between embedded clauses that must be characterized as 'indirect imperatives' from embedded clauses that cannot be characterized in this way. It is not easy to give an independent motivation for this distinction. In this respect evidence about restrictions on adverbials may be relevant. E.g. it may be possible to account for the fact that (25)a is grammatical and (25)b is not, by blocking the introduction of adverbials like *helaas* ('unfortunately') in clauses that are not dominated by S.

25a Hij zei dat hij helaas geen tijd had.
He said that, unfortunately, he had no time.
b *Hij bemerkte dat hij helaas geen tijd had.
He perceived that, unfortunately, he had no time.

In my opinion the embedded clause in (25)a is dominated by Sentence and the embedded clause in (25)b by Fact. But I will not deal with this kind of questions here, since they are very complicated and require much more research. The only thing I want to demonstrate is, that the notion 'indirect speech' can be used to block the optional *om* (and, to some extent, *zullen*) in infinitive constructions, in cases where the condition in terms of Fact is not sufficient.

10 I propose to describe the facts illustrated in (21) and (22) as follows. The b-sentences are derived from an underlying structure that differs from the underlying structure of the c-sentences, in that the embedded clause in the former is an S-clause and in the latter an E-clause. In the b-clauses the infinitive may contain *zullen*, since they are derived from an S-clause (that is not an 'indirect imperative'). Whereas the condition formulated in the preceding section makes it possible to have *zullen* in the b-sentences, the same condition blocks *zullen* in the c-sentences, since in these sentences the infinitive construction is derived from an E-clause. Arguments for postulating different underlying structures for the b-sentences and the c-sentences will be given in the following section. To account for the incompatibility of *om* and *zullen*, which is illustrated in the sentences (21)d and (22)d, I propose to formulate an additional condition on the introduction of the optional *om*. This condition states that it is impossible to introduce *om* before an infinitive construction that has been derived from an S-clause (structures of type (5)a or (5)b). According to this condition *om* cannot be introduced in the b-sentences, yielding the d-sentences. On the other hand *om* can be introduced in the c-sentences, since in these sentences the embedded clause is an E-clause and E-clauses are the only type of embedded clauses that can be derived into an infinitive construction with the optional *om*.

11 There is another restriction on the occurrence of *om* that cannot be described if the introduction of *om* is blocked only in F-clauses. This restriction can be illustrated by the following example:

26a Ze zeiden haar het boek te lezen.
They told her to read the book.
b *Ze zeiden haar o m het boek te lezen.

(26)a is ambiguous. The infinitive construction can be interpreted as an indirect assertion. In this interpretation the underlying subject of the embedded clause is coreferential with the subject of the matrix. The fact that in this interpretation (26)b is ungrammatical is accounted for by the condition that blocks the introduction of *om* in F-clauses. In the other interpretation the infinitive construction is an indirect imperative. In this interpretation the underlying subject of the embedded clause is coreferential with the indirect object of the matrix. The fact that (26)b is also ungrammatical in this interpretation cannot be accounted for by the condition that blocks the introduction of *om* in F-clauses, since an indirect imperative has no truth value and hence cannot be described as an F-clause. If we introduce the condition proposed in the preceding section, we can account not only for the incompatibility of *om* and *zullen* but also for the absence of *om* in indirect imperatives. Since an indirect imperative is an instance of indirect speech, the underlying structure of (26)a in the indirect-imperative-reading must contain an embedded S-clause. By blocking the introduction of *om* in S-clauses, we block the derivation of (26)b in both interpretations. It should be noted, incidentally, that (26)c must be interpreted as an indirect assertion and that it cannot be interpreted as an indirect imperative:

26c Ze zeiden haar het boek te z u l l e n lezen.

Hence, the condition that *zullen* may occur in infinitive constructions that have been derived from an F-clause or an S-clause, must be modified to the effect that infinitive constructions with *zullen* that must be interpreted as indirect imperatives are blocked.

12 In section 10 I claimed that an infinitive construction governed by *beloven* or *besluiten* must be derived either from an underlying S-clause or from an underlying E-clause. Further, by deriving all infinitive constructions governed by *zeggen* from an underlying S-clause (section 11), I claimed that infinitive constructions that are indirect imperatives differ in underlying structure from infinitive constructions governed by verbs like *dwingen*('force'). The former must be derived from an S-clause and the latter from an E-clause. In other words, I claimed that instances of 'indirect speech' must be distinguished syntactically from other types of embedded clauses. It was admitted already in section 9, that it is difficult to find strong support for this distinction. In this section I will present some syntactic observations that may be of interest with respect to this question. Consider the following sentences:

27a Ze dwongen haar (om) het boek te lezen.
 b Ze dwongen haar e r t o e (om) het boek te lezen.
 They forced her to read the book.
28a Ik zal zorgen dat je het boek krijgt.
 b Ik zal e r v o o r zorgen dat je het boek krijgt.
 I will see to it that you will get the book.

The a-sentences are synonymous with the corresponding b-sentences. They differ from them in that the b-sentences contain *ertoe* and *ervoor*. These words consist of a pronominal element *er* and a prepositional element (*toe* in (27)b and *voor* in (28)b. *Toe* is a variant of *tot* after a pronoun). *Er* is the pronominal head of the NP that dominates the embedded clause. We can describe the relation between the a- and the b-sentences by deriving this NP from a PrepPhrase and deleting the preposition together with the pronominal head optionally. If this deletion transformation applies we get the a-sentences, if it does not we get the b-sentences. That the preposition is present in the underlying structure can be inferred from the fact that deletion of the embedded clause has as result the c-sentences and not the d-sentences:

27c Ze dwongen haar e r t o e .
 d *Ze dwongen h e t haar.
28c Ik zal e r v o o r zorgen.
 d *Ik zal h e t zorgen.

(*Het* is the form of the pronominal head is there is no preposition). Now consider some additonal observations on *besluiten* ('decide'):

22e Het bestuur besloot dat het een vergadering zou uitschrijven.
 f Het bestuur besloot tot het uitschrijven van een vergadering.
 g Het bestuur besloot h e t met algemene stemmen(met algemene stemmen = 'unanimously')
 h Het bestuur besloot e r t o e met algemene stemmen.

It must be inferred from the above examples that an embedded clause governed by *besluiten* can be either direct object or prepositional object. In (22)f and (22)h *besluiten* takes a prepositional object (*ertoe* occurs) and in (22)g a direct object(the pronoun has the form *het*). In order to find the correct underlying structure of (22) a-c and (22)e, we try to insert *ertoe* in these sentences. We get:

22i Het bestuur besloot e r (met algemene stemmen) t o e een vergadering uit te schrijven.
 j *Het bestuur besloot e r (met algemene stemmen) t o e een vergadering uit

te z u l l e n schrijven.
k Het bestuur besloot e r (met algemene stemmen) t o e o m een vergadering uit te schrijven.
l *Het bestuur besloot e r (met algemene stemmen) t o e d a t het een vergadering zou uitschrijven.

The above examples show that *tot* cannot occur if the embedded clause has the form of a *dat*-clause ((22)l) or an infinitive construction with *zullen*((22)j). The preposition can or cannot occur if the embedded clause has the form of an infinitive construction without *zullen* ((22)a,c,i and k). Further, it turns out that *tot* must occur if the embedded clause has the form of a nominalization:

22m *Het bestuur besloot het uitschrijven van een vergadering.

The incompatibility of the preposition with the *dat*-clause cannot be described by making the transformation that deletes the preposition and the pronoun obligatory if there is a *dat*-clause, since there are *dat*-clauses that may occur with *er* +preposition (example (28)b). Therefore, and because of the fact that (22)g (with the pronoun *het* as direct object) is grammatical, it is very plausible to derive the *dat*-clause from a direct object. Consequently the infinitive construction with *zullen* is to be derived from a direct object too. On the other hand the infinitive construction with *om* and the nominalization are to be derived from a prepositional object. It seems to me that an infinitive construction without *om* or *zullen* and without preposition (example (22)a) can be derived from a prepositional object by application of the (optional) deletion transformation, but I am not sure whether derivation from a direct object is also possible. With respect to *zeggen* and *dwingen* we can note that *zeggen* takes a direct object and *dwingen* a prepositional object (as shown in (27)). They also differ in that *dwingen* can have a nominalization as complement, which is not possible with *zeggen*. Again the preposition cannot be deleted before a nominalization:

26d *Ze zeiden haar het lezen van het boek.
27e Ze dwongen haar t o t het lezen van het boek.
f *Ze dwongen haar het lezen van het boek.

Both the observations about *besluiten* and those about *zeggen* and *dwingen* show, that some syntactic properties of nominalizations are shared by infinitive constructions with optional *om* and not by infinitive constructions that cannot be preceded by *om*. Hence we can exclude in these cases both the derivation of nominalizations and the introduction of *om* before infinitive constructions in terms of the same context; in my proposal in terms of a dominating category Sentence. Moreover, we can formulate the following restriction on the introduction of the category Sentence in the base: Sentence cannot be derived from an NP that is dominated by the category PrepPhrase. In the previous discussion I paid no further attention to *beloven* ('promise'). Since *beloven* never takes a prepositional object but always a direct object, the syntactic arguments for *besluiten* are not applicable with respect to this verb. Yet I suppose that also *beloven* takes either an S-clause or an E-clause as direct object, for *beloven* and *besluiten* bear an important semantic similarity. This common semantic property can be roughly formulated as follows: the activity they refer to can be characterized as the performance of a speech act and at the same time as a step in a process that is to result in the performance of the action denoted in this speech act.

13 Finally I want to make a short remark about the relation between the function of an embedded clause and its characterization as S-clause, F-clause, or E-clause. It is especially my analysis of sentences with *besluiten* that make such a remark useful. It can be demonstrated that the description of *besluiten* as a verb that takes either an S-clause as direct object or an E-clause as prepositional object follows naturally from a localistic hypothesis about grammatical functions. Putting aside the many differences of opinion, the essential claim of localistic grammarians[3)] can be formulated

as follows. There are two basic types of verbs: those which denote some change and those which do not. Corresponding with the nature of the 'source' and the 'goal' of the change, several kinds of change can be distinguished, from local transitions to more abstract changes of state or circumstance. On this level of abstraction verbs with the meanings 'say', 'decide' and 'force' can be characterized as change verbs. That is, apart from the Agent, that will not be discussed here, they govern three NP's. With respect to their function these NP's can be characterized as Object, Source and Goal. Each of the verbs denote a special kind of transition of the Object from the Source to the Goal. Their difference in meaning is partly reflected by the selectional restrictions imposed on the NP's they govern. Thus the Source and Goal in connection with a verb of 'saying' are persons (Source and Goal are identical in the special case of 'thinking'), whereas the Object is a linguistic utterance. On the other hand there are verbs like 'force', where the Object is a person. These verbs denote a transition of the Object-person from one state (Source) to another (Goal). In the case of 'force' the (abstract) Source and Goal can be roughly characterized as 'not intending to do something' and 'doing it' respectively. The change called 'deciding' can be characterized in two ways. On the one hand it is a transition of the 'say'-type, where the Object is an utterance and the Source and Goal are persons, on the other hand it is a transition of the 'force'-type, where the Object is a person and the Source and Goal are abstract states (attitudes with respect to the performing of some action). It can be stated for such languages as Dutch and English, that normally the Object (in the localistic sense) of a sentence is subject or direct object, whereas the Source and the Goal are subject or prepositional object. If the double characterization of 'decide' in localistic terms is right, it follows naturally from this characterization that an embedded clause governed by this verb is either an S-clause or an E-clause. If it is an S-clause it has the function Object on the most abstract level of representation and the function direct object on a more superficial level. If it is an E-clause, it has the functions Goal and prepositional object respectively. It seems to me that also verbs like *adviseren* ('advise'), which take an infinitive complement with the optional *om* but never tolerate *zullen* in their complements,must have a double characterization in a localistic description. Syntactic evidence for this is the fact that both (29)a, with a direct object, and (29)b, with a prepositional object, are grammatical:

29a Hij heeft h e t me geadviseerd.
b Hij heeft me e r t o e geadviseerd

I will not discuss these verbs at this moment.

The analysis I suggested involves an important problem with respect to the semantic representation of sentences with verbs like *besluiten*. How can we account for the agreement in meaning between the different syntactic types of sentences with such a verb, if we derive them from different underlying structures. The only suggestion I can offer at this moment is, that meaning postulates might be an appropriate device for this(cf. Lakoff(1972a)).

14 My conclusions can be summarized as follows. The fact that infinitive constructions governed by verbs like *beweren* ('pretend'), *menen* ('think'), *vertellen* ('tell'), *betreuren* ('regret'), *verbazen* ('surprise'), *trots op* ('proud of') cannot be preceded by the optional *om* can be accounted for by blocking the introduction of *om* in infinitive constructions that have been derived from F-clauses (structures of type (5)a or (5)c). F-clauses differ from other clauses in that they may contain a truth value modifier and in that they can take the past tense. The fact that infinitive constructions governed by verbs like *beloven* ('promise'), and *besluiten* ('decide') cannot be preceded by *om* if they contain *zullen* and the fact that infinitive constructions that are indirect imperatives cannot be preceded by *om* can be accounted for by blocking the introduction of *om* in infinitive constructions that have been derived from S-clauses (structures of type (5)a or (5)b)). S-clauses ('indirect speech') differ from

other clauses in that they cannot be derived into a nominalization and in that they are never dominated by the category PrepPhrase. The latter property follows naturally from a localistic description of grammatical functions. Infinitive constructions that can be preceded by *om* are to be derived from E-clauses (structures of type (5)d).

Department of Linguistics
Catholic University Nijmegen

Notes

* I am indebted to L. Stassen for reading the text of this paper critically and to J. Crouzen for correcting my English.

1 The class of verbs is considered to include adjectives (cf. Lakoff(1970b)).

2 Kajita(1968),p.115.

3 Theories about grammatical functions that are more or less localistic can be found in Gruber(1965), Anderson(1971) and Fillmore(1971).

DUTCH WORD STRESS

W.U.S. van Lessen Kloeke

Textbooks on Dutch grammer usually devote a short paragraph to word stress in which it is qenerally observed that in accordance with the Germanic stress rule, which assigns primary stress to the 'Stammsilbe', Dutch words receive primary stress on the first syllable except on a few prefixes like *be-*, *ver-*, *ge-*, etc., whereas loanwords presumably retain their original accent, e.g.

1 commíssie commissáris commissionáris commissoriáal

However, it is also often noted that several affixes bring about a change in the stress contour of the 'ground word', namely *-baar*, *-ig*, *-isch*, *-lijk*, *-loos*, *-zaam*. "It is as if these suffixes draw the accent towards themselves..."[1] Such a contrast can be seen in examples as in (2) and (3):

2 máatschap (on)maatscháppelijk maatschappíj
hérberg onherbérgzaam herbergíer(ster)

3a víjand vijándelijk
ámbacht ambáchtelijk
méineed meinédig
wánhoop wanhópig
hérkomst herkómstig
ónfatsoen onfatsóenlijk
óorzaak oorzákelijk
áfgod afgódisch

b árbeiden arbéidzaam
verántwoorden verantwóordelijk
wántrouwen wantróuwig

and in (4) where the stress shifts across several syllables:

4 ógenblik ogenblíkkelijk
vóornaamwoord voornaamwóordelijk
bedrijfshuishoudkunde bedrijfshuishoudkúndig

The phenomenon seems also present in (5) although those words do not possess counterparts with initial stress:

5 hoogwáardig edelgrootáchtbaar weledelzeergeléerd

But as the pairs in (6) show, the contrast in stress exists also without the suffix (the glosses, of course, are only approximations)

6 óndicht bad poem ondícht leaky
ónnut useless person onnút useless
ongelijk error ongelíjk unequal
vóornaam Christian name voornáam dignified

On the other hand, adjectives ostensibly derived from adverbials (7)

7 laagbijdegrónds bijdehánd platvlóers terécht

retain final stress. Stress on the final or penultimate syllable occurs also in isolated words, many of Germanic origin:

8 goedkóop goedertíeren weerbárstig
hardléers rampzálig armetíerig
germáans schroomvállig meewárig
meláats ordéntelijk potsíerlijk
onbesúisd verbouwereérd wispeltúrig

Regardless of whether or not the adjectives are composed of more than two constituents as in (4) and (5), or appear foreign as in (9)

9 curiéus politiéel verneukeratief
familiáar politionéel

or belong to more familiar looking 'thieves slang' (10)

10 bargóens hodeldebódel chasjewijne
kadúuk kapóres lázerus
góochem mesjógge

they receive primary stress on the ultimate, penultimate or ante-penultimate syllable. Therefore, we might formulate a stress rule for Dutch adjectives which assigns primary stress to the last syllable with disregard for the suffix. Let us assume that the Dutch adjectival stress rule is fundamentally the same as the rule formulated by Chomsky and Halle, the formulation and workings of which are extensively discussed in 'Sound Patterns of English' [2]:

A i $V \longrightarrow [1\ \text{stress}] / [X\_\_C_0 \begin{bmatrix}-\text{tense}\\ V\end{bmatrix} C_0^1 \begin{bmatrix}-\text{tense}\\ V\end{bmatrix} C_0]$

ii $V \longrightarrow [1\ \text{stress}] / [X\_\_C_0 \begin{bmatrix}-\text{tense}\\ V\end{bmatrix} C_0]$

iii $V \longrightarrow [1\ \text{stress}] / [X\_\_C_0]$

Since this rule does not recognize suffixes, but only weak clusters[3], the stress will be properly assigned to *verantwóordelijk*[4], *toŋelemóne* and *jalóers*, but in order to get the correct stress in words such as *éerzaam*, *éindeloos*, *óorbaar*, which contain a tense V in the final syllable, it must be assumed that the suffixes *-zaam*, *-loos*, *-baar* somehow cannot receive stress[5]. Assuming that all adjectives are stressed according to the above rule, we can now explain a difference in stress pattern of (11):

11a		11b	
	vooruítstrevend		vooruitstrévend
	góedkeurend		goedkéurend
	dóorlopend		doorlópend
	teléurstellend		teleurstéllend
	--		waarheidslíevend
	--		haatdrágend
	--		mensontérend
	--		roodomránd
	--		godvergéten

The words in the lefthand column, which appear to be present participles, have the same stress pattern as their associated infinitives, whereas those in the righthand column are unambiguously adjectival in nature in conjunction with an adjectival stress pattern. Also in the cases where there are no related verbs, it suffices to label the words as adjectives regardless of the fact that they resemble present and past participles. This being established, it also allows for the fact that there are two alternative stresses to be heard as in (12):

12		
	ínzittenden	inzíttenden
	ómwonenden	omwónenden

Those on the right can be explained by assuming them to be nominalized adjectives, those on the left nominalized participles. A similar explanation can be given for the opposition in (13):

13	ápezuur[6]	monkey's acid	apezúur	very burdensome
	ápelazerus	ape's disease	apelázerus	dead drunk
	dóodzonde	deadly sin	doodzónde	sinful, a great pity

where the words from the right column can be taken as predicative adjectives. At first glance this labelling may seem a bit bizarre, but although they have so-called level-stress, there can be no doubt that there is only one primary stress, and in fact they have excactly the same stress pattern as words in (14):

14 doodsbáng, apemóoi, superlélijk, steenkóud, pikzwárt, kraakzíndelijk.

which have this kind of successive accent by virtue of the fact that they are combined in some way with lexical intensifiers which are typically related to metaphors[7]. The same pattern occurs in (15):

15 goorwít, roodkóperen, lichtbéige, bruinzwárt

at least when they are predicatively used[8]. Assuming again that words with level-stress have only one primary stress[9], we may proceed to compare the following examples (16):

16	a	dolgráag (adv.)	b	leergíerig	c	léergraag
		ijzersterk		ijzerhóudend		íjzerrijk
		doodziek		twistzúchtig		twístziek

The words in the lefthand column, although level-stressed, have rightward stress as predicted, as do the words in the middle column. The adjectives in the righthand column which are synonymous with those in (b) however, have initial stress. In order to account for this we could assume that there exist a number of affixes (*-ziek,-rijk, -blind, -vol* etc.) which are somehow disregarded by the adjectival stress rule in the same manner as other suffixes discussed before. But this would not work in all cases, as the examples in (17) show:

17	a	ínvloedrijk	b	omvángrijk
		wéergaloos		meedógenloos
		terugvórderbaar		overdráagbaar
		hérbenoembaar		herbenóembaar

The adjectival stress rule (A) would then predict the stress pattern in (b) but not in (a). When we compare the following columns

18	a	spínnewebachtig	b	deeláchtig
		stópverfachtig		krampáchtig
		knóflookachtig		reusáchtig
		sléutelbloemachtig		waarachtig
		jongejúffrouwachtig		woonáchtig
		schóolmeesterachtig		twijfelachtig
		búrgemeésterachtig		vreesáchtig*
		áanpapperig		aanhálerig
		múggezifterig		aanstéllerig
		gewíchtigdoenerig		opschépperig*
		nijdasserig		uitslóverig*
		hóbbezakkerig		kieskáuwerig*
		kóukleumerig		

again rule (A) does not account for the lefthand column, and is optional for the starred examples. Now there are two possibilities: give up the general claim that all adjectives are stressed to the right, and in particular that the *-ig* suffix attracts the stress, and mark the affixes in the (a) columns in such a way that they have the stress of the substantive or verb from which they are derived and block (A) from applying to those adjectives. The other possibility is to enter all those words as exceptions which is even more awkward because the pattern is extremely productive, whereas those in (18)b are only limited in number. The productivity of type (a) gives a lead. *Spínnewebachtig, gewíchtigdoenerig* etc. are transformationally related to the associated propositions in a completely unambiguous way (*spínneweb, dánpappen, gewíchtig doen* etc.) and this suggests that the transformationalist hypothesis which Chomsky found to be correct for the gerundive nominals but not for the derived nominals in English might be correct here, too[10]. But what is more - and this argument is due to Joan Bresnan(1971) - if word stress must be regarded as to be assigned prior to syntactic transformations, it will remain unchanged in the course of the following operations, in other words, transformationally attached affixes are stress neutral. The above mentioned affixes seem proper candidates for this hypothesis. Words in the (b) column like *deeláchtig*, which have idiosyncratic meanings only partially related to their associated propositions and have a high frequency of occurrence, receive their stress according to the general rule (A) having been inserted lexically. The same is true for the words in (17b), but not for those in column (17a). The question how the words in (17a) are derived will not be further explored here in detail. However, there seem to be at least three possibilities. If they are derived lexically they must have a phonological representation which is different from the examples in (17b), namely with suffixes which do not shift the stress of the noun from which they are derived (cf. the nouns in *-ling* further in the text). If they are derived transformationally their suffixes are stress neutral, being introduced as in (18a). But - and this will be argued for the so-called 'separable verbs'- if they are transformational rather than lexical compounds, composed of separate constituents which are not stress neutral, the stress contour must be accounted for by another rule. (In this context it is worth noting that lexically derived adjectives often can be prefixed with *on-* while transformationally derived adjectives can only be negated with *niet*.)

So far the claim that adjectives get their stress according to rule (A) holds, but curiously there exists one exception:

19 áangenaam

as opposed to *aannémelijk, voornáam*. An attempt to deal with this single exception will be made below[11].

There exists quite a number of substantives which have stress on the last syllable:

20			
	karwéi	kabeljóuw	prinsemaríj
	lawáai	akeléi	makelaardíj
	woestíjn	lekkerníj	warmoezenier
	tonéel	fenegríek	tierelantíjn
	tagríjn	taferéel	kaninefáat
	kwetsúur	formulíer	leverancíer
	struwéel	papegáai	individú

on the penultimate

21			
	kénnis	ellénde	konterféitsel
	lóbbes	ansjóvis	gruzelementen
	dýas	dyáde	haberdóedas
	ávond	vrijáge	kanonnáde
	bísschop	bosschage	communísme

	óorlog	machíne	akkefíetje

or the antepenultimate

22	gládakker	kwíntessens	bekéntenis
	hómmeles	léeuwerik	geschíedenis
	bóemerang	gámelan	schermútseling

Clearly the stress of those words as well as that of single syllable words fits the same rule (A). For instance *vijand* is stressed by the same rule (Aii) as *vijándig*. If in addition we should adopt the Compound Stress Rule for nouns (cf. Chomsky and Halle(1968),p.92) which assigns primary stress to the first constituent of the compound, a large number of nouns will be accounted for. Leaving proper names aside[12], there are still problematical cases as in

23	kakelóbbes	sekretarésse	pieremachóchel
	profésssor	falderáppes	antimakássar

The ultimate and the penultimate syllable of those words contain weak clusters, nonetheless the penultimate vowel bears stress. Unlike Finnish or Italian, Dutch does not have phonetically long consonants, so instead of marking those words in such a way that case (ii) operates on them we could assume that those words have a phonological representation of two identical consonants in the penultimate cluster[13]. Such consonants do occur in e.g. *losstoten, aannemen, bommelding* but are phonetically not realised, and they must be assumed for such words as *Chinese* ('Chinese woman') which is derived from *Chinees* in the same way as *Italiaanse* is derived from *Italiaan*. In his paper 'Apropos of the Dutch Vowel System' De Rijk draws attention to the fact that fricatives in Dutch after non-tense stressed vowels are always devoiced, after a tense vowel voiced. Examples of this are *effen/even, Tjeremissisch /Kirgiezisch, lassen/lazen*. Exceptions are *puzzle* and *mazzel*, and the velar fricative which occurs both after tense and non-tense vowels (*wiegen/wiggen*)[14]. Voiceless /f/ and /s/ are therefore only to be found after a non-tense vowel, but that is not true in case (24):

24	Chinezen	'the Chinese'		Chinese	'Chinese woman'
	Albanezen	'the Albanians'		Albanese	'Albanian woman'

where *Chinese* and *Albanese* have an underlying cluster /ss/. There is historical evidence for the existence of 'twin consonants', e.g. *koningin, boerin* with a suffix derived from Germanic <**injō*. Compare the examples in (25):

25	a	demokratíe	b	redenátie	c	crambámboelie
		palilalíe		monopólie		monópoly
		stereopeníe		bombárie		
		idioteríe		kanárie		
		idiotíe		devótie		
		Curíe		cúrie		

Only the words in the first column have final stress but in all three the final vowel is tense. There is however an explanation for this: there occur in Dutch only tense vowels in word-final position, but for his own argument De Rijk has to postulate an underlying lax vowel for this environment, which is exactly what is needed for our purposes. Support for this assumption can be found in the plural-formation. A few words (*orgie, manie, ceremonie*) have either final stress along with *-en* plural, or penultimate stress along with *-ś* plural:

26	a	órgies	b	orgiéën
		mánies		maniéën
		ceremónies		ceremoniéën

The singulars, however, have tense final vowels irrespective of the stress. Therefore, if an underlying lax final vowel in the case of (26a) and also in (25b,c) is postulated, both their stress pattern and their plural-formation is explained. When looking at (27):

27

sing.	plur.	sing.	plur.
rúzie	rúzies	jalouzíe	jalouzíeën
arrestátie	arrestáties	demokratíe	demokratíeën
áuto	áuto's	oktróoi	oktróoien
stóepa	stóepa's	individú	individúen
giróffel	giróffels	fontanél	fontanéllen
váandrig	váandrigs	kantóor	kantóren
kástanje	kástanjes	sedatíef	sedatíeven
pélgrim	pélgrims	bloemíst	bloemísten
studénte	studéntes	studént	studénten

the plural formation seems generally to be dictated by the stress, but clearly this is not true for (28) which all have *-en* plural:

28

vóorbehoud	majésteit
vóornaam	ólifant
wóordenboek	vrijheid

Rather, the choice between plural in *-s* or in *-(e)n* is determined here by the strong cluster principle[15]. On the other hand words like (29)

29 station, perron, roman, cordon

and a number of 'foreign' words have final stress but *-s* plural, and rather than having their final consonant doubled, they should be marked in such a way that case (iii) of rule (A) applies, but they will get their correct plural without any special marking[16] (cf. Halle and Keyser(1972),p.71).

The assumption that Dutch has primarily the tendency to apply stress from the right to the left rather than from the left to the right in accordance with rule (A) finds support in the following examples, which by some (not necessarily uneducated) Dutch are heard to be pronounced with the following stress:

30

katalógus	corned beef
exódus	spatél
petroléum	manchéster
notúlen	badmínton
normalíter	detectíve
deposíto	high fidelity

Standard received pronunciation is

31 $\text{interv\'iew}_N$ $\text{interv\'iewen}_V$

with final stress. Geographical names are not always pronounced as in their place of origin:

32 Niagára, Arkánsas, Canbérra, Edmónton, New Orléans, Karlsrúhe, Potsdám, Stockhólm, Tampére, Helsínki

whereas some Dutch apply the Dutch stress rule when they speak English or German, which produces the wrong stress patterns:

33 *generátive *niederlándisch

*ordinary	*holländisch
*necessary	*unwissenschaftlich
*interesting	*Verunreinigung
*pullover	*Araber
*comment	*Monate
*spiritual	*Grammatik

Verbs generally seem to fit rule (A) as in (34):

34			
	doen	slampampen	soebatten
	varen	evenaren	tandakken
	schrobberen	hanteren	verorberen

There are a small number of verbs like (35)

35 puntlassen, liefkozen, beeldhouwen, huisvesten

which can be handled by the Compound Stress Rule. A big problem is however presented by the so-called 'separable' verbs of type (36a):

36	a			b		
		doorzoeken	'search on'		doorzoeken	'search(through)'
		omkleden	'change dress'		omkleden	'envelop'
		ondergaan	'go under'		ondergaan	'undergo'
		overkomen	'come over'		overkomen	'happen'
		voorspellen	'spell'		voorspellen	'predict'

Rule (A) assigns the correct stress only to the verbs in (36b), so the difference in stress pattern with the verbs in column (36a) calls for an explanation. When used in a main sentence the conjugated forms of the (36a) type always have the particle following the verb:

37 Brigadier Snuf zoekt door.
Bertha kleedde zich om.
De Albatros gaat onder.
Doddeltje kwam over.
Wammes Waggel spelde voor.

but the particle precedes the conjugated verb in a subordinate clause, e.g.

37' ...dat brigadier Snuf doorzoekt
...of Bertha zich omkleedde
...hoewel de Albatros ondergaat
...wanneer Doddeltje overkwam
...als Wammes Waggel voorspelde

The infinitival forms of the (36a) type verbs can appear as follows:

38 Brigadier Snuf had door moeten zoeken.
Bertha had zich om willen kleden.
De Albatros zou onder hebben kunnen gaan.
Doddeltje heeft niet over hoeven komen.
Wammes Waggel heeft voor mogen spellen.

38' Brigadier Snuf had moeten doorzoeken.
Bertha had zich willen omkleden.
De Albatros zou hebben kunnen ondergaan.
Doddeltje heeft niet hoeven overkomen.
Wammes Waggel heeft mogen voorspellen.

Thus, auxiliaries appear optionally between particle and infinitive, but it should be mentioned that the sentences in (38) and (38') differ stylistically: those in (38) are rare in literary usage. Clearly, all this implies that the sequence of particle and infinitive in (37') and (38') is 'accidental', in other words a syntactical rather than a lexical product. On the other hand, when these verbs are used in their finite form as in (37), they naturally get their proper stress by the Nuclear Stress Rule as described in Chomsky and Halle(1968),p.90. Joan Bresnan in her article 'Sentence Stress and Syntactic Transformations'(1971) shows that primary stress in a sentence is generally assigned to the rightmost constituent, but that seemingly deviating stress patterns of syntactically complex constructions are reflections of the patterns in the embedded simple sentences in deep structure. Kraak in a somewhat different approach in his article 'Zinsacccent en Syntaxis' explained those stress patterns in terms of 'topic/comment'-relations. If we compare the sentences

39 Jan is naar de béurs geweest.
40 Jan is naar de beurs voor wáren geweest.

first *beurs* is 'comment' in (39) and then *waren* is 'comment' in (40). However, (40) is synonymous with (40'):

40' Jan is naar de wárenbeurs geweest.

and

41 Jan is naar de beurs voor waren voor kruidenîers geweest.
41' Jan is naar de kruidenîerswarenbeurs geweest.

are likewise synonymous. Moreover the stress contour has not changed[17]. Because of this it suggests itself that some compounds show a stress pattern which reflects the stress pattern of their related noun phrases, and the stress contour in *vóorkomen, óverleggen, áchterhouden* etc. may well be explained in terms of 'topic' and 'comment'. The question remains whether those words are compounds or a sequence of two separate constituents. Kiparsky in his article 'Über den deutschen Akzent'(1970) does not assume that the verbs of type (36a) consist of formatives with word boundaries in between. He cites examples as in (42):

42 verkáufen, unterrîchten, studîeren, fabulîeren, stibîtzen

for which he formulates the rule that the past participle is only prefixed with *ge-* if the first syllable is stressed. This accounts for

43	missbráuchen	missbráucht
	überfüttern	überfüttert

but not for

44	mîssverstehen	mîssverstanden
	überbelasten	überbelastet

so he extends his rule in such a way that in front of a non-stressable syllable with the feature [+U] the proper stress pattern is arrived at in a second cycle. If on the contrary it can be assumed that there are two separate constituents involved, then the original, 'shorter' rule can be maintained, nor do we have to assign [+U] to a number of prefixes. However, for Dutch it is necessary to add a restriction to the rule because Dutch unlike German affixes *ge-* in cases like (45):

45	krakélen	gekrakéeld
	studéren	gestudéerd

bazúinen		gebazúind

So the rule is: in Dutch the past participle is formed without *ge-*, if the first syllable is unstressed and belongs to the category of prefixes. So justly we get *gevernist* (from *vernissen*) but *vergist* (from *vergissen*). This explains why 'in the middle' of this type of compounds an infix *ge-* appears (*vóórkomen*, *vóórgekomen*). Reversely, this means that real compound verbs are recognizable as such: everything to the right of the *ge*-prefix up to the word boundary is part of the compound, as shown in (46'):

46	misráden		mísraden
	zich miskíjken		mískijken
	zich misrékenen		mísrekenen
	zich mistéllen		místellen
	misstáan	mínachten	místrappen
	ontfútselen	béeldhouwen	teléurstellen
	veronderstéllen	líefkozen	líefhebben
	herkénnen	hérbergen	hérgroeperen
46'	misráden		mísgeraden
	zich miskéken		mísgekeken
	zich misrékend		mísgerekend
	zich mistéld		mísgeteld
	misstáan	geminacht	mísgetrapt
	ontfútseld	gebéeldhouwd	teléurgesteld
	veronderstéld	geliefkoosd	líefgehad
	herkénd	gehérbergd	hérgegroepeerd

(Another peculiarity of those compounded verbs in the middle column is that they are weak verbs, e.g.**heeft beeldgehouwen* but *heeft gebeeldhouwd*, **heeft stofgezogen* but *heeft gestofzuigd*). The assumption that particles and not prefixes are involved in the case of the verbs of type (36a) is seemingly contradicted by examples like *hérverdeeld* (from *hérverdelen*), *mísverstaan* (from *mísverstaan*), and *wánbetaald* (from *wánbetalen*), because sentences like **Hij verdeelde de buit hér*, **Willem verstond zijn moeder mís* and **De abonnees betaalden wán* are out. But those particles do not occur here with the finite form, only with infinitive or participle, and instead *her*, *mis* and *wan* are paraphrased with *opnieuw*, *verkeerd*, and (*gewoonlijk*) *niet*, respectively. Concluding we can account for the stress pattern in (36) by rule (A). More evidence may be needed to show that the cases in (36a) receive their stress patterns eventually by the NSR; if so, this is not necessarily at conflict with the Evers/Huybregts assumption that Dutch is a SOV language provided an optional particle can appear behind the V in deep structure.

As said before, there are only few compound verbs and in fact the majority of the verbs has final stress, not only in cases like (36b) but also in

47 bakkeléien, eerbiédigen, veronderstéllen, verdonkeremánen

On the other hand we have stress alternations between the noun and the verb as in

48	ónderscheid	onderschéiden
	ónderwijs	onderwíjzen
	ónderricht	onderríchten
	mísbruik	misbrúiken
	wéerstand	weerstáan

We must search for evidence to decide whether the noun should be derived from the verb or the verb from the noun. If we assume that it is a compound then we run into

difficulties for formal reasons, because both the noun and the verb will undergo the compound stress rule, resulting in *ónderwijs* and **ónderwijzen*. If the word were assumed to be prefixed without internal word boundaries, the noun would get the wrong stress. Words like

49 assegáai, marsepéin, artisjók

show that there must be a means to o p t i o n a l l y assign stress to the left, but obligatory in cases like

50 álgebra, hóspitaal, májesteit

However those cases are more the exception than the rule, whereas prefixed, recognizably structured nouns are generally initially stressed. To express the regularity of this fact, rule (A) must include a condition shifting the stress of nouns which are derived from verbal stems to the left of that stem.

51 $$/ \text{——}\ {}_{stem}[\ C_o \begin{bmatrix} 1\ \text{stress} \\ V \end{bmatrix} C_o\ ]_{stem}\ ]_N$$

So *ónderwijs* can now be derived from *onderwíjzen*, but if we do not label the stem in (51) we can abbreviate the condition as in (52):

52 $$/ \text{——} \begin{bmatrix} 1\ \text{stress} \\ V \end{bmatrix} C_o\ ]_N$$

but we can still account for the nouns[18] in the left hand column of (53):

53	a		b		c
		wánsmaak		smaak	[wansmákelijk]$_A$
		mísdaad		daad	[misdádig]$_A$, [misdóen]$_V$
		hérdruk		druk	[herdrúkken]$_V$
		bállast		last	[baldádig]$_A$
		óorsprong		sprong	[oorsprónkelijk]$_A$
		méineed		eed	[meinédig]$_A$

The principle of the derivational cycle also gives the right result for [*misbáar*]$_N$ because this particular noun does not have internal brackets. In order, however, to account for (54a):

54	a	
	mísbaksel	[báksel]$_N$
	ónbehagen	[behágen]$_{V,N}$
	mísnoegen	[misnóegen]$_V$
	wántoestand	[tóestand]$_N$

in the same way as for the previous nouns in (53a), we have to extend condition (52) by replacing two symbols by one:

55 $$/ \text{——} \begin{bmatrix} 1\ \text{stress} \\ V \end{bmatrix} Y\ ]_N$$

A quite different phenomenon is to be observed in verbs prefixed with *ver-* and *ge-*. As the examples in (56) show they are unaffected by the main stress rule, rather they maintain the stress pattern of the noun, verb, or adjective from which they are derived:

56
a vermáagschappen, verhóefslagen, verántwoorden, veróngelukken, veróordelen
b verdeemóedigen, verhéimelijken, verlatíjnsen, verduizendvóudigen, veráangenamen, veronáangenamen
c verlánterfanten, veronderstéllen, verontréinigen, verslampámperen
d bevóordelen, bevóorraden, bewáarheiden, bewégwijzeren

All those verbs are transitive (often factive) and have the regular, 'weak' conjugation but - at least in combination with verbs and nouns - the prefix *ver-* adds a wide variety of meanings. We must assume that the verbs in (56) have a derivational structure of the type $_V$[ver#[...]en]$_V$ which ensures that they undergo rule (A) vacuously, provided that a condition is added:

57 Condition: X may not contain internal # boundary

There are yet a few 'loose ends' to be tied up. A limited number of verbs will have to undergo the compound stress rule just as the verbs in (56b):

58 verfómfaaien, spélemeien, flíkflooien, kíssebissen, kískassen

As for the adjectives, there are some which resemble participles and in most cases those have end-stress:

59 rechtgeáard, platbóomd, eigenérfd

but there are some with initial stress:

60 íngetogen, ópgetogen, áangeboren, áangedaan

Historically they are participial forms of no longer extant verbs and formally they contain verbal stems with a *ge*-prefix and a particle. But this description matches exactly the above-mentioned exception (19) *áangenaam*, which is therefore also marked for being subject to that case of the compound stress rule which shifts the stress to the left. All the other compounded adjectives as in (4), (5), (11b), and (16b) are obligatorily stressed to the right.

A different argument holds for the nouns in (61):

61 álgebra, májesteit, hóspitaal, ínfinitief, áccusatief, cómparatief

The nouns *májesteit* and *álgebra* have regular adjectives *majestéitelijk* and *algebráisch*. If they should receive final stress before the main stress rule applies (cf. Chomsky and Halle(1968),p.152, rule (158)) condition (55) could apply and they would be correctly stressed. While this is an exceptional measure for those words, it is the only possible one for the suffixes *-schap* and *-dom* which can occur with primary stress or not but which never are stress neutral:

62 a wétenschap b wetenscháppelijk
éigendom eigendómmelijk

If they are first subject to a rule similar to rule (158) the nouns in (62a) will then correctly be stressed to the left, while in the next cycle the stress will be shifted to the right as in (62b) because the condition only works for nouns. Derivations in *-ling* such as

63 duísterling, víngerling, óuderling

would receive incorrect stress unless their suffixes are entered as #ling[19]. As the examples in (17) show the adjectival suffixes are sometimes stress neutral and sometimes not. In one case *-baar* appears with primary stress, whereas *-loos* sometimes has an optional[1 stress] , in particular in front of the suffix *-heid* where there is even a definite tendency to stress *loos*:

64 a openbáar 'public' b ópenbaar 'openable'
goddelóos 'godless' góddeloos 'godless'

werkelóos 'workless' wérkeloos 'workless'

That means that *-baar* in (64a) *openbáar* and *openbáren* has no # boundary and that *-loos* perhaps has this symbol optionally[20], but more evidence is needed to determine the exact status of the adjectival suffixes in general.

To sum up: although the assumption that Dutch words are in principle stressed to the right is not supported by historical linguistics, that assumption permits the expression of a larger generality. Only a small number of affixes have to be taken as exceptions to the stress rule for reasons which are independently motivated. Interestingly enough, the formulation of the rule forces us to treat a number of end-stressed loanwords as exceptions which have to be marked in order to receive the correct stress. Further, it is argued that the 'separable verbs' are composed transformationally and not lexically, so that the notion 'separable' can be abandoned. The same strong cluster principle that determines the location of primary word stress is involved in plural formation, which is shown to be more regular than has so far been assumed. The Dutch stress rule has presumably the following form:

65 $$V \longrightarrow [1\ \text{stress}] \Big/ [X\_\_\_C_o((\begin{bmatrix}-\text{tense}\\ V\end{bmatrix} C_o^1) \begin{bmatrix}-\text{tense}\\ V\end{bmatrix} C_o) \quad \text{(A)}$$

$$\Big/ \_\_\_ < 1 \begin{bmatrix}\text{stress}\\ V\end{bmatrix} Y >]_{<N>} \quad (55)$$

Condition: $X \neq \ldots\#\ldots$ (57)

which, apart from condition (55), is very similar to the Latin accent rule[21].

Notes

*At this point I should like to thank all who have been forthcoming with advice and assistance. I am particularly indebted to S. Eliasson, M.A.C. Huybregts, C.J. Ruijgh and C. Soeteman for valuable comments and suggestions.

1 Rijpma & Schuringa(1968),p.64.

2 Chomsky & Halle(1968),p.28 ff.; Halle & Keyser(1972),p.11.

3 A lax vowel followed by no more than one consonant, in symbols $\begin{bmatrix}-\text{tense}\\ V\end{bmatrix} C_o^1$, is called a weak cluster. Any other sequence beginning with a vowel is a strong cluster. For a discussion of the lax and tense vowels in Dutch see Cohen e.a.(1961); also De Rijk(1968), who shows that each group behaves as a natural class.

4 The *ij* in the adjectival suffix *-lijk* represents a reduced vowel.

5 Those suffixes will be discussed later in the text.

6 An idiomatic expression which occurs only in *Ik schrok me het apezuur (het apelazerus)*'I was scared out of my wits'.

7 Cf. Bolinger(1972),p.55.

8 The stress tends to shift, however, to the first syllable when the words in (15) are attributively used:

De hond is doodsbáng vs. De dóodsbange hond

9 Whether those words all are to be treated in the same way, either by a compound rule or a nuclear stress rule, is uncertain. It is apparent that the Stress Adjustment Rule is 'inoperative' here. (cf. Chomsky & Halle(1968),p.34). Cf. hartsdóm : hartsvàderlijk.

10 Cf. Chomsky(1967b).

11 I shall not attempt to deal with adverbials. Suffice it to say that generally speaking, stress is assigned in the same manner as to adjectives, which is hardly

surprising since the majority of adverbials is either derived from adjectives or from petrified NP's: vooralsnóg, stantepée, ongevéer, voorshánds, navenánt, enigszíns, achtereenvólgens, dienovereenkómstig.

12 Proper names are irregular but seem to have a tendency towards initial stress as in

Níkolaas	Fákkeldij	Van Hóogeveen
Válentijn	Páradijs	Van Véenhuizen
Cónstantijn	Góedkoop	Bréda-bier

whereas placenames often have final stress (*Hoogevéen, Veenhúizen, Bredá, Hoogkérk, Amsterdám*) and a few street names vary (*Keizersgracht, Herestraat*). A different phenomenon is probably involved in **Copernícusstraat, *Genestétlaan* and perhaps **Bilderdíjkstraat*, pronunciations which are sometimes heard. (Cf. examples (33)).

13 Dutch spelling rules do not give a clue: in *matten* the *tt* indicates that the preceding *a* is non-tense, conversely in *maten* the single *t* with a following vowel indicates that the preceding *a* is tense.

14 A voiceless fricative after a tense vowel is to be found in e.g.

Pruisen		luifel
IJssel		kazuifel
bloesem	(vs. boezem)	tafel
desem	(vs. bezem)	kousen

and the inflected form of the suffix *-isch*. Dutch speakers in Holland pronounce *taktische* as [taktisə]. Belgian native speakers of Dutch, however, pronounce the sequence as a l a x vowel with a voiceless fricative and a reduced vowel. Nonetheless, this seems to indicate that the underlying representation contains an unspecified consonant next to the ó : /sC/. Although /ɣ/ and /χ/ are not phonetically distinct with all speakers of Dutch the same rule seems to be at work in the etymologically synonymous *tegel* : *tichel*, *regel* : *richel*.

15 The best description of Dutch plural formation is to be found in Van Haeringen (1947), who provides ample material. Although there are several other plural formations possible (1 a few like *kinderen* (sg.*kind*), 2 some like *gymnasium* which has both *gymnasia* and *gymnasiums* , 3 hundreds of other words having both *-n* and *-s* plural), there is a great advantage in this claim since one is predictable and the other somehow 'irregular', often for good reasons: *tafelen*,*vaderen* etc. as plurals of *vader*, *tafel* have distinctly biblical connotations, whereas *lélièn, provínciën* are samples of literary or archaic usage. (Cf. Van Haeringen (1949), p.186). In *majesteit* the *-n* plural is regular but the stress pattern is irregular (all words in *-teit* have final stress).

16 To be sure, adjectives like *kapót, apárt, astránt, uniſórm* and nouns like *balâns, trammelánt, pieremént* have to be handled by rule (Aiii), but because of the ordering principle they would get the wrong stress by either (Ai) or (Aii) since rule (A) generally disregards final strong clusters as long as the vowel is non-tense. Consequently, the words have to be marked for rule (Aiii). Typically, again, this concerns a category of unsuffixed 'foreign' looking words. The nouns *ólifant, vágina, élbido,* although of the same type, have no special marking and therefore regularly receive stress by (Ai), provided the two final clusters contain non-tense vowels in their phonological representation. Nouns like *asbest, budget , narcis, paranimf, accordeon, uniform*, which occur with two different stress patterns, have this marking optionally. The construct of strong clusters is needed for the correct plural formation of e.g. *tijgerín, berín*, which always have *-n* plural. The representation with a double final consonant is optional for *bollebóf, menuét* because some speakers use the words with *-n* and others with *-s* plural. Meanwhile, words like *giráf, pád, gerúcht, koningín* also occur with a reduced vowel at the word end: *giráffe, pádde , gerúchte, koningínne(dag)*. So instead of marking those words for (Aiii) we may assume that they receive stress by (Aii) after which the final vowel is deleted optionally. More evidence is needed to decide whether words like

geluk, gezél or *Mameluk, kartél* have either (Aiii) marking or a deletable final *-e*.

17 Joan Bresnan citing the sentence *Peter had clams for dinner* (p.30) assumes that the formulation of the NSR should be made to allow certain prepositional phrases to have different patterns. Her examples

A Peter had plans for dínner
B Peter had clams for dinner

can be extended with one more:

C Peter had clams for dínner

but excluded is

D *Peter had pláns for dinner

(I am of course non concerned with emphatic or contrastive stress). Those sentences match again the following with the same stress distribution:

A' Peter had dínner plans
B' Peter had a clám dinner
C' Peter had a clam dínner
D' *Peter had dinner pláns

Actually English but also Frisian and some Dutch dialects frequently allow the pattern in (C')(e.g. Frisian *skoarstienmántel, skúrredoarren*, Groningen dialect *schoorsteenmántel, schuurdéur*) whereas Dutch hardly ever does (Dutch *boerenkínkel, stadhúis*, but *schóorsteenmantel, schúurdeur, bóerenvolk, ráadhuis*). Cf. Botha(1968),p.183-192, a chapter which roughly applies also to Dutch.

18 This proposal deviates only slightly from the one made in Chomsky & Halle(1968), p.96 ff, in as much as no ≠ boundary is needed. The implication could also be that English nouns regularly shift stress to the left under the same condition: inset-ínset, uplíft-úplift, forejúdge-fórejudge, undercut-úndercut, overláp-óverlap, overbíd-óverbid, transfér-tránsfer, expórt-éxport, commént-cómment, expért-éxpert, discharge-díscharge, supíne-súpine, envelóp-énvelope, reprimánd-réprimand, attríbute-áttribute, whereas verbs maintain the stress of the noun from which they are derived: *phótograph, blackmail* etc. This will be explored in a forthcoming paper.

19 Presumably this goes also for *-ing*. Both *-ing* and *-ling* have a strong cluster /ng/ because both always have plurals in *-n*. This does not apply to words like *presénning, kénning, kámpong, dóejoeng, sárong*. Those have a weak cluster at the end in /n/, which warrants the proper *-s* plural. On the other hand *kóning* which also has no internal brackets (therefore no internal ≠ as shown by the shifting of the stress in the derivation *koningín*) has *-n* plural viz. a strong cluster /ng/.

20 K.L. Nieuwborg's 'Retrograde woordenboek'(1969) proved to be indispensable for collecting material. In a few instances Dutch adjectival affixes are stress neutral:

árbeidsloos	(árbeid)	vs.	meedógenloos	(médedogen)
kóninklijk	(kóning)	vs.	aanvánkelijk	(ánvang)
lévendig	(léven(d))	vs.	vijándig	(víjand)

German adjectival suffixes, on the other hand, are stress neutral in most of the cases (*Absicht - absichtlich, Wissenschaft - wissenschaftlich*) but not in e.g. *lebéndig*. Moreover, condition (55) applies not only to nouns but also to German adjectives(*únwissenschaftlich, únabsichtlich*), a difference of one symbol. This raises the question whether there is a connection between the applicability of

condition (55) to adjectives and the stress neutrality of their suffixes. While a cursory look at data from closely related languages seems to indicate that the main stress rule applies to all of them the answer cannot be given off-hand and deserves further attention. (In Dutch and Frisian condition (55) applies only to nouns and there are only a few cases where the adjectival suffix is stress neutral; in German and Yiddish condition (55) applies to nouns as well as to adjectives and the adjectival suffixes are usually stress neutral; as for the Skandinavian languages the answer is less obvious because of vacillations in stress and the large number of borrowings from Low German). The adjective *mísbaar* ('dispensable') and the noun *mísbaar* ('hullabaloo') have stress contours which are paradoxically at variance with the examples in (6). The explanation is that they are structured [mis=# baar]$_A$ and [mis+baar]$_N$, respectively (unless the adjectival suffix *-baar* is incorporated into the stress rule).

21 As C.J. Ruijgh pointed out to me, the last cluster in the Latin accent rule is not specified, whereas in the Dutch stress rule (A) the last vowel carries the feature [-tense]. The adding of this restriction is justified because of such words as in (20) with the endings *-ij*, *-ijn*, *-eel*, *-ier*, affixes originally borrowed from Old French, which now receive primary stress regularly by (Aiii).

SENTENCE STRESS ASSIGNMENT. AN INDEPENDENT ARGUMENT FOR VSO

Ton van der Geest

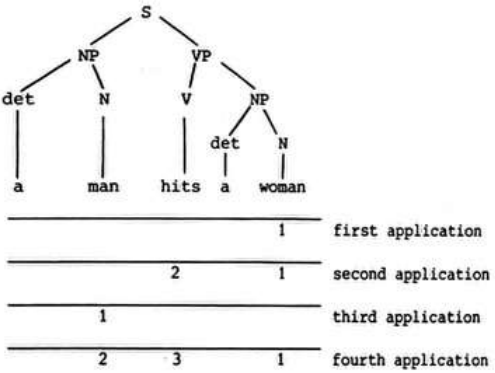
I Literature

In Chomsky and Halle's 'Sound Pattern of English'(1968) a rule mechanism is developed according to which sentential stress can be accounted for: the so-called Nuclear Stress Rule (NSR). This rule places primary stress on the rightmost of the elements already having primary stress within a major constituent (S, NP, and VP). By the preceding application of the Main Stress Rule (MSR) each lexical morpheme already has been assigned a stress maximum (primary word stress). By a general convention of stress assignment each time an element receives primary stress all other stresses within the domain of application of the rule are reduced by one. Both the NSR and the MSR are assumed to apply to surface structures and within the phonological cycle. The NSR applies first to the most deeply embedded constituent, then to the next most deeply embedded constituent and so on upward, until the topmost S-node is reached (see Berman and Szamosi(1972)). This can be formalized as follows:

1 $V \longrightarrow [1\ \text{stress}] \,/\, \#\# \, x \, \underline{\qquad}_{1\ \text{stress}} \, y \, \#\#$, where y contains no vowel with the feature [1 stress]

A demonstration of how stress is assigned according to the NSR is given in (2):

2



Bresnan(1971) has given evidence that:

I NSR must be ordered before Question Formation and Relative Clause Formation;

II NSR applies within the syntactic cycle;

III Question Formation and Relative Clause Formation apply within the syntactic cycle;

IV Evidence for the existence of the syntactically motivated deep structure is provided by (2);

V McCawley's 1970 proposal of English being a VSO language is disconfirmed by (2).

Finally, Bresnan develops the following rule: all elements to the right of the verb should retain primary stress until the late application of a rhythm-rule. She needs this rule to account for stress-assignment in sentences such as *Seymour slices the salami with a knife*. Bresnan offers hardly any linguistic justification for this rule, although such justification is absolutely necessary because the rule plays such an important role in the formulation of the theory.

Lakoff(1970d, 1972b) argues that the evidence for Bresnan's proposition I is by no

means clear. He argues that the NSR is some form of a global rule with an environment ordered before Question Formation and Relative Clause Formation. Finally he provides evidence that Bresnan's argument for III does not hold. This is the reason why there is no evidence for IV and V.

In Berman and Szamosi(1972) Bresnan's(1971) hypothesis is shown to be observationally inadequate: it makes incorrect predictions and is unable, in principle, to capture generalizations about English prosodic stress. Furthermore, the feasibility of assigning stress by means of the NSR, at any level, is seriously questioned. Finally it is argued that stress assignment cannot be a function of structure alone but also for example of semantics.

Van der Geest(1970, 1972) has suggested that the stress in simple, neutral sentences is determined on the basis of grammatical functions. The primary stress (under certain conditions, specified below) is placed on the direct object: if there is no direct object then on the indirect object, thereafter on the subject, and only in the last case on the verb. The condition which must be met, is that all the constituents in question must have equivalent internal structures. For example, all constituents must have the same determiner, whether definite, indefinite or categorial; if any constituent is a proper noun, then all must be; all must be anaphoric if any are. Stressed constituents tend to loose their stress if their articles become definite, if these constituents are anaphoric, or are replaced by proper nouns. A few examples:

3 Schotten dragen rókken.
Scotsmen wear kílts.
4 Een man geeft een vrouw blóemen.
A man gives a woman flówers.
5 Een mán geeft het.
A mán gives it.
6 (kijk): een man geeft een vróuw iets.
(look): a man gives a wóman something.
7 Er zingt een vógel.
There sings a bírd.
There is a bírd singing.
8 Het régent.
It ráins.
9 Hij vált.
It fálls.

In the case of complex sentences, the stress assignment is worked out separately for each of the underlying sentences. Thus, the resultant sentence may have more than one primary stress. If one of the sentences loses its independent status, for example by being embedded in another sentence as an adjectival or adverbial modifier, then the embedded sentence acquires the stress. For example:

10 Een man geeft een vrouw blóemen.
A man gives a woman flówers.
11 Hij (de man) hóudt van haar (de vrouw).
He (the man) lóves her (the woman).
12 Een man geeft een vrouw blóemen omdat hij van haar hóudt.
A man gives a woman flówers because he lóves her.
13 Seymour slices the salámi.
14 He (Seymour) uses a knífe.
15 Seymour slices the salàmi with a knífe.
16 People láughed.
17 They did it lóudly.
18 People laughed lóudly.
19 Victor appéared.

20 It was on the stáge.
21 Victor appeared on the stáge.
22 Amidst loud láughter Victor appeared on the stáge.

In cases where relative constructions or adjective constructions are used the stress is influenced by the choice restrictive - non restrictive. This is the apparent reason that in (22) the stress is on *láughter* instead of on *loud*.

II The ordering hypothesis

Of the studies mentioned above Bresnan's(1971) and (1972) proposals on sentence stress are doubtless the most elaborated and the most strongly hypothesized ones. For that reason we will restrict ourselves to these studies in the following. In her reply on Lakoff(1972b) and Berman and Szamosi(1972) Bresnan argues that her hypothesis that the NSR applies after all the syntactic transformations on each transformational cycle, essentially means that intonation depends systematically upon underlying syntactic structures. This means that the following ordering hypothesis can be formulated:

1 Deep structure
2 Lexical insertion and word stress
3 Transformations per cycle
4 Nuclear stress rule

In order to prove the correctness of this hypothesis the following points ought to be argued:

a How can the systematic dependency of intonation and underlying structures be accounted for?
b A related point is whether or not stress ought to be assigned after of before lexical insertion.
c It ought to be argued that word stress precedes sentence stress assignment.
d It ought to be made clear that syntactic transformations influence the underlying intonational contour.

Ad a Bresnan does not deal systematically with the problem of how intonation and the underlying syntactic structure are related. It seems to me that one way or another the underlying syntactic structure ought to be specified in terms of sentence stress. A possible way out of the problem would be to specify constituents or functions in terms of stress. As a consequence of Bresnan's proposal sentence stress should be accounted for at least two times in the derivation, viz. in 1 and in 4. It would, however, lead to a basically simpler solution for sentence stress, of one would be able to demonstrate that the intermediate levels, namely lexical insertion and word stress and the syntactic transformations per cycle do not influence the stress assignment. In that case sentence stress can be supposed to be based only on deep structure information. Consequently, the deep structure ought to be made appropriate for sentence stress assignment.

ad b A related point is that Bresnan's ordering hypothesis is based on a syntactically motivated and not on a semantically based theory. For both a and b it is the essential question whether lexical insertion and the determination of word stress which it implies, occur before application of the NSR, or whether the NSR is applied before lexical insertion and word stress. Arguments have been offered above in support of the contention that stress is assigned before lexical insertion, and against the ordering proposed by Bresnan. It is clear after consideration of the stress patterns of the following sentences that sentence stress must be assigned at the level of prelexical deep structure.

23 Jan slóeg Piet niet, hij zál hem slaan.
24 Jan hit Piet not, he shall him hit(=Jan dídn't hit Piet, he's góing to hit him)

24 Jan kócht geen bloemen, hij vérkocht ze.
Jan bought no flowers, he sold them(=Jan didn't búy any flowers, he sóld them)
25 John did not trý to open the door, but the door ópened.
26 John did not hít Peter, but he wás hit by Peter.

In these examples what is stressed is, respectively, tense, the direction of exchange of the flowers, transitive in contrast to intransitive, and active in contrast to passive. This implies that the word in its totality is not under the domain of stress but only a subpart of its total semantic content or a grammatical aspect covered by the second word under consideration. In the same light one can also discuss anaphora. According to Bresnan NSR needs information from the lexicon as to whether it will be applied to a fully specified noun phrase or to a pronoun or a semipronoun like *people* and *thing*. See for example:

27 The sún is shining.
28 It's shíning.
29 A propósal was made.
30 They arríved.

Bresnan argues correctly inasfar as these sentences are concerned that the ordering hypothesis predicts that when the subject of the underlying sentences is pronominal, the primary stress will fall on the verb. Her conclusion, however,('Thus the ordering hypothesis is confirmed rather than disconfirmed by the examples') is not correct because it leaves open the question of whether or not the NSR ought to be applied after lexical insertion and the syntactic transformations. The semantic specification, e.g. by means of the iota-operator or by means of noun phrase descriptions specifying the arguments in the proposition(McCawley(1970)), is a sufficient explanation for the prediction of sentence stress in these cases, under the condition that one takes the view that the transformational cycle does not affect sentence stress assignment.

ad c Bresnan's argument to assume that word stress assignment by means of the MSR precedes the sentence stress assignment by means of the NSR is that intuitively the principle of the phonological cycle states that the stress pattern of the whole is a function of the stress patterns of the parts. In fact she does not present any argument for taking MSR applying before NSR. Intuitively the opposite could be argued also. Namely, if the primary sentence stress is on the subject/object/etc. then the primary sentence stress is on the primary stress of the subject- or object-phrase. If the primary phrasal stress is on the word X of the phrase in question then both the primary phrasal and the primary sentence stress are on the primary word stress of that word. Such an alternative solution implies the possibility of accounting for stress shift in nominalizations as a result of lexical ideosyncracies of English which such shifts as *confírm-confirmátion* actually are(at least in comparison with other languages as Latin, French, German and Dutch[1]). If McCawley's last stated possibility in 'Lexical insertion' is correct, i.e. that nominalization takes place before lexical insertion and that furthermore, affixes are not necessarily stress-neutral, then the present stress shift can be accounted for before lexical insertion.

ad d The last point to be accounted for in order to prove the correctness of the ordering hypothesis is whether or not syntactic transformations influence the underlying intonational pattern. Inasfar as Bresnan's standpoint is concerned, she states explicitly that according to her the syntactic transformations do not influence the sentence stress assignment:'However, the ordering hypothesis permits the fundamental stress relations established in the underlying structure to be presented through the syntactic derivation'(Bresnan(1972,p.330). In other words there is no argument available to hypothesize that NSR applies after the syntactic transformations. Her conclusion that the ordering hypothesis provides an explanation of certain correlations of meaning and stress is correct. It can be questioned, however, whether the present ordering hypothesis expresses this relationship clearly enough. Actually it

is clear, in Bresnan's standpoint also, that such notions as subject and predicate are essential for sentence stress. It is nothing more than an absurdity to obscure or even neglect this very relationship in the description.

In sum, it can safely be stated that Bresnan's proposed ordering hypothesis is not argued at all inasfar as the sentence stress assignment is concerned. She doesn't present any argument for the assumption that the NSR ought to apply after lexical insertion and word stress, nor that it applies after the syntactic transformations. Furthermore, Bresnan's hypothesis may well indeed describe sentence stress correctly. However, it can be questioned whether her solution is the most natural and simple one. Finally, her remark that stress assignment may serve as an argument against the transformationalist hypothesis of generative semantics and for the lexicalist hypothesis of the extended standard theory does not hold.

III The Topical Stress Rule and the Rhythm Rule

Bresnan deals with two phenomena which are problematic for the application of the NSR in Chomsky and Halle(1968), namely topical stress and the rhythm rule. The first phenomenon deals with for example the fact that in some cases the stress is placed on the subject instead of on the verb, which would be expected from the NSR. For example:

31 The sún is shining.
32 A mán is working.

Actually Bresnan claims that there is an optionality in these cases for stress assignment. See for instance:

33 The sun is disappéaring.

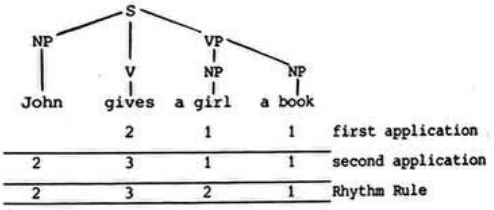
Topical stress is partly structurally dependent according to Bresnan. However, I disagree here with her observation. I feel that (33) is contrastive or at least emphatic, because of its impossibility in such contexts as:

33a *Look, the sun is disappéaring.

Therefore, I think that in (31) and (32) the sentence stress is not optionally but obligatorily on the subject. This implies that neither the NSR nor the revised NSR of Bresnan's can account for this peculiar sentence stress assignment with other than ad-hoc rules.

The second problem is concerned with the VP if this constituent consists of more than one NP. NSR does not predict the correct sentence stress in that case. In order to arrive at a descriptively adequate solution it is formulated that all elements to the right of the verb should retain primary stress until the late application of the 'Rhythm Rule'. By this Rhythm Rule the rightmost element retains its primary stress; all other primary stresses are reduced by one. As an illustration of how stress is assigned according to Bresnan's 'Revised NSR', see:

34



This solution runs into difficulties if the NP having ultimately primary stress is replaced by a pronoun. For example:

35 John gives a gírl something.

This stress assignment can only be accounted for if some general conventions can be formulated that NP's that will be substituted by a pronoun are stress neutral. This, however, runs into difficulties for such sentences as:

36 Look, a mán gives it to her.
37 Listen, a spý invited me.

The 'Revised NSR' predicts that the primary stress is on the verb in these cases. Furthermore, it can not account for such particular stress shifts in sentences like:

38 Willy had his fínger in a crevice.
39 Willy puts his finger in a crévice.[2)]

An additional problem is that after the application of the Rhythm Rule the subject stress and the reduced stresses of the VP are presented as equal. In general this stress equality is hardly to be observed. In section (IV), however, there will be presented experimental evidence that this equality does not hold. Of course a description of sentence stress which does not need such special restrictions as formulated in both the Topical Stress Rule and the Rhythm Rule is preferred.

IV Experimental evidence.

It is the author's opinion that it is very difficult to make valid judgements intuitively on sentence stress. Especially, when dealing with more complicated sentences. Be it possible to examine primary stress, and eventually secondary stress, all other stresses resist a systematic observation. Still these stresses are predicted by the NSR. One needs therefore some help of other judges, which implies an experimental design. In the next sections an exploratory experiment on the judgement of sentence stress will be reported.

1 Method

An exploratory study was designed in order to confirm the linguistic intuitions which formed the basis of the conclusions described in section I. Adult subjects were asked to determine the primary stress of 47 sentences. Such a task delivers also the possibility of accounting for distinct lower stresses. For, it can be hypothesized, that the secondary stress has a bigger distracting value in the judgement on primary sentence stress assignment than the tertiary sentence stress. The following sentence types were used:

I Seven sentences of the form subject, object, indirect object, verb, with regular word order and a preposition before the indirect object, e.g.:

40 De zanger wil voor Dolf het bruidskoor zingen.
The singer wants for Dolf the bridal chorus to sing(=The singer wants to sing the bridal chorus for Dolf).

41 De firma moet aan Ketjen de handelsnaam afstaan.
The firm must to Ketjen the trade name surrender(=The firm must surrender the trade name to Ketjen).

II Five sentences identical to Type I, except that they lack the preposition before the indirect object:

42 Een praatje kan een winkelier een schadepost bezorgen.
A rumour can a shopkeeper a loss cause(=A rumour can cause a shopkeeper a loss)

III Eleven sentences identical to Type I except that the indirect object be-

gins the sentence:

43 Voor Shell laat de minister het meer dempen.
For Shell lets the minister the lake fill up(=For Shell, the minister is having the lake filled up)

IV Four sentences with an indirect object and an optional directional object:

44 De man brengt het geld naar de bank.
The man brings the money to the bank.

V Six sentences with optional direct objects and directional objects:

45 De man reed de wagen de garage in.
The man drove the car the garage into(=The man drove the car into the garage)

VI Five sentences with obligatory direct objects and directional objects:

46 De wind dreef de ballon naar het oosten.
The wind drove the balloon to the east.

VII Four sentences with a progressive construction(expressed by 'zijn aan het' plus infinitive), in which either a directional object or a prepositional object occur:

47 Cruyffie was ballen op doel aan het schieten.
Cruyffie was balls at goal shooting(=Cruyffie was shooting balls at the goal)

VIII Five sentences with the progressive construction, in which a direct object and an indirect object construction also occur:

48 Juultje was haar personeel instructies aan het geven.
Juultje was her personnel instructions giving(=Juultje was giving her personnel instructions)

Care was taken that the words which were expected to receive primary stress occurred in different places in the various sentences. All the sentences consisted of eight words, of which four were content words and four were function words. The subjects were asked to indicate on a score sheet which word in each sentence received the emphasis. The sentences were presented in written form. The word 'emphasis'(nadruk) was used because it seemed the most neutral term.

2 Hypotheses

The first, general hypothesis states that the stress falls on content words, not on function words. The mathematical probability of the stress falling on function words is .5. The second hypothesis is that stress is assigned to different grammatical functions, according to the sentence type. The third hypothesis is described fully in section I.

3 Subjects

Ten adults, eight male and two female, served as subjects. They came from different areas of the Netherlands, and had at least a high school training.

4 Results

4.1 Hypothesis 1

Only 10 of the 460 primary stresses scored fell on function words (2.2 %).

4.2 Hypotheses 2 and 3

The following table gives data concerning the relationship between stress assignment in the different sentence types and grammatical function.

49	subject	indirect object	direct object	preposition constituent	verb	function word
I	11	22	35	--	0	2
II	18	4	26	--	1	1
III	17	50	33	--	6	4
IV	4	--	5	28	2	1
V	18	--	13	26	3	0
VI	12	--	9	27	0	2
VII	12	--	(2)	26	0	0
VIII	14	8	27	--	1	0

A correlation, calculated using Chi-square, was significant at $p < .001$. The frequency of stress assignment to any grammatical function was affected by sentence type exactly according to the expectations described in section I,3.

V Discussion.
It should once again be pointed out that the results of this study must be considered with reservation. The discussion that follows should also be considered speculative, in the sense that the results of a preliminary study with a very small sample (47 sentences) are being generalized to the population.

V,1 Sentence types I, II, and III.
For a good overview it is desirable to examine the results sentence type by sentence type. The following table gives the results for subject, indirect object, (direct) object, and verb for sentences of types I, II, and III.

50	subject	indirect object	object	verb
I	11	22	35	0
II	18	4	26	1
III	17	50	33	6
total	46	76	94	7

One can see from the total score that the frequency increases with grammatical function in the following way:

51 V S IO O

This order is precisely what was predicted in section I,1. The order of stress preference is also accounted for by Bresnan's 'Revised NSR" except for the fact that the experimental subjects do not agree with the prediction that the subject and the indirect object are equally stressed. It should, however, be noted that the results for the indirect object are rather strange for some sentence types. For type II, the indirect object has a lower score than the subject; for type III, the indirect object has a higher score than the object. Thus, the scores per cell are to a certain extent determined by sentence type. This means that only the indirect objects receive different evaluations, depending on the type. These evaluations run parallel with the linguistic considerations that indirect objects marked with prepositions (type I) and preposing (type III) possibly imply a special emphasis. It also seems possible that the position of the indirect object in (35) can be attributed to factors of context sensitivity. One could be content to stop with the above-described delimitations of preference in sentence stress assignment. From the preceding discussion, however, it is clear that neither the NSR nor the 'Revised NSR' predicts the actual stress on the subject if there is no object in the underlying structure. A valid account of sentence stress has to predict the following preferences of sentence stress:

51 a V-S
b V-S-IO-O
c V-S-O

This means that on the basis of the results obtained in this study (leaving the indirect object out of consideration) the following underlying structure exists:

52 V-S-O

This is a remarkable result in the light of current discussions about stress assignment and formation of linguistic theory. The NSR seems only in case (c) to be an alternative formulation of the regularities given in section I, which were based on grammatical function, while the 'Revised NSR' of Bresnan's(1972) needs some special conventions and specifications on the Topical Stress Rule and the Rhythm Rule to account for some peculiarities in sentence stress assignment in types (51) a and b. (See also III: The Topical Stress Rule and the Rhythm Rule). Types (51) a, b, and c, however, can be accounted for if one starts from McCawley's(1970) proposal. He suggests primarily on transformational grounds, that the underlying order of elements is VSO, going along with the view that the VP should no longer be considered a 'major' category. Bresnan rejects McCawley's proposal on the following grounds. In McCawley it is included that intransitive verbs precede their subjects during the entire transformational cycle. This implies that:

53 J$\overset{1}{\text{e}}$sus w$\overset{2}{\text{e}}$pt.

and not

54 J$\overset{2}{\text{e}}$sus w$\overset{1}{\text{e}}$pt.

would be the normal surface structure stress pattern in these cases. However, Bresnan's proposal fails, because it is based on the assumption that sentence stress is assigned after word stress (that is, after lexical insertion). *Wept* does indeed get the primary stress, but this is connected to the fact that *Jesus* is a proper noun. As was mentioned in section I, proper nouns may cause changes in stress patterns, at least if one assumes that the most neutral nominal constituents are those with indefinite articles. For example:

55 Hij zei dat er een m$\overset{1}{\text{a}}$n woont.
He said that there a man lives(=He said that a man lives there)
56 Hij zag dat een vl$\overset{1}{\text{ie}}$gtuig overvloog.
He saw that a plane flew over(=He saw a plane fly over)
57 A b$\overset{1}{\text{i}}$rd is singing.
58 There is a b$\overset{1}{\text{i}}$rd singing.
59 Het zingen van een m$\overset{1}{\text{a}}$n.
The singing of a man.
60 Het z$\overset{1}{\text{i}}$ngen van de man.
The singing of the man.

In other words, it is the status of nominal constituents as definite or indefinite (a distinction which is both syntactically and semantically relevant) which is decisive for sentence stress, and not various other surface lexical features. Because grammatical functions as subject, object, and the like, actually are rather semantic than syntactic phenomena it seems possible to hypothesize that stress is assigned according to semantic-cognitive principles. Such a hypothesis is the more attractive if one realizes that changes in meaning (e.g. definite vs. indefinite) apparently cause stress shift. Especially McCawley's proposal on semantic representation in which underlying VSO-order is accounted for ought to be paid attention to.

By an interesting, and furthermore illustrative coincidence, the indirect object, which produced some results difficult to explain in sentence types I, II, and III, is also problematic for McCawley's theory in those cases where Dative Movement is applied. However, this problem disappears for both formulations if the two sentences:

61 I gave ten dollars to Max.

and

62 I gave Max ten dollars.

are not any longer considered to be optional variants, but to be sentences which differ in topic and comment. The neutral sentence in this case is (62).

V,2 Sentence types IV, V, and VI.

The results for sentence types IV, V, and VI are given in the following table:

63

	subject	object	directional object	verb
IV	4	5	28	2
V	18	13	26	3
VI	12	9	27	-
total	34	27	81	5

Except for sentence type IV, the total scores for S and O give the same picture as the scores taken apart for the different sentence types. This means that the underlying order must be:

64 V-O-S-DO

This result conflicts with what was expected (V-S-DO-O). See, for example:

65 Een man plakte een postzegel op een envelop.
A man stuck a stamp on an envelope.
66 De man reed de wagen de garage in.
The man drove the car the garage into.
67 Een bakker bracht een brood naar een klant.
A baker brought a loaf to a customer.
68 Een man plakte iets op een envelop.
A man stuck something on an envelope.

It is difficult with such a small amount of material to explain these differences. The most logical explanation is that the subjects have taken the sentences not as neutral, but as functioning within some context. In any case care will be taken in the definitive experiment that subjects choose the neutral interpretation as basis for their judgements. This can be done by giving the sentence a highly determining context, for example: 'Have you heard, test sentence' or 'Look, test sentence'. Other possibly confounding variables are the pre- or post-posing of the prepositions in Dutch, the differences in articles (definite and indefinite), the lack of an article (as in 'op doel schieten'), and perhaps also the proper nouns, which for purposes of the test-design were assumed to be equivalent to NP's with definite articles. If the results of the definitive experiment will be identical to the above, even with the added precautions described, then this can only be explained within the VSO point of view in the following way:

i the traditional directional object is in fact, as assumed in the description of the sentence types, a sort of d i r e c t object which follows verbs of movement.

Such a line of reasoning receives some support from results of the do-so test, which seem to reveal that the directional object is inherently related to the verb.

ii if a sentence has an object as well as a directional object, the directional object appears as the object and the V+O combination becomes a verbal unit: this verbal unit names an action such as 'balschieten'(ball-shooting), 'postzegelplakken'(stamp-sticking), etc.; these names can be the answers to questions like 'What is X doing?' The basic assumption in such a proposal is that the verb shows greater cohesion with the object than with the directional object. A possible paraphrase of such sentences as:

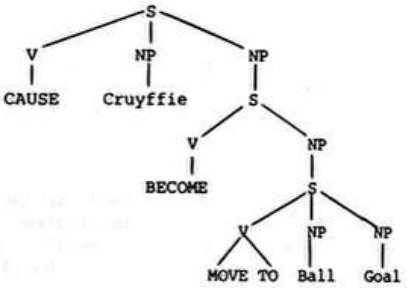
69 Cruyffie schiet ballen op het doel.
Cruyffie shoots balls at the goal.

must be something like:

70 Cruyffie veroorzaakt dat het wordt dat de bal naar het doel beweegt.
Cruyffie causes the ball to become moved to the goal.

This can be diagrammed in the following way:

71



Predicate Raising
→ CAUSE BECOME MOVE TO Cruyffie ball goal

The only anomaly in the results not accounted for in the diagram of (71) is the fact that the subject in these cases has a higher preference for stress than the object. It should be noticed, however, that we are dealing here with a very small difference with respect to the preference of stress, namely: 26 to 34 out of a set of 150 options. The definitive experiment has to account for this uncertainty. The verbal unit interpretation according to which 'MOVE TO + Ball' functions as a predicate to be raised, delivers the following result of predicate raising: CAUSE BECOME Ball MOVE TO Cruyffie goal. This description is in accordance with the results of (63).

V,3 Sentence type VII.

The results for sentence type VII, which consisted of sentences containing a progressive construction with a directional object or prepositional object, are given in the following table:

72

	subject	directional/prepositional object	verb
VII	12	26	0

In terms of the extended NSR, this means that the underlying order of elements must be:

73 V-S-DO/PO

It will be clear that the line of reasoning proposed above for the directional object holds as well for the prepositional object. Thus it can be proposed for this sentence type that:

i the VSO order is reflected in it;
ii the progressive construction does not influence the sentence stress assignment.

This last point is a new argument in favor of the point of view defended in this paper, that sentence stress is assigned before the transformational cycle.

V,4 Sentence type VIII.

The sentences of the last type also contained progressive constructions; the objects, indirect objects, and subjects from types I, II, and III were used in the construction of these sentences. The scores obtained were:

74

	subject	indirect object	object	verb
VIII	14	8	27	1

Interpreted according to our proposal, this means that the underlying order is:

75 V-IO-S-O

Since in this sentence type *aan* and *voor* were not used (as they were in sentence type I), nor was there emphatic preposing causing the indirect object to take the first position (as in sentence type III), sentence type VIII can perhaps best be compared to sentence type II. The results for sentence types II and VIII give the same order of elements, so it can be proposed for VIII as well that the VSO point of view is supported and that cyclic transformations take place after stress assignment.

VI Conclusions

Stress assignment within sentences by experimental subjects can generally be accounted for by the Chomsky and Halle hypothesis (the NSR, 1968). Some apparent exceptions can be handled if the NSR is to be extended by means of the so-called 'Topical Stress Rule' and the 'Rhythm Rule' as well (Bresnan(1971,1972)). The former rule operates on the NP-VP distinction, the latter on the V-NP distinction within the VP. Ultimately, these two modifying stress rules are counter evidence for a NP-VP analysis of sentences, which implies that the NSR cannot be applied anymore. Van der Geest's(1970) proposal can actually account for the result of the pilot experiment. The results which were in conflict with the basic theory underlying the Chomsky-Halle hypothesis, as that is worked out by Chomsky(1965), support the alternative theory of McCawley's(1970), in its way of dealing with the underlying order of grammatical functions, predicate raising as one of the basic principles of generative semantics, and the semantic representation as the only pretransformational component. A question which must now be dealt with is whether the topic-comment distinction should be maintained as a basis for stress assignment in the neutral sentence. If it is maintained, the distinction must formulate the same facts as the extended NSR does, which would naturally imply a doubling of the number of rules. The distinction between 'new' and 'given' as used in discussions of topic and comment sounds in fact rather artificial for neutral sentences, especially since these sentences are mostly described as completely 'new', thus as sentences

which apparently consist only of comment(see Dahl(1969), Kraak(1970), Schermer-Vermeer(1971) for discussion).

A phenomenon closely related to the notions of topic and comment is what is called 'expectation-line' by Hubers(1972), but for which I maintain for practical descriptive purposes the term 'presupposition'[3]. Although the normal stress contour in predicate sentences is on the predicate, as in:

76 The Tower is a príson.
77 Black is béautiful.
78 This dog is my áunt's.

there are neutral predicate sentences with different stress assignment, for example:

79 The mícrophone is defect.
80 My cár was broken.
81 The quéen is ill.
82 Your táil-light is out of order.

In all these sentences it is situationally presupposed that something is wrong; (79) for example, if said in a repair shop; in (80) it is known that the speaker was too late for his appointment; in (81) it is clear from the way of behaving that there is something the matter; (82) can be a new or isolated utterance to warn somebody that something is wrong. In these situations it is not necessary even to realize the predicate:

79a The microphone.
80a My car.
81a The queen.
82a Your tail-light, sir.

This is the more illustrative if one realizes that (82a) depending on whether it is day-light or night means:

82b Your tail-light is on.

or

82c Your tail-light is out of order.

respectively. Such seeming anomalies can more validly be accounted for in a semantically than in a syntactically motivated theory of stress.

The most sensible conclusion seems to be that sentence stress is determined before lexical insertion; thus, through various prelexical transformations the primary stress is assigned to a semantic cluster, a semantic subtree, which then can be expressed with a word. This word then carries the sentence stress. These observations lead to the following alternative Ordering Hypothesis:

i semantic deep structure
ii sentence stress assignment
iii prelexical transformations
iv lexical insertion and word stress
v transformations (cyclic as well as pre- and post-cyclic)

Department of Linguistics
University of Amsterdam

Notes

1 In these languages the affixes belonging to the verb-stem *confirm* are non-neutral. See e.g. the infinitives *confirmēr*, *konfirmieren*, *confirmāre* and *confirmēren*. Bresnan's conclusion, that because of the stress shift in such pairs as *confirm* and *confirmation* the transformationalist's hypothesis is falsified, is incorrect. It would namely imply that in French all possible forms of the verb *dériver* ought to be in the lexicon. See e.g. *derive*, *derivéz*, *derivons*, etc. (See also Berman and Szamosi(1972). According to Bresnan it is a dubious assumption that the ordering hypothesis is valid for other languages. This however, is a serious restriction of her proposal in terms of explanatory adequacy.

2 Examples are taken from Burt(1971). She assumes that in both sentences the constituent *in a crevice* belongs to the VP.

3 Because 'expectation line' concentrates upon the hearer, and while presupposition can be considered a mental activity of the speaker, the latter term seems the better. Furthermore, in linguistic theory, presupposition can be dealt with at the descriptive level. This is done actually by Morgan(1969), who considers them as left branched sentences, because they act like previous sentences.

ONE PHONEME OR TWO? THE THEORY OF AFFRICATES COMPARED WITH THE THEORY OF DIPHTHONGS

B.L. ten Have

The syntagmatic complexity of word expressions is recognized in alphabetic writing. Strong intuitions underlie our naive convictions about the linear segmentation of speech expression. It is my intention here, developing upon the work of Martinet (1939,1949 and 1965) especially, to make these intuitions explicit. I shall further consider what the practice of linguists has been in deciding the problem of monophonematicity in consonant systems (affricates in particular) and the implications of this for vocalic systems and, finally, I shall try to explicate our intuitions about syntagmatic complexity by formulating criteria to decide the general case of 'one phoneme or two'.

The intuitive idea of phonemic simplicity versus complexity has four conspicuous aspects:

1 judgment as to the 'homogeneity' versus the 'discontinuity' of the expression;
2 judgment as to the 'simultaneity' versus the 'sequentiality' of perceived parts of the expression;
3 judgment as to the 'integrality' versus the 'commutable independance' of the parts of the expression;
4 judgment as to the relative 'cohesiveness' of the whole in respect to the 'cohesiveness' of the parts.

1 The naive approach to this problem would expect a physical acoustic or phonetic homogeneity to underlie monophonematicity. The real situation is, of course, much more complicated. Discontinuity in time m u s t underlie all sequential complexity, with the possible exception of gemination; however, we have only to consider, for example, the realization of the occlusive consonants to see that phonological segmentation is not determined by the complexity in time of physical events in the realization of word expressions. The initial consonant in the English word *pit*, for instance, consists physically of an occlusion (probably inaudible), an interval of silence, an explosion, an interval of frication, an interval of aspiration with vocal cords open before the onset of phonation, and a vowel formant transition partly realized in the noise of aspiration. And yet, there can be no doubt as to our perceived impression of homogeneity.

In our intuitions as to vocalic complexity, we are even more likely to be deceived as to the physical facts. The definition of a monophthong as a vocalic nucleus in which the vowel quality does not change is no longer acceptable. We know that in such a word as *bit*, vowel quality as represented by formant positions changes almost continuously through the nucleus. Nevertheless, these changes are perceived as pertaining, not to the vowel, but to its consonant environment. Our definitions of phonetic monophthongs and diphthongs obviously must be revised to provide for this contextual interaction: a phonetic monophthong is a syllabic nucleus in which the only variations in formant heights are random or result from contextual interaction with adjacent phonemes. A phonetic diphthong is a syllabic nucleus in which there are non-random changes in formant height not resulting from contextual interaction.

2 But what justifies our treatment of the sequence of physical events in the realization of a stop consonant as mere moments in the realization of the simultaneous unity of the whole consonant? There is no doubt a perceptual unity, but can this be other than conditioned by the functional 'simultaneity' of the ensemble of distinctive features that constitute the phoneme? Here, functional simultaneity means simply the impossibility of rearranging the sequence of physical events in a different order to produce a different word expression with a different meaning.

3 The intuition of simplicity certainly contains the notion of constituent 'integrality',i.e. the putative parts are seen as not all capable of independent existence. Not all the parts of an integral whole may be capable of functioning themselves as independent wholes, as for instance, the hushing fricative release of the occlusion in the Spanish affricate in *mucho*.There simply is no phoneme with the realization [ʃ] in Castilian Spanish, therefore [tʃ] must be a unitary phoneme.

4 Relative 'cohesiveness' is a quality which derives from the ability of the whole to function as a unit. In any case where the whole has greater freedom of combinability than its putative parts it has greater cohesiveness than the parts and should terminate analysis. This notion has received clear formulation by F.W. Householder(Word 20,1964, suppl.p.18):"...a sequence of phonemes cannot have a wider distribution or a higher frequency than its component phonemes have separately..."

One conspicuous weakness of the well known Smith and Trager treatment of the English vowels was their failure to recognize this principle: even if we accept that the vowel of English *bay* is a diphthong consisting of the vowel in *bet*, i.e.[ɛ], followed by the consonant initial of *yet*, i.e. [j], we must still reject the phonemic analysis [ɛj] = /ɛj/ because [ɛj] can occur in all the functions of the English open syllable vowels while neither [ɛ] nor [j] has this capability.

In dealing with the problem of syntagmatic complexity, the affricates have generally received more attention than have the diphthongs, and there is considerable agreement among linguists in practice. Martinet distinguishes three typical cases:
1 First, there are such as that in Polish where *czy* and *trzy* are opposed, as more cphesive versus less cohesive types. In these cases, the more cohesive type may be interpreted as a unitary phoneme and the other as a phoneme sequence. Such cases are perhaps paralleled in the diphthongs by such examples as *Freer*(/fri͡ə/, proper name) versus *Freeer* (/'fri- /, comparative of *free*) in some orthoepic pronunciations.
2 Secondly, there are cases of the type of Spanish *mucho*, where one element of the affricate is the automatic accompaniment of the other and where the phonemic relevance of such a sound feature as affrication is doubtful. Here we have a parallel with the situation in the English 'diphthong'in *bay*. This word may be pronounced with a 'homogeneous' vocalic nucleus [be:], or, more commonly, may be a phonetic diphthong [bei͡]. The diphthongal element may alternate freely with zero, however, without affecting the meaning of the sign.
3 Thirdly, we have the typical case of the English affricates [tʃ] and [dʒ] of *church* and *judge*. The usual treatment of these turns on an argument with three steps:

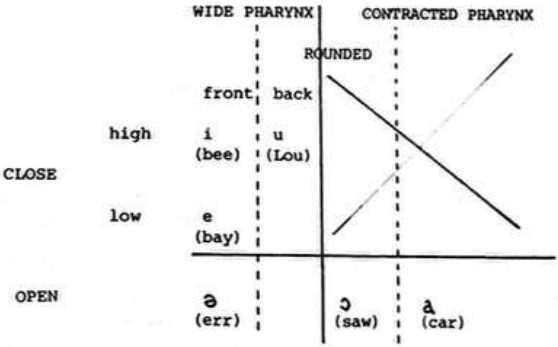
a [tʃ] and [dʒ] belong as a pair to the fortis-lenis correlation and must therefore be accorded parallel treatment. If one is judged monophonematic, the other must be as well.
b (Commutability and Householder's principle). The affricate [dʒ] occurs in all positions, initial, medial, and final, but the phoneme /ʒ/ has no occurrence in initial position in acceptable native word expressions. Therefore in initial position [dʒ] must be regarded as a unitary phoneme /ǰ/ and [tʃ] likewise given similar treatment as /č/.
c (Consistency of treatment). Although /ʒ/ does occur in initial and final positions, so that commmutation of [d] with zero is possible, there is no reason why in the interest of consistency of treatment, the monophonematic treatment should not be applied in all positions.

Let us take by way of illustration the case of the diphthongs in modern Standard English. Since the diphthongs have the same distribution as the system of vowels in stressed open syllables, we may consider them in reference to this restricted sub-system of the English vowels. The first necessary step in abstracting the system of monophthongs is to examine all phonetic diphthongs to see if their diphthongization is functionally relevant. So doing, we take note of an inventory of phonetic diphthongs,

which, in addition to nuclei of the types exemplified in a) *cow*, *sew*, b) *beer*, *bear*, *poor*, and c) *buy*, and *boy*, contains phonetic diphthongs of the types [beɪ̯], [sɔə̯], [kaə̯] (*bay*, *saw*, *car*) etc. These latter are found to be freely variable with [be:], [sɔ:], and [ka:], so that the diphthongization must be judged to be random and without distinctive relevance. We may then put these into the structure of English stressed open syllable monophthongs, which is organized on the basis of the following oppositions:

1 close (having buccal cavity constriction)~open (without buccal cavity constriction;
2 wide pharynx~contracted pharynx;
3 high (tongue forward and high)~low (tongue somewhat retracted and lowered);
4 front (narrowing at F_2 front sound velocity zero)~back (narrowing at F_2 back sound velocity maximum);
5 rounded (lips rounded or vocal tract lenghtened)~unrounded.

These form a structure as below:



The phonemic diphthongs as such fall into two main groups:

1 those based on a transition from open to close, producing an essential change in F_2 height, and
2 those based on a transition from close to open, producing an essential rise in F_1.

The first group is subdivided by the opposition front ~ back which is compatible with the feature close.

I Open to close diphthongs:
  a Back close diphthongs, F_2 falling:
    1 [aʊ̯] as in *cow*: transition from open, contracted pharynx unrounded to (back) close, wide pharynx, rounded.
    2 [əʊ̯] as in *sew*: transition from open, unrounded, to (back) close, rounded. In some usages another diphthong [ɔʊ̯] is found in place of this in all the same lexical items; this involves a transition from open, contracted pharynx, to (back) close, wide pharynx.

  b Front close diphthongs, F_2 rising:
    1 [aɪ̯] as in *buy*: transition from open, contracted pharynx

to (f r o n t), c l o s e , w i d e p h a r y n x .
2 [ɔi̯] as in *boy*: transition from o p e n , c o n t r a c t e d p h a r y n x , r o u n d e d to (f r o n t) c l o s e , w i d e p h a r y n x , u n r o u n d e d .

II C l o s e to o p e n diphthongs, F_1 rising:
1 [i̯ə] as in *beer*: transition from (f r o n t h i g h) c l o s e to o p e n .
2 [e̯ə] as in *bear*: transition from (f r o n t l o w) c l o s e to o p e n .
3 [u̯ə] as in *poor*: transition from (b a c k) c l o s e to o p e n .

Organisation of the Phonemic Diphthongs

	Front		Back
Open to Close	contracted pharynx	ai (buy) (unround.)	au (cow)
		ɔi (boy) (round.)	(ɔu) (sew)
	wide pharynx		əu
Close to Open	high	i̯ə (beer)	u̯ə (poor)
	low	e̯ə (bear)	

The question remains to be decided as to whether diphthongization results from the addition of a distinctive feature to a given archiphoneme or from an addition of a successive phoneme in sequence with a given phoneme segment. Do we have to do with unitary phonemes or monosyllabic vowel sequences in the case of the English diphthongs? The criterion of functional sequentiality is the possibility of reversing the sequence, and in the case of [ai̯] and [ɔi̯] this possibility is certainly non-existent after an initial consonant. The same is true for [əu̯], although such forms as *Dwight* and *Guadeloupé* might provide some arguments. Still the criterion of parallelism requires us to accord similar treatment to [au̯] and [əu̯]. The diphthongs [i̯ə], [e̯ə], and [u̯ə] are not reversible because sequences of /ə/ plus a stressed vowel are always given bisyllabic realization. The nuclei in *sew* and *poor* can not be regarded as symmetrical since the reversed sequence has the peak of sonority situated on a different constituent. We shall, therefore, prefer to treat each of these English diphthongs as a unitary phoneme. Let us note diphthongization of the close vowels with a trema, and of the open vowels with an acute accent for f r o n t c l o s i n g and a grave accent for b a c k c l o s i n g diphthongs. The English stressed open syllable nucleus structure then takes on the following aspect:

iï	uŭ				
eë					
əə̈			ɔɔ́ (ɜ̀)	å a á	

Thus diphthongization can be handled in distinctive feature terms with only one additional opposition: 6) d i p h t h o n g a l ~ m o n o p h t h o n g a l , since 4) f r o n t ~ b a c k is already in our inventory and is now seen to be compatible not only with m o n o p h t h o n g a l , c l o s e but also with the feature d i p h t h o n g a l .

Let us then conclude with an inventory of the criteria which we have considered for deciding cases of 'one phoneme or two'. These are:

1 Relevant existence (does alternation with zero change the meaning?).
2 Relevant sequentiality or simultaneity (can reversal of sequence of putative parts change meaning? Reversal of sequence must preserve symmetry with respect to peak of sonority in languages with word accent or vowel ~ semivowel opposition.
3 Commutation with zero of one of the parts (is one part incapable of functioning as independent phoneme?).
4 Analyticity (Householder's rule).
5 Parallelism (like complexes must receive like treatment).
6 Consistency for all syntactic positions (the same complex should be either monophonematic or sequential in all positions in which it can occur).

MARKING CONVENTIONS FOR LIQUIDS

Norval S.H. Smith

In this paper I will discuss the problems involved in the setting up of marking conventions for liquids. The first problem here is to define what, phonologically, a liquid is. If we take English for example we can set up the following system for the underlying non-syllabics:

	LABIAL	DENT/ALV	PAL-ALV	VELAR	
STOPS	p	t	tʃ	k	
	b	d	dʒ	g	
FRICATIVES	f	θ s	ʃ	x	
	v	z	ʒ		
NASALS	m	n		ŋ	
LIQUIDS		l r			
SEMIVOWELS					w j

Here, the units that are phonetically approximants, i.e. sounds that have a 'range of cross-sectional channel areas somewhat larger than fricatives' (description of Catford (1968), but are non-nasal, behave differently phonologically from the other units. Thus they are the only units that can follow initial stops. Within the class of non-nasal approximants we can distinguish between the liquids and semivowels because of their differing phonological behaviour. Thus the semivowels have phonological relationships with vowels and different distributional possibilities after vowels (superficially: at a deep level they do not exist in this position). The liquids differ from other groups such as the stops, fricatives and nasals in that they do not occur in so many of the colums of the above table representing the different places of articulation. Thus the definition of a liquid is here largely a distributional one. Now it is true for many languages that they have a non-syllabic system very similar in essence to that given above for English. For example:

Dagbani (Ladefoged,1968)

	LABIAL	ALVEOLAR	PAL-ALV	VELAR	LAB-VEL
STOPS	p	t	tʃ	k	k͡p
	b	d	dʒ	g	g͡b
FRICATIVES	f	s	ʃ		
	v	z	ʒ	ɣ	
NASALS	m	n	ɲ	ŋ	m͡ŋ
LIQUIDS		l			
SEMIVOWELS					w j

Tojolabal (Hockett,1955)

	LABIAL	ALVEOLAR i)	ii)	PAL-ALV	VELAR	
STOPS	p	t	ts	tʃ	k	?
	p'	t'	ts'	tʃ'	k'	
FRICATIVES			s	ʃ	h	
NASALS	m	n				
LIQUIDS		l r				
SEMIVOWELS						j w

The phonological liquids have certain normal features as far as their phonetic realization is concerned. Thus they are normally coronal or palatal approximants, trills,

taps, or flaps. However in some languages certain fricatives appear also to act as liquids.

Within the one language the liquids may have quite varied phonetic realisations. Thus the liquid symbolised as /r/ in English appears in different dialects as an alveolar trill, alveolar tap, post-alveolar approximant, post-alveolar fricative, retroflex approximant, uvular approximant. In French for /r/ we get (Ladefoged,1971) alveolar trills, uvular trills, uvular approximants and uvular fricatives. What it is in the acoustic of all these sounds that allows them to function equivalently I don't know but clearly there must be some common factor. It is also clear that some sounds pattern as liquids in some languages and not in others. Thus the voiceless lateral fricative is a liquid in Kalinga (Reid,1972) where it is the allophone of /l/ occurring in initial position. In Kutchin however where we have the following part-system:

t	tɬ	tθ	ts	ts^y	tʃ	t̪s̪	k	k^w
t^h	$tɬ^h$	$tθ^h$	ts^h	ts^{yh}	$tʃ^h$	$t̪s̪^h$	k^h	k^{wh}
t'	tɬ'	tθ'	ts'	$ts^{y'}$	tʃ'	t̪s̪'	k'	$k^{w'}$
	ɬ	θ	s	s^y		s̪	x	x^w
	l	d	z	z^y		z̪	ɣ	$ɣ^w$

it is quite clear that neither /l/ or /ɬ/ is functioning as a liquid but that they are both here to be regarded as fricatives.

Although as we have seen above liquids may sometimes be realised as fricatives, this is rare and we will assume that underlyingly all liquids are sonorant and therefore not fricatives from a phonological point of view.

I will now briefly remind the reader of the functions of marking conventions. In the first place marking conventions define the complexity of phonological systems, rules configurations etc. They do this by defining, for every feature, in a given context, which of the two possible values (plus or minus) of that feature is more normal, natural and therefore unmarked in that particular context. This has its most obvious utilization in the lexicon, in the specification of lexical redundancy. Thus unmarked feature values can be employed to express the redundant portions of lexical entries. These unmarked values are regarded as having no cost. It is frequently the case that if a particular neutralization exists in lexical representations in a particular environment that we get the unmarked member of this neutralization occurring. Thus in English the only initial clusters involving two true consonants (i.e. +consonantal, -vocalic) are /sp st sk sm sn/. Here /s/ is defined as being unmarked for every feature except that of (consonantal) and (segment). Thus it is the maximally unmarked consonant in this environment. However it appears not always to be the unmarked term that occurs in a neutralization situation. What do we do here? It is quite clear that we cannot logically employ marked values of features in lexical representations in such a situation. It is suggested by Postal(1968) that we should enter unmarked values of features here and later produce the correct result by a later rule. Thus in the Swiss German dialect of Zürich (cf. Smith and Van Riemsdijk, in preparation) we get the following cases where the first two segments of a morpheme are true consonants.

ʒp ʒt zk (⟶ zkx)

ʒm ʒn

Here, ignoring the problem of the tenseness of the initials, we can say that in four cases we get /ʒ/ which is marked for (± anterior) and thus not the unmarked consonant that /z/ is. If we entered morphemes with these clusters in the lexicon as beginning with /ʒ/, then their initial would be (m anterior). But what would this mean? We can hardly have a marked term in an opposition if there is no unmarked term in contrast with it. Thus we should, adopting Postal's suggestion, represent these neutralised cases all with the unmarked feature-value of (anterior) and 'correct' things with a later rule. Thus we would be representing these clusters in the lexicon as:

zp zt zk

zm zn

It is at least interesting that this is the assumed course of historical events in German.

Another function that has been given to marking conventions is that of aiding in the operation of the evaluation measure. Thus since Chomsky and Halle assumed an evaluation measure that counted symbols, they introduced the concept of 'linking', whereby if we have a rule 1)

$$1 \quad X \longrightarrow (\alpha F) \;/\; Y\left[\overline{Q}\right]Z$$

$$2 \quad (uG) \longrightarrow (\beta G) \;/\; \left[\begin{matrix}\overline{\alpha F}\\ W\end{matrix}\right]$$

whereby if "rule 1) applies to a segment containing X in the context $Y(\overline{Q})Z$, it assigns to this segment the feature specification (αF) in the usual way. If furthermore, the segment to which 1) has applied meets the condition W of 2) then the feature specification (βG) is automatically assigned to that segment. In order to prevent the assignation of (βG) rule 1) will have to be made more complex in some way"(Chomsky and Halle,1968). Thus the rule that brings about the more unmarked situation will be cheaper to state since it can be much abbreviated by the linking use of marking conventions.

After these basic remarks I would like now to turn to the basic problem at issue. How to find marking conventions for liquids? Chomsky and Halle give us the following conventions:

$$\begin{bmatrix}+\text{voc}\\ +\text{cons}\end{bmatrix} \longrightarrow \begin{bmatrix}-\text{nas}\\ +\text{son}\end{bmatrix}$$

(u ant) ⟶ (+ ant)

(+ ant) ⟶ (+ cor)

(u cor) ⟶ (+ cor)

(- cor) ⟶ (- lat)

(u lat) ⟶ (+ lat)

(u cont) ⟶ (+cont)

One convention here that is simply wrong is the fifth. Chomsky and Halle claim that this excludes lateral uvulars. I don't wish to claim that lateral uvulars exist but

this convention also excludes palatal lateral liquids which exist in a number of languages. Here we can formulate two new conventions quite simply:

$$(u\ cor) \longrightarrow (+cor) \ /\ \overline{(u\ lat)}$$

$$(-cor) \longrightarrow (-back) \ /\ \overline{(+lat)}$$

of which the second will follow the conventions for (lat). A problem also arises with the last convention. This seems to allow for the existence of non-continuant liquids. Since Chomsky and Halle suggest that trills and taps are continuantsit is difficult to imagine what these non-continuant liquids could be. For this reason I suggest a change here by dropping this convention and altering the first convention to

$$\begin{bmatrix} +voc \\ +cons \end{bmatrix} \longrightarrow \begin{bmatrix} -nas \\ +son \\ +cont \end{bmatrix}$$

Let us now turn to the much more important problem of what the unmarked liquid is. How can we find this out? Four areas of study suggest themselves. These are cross-language distribution, language-internal distribution, historical change and developmental factors. As regards the first we can look at the languages with only one type of liquid. All other things being equal we should expect the most unmarked liquid to occur most often under such a situation. I have of course not looked at every language but I have a good number from each continent. They divide between lateral (always /l/) and nonlateral as follows:

	AMERICA	EUROPE	ASIA	AFRICA	OCEANIA
/l/	43	-	7	18	14
/r/	16	-	1	10	2

This data is rather skewed in parts. Thus 13 out of the 15 Oceanic languages are from the Philippines. However the American and African languages considered are fairly well distributed. Within individual languages with only a single liquid phonological unit we sometimes find (l) and (r) in complementary distribution. A case of this occurs in Ewe, a W.African language. Here the liquid, normally (l), varies between (l) and (r) initially after consonants. Thus we get (Ladefoged,1968):

pl	tr	tcr	kl	k͡pl
bl	dr	dzr	gl	g͡bl
ml		ɲr	ŋl	
ɸl	fl	sr	xl	
βl	vl		ɣl	
		jr	hl	wl

Here we have a clear situation, (r) after coronals and (l) after non-coronals. In English, as in many other languages, despite the existence of more than one liquid, we get similar patterns, e.g.

pl	pr	tr		kl	kr	spl	spr
bl	br	dr		gl	gr		str
fl	fr	θr	sl	ʃr		skl	skr

Note here too the non-occurrence of tl, dl, θl etc. For an Asian example compare Laven, a Laotian language (Ferlus,1972):

pl	pr	tr	cr	kl	kr
bl	br	dr	jr^1	gl	gr
		sr			

Here again we have no tl, dl etc. We can say, therefore, that after a coronal, the unmarked liquid is a non-lateral. When /tl/ occurs it seems mostly to be a single unit, a lateral affricate, as for instance in the example of Kutchin quoted above. /tl/ does of course occur in some languages as a sequence, but here it will be a doubly marked sequence. The liquid will be marked for the feature (lateral) and the stop would be presumably marked in its place features since it is less normal before /l/ than /p/ or /k/. A language with this sequence is Scottish Gaelic.

As far as historical evidence is concerned, we probably know too little at the moment to make a judgement of any value. We know, for instance, that changes of /l/ to /r/ and of /r/ to /l/ in all positions both occur, but as to which is most common we have no real evidence. Both changes occur in different types of Sanscrit. Overall changes of this nature could conceivably arise from generalisations to all positions from an occurrence in one position where it represented a change from the marked to the unmarked case. An apparent example of such a restricted change occurs in the fisher dialect of Filey in Yorkshire, England (Wakelyn,1972):

church	kelk
cork	kolk
fork	folk
pork	polk

The evidence from developmental phonology is a little clearer. In general r-sounds are acquired (as part of the phonological system) later than l-sounds. Thus Ruke-Dravina(1965) shows that in Czech and Latvian the late achievement of apical trilled /r/ is preceded by its replacement by /l/. Interestingly enough uvular (R) occurred at an earlier period as a substituting phone in both cases. N.V. Smith(forthcoming) shows a slightly different picture with English post-alveolar approximant /r/ appearing at one stage correctly but then later being replaced for a time by /l/ and then re-appearing again as /r/. As far as clusters are concerned, with adult labial-r and velar-r clusters, these appear first without /r/, and then with this replaced by /l/. Interestingly enough the alveolar-r clusters are not found in this middle stage (with the exception of those with the alveolar assimilated to a following labial or velar) but proceed directly to forms with /r/. Thus:

P ⟶ PL ⟶ PR

K ⟶ KL ⟶ KR

T ⟶ TR

It is possible, however, that the different behaviour of the alveolar-r clusters in English is due to the affricate pronunciation they receive in most forms of English. Evidence from other languages on the development of alveolar-r or dental-r clusters is conspicuous by its absence.

From these various pieces of evidence we can, I think, conclude that the lateral liquid is the unmarked one, at least in non-consonantal surroundings. However, in clusters following coronals it would seem to be the case that the non-lateral is rather the unmarked liquid. Thus we could replace the sixth convention

$$(u\ lat) \longrightarrow (+lat)$$

by the following:

$$(ulat) \longrightarrow \begin{Bmatrix} (-lat) \ / \ (+cor)— \\ (+lat) \end{Bmatrix}$$

Now let us examine briefly a much thornier problem, that of sequences of liquids, immediate or interrupted. In my English intrasyllabic sequences of liquids are possible as follows:

rl	*ll
*rr	*lr

With words of the form CL_1VL_2 some interesting restrictions appear. We have

CrVl	CrVr	ClVr	ClVl
many words	one word	many words	one word
eg. *brawl*	*prayer*	eg. *flare*	*flail*
grill	(non-agentive)	*blur*	

Words like *friar* are disyllabic in final-r-sounding dialects and are therefore irrelevant here. From the above chart we can see that words with the same liquid in the two liquid positions in CL_1VL_2 are clearly less normal. Indeed the word *flail* has become *frail* in many English dialects.

Ross has pointed out a similar restriction involving words of the type of *flicker* and *crackle*. English has also inherited the Latin alternating suffix *-al/ar* where the *ar* form only occurs with roots ending in /l/. All these facts suggest the following:

rl is a less marked sequence than *lr*

$$\begin{Bmatrix} r....l \\ l....r \end{Bmatrix} \text{are less marked sequences than} \begin{Bmatrix} r....r \\ l....l \end{Bmatrix}$$

Between the two alternatives r....l and l....r it is difficult to say that one is more natural than the other. Thus, according to Jackson(1967), in some Breton dialects original ...lCVl... sequences become ...rCVl... in some dialects and ...lCVr... in others:

Eg. *delchel* becomes *derc'hel* or *delc'her*

Similarly certain Common Celtic sequences of ...rVr... become ...lVr... in Irish,

Breton and Cornish, but ...rVl... in Caulish. In many Greek dialects an /r/ becomes /l/ if another /r/ occurs in the word. Compare what happens to English loans in Tyrone Irish(O'Searcaigh,1925):

corner	(kɔrNal)	garter	(gɑrtal)
mortar	(MʌrtaI)	mariner	(Mɑ:rNəlɑx)

The evidence from child-language on this point is almost completely absent. However we can formulate the marking convention, to follow that given above:

$$(u\ lat) \longrightarrow (-\alpha lat)\ /\ (\alpha lat)\ldots.\_\_$$

To conclude, then, it is obvious that there is still a great deal to say on this subject, indeed the facts are still largely unknown. It will only be by a greater knowledge of the phonologies of the languages of the world, by a great deal of study of their historical development, and a vastly increased amount of work in developmental phonology that we will ultimately be able to set up marking conventions or some equivalent that are at all soundly based.

Department of Linguistics
University of Amsterdam

Notes

1 It is unclear whether the first members of the clusters in this column are palatal stops or palato-alveolar affricates. The latter is most likely.

ON THE INTRODUCTION OF CONDITIONAL CONJUNCTIONS IN DIFFERENT CONTEXTS[1)]

L.G.M. Noordman

Introduction

There are some well known types of sentences that express conditional relations between two events. The sentence 'if it is raining, the streets are wet' expresses the conditional relation between raining and the streets being wet. This study deals with some conditional conjunctions; the aim is to investigate how these conjunctions are interpreted in natural language.

Conditional sentences are usually presented in logic as 'if p then q', or 'p → q', where p and q are propositions, p is a sufficient condition for q; q is a necessary condition for p. Given 'p → q'; from p follows the conclusion q; from -q (not q) follows -p (not p); from -p no conclusion can be drawn with respect to q or -q; from q no conclusion can be drawn with respect to p or -p. One can ask the question whether conditional sentences in natural language are interpreted in this logical way.

In a study about the development of logical reasoning ability in children Roberge (1970) presented children age 10-16 years with complete syllogisms. They had to judge the validity of the conclusions. It appeared that children of all ages made the largest number of errors in judging syllogisms where the correct answer was 'indeterminate' (e.g. 'p → q, -p' and 'p → q, q). The main objective of this study was, however, to investigate to what extent children of different ages are able to perform logically correct deductions. No analysis is given of the kind of logically incorrect answers; the question of how conjunctions are interpreted was left aside.

According to some authors, e.g. Inhelder and Piaget(1958), Matalon(1962), adults are able to handle conditional sentences in a logical way, but children are not able to do so. Matalon(1962) presented conditional sentences to children of 10 years old. They were asked to draw conclusions, given a second premiss e.g.: 'if the red light is lit, the green light is lit; the red light is lit; what can be concluded with respect to the green light'. They also had to indicate with respect to each combination of events (p, q; p, -q; -p, q; -p, -q) whether that combination can occur or not. The third task the children had to perform was to enumerate themselves the possible and impossible combinations (p, q; -p, q; -p, -q) and to make the inference called 'modus ponens' (p therefore q).More difficult was to recognize the impossible combination (p, -q) and the 'modus tollens' (-q, therefore -p). The most difficult task was to enumerate the possible and impossible combinations and to draw the right conclusion in case the second premiss was -p or q. It appeared that most of the errors the children made were due to the fact that 'if' was interpreted as 'if and only if': the conditional conjunction was understood as if it was a biconditional conjunction in these cases. However, the data show that 23 out of the 30 subjects judged that the combination -p,q was a possible one. This contradicts the conclusion that 'if' is interpreted as a biconditional conjunction. Matalon concludes that young children interprete conditional sentences as biconditional sentences. It is only at an age of twelve years or more that children interprete the relation of implication in natural language in a logical way, according to Matalon.

O'Brien, Shapiro and Reali(1971) investigated what the natural interpretation is for 'if ... then' sentences. They found that children of elementary school age interprete these conditional sentences as biconditional sentences: p is a necessary and sufficient condition for q and consequently q is a necessary and sufficient condition for p. As age increased, however, children increasingly interpreted these sentences as material implication.

In order to investigate how the relation of implication is understood Johnson-Laird

and Wason(1970) presented adult subjects with a conditional sentence ('if ... then') and asked them what information they needed in order to decide whether the sentence was true or false. The results of the experiment indicated that adults do not interpret these tasks in a logical way.

Conditional relations can be expressed not only with the conjunction 'if then', but also with the conjunctions 'unless', 'or', 'only if', and others. From a logical point of view the following sentences are equivalent in the sense that they express the same relation between the same events:

it is raining, the streets are wet;
if the streets are not wet, it is not raining;
it is not raining, unless the streets are wet;
either the streets are wet, or it is not raining;
it is raining, only if the streets are wet.

It is however an open question whether these sentences are equivalent also in natural language. The sentence 'it is not raining, unless the streets are wet' may sound strange or even may be false for some people, because they claim that one would have to conclude from this sentence that it is raining if the streets are wet, which is not necessarily the case. This would suggest, that a conditional relation is more easily interpreted as a biconditional relation when the relation is expressed with the conjunction 'unless', than with the conjunction 'if then'. One could ask whether the conjunctions 'only if' and 'or' are similar in this respect to the conjunction 'unless'.

The interpretation of the above mentioned conjunctions depends probably on the topic of the sentence. The sentence 'if it is freezing, the temperature is below 32°F' will more easily be interpreted as a biconditional sentence, than the sentence 'if it is raining, the streets are wet'. According to Naess (1962) the meaning of 'or' depends on the topic of the sentence, just as the meaning of 'if then': 'or' can express a conditional and a biconditional relation. One usually uses the words 'inclusive' and 'exclusive' to indicate these interpretations of 'or'. We will use these terms to indicate the two interpretations of a conjunction; e.g., 'if inclusive' is the conditional conjunction expressing material implication, -p & q is true; 'if exclusive' is the biconditional conjunction expressing equivalence, -p & q is false.

Lakoff (1971a) makes a distinction between symmetric and asymmetric 'or'. As an example of the symmetric 'or' consider the sentence 'either John eats meat, or Harry eats fish'. This sentence is equivalent to the combination of both the following sentences: 'if John does not eat meat, then Harry eats fish'; 'if John eats meat, then Harry does not eat fish'. This 'or' is exclusive: it is not possible that both 'John eats meat' and 'Harry eats fish' are true. The sentence 'either Seymour eats his dinner, or his mother complains to the neighbours' is an example of the symmetric type of 'or'. This sentence is equivalent to 'if Seymour does not eat his dinner, his mother complains to the neighbours'. This 'or' is inclusive: it is possible that Seymour eats his dinner and that his mother complains to the neighbours.

The meaning of 'unless' is, according to Reichenbach (1966), logically equivalent to the meaning of 'if not' and 'or'. 'Unless' can express a biconditional relation as well as a conditional relation. If it is true that the conjunctions 'only if', 'or' and 'unless' are more easily interpreted as biconditional conjunctions than 'if then', then the interpretation of 'if then' wil be determined by the topic of the sentence more than the interpretation of the other conjunctions.

The problem

This study concerns the question how conditional conjunctions are interpreted in natural language. The following questions are asked. Are the conditional conjunctions 'if then', 'unless', 'or', and 'only if' dominantly interpreted in natural language in an inclusive way (material implication) or in an exclusive way (equivalence). It was hy-

pothesized that the dominant interpretation of the four conjunctions is the exclusive interpretation, but more so for 'unless', 'or', and 'only if' than for 'if then'. Another question is: to what extent does the interpretation of the conjunctions depend on the factual knowledge the hearer has about the topic of the sentences and to what extent on the meaning of the conjunctions themselves. Because of the knowledge one has about the events expressed in the two propositions, one knows that the relation between the events in some cases is in fact a biconditional relation, e.g. 'if it is freezing, the temperature is below 32° F'. In other cases this relation is a conditional relation, e.g. 'if it is raining, the streets are wet'. In still other cases the relation between the two events is quite arbitrary; knowledge about the facts expressed in the two propositions of the sentence does not give any information about the question wether the relation is a conditional or a biconditional one, eg. 'if the red light is lit, the blue light is lit'. Sentences of these types will be called sentences with an exclusive context, sentences with an inclusive context and sentences with a neutral context respectively. In neutral-context sentences the only information about the relation between the two events is the information conveyed by the conjunctions themselves. These sentences can be considered as a kind of control for actual knowledge. It was hypothesized that the conjunctions generally are interpreted in an exclusive way in each of the three kinds of sentences, but that this would be the case in the exclusive sentences more than in the neutral-context sentences and in the inclusive sentences less than in the neutral-context sentences. As a corrolary of the first hypothesis it was expected that the difference between the three kinds of contextual information would be greater for the conjunction 'if then' than for the other conjunctions. In other words, it is expected that the meaning of 'if then' is more dependent on the context than the meaning of the other conjunctions. Another question regards the ease of understanding the conjunctions: do sentences expressed with different conjunctions differ in ease of understanding? Sentences with a neutral context were used in the experiment in order to investigate to what extent people in understanding conditional sentences make use of knowledge about the conjunctions independently of knowledge about the facts expressed in the propositions. If knowledge about the facts increases the ease of understanding conditional sentences, one would expect that neutral-context sentences are more difficult to understand than the other types of sentences.

Material and subjects

The experimental material consisted of 48 items. Each item consisted of two premisses - the first one being a conditional sentence, the other one a simple proposition - and three response alternatives among which the subjects had to choose the correct conclusion. An example of an item is:

if it is raining, the streets are wet
it is not raining
a the streets are wet
b the streets are not wet
c indeterminate

The three alternatives were: the proposition, that was not stated in the second premiss, in affirmative form (p or q); the negation of the first alternative (-p or -q) and the word 'indeterminate'. The items were constructed in the following way. Twelve 'if then' sentences were constructed. There were four neutral-context sentences, four exclusive sentences and four inclusive ones. For each sentence three logically equivalent sentences were constructed using the conjunctions 'unless', 'or', and 'only if', yielding 12 quadruplets of sentences. These sentences were used as the first premiss. Each sentence out of a quadruplet was paired with only one of the four possible propositions (p, -p, q, -q) as second premiss. Besides the experimental items, there were some practice items. The items were presented using a slide-projector. The order of presentation of the conjunctions was balanced, using 12 permutations of four elements. The number of items between any two items out of a particular quadruplet was constant. Each item was presented for a time of 25 seconds. The subjects indicated on a sheet of paper the let-

ter of the alternative they considered to be the correct conclusion. The subjects were 28 undergraduate students in psychology from the University of California at Berkeley. The experiment was conducted during a class meeting. The data of only those students are considered who were native speakers of English and who had no previous training in logic.

Results

The interpretation of the conjunctions

The question of exclusive vs. inclusive interpretation arises only with respect to the 24 items for which the answer is 'indeterminate' according to the logic of material implication. Only these items are considered in the following analysis. The data show very clearly that the conjunctions are not interpreted in an inclusive way. Considering the items having a logical form that can be described as 'p → q, -p' and 'p → q, q', one can compare the number of times the answer -q in the first case and p in the second case is given (exclusive interpretation) with the number of times the answer 'indeterminate' is given (inclusive interpretation) for each item separately. It is not surprising that such logical forms when used in an exclusive context are interpreted more frequently in an exclusive way than in an inclusive way; the level of significance for each item separately being at least .005. The more interesting items are those where the context is neutral with regard to the interpretation or even suggests an inclusive interpretation. Thirteen out of the sixteen items are interpreted significantly more frequently in an exclusive than in an inclusive way (for eleven items $p < .01$). One 'unless' item just failed to reach significance ($p > .05$). Only the two 'if p then q, -p' items were interpreted equally often in an inclusive as an exclusive way (table 2). It should be noted that as many as 13 out of 27 subjects concluded from the premisses: 'if the car is running, there is gasoline in the tank; the car is not running' that there is no gasoline in the tank. The difference between the 'if p then q, -p' items and the 'if p then q, q' items will be discussed later.

It appears from the data that all the conjunctions tend to be interpreted in an exclusive way, even if the context normally suggests an inclusive interpretation. It might be argued that a sentence like 'John will not get his driver's licence unless he pays the examination fee' normally is used in a situation where the speaker and the hearer know that all the conditions for John getting his licence are fulfilled except maybe one: they don't know whether John paid or is going to pay the examination fee. It can be concluded that conditional sentences in ordinary language have implications that are not conform to the logical laws of material implication. In what form the conjunctions and their implications are represented in memory, is a question for further research. But for many people 'if p then q' implies 'only if p then q' in one or another form and 'p unless q' implies 'if q then -p' in one or another form. 'p only if q' is often interpreted as implying 'p if q'. The sentence 'p or q' is often interpreted in such a way that it implies 'if p then -q'.

In order to get a more detailed idea about the influence of the context of the sentence and about the differences between conjunctions with respect to the degree of exclusive interpretation, an analysis of variance was carried out on the data for the above mentioned 24 items. Because the analysis cannot be performed on dichotomous data, the 28 subjects were arbitrarily divided into four groups of seven subjects each. An index for exclusivity was devised, being the difference between the number of exclusive and inclusive interpretations of a group of subjects. The analysis of variance was performed on these data, with conjunctions, contexts and second premiss (q resp. -p) as within factors. The data in table 1 are sums of the scores for the two items in each conjunction and context combination. The maximum possible score is 56; it would have been obtained if all subjects interpreted a conjunction in the exclusive way. A score of 0 would indicate that a conjunction is equally frequently interpreted in the inclusive as in the exclusive way. The data for the two items have been pooled, since the underlying form of a single 'unless' item can be considered to be equivalent to the underlying form of both 'if then' items, e.g. 'John is working, unless he is tired; John is

tired' can be considered to be a 'p → q, -p' item as well as a 'p → q, q' item, depending on the fact whether p and q are defined with respect to the sentence 'if John is not tired, he is working' or to the sentence 'if John is not working, he is tired'. The same is true for the 'or' sentences.

Table 1. Scores for degree of exclusive interpretation for the different conjunctions and contexts

	neutral context	exclusive context	inclusive context	total
if then	18	32	18	68
unless	35	43	34	112
or	28	36	29	93
only if	29	43	35	107
total	110	154	116	

There is a difference in the interpretation of the four conjunctions. The conjunctions 'unless', 'or', and 'only if' are almost equally exclusive and they are more exclusive than 'if then': $F(1,69) = 9.15$ ($p < .01$). (Because all the error terms are homogeneous they are pooled in the analysis). In sentences with an exclusive context the conjunctions are interpreted more frequently in an exclusive way than in sentences with a neutral context: $F(1,69) = 8.76$ ($p < .01$). But surprisingly the inclusive sentences are interpreted in an exclusive way as frequently as the neutral-context sentences. The fact that the inclusive sentences express a conditional in contrast to a biconditional relation, does not prevent people to interprete that relation as a biconditional one. The knowledge about the facts stated in the propositions does not reduce the 'exclusivity' of the sentence. A possible explanation has been given earlier. It was not found that the difference in exclusive interpretation for the three kinds of contexts was greater for the 'if then' sentences than for the sentences with other conjunctions: $F(1,69) = 1.96$ ($p > .10$).

Some additional points have to be made. Table 2 represents the original data for 'if then' and 'only if' in sentences with a neutral and an inclusive context respectively. The data for 'unless' and 'or' cannot be given in this way for the reason stated above. The top figure in each cell represents the number of subjects giving the answer p or q, depending on the item; the second figure represents the number of subjects giving the answer -p or -q, again depending on the item; the third figure represents the number of subjects answering 'indeterminate'.

Table 2. Answers for each 16 items. The three figures in each cell represent the number of subjects answering p, -p, indeterminate resp.; q, -q, indeterminate resp., depending on the item. (N = 28)

	neutral context				inclusive context			
second premiss	p	q	-p	-q	p	q	-p	-q
'if then'	28	25	2	3	28	23	1	0
	0	0	11	13	0	1	13	21
	0	3	15	12	0	4	14	7
'only if'	28	22	2	0	28	22	1	0
	0	1	19	28	0	0	23	27
	0	5	7	0	0	6	4	1

It is noted earlier that the 'if then' sentences are the least exclusive of all items. An inspection of the data for 'if then' indicates that this conjunction is sometimes given an alternative interpretation. The items 'if p then q, q' were interpreted in an exclusive way much more frequently than the items 'if p then q, -p',as was stated earlier. This was true for the neutral-context and inclusive sentences: $F(1,69) = 32.18$ ($p < .001$). This difference might be explained in the following way. Hearing the sentence 'if p then q' the hearer makes a connection between the two propositions p and q. The two propositions are cognitively linked together. If one of the two is presented as second premiss, the other one, associated with the first one, is given as the answer. In fact, the answer for q as second premiss was almost equally often p as the answer for p as second premiss was q. The situation is different if the second premiss is -p. That premiss is not a part of the first sentence. There is no direct information available with respect to -p. In previous research (Wason(1966) and Johnson-Laird & Wason(1970)) it was also found that the proposition -p is irrelevant to q or -q. Furthermore the answer q for the item 'p → q, p' is given more frequently than the answer -p for the item 'p → q, -q' ($p < .05$ for the inclusive sentences; $p < .01$ for the neutral-context sentences). These observations show that 'if then' is sometimes interpreted as indicating a bidirectional connection between the two propositions stated in the sentence (p and q), but not a bidirectional connection between the negations of the propositions (-p and -q). Further research is needed to determine whether it depends on the item, on the subject or on both, whether 'if then' is interpreted in this way or in the exclusive way.

In what sense does the interpretation of 'only if' differ from the interpretation of 'if then'? The items 'p only if q, q' do not differ from the items 'p only if q, -p' as 'if p then q, q' differs from 'if p then q, -p'. The frequency of the answer -q for the item 'p only if q, -p' was equal to the frequency of the answer p for the item 'p only if q, q'. Furthermore -q leads more frequently to the conclusion -p and vice versa when the first premiss is 'p only if q' than when the first premiss is 'if p then q'. This difference is in fact significant in all cases at the level of at least 5%. These observations suggest that the meaning of the conjunction 'only if' can be represented both by a bidirectional connection between the two propositions stated in the conditional sentence, as is the case for 'if then', and by a bidirectional connection between the negations of these propositions. This is in agreement with the analysis of 'only' given by Horn(1969). 'Only John came' presupposes that John came and asserts that nobody else came. Formally: only $(x = a, F_x)$ presupposes F_x and asserts $-(\exists_y)(y \neq x \,\&\, F_y)$. Consequently the sentence 'it is raining only if the streets are wet' asserts 'if the streets are not wet, it is not raining'. The data suggest that the assertion of 'p only if q' ('if -q then -p') is in fact represented in the memory. The above given analysis of 'if then' and 'only if' illustrates in what sense 'only if' is more exclusive than 'if then'.

Ease of understanding the conjunctions

It is assumed that the ease of understanding the conjunctions is indicated by the number of errors. But with respect to what criterion is an answer considered to be an error? In this exploratory study there is no reason to consider the answers that are conform to the laws of material implication as the correct answers. An answer is considerd to be false in case both the exclusive and the inclusive interpretation of the conjunction do not allow that answer to be the conclusion. This definition is used for the sentences with an exclusive context as well as for the other sentences; an inclusive interpretation of a conjunction in an exclusive context was not considered to be false. Whether the conjunction is interpreted in an exclusive or inclusive way, the answer 'indeterminate' or -q for the item 'p → q, p' is false. So is the answer -p for the item 'p → q, q'. For each conjunction used in each of the three kinds of contexts the number of errors was computed for each subject. An analysis of variance was performed on these data with conjunctions and contexts as within factors. The number of errors are summed over the subjects and represented in table 3.

Table 3. Number of errors for the items with different conjunctions and different contexts.

	neutral context	exclusive context	inclusive context	total
if then	17	12	9	38
unless	30	3	6	39
or	38	18	22	78
only if	3	5	2	10
total	88	38	39	165

For each conjunction separately the number of errors in items with an exclusive context is approximately equal to the number of errors in items with an inclusive context. For the 'unless' items the number of errors in neutral-context sentences is considerably larger than in other sentences: $F(1,297) = 43.00$ ($p < .001$). The same result is found for the 'or' items: $F(1,297) = 21.42$ ($p < .001$). The difference does not reach significance for the 'if then' items: $F(1,297) = 2.79$ ($p < .10$). For the 'only if' items there is no difference at all. (The error terms are pooled in the analysis, because they are homogeneous.)

Contextual information appears to facilitate reasoning at least with the conjunctions 'unless' and 'or'. Even adults do not use the relation of implication as such in reasoning tasks, but make considerably use of the contextual information in deductive reasoning.

The lack of difference in errors between neutral-context sentences and the other sentences for the conjunction 'only if' is of special interest: of the four conjunctions 'only if' is the one that conveys, independently of the context, the most information about the conditional relation between the two propositions. The items with 'only if' are by far the easiest ones: $F(1,297) = 32.29$ ($p < .001$). This might be explained by the fact that the assertion of 'p only if q' is 'if not q then not p' and that in encoding 'p only if q' an assertion is made between p and q as well as between -p and -q. The most difficult items are the items with the conjunction 'or'. It should be noted that 'or' is the only coordinate conjunction. It might be argued that the 'or' sentences express the conditional relation in a somewhat unfamiliar way: 'there is gasoline in the tank, or the car is not running'.

Conclusion.

There is a tendency to interprete the conjunctions 'if then', 'unless', 'or', and 'only if' in an exclusive way, even in contexts where the inclusive interpretation is the more obvious one. The conjunction 'if then' is the least exclusive of these four conjunctions. The context determines only to a certain degree the interpretation of the conjunctions. In an exclusive context they are interpreted in a more exclusive way than in a context that requires an inclusive interpretation or in a context that is neutral with respect to the interpretation. On the other hand the way the context of the sentence is understood is determined by the exclusive interpretation of the conjunction: even inclusive sentences are understood as dealing with exclusive situations. In reasoning with conditional sentences people lean heavily on contextual information. They do not make use only of the information given by the conjunction; the context is a facilitating factor in arriving at the conclusion.

1) This research was conducted while the author had a grant from the Niels Stensen Stichting that enabled him to stay as a research associate at the University of California, at Berkeley. The author would like to thank Dr. Dan I. Slobin for the research

facilities and the helpful discussions and Dr. Laurence R. Horn for the valuable discussions on the topic of this study.

LINGUISTS AS BEHAVIORAL SCIENTISTS: TOWARDS A METHODOLOGY FOR TESTING LINGUISTIC INTUITIONS [1]

Catherine E. Snow

Linguists develop their theories on the basis of native speakers' intuitions concerning the grammaticality, ambiguity, paraphraseability, and interpretation of sentences. The ability of native speakers to give such judgements is one aspect of linguistic competence. Linguistic competence is, of course, the speaker-hearer's abstract language capacity, all that he knows about language. Producing and understanding sentences is seen as a process of filtering competence through various performance factors, which in some sense limit or distort the capacities inherent in competence.

This view of language behavior is in general a congenial one to psychologists, who have long used distinctions similar to the competence-performance one (e.g., learning vs. performance, Intelligence A vs. Intelligence B; see Hebb(1966) for further discussion of these concepts). However, many of the psychologists who from time to time read linguists' papers have been struck by an inconsistency in the use of this distinction. Whereas speaking and hearing are admitted by linguists to be affected by performance factors, judgements about sentences have for some reason been treated as if exempt from the influence of performance variables. Bever(1970a) has worried about this. He suggested that sentences taken from several linguistic articles would receive the original judgements if presented in the original order and context, but very different judgements if presented mixed with each other. Bever goes so far as to say that a grammar based on linguistic intuitions might be completely different from a grammar based on observations of other kinds of language performance. Levelt(1971) has also complained about linguists' methodology, especially about their reliance on judgements of borderline sentences, which Chomsky expressly forbids. Since the borderline cases are often the most interesting, and will in any case continue to be used by linguists, it seems more fruitful to supply a methodology which can overcome some of the difficulties of working with borderline sentences than to proscribe them. Levelt makes several useful suggestions for an improved methodology of testing linguistic intuitions, which I will refer to throughout this paper. His suggestion that cohesion judgements be used in place of grammaticality judgements seems to me to be of rather limited applicability.

The general tendency to ignore the effect of performance factors on making linguistic judgements is the more frustrating to social scientists who know of the long history of the controversy over introspectionism within social science. Psychology has experienced a complete swing of the pendulum, from the unabashed introspectionism of Wundt and Titchener to the pure behaviorism of Watson,and back to a middle ground of cognitive behaviorism, in which subjective judgements are regarded as invaluable but potentially very dangerous data, to be collected and treated with the greatest conservatism. Sociology, which never made the mistake of thinking it could do without subjective data, has also used them in conjunction with techniques designed to protect the scientist against the dangers inherent in them. Social scientists have therefore developed a number of techniques for checking on and improving the quality of subjective judgements offered by subjects. For example, public opinion polls typically include check questions, which indicate whether the pollee has told the truth in earlier questions. Preference tests are produced in two equivalent versions; one subject can be tested on the two versions at different times to determine whether his preference judgements are stable. A basic tenet of research in the social sciences is that some subjects are atypical; therefore enough subjects must be tested so that the atypical ones do not seriously distort the data. Factors which might affect performance - age, sex, educational background, profession, etc. - are either distributed randomly across groups of subjects, or else homogeneous groups are tested and the results are not generalised to other groups. A standard experimental control procedure involves giving groups of subjects test items in varying orders, so as to eliminate possible effects of fatigue,

decreasing nervousness, learning how to do the test, or expectations based on previous items. The serious problem of experimenter bias, of the experimenter's somehow communicating to the subject his expectations and thereby influencing the results (an effect which has been demonstrated when the subjects are rats, and is predictably stronger when the subjects are human) requires more elaborate safeguards. Obscuring the purpose of the testing is clearly a first step. Offering the test items in a neutral medium - typed, or tape recorded by someone who does not know what results are desired - so as to minimize experimenter-subject interaction is clearly desirable. Having a naive assistant test the subjects and score the results is an ideal solution.

Test construction is a crucial stage. Asking for judgements which are too fine, or using poor test items, can produce unreliable and therefore worhtless data. Psychologists testing attitudes have found that a scale more differentiated than seven categories is difficult to use. Relative judgements (A is better than B) are more reliable than absolute judgements (A is excellent, B is fair), as has been pointed out by Levelt(1971). Indirect judgements (Would you approve of a Negro teacher for your son?) are quite often more revealing than direct judgements (Are you in favour of racial integration?). And of course test instructions are very important; if the experimenter has not defined the task sufficiently, the subject will define it for himself, sometimes in unpredictable ways.

Other factors which affect judgements of grammaticality can be thought of as various aspects of the context:

1 Context of discourse: the linguistic argument which the sentence-judgement is to prove. The practice of using linguists as judges renders this context relevant and potentially very distorting. Using naive informants is an obvious solution.
2 Paralinguistic context: the context in which the judge imagines the sentence to occur. Judging a sentence grammatical can be seen as equivalent to thinking of a context in which that sentence might occur. Thus, judgements of ungrammaticality are always questionable on the grounds that the judge is unsufficiently inventive. (McCawley(1972)). Morgan's (in press) illustrative example is 'Spiro conjectures Ex-lax', a sentence sure to be judged unacceptable by native speakers before they hear the context 'Does anyone have any idea what Pat Nixon frosts her cakes with?' but not after. Heringer(1970) presents data showing that informants' judgements are sharply influenced by provision of a context. This implies that the most reliable judgements will be obtained if the linguist supplies the context for all sentences tested.
3 Context of judgement: the other sentences which are being judged at the same time. Levelt(1971) suggests, for example, that a borderline case would be judged grammatical if presented after several extremely deviant sentences, but ungrammatical if presented after several perfectly normal sentences. One of the experiments presented in this paper tests this hypothesis.

The perfect methodology for testing linguistic intuitions clearly will include many different precautions and control procedures. In this paper I will discuss only two of the many possible methodological studies that one could do on linguistic intuitions. First, I tested the reliability of linguistic judgements using an alternate-test-form procedure. Reliability means consistency in judgements within subjects across time. Inconsistency across subjects means, not that the judgements are unreliable,but that the subjects speak different dialects or idiolects. Inconsistency within subjects means that the test is not well designed or that the judgements are simply too difficult. Reliability was tested by taking 20 sentences from Kraak and Klooster(1968) which native speakers of Dutch judged to be unclear cases, and constructing alternate forms of these sentences which incorporated the crucial syntactic form (see Table 1 for sentences and alternate forms). The twenty original sentences were typed on score sheets, together with the following instructions: Lees elk van de volgende zinnen. Ga af op je eerste reactie, en schrijf erbij GOED als de zin korrekt is en FOUT als de zin niet korrekt is. Korrekt betekent hier niet grammatikaal korrekt, maar acceptabel in de

spreektaal. Als je denkt dat een zin fout is, schrijf eronder hoe de zin goed zou luiden. These instructions are quite liberal, and results must therefore not be directly compared with those of Kraak and Klooster. These sentences were judged by 39 non-linguists, and two to five weeks later the alternate sentences with the same instructions were given to the subjects. The reliability of the judgements was estimated using a phi coefficient except in two cases where entries of zero occurred. It can be seen from Table 1 that the sentences differ widely in degree of acceptability, in consensus achieved concerning acceptability, and in reliability. Of the 39 subjects, only two were perfectly consistent, and most changed 20% to 40% of their judgements. Only one sentence (the first sentence in Table 1) was judged consistently by all the subjects, apparently because it is so clearly unacceptable. The other sentences received from 2 to 20 inconsistent judgements. The rank-ordering of acceptability given in Table 1 is, of course, based on pooled judgements. It would be interesting to determine whether the same order of acceptability would hold for an individual; this could easily be tested using the paired judgements procedure suggested by Levelt (1971). In general it can be concluded from this experiment that linguistic judgements of borderline sentences are rather unreliable, and that sentences which are lumped together by linguists as 'unacceptable' may in fact show great variability in acceptability.

In Experiment 2 the original sentences were alternated on score sheets with 20 other sentences. Instructions were identical except that the subjects were not asked to write a corrected version of incorrect sentences. For half the subjects, the filler sentences were normal, perfectly acceptable Dutch sentences, whereas for the other half they were clearly deviant, unacceptable sentences. The filler sentences were also taken from Kraak and Klooster so as to keep their semantic content more or less equivalent to the test sentences. The results of Experiment 2 are given in Table 2. It can be seen that in almost every case sentences were much more likely to be judged acceptable if they were presented with very deviant sentences than if presented with normal sentences. The only exceptions were sentences that were themselves very unacceptable, and one relatively acceptable sentence (number 18) which was presented quite early in the list, and may therefore not yet have been subject to the effect. Comparison of Table 1 and Table 2 will reveal considerable differences in absolute levels of acceptability for some sentences, and in the order of acceptability of the sentences. I cannot explain these differences on the basis of the information I have, but they further support my point that many uncontrolled factors can affect judgements of sentences.

In conclusion I would like to offer a few concrete suggestions for a methodology of testing linguistic intuitions:

1 Test naive subjects, not linguists.
2 Select subjects (perhaps using the tests given in Experiment 1 as a pre-test) who can give reliable judgements.
3 Test enough subjects to be able to determine the range of dialectical and idiolectical variation.
4 Present the sentences in a written form, including a context and/or intended interpretation.
5 Include at least one, preferably several, alternate form(s) of each sentence, and present the alternates in a different order from the originals.
6 Include normal filler sentences in the test, to give the subjects some reference point for 'acceptable'.

1) I would like to express my thanks to Kwee Tjoe-Liong, Margreet van Ierland, and Constance Dolman for help with the selection and construction of test sentences, and to Leo Oomens and A. Koos Slob for help in locating and testing subjects.

		AA	UU	UA	AU	phi
1	Hij verzorgde de wedstrijd de spelers. Hij assisteerde het diner de kok.	0	39	0	0	--
2	De kinderen zijn een uur gefietst. De jongens zijn twee uur gelopen.	0	37	2	0	--
3	Ik ga met ons allen naar de kermis. Ik kijk met ons allen naar de televisie.	2	33	2	2	.44
4	Er wordt gegraasd. Er wordt geblaft.	2	30	5	2	.28
5	Ik vond het een bedorven eetlust. Ik vond het een geleste dorst.	4	25	6	4	.28
6.5	De kinderen hebben naar Haarlem gefietst. De jongens hebben naar Amsterdam gelopen.	5	24	4	6	.33
6.5	Zijn oom is bekend artiest. Mijn buurman is beroemd musicus.	5	24	6	4	.33
8	Het hockeyteam zijn die jongens. Het bestuur zijn deze heren	5	22	1	11	.37
9	Ik vind die ring van goud. Jan vindt die jurk van zijde.	7	21	3	8	.38
10	Hij heeft een duw aan zijn broer gegeven. Zij heeft een kus aan haar tante gegeven.	8	20	10	1	.47
11.5	Ik vond het weggegooide flessen. Hij vond het verspilde melk.	9	10	18	2	.17
11.5	Die jongens zijn het hockeyteam. Deze heren zijn het bestuur.	10	17	8	4	.38
13	Hij heeft zijn kinderen een verhaal geschreven. Karel heeft zijn moeder een gedicht geschreven.	11	14	8	6	.28
14	Bloemen liggen. Brood is gesneden.	11	10	3	15	.19
15	Hij heeft zijn broer geweigerd een boek te geven. Hij heeft zijn zuster geweigerd een kado te geven.	12	9	5	13	.12
16	Ik vind het een gouden ring. Ik vind het een zijden jurk.	15	14	4	6	.49
17	Hij heeft zijn broer een arm en een knipoog gegeven. Zij hebben de winnaar een komplimentje en een hand gegeven.	18	14	5	2	.65
18	Enige kinderen gaan niet mee. Enige meisjes doen niet mee.	27	5	4	3	.47
19.5	Alles wat Midas aanraakte werd van goud. Alles wat de toverfee aanraakte werd van zilver.	32	1	4	2	.18
19.5	Die rotsen zijn van bazalt. Die huid is van leer.	32	1	1	5	.22

Table 1

Results of the Alternate-form Test for Reliability

Entries in the first four columns indicate the number of subjects who fall into each category. AA: both forms were judged acceptable. UU: both forms were judged unacceptable. UA: the first form was unacceptable, the second acceptable. AU: the first form was acceptable, the second unacceptable. The last column gives the phi coefficients, a measure of the reliability of the judgements.

		Acceptable filler sentences	Unacceptable filler sentences
1	Hij verzorgde de wedstrijd de spelers	4.3	
2	De kinderen zijn een uur gefietst.	0.0	1.7
3	Ik ga met ons allen naar de kermis.	0.0	0.0
4	Er wordt gegraasd.	52.2	3.5
5	Ik vond het een bedorven eetlust.	8.7	66.7
6	De kinderen hebben naar Haarlem gefietst.	21.7	23.3
6	Zijn oom is bekend artiest.	17.4	25.0
8	Het hockeyteam zijn die jongens.	8.7	35.0
9	Ik vind die ring van goud.	13.0	16.9
10	Hij heeft een duw aan zijn broer gegeven.	19.5	15.2
11	Ik vond het weggegooide flessen.	2.2	40.3
11	Die jongens zijn het hockeyteam.	6.4	5.0
13	Hij heeft zijn kinderen een verhaal geschreven.	13.0	31.7
14	Bloemen liggen.	13.0	33.9
15	Hij heeft zijn broer geweigerd een boek te geven.	50.0	45.0
16	Ik vind het een gouden ring.	17.4	79.3
17	Hij heeft zijn broer een arm en een knipoog gegeven	32.6	28.8
18	Enige kinderen gaan niet mee.	63.0	52.5
19	Alles wat Midas aanraakte werd van goud.	63.0	47.4
19	Die rotsen zijn van bazalt.	78.3	80.0
			86.7

Table 2

Results of Filler Sentences on Judgements of Acceptability

Entries in the columns indicate the percentage of the subjects who judged a given sentence acceptable under each of the conditions. Forty-six subjects were tested with acceptable filler sentences, and sixty with unacceptable filler sentences. The sentences are presented here in order of acceptability (based on the results of Experiment 1), not in the order in which they were presented to the subjects.

THE CYCLE IN PERCEPTION

Louis des Tombe

1 Introduction

I shall be concerned with the well-known problem of sentences like the following:

1 *That that Stewartsen sweated pleased Slade was a shame. (*=unacceptable,grammatical)
2 *The girl who Stewartsen who Slade hunted payed attention to was shot.
3 *I wondered whether that he was on his way to Albania was known to Slade.

My goal is to increase our understanding of how sentences are perceived. The general idea is that perceiving a sentence is the formation of some kind of mental representation based on an incoming stream of sounds:

4 [stream of sounds] —perceptual processes→ [mental representation]

The set of perception processes can be called 'linguistic perception mechanism'. By the use of 'mechanism' I do not mean to imply that there is an anatomically defined entity corresponding to it. The word 'linguistic perception mechanism' refers to the human brain in so far as it performs (4). The supposed neurological processes are described in an abstract way that is known as 'information processing model', which means that the entire process is broken down into functionally defined steps, in the same way as it is done in a computer program written in one on the programming languages. The reason to use information processing models and programming languages is that they are much more easy to handle (for discussion see Neisser(1967), Haber(1969), Newel & Simon(1972)). In this paper I present an information processing analysis of a perceptual process that is pertinent to sentences like (1), (2), and (3). I will argue that this process is the same as the transformational cycle.

2 The problem of internal sentences

Sentences such as (1), (2), and (3) are well-known for their being both unacceptable and grammatical. Various explanations have been offered, three of which are insufficient in a way that is relevant to the views I hold.

2.1 The 'incompatible relations' hypothesis

Bever(1970b) presents the following sentence as an instance of 'double embeddings':

5 *The boy the girl the man left watched then left.

Bever's explanation for the incomprehensibility of (5) is that *the girl* must be perceived as subject with respect to *the boy* and as object with respect to *the man* simultaneously. This must go wrong, since:

6 "A stimulus may not be perceived as simultaneously having two positions on the same classificatory relation" (p.10).

I do not intend to criticize (6) as being improbable. Actually, Bever presents some sentences and some visual patterns as well whose unacceptability can be attributed to (6), and I know of no reason to doubt that (6) explains (5). But I think that Bever is too ambitious in holding that (6) is "at the heart of *center-embedded sentences*" (p.10; italics mine). Unfortunately, (6) is irrelevant to (1), (2), and (3), so I conclude that, though (6) accounts for (5), it certainly is not near the heart of the difficulty of center-embedded sentences.

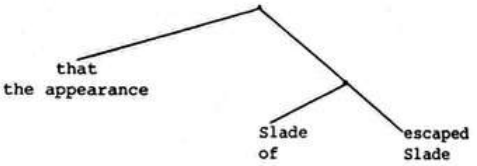
2.2 The depth hypothesis

Having blamed Bever's explanation for being too narrow, I turn now to the most general hypothesis that has been proposed to account for the center-embeddings problem: Yngve's (1961) depth hypothesis. This principle holds that, every time we expand a node to the left, we are committed to expand it to the right; and since performance is from left to right, a left-branching sentence entails many more commitments than a right-branching one. The depth hypothesis accounts for the difficulty of center-embedded sentences because the latter type of sentences are left-branching to a greater extent than right-embedded sentences are. There is a lot to say about the depth hypothesis. I will confine myself to one point that can serve to elucidate my problem: the fact that the depth hypothesis has been formulated in terms of 'unlabelled nodes'. This is its fundamental inadequacy. The nature of the nodes surely makes a difference, as can be seen from the following comparison:

7 *Because that Slade excaped upset me there was a short lull in the fight.
8 Because the appearance of Slade upset Stewartsen there was a short lull in the firing.

There is no difference between (7) and (8) in terms of their unlabelled node structure:

9



From this example it can be seen that the depth hypothesis is not specific enough, and that left branching harms perception only if the left-embedded node is labelled S.

2.3 The 'recursive procedure' hypothesis
Chomsky(1965,p.14) has proposed an explanation that is more general than Bever's and more specific than Yngve's principle. From the insight that unacceptability occurs if

i an internal node contains an internal node
ii these two nodes have the same label

he argues that perceptual harm is done when, during the execution of some perceptual process, this same process must be executed. A procedure cannot call for itself. This idea looks impressive but it is rather vague and, besides, it is wrong. The requirement of two identical labels is not specific enough, as appears from:

10 *Nobody understood why that he had had a mate was concealed by Rearden.
11 Nobody understood why the fact that he had had a mate was concealed by Rearden.

Here the simple occurrence of 'the fact' appears to make all the difference for perception, and so Chomsky's principle fails. Actually, I know of no proposal to explain the perceptual difference between (10) and (11).

3 The psychological reality of the cycle

3.1 A general rule for center-embedded sentences
The following statement accounts for most of the cases where embedding results in unacceptability:

Principle 1: A sentence is perceptually unacceptable if there is an embedded clause that is not the rightmost constituent of its matrix clause.

The two exceptions to this principle, of which (11) is one, will be discussed in sections 5 and 6.

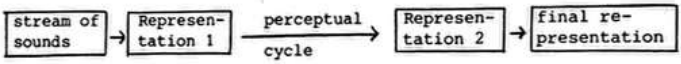
3.2 An hypothesis on the perception of sentences

Principle 1 expresses a direct connection between dominance and left-to-right relations in surface structure with respect to perception: a sentence can only be perceived without any difficulty if each higher clause entirely precedes its embedded clause. The following seems to me a plausible explanation for this clauses-order preference:

Principle 2: In the perception of sentences there is a stage at which the analysis applies to the surface structure clauses of a sentence, one at a time, and from top to bottom.

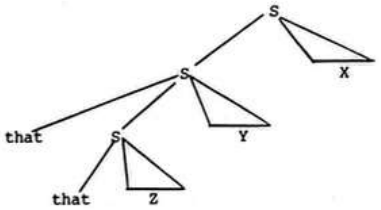
This process I call the 'perceptual cycle' for reasons that will become clear. Diagram (4) can now be extended as follows:

12



The perceptual cycle accounts for the unacceptability of sentences with non-final embedded clauses; (1) will serve to illustrate this. Suppose that Representation 1, which I roughly identify with surface structure, is something like this:

13

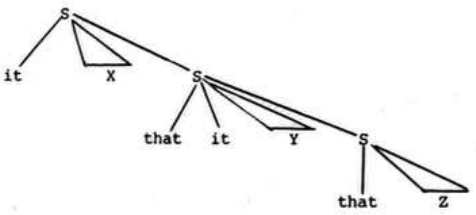


Since the perceptual cycle must start at X, the whole sequence *that-that-Z-Y* must be stored, and some kind of queue of waiting clauses results. If this queue gets too long, memory is overloaded, and this in turn causes the unacceptability of (1). It is clear that this memory overload will not occur in the perception of the acceptable, right-branching variant of (1):

14 It was a shame that it pleased Slade that Stewartsen sweated.

which has the following Representation 1:

15



In the perception of (14) there is never more than one clause to be stored, according to principle 2, since its clauses are presented to the hearer in the same order in which they are to pass the perceptual cycle.

3.3 Perceptual and transformational cycle
In this section I will explain why I identify the fixed order in perception, referred to in principle 2, with the transformational cycle. First, the transformational cycle can be characterized as follows:

i There is a pre-cyclic level of representation L1
ii There is a postcyclic level L2
iii The representation of an embedded clause on L2 is predictable only with reference to the representation of its matrix clause on L1.

This can be stated popularly as follows: in analyzing the surface structure of an embedded clause, we must use the deep structure representation of its matrix clause. As far as the order of clauses being analyzed is concerned this amounts to the following:

i For a production process, going from surface to deep representation: an embedded clause is translated into its concrete form while the matrix clause is still available in its deep structure shape (the transformational cycle);
ii For a perception process, going from surface to deep representation: an embedded clause can be analyzed only after its matrix clause has been t r a n s f o r m e d into its deep structure form (the perceptual cycle).

It thus appears that there is an immediate logical correspondence holding between the transformational and perceptual cycle. This leads to the following principle:

Principle 3: The perceptual cycle corresponds to the transformational cycle.

Two comments should be made about this principle, before I will pass on to some empirical arguments to justify it. First, I use the word *correspondence* without knowing exactly what I mean. At the end of section 1, I have written: "is the same", but that certainly has been formulated somewhat loosely. Here I want to confine myself to the bare fact of the correspondence. Second, one empirically testable claim that is implied in principle 3 is that languages like Japanese, where sentences such as (1), (2), and (3) are perfectly acceptable, do not have a cycle. The verification of this claim I am glad to leave to linguistic research.

4 The left-branching compound nominals problem
So far I have argued that the unacceptability of certain sentences follows from a fixed order of analysis of constituent clauses, and that in generative grammar the corresponding fixed order has been called the cycle. It is interesting to look for cases in which unacceptability and cyclic rules coincide. Take for instance:

16 blackboard eraser.

In this type of construction, a cyclic stress rule is supposed to operate (Comsky & Halle(1968,p.20)). From this and from principles 2 and 3 the unacceptability of (17) follows:

17 *Blackboard eraser production manager disease.

Wether this is the same cycle as the one pertinent to clauses, or not, does not concern us here: in both cases (17) is an argument for principle 3.

5 Internal clauses with lexical antecedents

5.1 An exception to the cycle
Sentences like:

18 It was fortunate that Slade, who took advantage of a lull in the shooting, was

caught by Stewartsen.

are not unacceptable in spite of the internal clause and consequently are counterexamples to principle 1. The crucial point is the lexical antecedent, as can be verified by comparing (10) and (11). Fortunately, this counterexample to principle 1 turns out to be an argument for principles 2 and 3. This follows from the fact that in a grammar all cyclic rules are blocked in the case of constituent clauses with lexical antecedents (called complex NP's by Ross(1967b)). Therefore it is the case that precisely those clauses, that are forbidden ground for cyclic rules in a grammar, can occur in non-final position without causing any perceptual difficulty. I take this fact to be a strong argument in favour of principle 3.

5.2 An apparent counterexample to the exception
There are sentences with all their embedded clauses lexically anteceded, which are nevertheless unacceptable as for instance (2):

2 *The girl who Stewartsen who Slade hunted payed attention to was shot.

One might conclude that a relative clause, provided it is embedded in another relative clause, does cause difficulties for the perception. However, the unacceptability of (2) has another source, namely the occurrence of two identical but not coreferential relative pronouns. Bever(1970a) has argued that identical NP's are perceived as being coreferential. That this principle actually accounts for (2) follows from two facts. First, Blumenthal(1967) had subjects paraphrase sentences like (2). The typical error he found was that all relative pronouns were perceived as referring to the first noun of the sentence. So (2) would have been reported as:

19 The girl who Stewartsen hunted and who Slade payed attention to was shot.

Secondly, the perceptual difficulty almost disappears when the pronouns are not identical:

20 The girl to whom Stewartsen who Slade hunted payed attention was shot.

I conclude that (2) gives us no reason to doubt the claim that sentences containing lexically anteceded internal clauses are exceptions to the perceptual as well as the transformational cycle.

6 The main clause
The second counterexample to principle 1 is a sentence such as

21 That it pleased Slade that Stewartsen sweated was a shame.

If (21) may not be the most elegant of all sentences, it surely is much more acceptable than (1). According to principle 2, however, (21) should be as difficult as (1), since both sentences have their main clause preceded by two embedded clauses. The general point here is that principle 2 does not hold when the matrix clause at issue happens to be the main clause of the sentence. Main clauses can be preceded by an arbitrary number of embedded clauses without perception being harmed much. This can be seen from the following general comparison:

1 *That that Stewartsen sweated pleased Slade was a shame.
22 *It was a shame that that Stewartsen sweated pleased Slade.
21 That it pleased Slade that Stewartsen sweated was a shame.
14 It was a shame that it pleased Slade that Stewartsen sweated.

Fortunately, the same conclusion can be drawn here as in the foregoing section. The main clause is not only an exception to the perceptual cycle but also in grammar it is exceptional. There is a whole series of transformations applicable to the main clause only

(see Emonds(1970)). So the main clause is a second case in which an exception to principle 1 appears to be an exception in grammar too.

7 Conclusions

The problem I have been discussing has generally been referred to wrongly as the proble of 'doubly embedded' sentences. I believe that at least the following three principles are at work:

i Bever's 'incompatible relations' principle for sentences like (5);
ii Bever's 'identical NP's' principle for sentences like (2);
iii The perceptual cycle, with its exceptions, for all others.

The fact that often perceptual difficulties only turn up in doubly embedded sentences i a consequence of the exceptional behavior of the main clause and of the fact that Bever' two principles only apply in doubly embedded sentences. Actually, from sentences (1), (2), and (3), only the last is a clear case without any irrelevant features. The most important topic that I want to touch on here is the correspondence problem. Modern psycholinguistics originally was set up as a discipline linking psychology to linguistics. It was hoped that both disciplines would profit by an investigation of the 'psychologica reality' of generative grammar.

However, a regrettable development has resulted in a progressively wider gap between the two fields. This development started with 'competence and performance' theory, in which it is held that linguistic competence is something less than potential performance (for instance, see Chomsky(1965)); next it was established that the relation between grammar and language use must be considered as 'abstract' (Fodor & Garrett(1966)); today it has come so far that it is argued that there are two separate systems without any specified relation (Bever(1970a)).

In the foregoing sections I have shown that there is a reason to doubt these conclusions It seems that the same cyclic principle operates in perception as well as in grammar. This can be argued on logical grounds (section 3.3) but it also appears that the exceptions to the perceptual and the transformational cycle coincide.

If my conclusion is correct then all three views on the psychological reality of a grammar are wrong since none of them permits one principle to govern both competence and performance. This will lead to a new view on the notion 'correspondence' about which I have nothing to say here (a first step was taken in des Tombe(1972)). What I argue here is nothing more than that this remarkable case of correspondence exists. The meaning of the word 'correspondence' will have to be developed mainly by analyzing this sort of cases.

Department of Linguistics
University of Utrecht

BIBLIOGRAPHY

ABRAHAM, W.
1969 'Verbklassifikation und das Komplement "Indirekter Fragesatz"', *Die Sprache* 15, 113-134.
1971 'Der e t h i s c h e Dativ', *Fragen der strukturellen Syntax und der Konstrativen Grammatik. Sprache der Gegenwart* 17, 112-134.
1972 *Komponentialanalyse von Fachsprachen*, Groningen.

ABRAHAM, W. & BRAUNMÜLLER, K.
1971 'Stil, Metapher und Abweichungsgrammatik', *Lingua* 28, 1-47.

AKMAJIAN, A.
1970 'On Deriving Cleft Sentences from Pseudo-Cleft Sentences', *Linguistic Inquiry* 1, 149-168.
1972 'Getting Tough', *Linguistic Inquiry* 3.

ANDERSON, J.M.
1971 *The Grammar of Case. Toward a Localistic Theory*, Cambridge.

AUSTIN, J.L.
1962 *How to Do Things with Words*, Oxford.

AYER, A.J.
1964 *The Foundations of Empirical Knowledge*, London.

BABBY, L.H.
'A Note on Agreement in Russian' (unpublished ms.)

Bach, E.
1962 'The Order of Elements in a Transformational Grammar of German, *Language* 38, 263-269.
1967 Pronominalization I and II (unpublished ms.)
1968 'Nouns and Noun Phrases', in Bach & Harms eds.
1970 'Problominalization', *Linguistic Inquiry* 1, 121-122.
1971 'Questions', *Linguistic Inquiry* 2, 153-167.

BACH, E. & HARMS, R.T.
1968 *Universals in Linguistic Theory*, New York.

BAKER, C.L.
1970 'Notes on the Description of English Questions: The Role of an Abstract Question Morpheme', *Foundations of Language* 6, 197-219.

BAR-HILLEL, Y.
1967 Review of Katz & Fodor 1964, *Language* 43, 526-550.
1969 'Universal Semantics and Philosophy of Language', in Puhvel ed., 1-21.

BARTSCH, R.
1970 'Die logische Analyse von Modaladverbien', *Linguistische Berichte* 10, 27-34.
1972 *Adverbialsemantik: die Konstitution logisch-semantischer Repräsentationen von Adverbialkonstruktionen*, Frankfurt/M.

BAVIS, N.
1965 *Sweet's Anglo-Saxon Primer*, Oxford.

BEEK, M. van
1969 *An Inquiry into Puritan Vocabulary*, Groningen.

BELLUGI, U.
1967 *The Acquisition of Negation* (Ph.D. Diss., Harvard University).
1971 'Simplification in Children's Language', in Huxley & Ingram eds., 95-116.

BEREITER, C. & ENGELMAN, S.
1966 *Teaching Disadvantaged Children in the Preschool*, Englewood Cliffs, N.J.

BERMAN, A. & SZAMOSI, M.
1972 'Observations on Sentential Stress', *Language* 48, 304-325.

BEVER, T.G.
1968 'Associations to Stimulus-Response Theory of Language', in Dixon & Horton eds., 478-494.
1970a 'The Cognitive Basis for Linguistic Structures', in Hayes ed., 279-352.
1970b 'The Influence of Speech Performance on Linguistic Structure', in d'Arcais &

Levelt eds., 4-30.
BEVER, T.G. & LANGENDOEN, D.T.
1972 'The Interaction of Speech Perception and Grammatical Structure in the Evolution of Language', in Stockwell & Macauly eds., 32-93.
BIERWISCH, M.
1963 *Grammatik des deutschen Verbs. Studia Grammatica* II, Berlin.
1970 'Fehler-Linguistik', *Linguistic Inquiry* 1, 397-414.
BIER'ISCH, M. & HEIDOLPH, K.E. (eds.)
1970 *Progress in Linguistics. A Collection of Papers*, The Hague.
BLOCK, N.J.
1972 Review of Joseph L. Cowan (ed.), Studies in Thought and Language, *Journal of Philosophy* 69, 14.
BLOM, A.
1972 'Konjunktiereduktie en "gapping"' (unpublished ms., University of Amsterdam).
BLOOM, L.
1970 *Language Development: Form and Function in Emerging Grammars*, Cambridge, Mass.
BLOOMFIELD, L.
1917 *Tagalog Texts with Grammatical Analysis*, University of Illinois Studies in Language and Literature III, 2-4.
BLUMENTHAL, A.L.
1967 'Observations with Self-embedded Sentences', *Psychonomic Science* 6, 453-454.
BOLINGER, D.
1972 *Degree Words*, The Hague.
BOTHA, R.P.
1968 *The Function of the Lexicon in Transformational Generative Grammar*, The Hague/Paris.
BOWEN, J.D. (ed.)
1965 *Beginning Tagalog*, University of California Press.
BRAME, M. & LASNIK, H.
1970 'A Derived Nominal Requiring a Non-Sentential Source', *Linguistic Inquiry* 1, 547-549.
BRESNAN, J.W.
1970a 'An Argument against Pronominalization', *Linguistic Inquiry* 1, 122-123.
1970b 'On Complementizers: towards a Syntactic Theory of Complement Types', *Foundations of Language* 6, 297-321.
1971 'Sentence Stress and Syntactic Transformations', *Language* 47, 257-281.
1972 'Stress and Syntax, a Reply', *Language* 48, 326-342.
BRINKMANN, H.
1962 *Die deutsche Sprache. Gestalt und Leistung.*
BROWN, R. & BELLUGI, U.
1964 'Three Processes in the Child's Acquisition of Syntax', *Harvard Educational Review* 34, 133-151.
BROWN, R. & HANLON, C.
1970 'Derivational Complexity and Order of Acquisition in Child Speech', in Hayes ed., 11-55.
BROWNE, W.
1972 'Relative Pronoun = Relative + Pronoun? Evidence from Serbo Croation' (unpublished ms.).
BRUNNER, K.
1965 *Altenglische Grammatik*, Tübingen.
BURT, M.
1971 *From Deep to Surface Structure*, New York, etc.
CALCAR, C. van, SOUTENDIJK, S. & TELLEGEN, B.
1968 *School, milieu and prestatie*, Enschede/Utrecht.
CATFORD, J.C.
1968 'The Articulatory Possibilities of Man', in Malmberg ed., 309-333.
CHAFE, J.C.
1968 'Idiomaticity as An Anomaly in the Chomskyan Paradigm', *Foundations of Lan-*

guage 4, 109-125.
CHOMSKY, N.
1957 *Syntactic Structures*, The Hague.
1961 'Some Methodological Remarks on Generative Grammar', *Word* 17, 219-239.
1962 'A Transformational Approach to Syntax', in Fodor & Katz eds.
1964a *Current Issues in Linguistic Theory*, The Hague.
1964b 'On the Notion "Rule of Grammar"', in Fodor & Katz eds.
1965 *Aspects of the Theory of Syntax*, Cambridge, Mass.
1966 *Topics in the Theory of Generative Grammar*, The Hague.
1967a 'The Formal Nature of Language' in Lenneberg ed., 397-442.
1967b 'Remarks on Nominalization', in Jacobs & Rosenbaum eds.
1968a *Language and Mind*, New York.
1968b 'Propriétés formelles des grammaires', in Chomsky & Miller eds., 59-168.
1969 'Deep Structure, Surface Structure and Semantic Interpretation', in Jakobson & Kawamoto eds.
1970 'Conditions on Transformations' (unpublished ms.).
1971 'Some Empirical Issues in the Theory of Transformational Grammar' (unpublished ms.).
1972 *Problems of Knowledge and Freedom*, London.
1972a *Studies on Semantics in Generative Grammar*, The Hague.
CHOMSKY, N. & HALLE, M.
1968 *The Sound Pattern of English*, New York.
CHOMSKY, N. & MILLER, G.A.
1968 *L'analyse formelle des langues naturelles*, Paris/La Haye.
CHOTLOS, J.W.
1944 'A Statistical and Comparative Analysis of Individual Written Language Samples', Psychological Monographs, 77-111.
CICIRELLI, V.G., EVANS, J.W. & SCHILLER, J.S.
1970 'The Impact of Headstart. A Reply to the Report Analysis', *Harvard Educational Review* 40,1 105-129.
CLOSS, E.
1965 'Diachronic Syntax and Generative Grammar', *Language* 41, 402-415.
COHEN, A. et al.
1961 *Fonologie van het Nederlands en het Fries*, 's-Gravenhage.
COHEN, A & HART, J.'t
1967 'On the Anatomy of Intonation', *Lingua* 19, 177-192.
COHEN, A., SLIS, I.H. & HART, J.'t
1963 'Perceptual Tolerances of Isolated Dutch Vowels', *Phonetica* 9, 65-78.
DAHL, Ø.
1969 *Topic and Comment in Russian and General Transformational Theory*, Göteborg.
DAVIDSON, D. & HARMAN, G. (eds.)
1972 *Semantics and Natural Language*, Dordrecht.
DAVIS, N.
1965 *Sweet's Anglo-Saxon Primer*, Oxford.
DELATTRE, P.
1962 'Some Factors of Vowel Duration and Their Cross-Linguistic Validity', *Journal of the Acoustical Society of America* 34, 1141-1143.
DIK, S.C.
1967 'Some Critical Remarks on the Treatment of Morphological Structure in Transformational Generative Grammar', *Lingua* 18, 352-381.
1968 *Coordination. Its Implications for the Theory of General Linguistics*, Amsterdam.
DIXON, T.R. & HORTON, D.L. (eds.)
1968 *Verbal Behavior and General Behavior Theory*, Englewood Cliffs, N.J.
DOUGHERTY, R.C.
1968 *A Transformational Grammar of Coordinate Conjoined Structures* (Ph.D. Diss., MIT).
1969 'An Interpretive Theory of Pronominal Reference', *Foundations of Language* 5,

488-519.
1970 'Recent Studies on Language Universals', *Foundations of Language* 6, 505-561.
EMONDS, J.
1970 *Root and Structure-Preserving Transformations* (Ph.D. Diss., MIT).
ES, G.A. van & CASPEL, P.P.J. van
1971 *Archief voor de Nederlandse syntaxis*, Reeks 1, Nr. 7, Groningen.
EVERS, A.
1971a 'Logische en Psychologische Interpretatie', *De Nieuwe Taalgids* 64, 5.
1971b 'The Syntactic Motivation of Predicate Raising' (unpublished ms., University of Utrecht).
FERLUS, M.
1972 'Simplification des Groupes consonantiques dans deux Dialectes Austroasiens du Sud-Laos', *BSLP* 66, 389-403.
FILLMORE, C.J.
1965 *Indirect Object Constructions in English and the Ordering of Transformations*, The Hague.
1968a 'The Case for Case', in Bach & Harms eds.
1968b 'Lexical Entries for Verbs', *Foundations of Language* 4, 373-393.
1970 'Subjects, Speakers and Roles', *Synthese* 21, 251-274.
1971 'Some Problems for Case Grammar', *Working Papers in Linguistics* 10, 245-265.
FILLMORE, C.J. & LANGENDOEN, D.T.
1971 *Studies in Linguistic Semantics*, New York.
FIRBAS, J.
1966 'Non-Thematic Subjects in Contemporary English', *TLP* 2, 239-256.
1968 'On the Prosodic Features of the Modern English Finite Verb as Means of Functional Sentence Perspective', *Brno Studies in English* 7, 11-48.
FLANAGAN, J.L. et al.
1970 'Syntactic Voices for Computers', *IEEE Spectrum* Vol.7, No.10, 22-45.
FLORIJN, A.
1971 'Riviernamen', *Taalkundige Bijlage van Blad* 1, Nr.2, 112-113.
FODOR, J.A.
1966 'How to Learn to Talk: Some Simple Ways', in Smith & Miller eds.
1970 'Three Reasons for not Deriving KILL from CAUSE TO DIE', *Linguistic Inquiry* 1.
1972 'Troubles about Actions', in Davidson and Harman eds.
FODOR, J.A. & GARRETT, M.
1966 'Some Reflections on Competence and Performance', in Lyons & Wales eds., 135-154.
FODOR, J.A. & KATZ, J.J.
1964 *The Structure of Language. Readings in the Philosophy of Language*, Englewood Cliffs, N.J.
FOWLER, H.W.
1968 *A Dictionary of Modern English Usage*, Oxford.
FRASER, B.
1965 *An Examination of the Verb-Particle Construction in English* (Ph.D. Diss., MIT).
1970a 'Some Remarks on the Action Nominalization in English', in Jacobs & Rosenbaum eds.
1970b 'Idioms within a Transformational Grammar', *Foundations of Language* 6,22-42.
FROMKIN, V.
1968 'Speculations on Performance Models', *Journal of Linguistics* 4, 47-68.
GEEST, A.J.M. VAN DER
1970 'Het creatief aspect van taalgebruik' (unpublished ms., University of Amsterdam).
1972 'Some Non Verbal Aspects of Language Acquisition', in *Proceedings of the Fourth International Congress on Education of the Deaf*, Stockholm.
GEEST, W.P.F. DE
1972 *Complementaire Constructies bij Verba Sentiendi in het Nederlands* (Ph.D. Diss., University of Nijmegen).

GILI GAYA, A.
1961 *Curso superior de sintaxis española*, Barcelona.
GREENBAUM, S.
1969 *Studies in English Adverbial Usage*, London.
GRICE, H.P.
1968 'The Logic of Conversation' (unpublished ms., Berkeley, California).
GRINDER, J. & POSTAL, P.M.
1971 'Missing Antecedents', *Linguistic Inquiry* 2, 269-311.
GROOT, A.W. DE
1949 *Structurele Syntaxis*, Den Haag.
1964 *Inleiding tot de Algemene Taalwetenschap*, Groningen.
GROSS, M.
1967 'Sur une Règle de "Cacophonie"', *Langages* 7,120-128.
1968 *Grammaire transformationelle du français. Syntaxe du verbe*, Paris.
1969 'Remarques sur la notion d objet direct en français', *Langue Française* 1, 63-73.
1973 'On Grammatical Reference', in Kiefer & Ruwet eds.
GRUBER, J.
1967a *Functions of the Lexicon in Formal Descriptive Grammars*, SOC-TM 3770/000/00, Santa Monica, California.
1967b 'Topicalization in Child Language', *Foundations of Language* 3, 37-65.
1970 *Studies in Lexical Relations* (unpublished ms., MIT).
HABER, R.N.
1969 'Perception and Thought: An Information Processing Analysis', in Voss ed., 1-26.
HABERMAS, J.
1971 'Vorbereitende Bemerkungen zu einer Theorie der kommunikativen Kompetenz', in Habermas & Luhmann eds., 101-104.
HABERMAS, J. & LUHMANN (eds.)
1971 *Theorie der Gesellschaft oder Sozialtechnologie*, Frankfurt/M.
HAERINGEN, C.B. VAN
1949 'De meervoudsvorming in het Nederlands', in *Neerlandica, verspreide opstellen door C.B. van Haeringen*, 's-Gravenhage, 186-209.
HALLE, M. & Keyser, S.J.
1971 *English Sentence Stress, Its Form, Its Growth, and Its Role in Verse*, New York.
HARADA, S.I.
1971 'A Non-source for Reflexives', *Linguistic Inquiry* 2, 546-556.
HARMAN, G.H.
1967 'Psychological Aspects of the Theory of Syntax', *The Journal of Philosophy* 64, 75-87.
HARRIS, Z.S.
1946 'From Morpheme to Utterance', in *Papers in Structural and Transformational Linguistics*, Dordrecht, 1970.
1951 *Methods in Structural Linguistics*, Chicago.
1964 'Transformations in Linguistic Structure', in *Papers in Structural and Transformational Linguistics*, Dordrecht, 1970.
HAYES, J.R. (ed.)
1970 *Cognition and the Development of Language*, New York.
HEBB, D.O.
1966 *A Textbook of Psychology*, Philadelphia^{2}.
HEGER, K.
1969 'La sémantique et la dichotomie de langue et parole. Nouvelles contributions à la discussion sur les bases théoriques de la sémasiologie et de l'onomasiologie', *Travaux de linguistique et de littérature* 7, 47-111.
HERINGER, J.T.
1970 'Research on Negative Quantifier Dialects', *Papers from the 6th Regional Meeting of the Chicago Linguistic Society*, 287-296.
HEROLD, C.P.
1968 *The Morphology of King Alfred's Translation of the Orosius*, The Hague.

HERTOG, C.H. DEN
1897 *De Nederlandse Taal. Praktische Spraakkunst van het hedendaagsche Nederlandsch*, Amsterdam.

HOCKETT, C.F.
1955 *A Manual of Phonology, Indiana University Publications in Anthropology and Linguistics 11.*

HORN, L.R.
1969 'A Presuppositional Analysis of ONLY and EVEN', *Papers from the 5th Regional Meeting of the Chicago Linguistic Society.*

HOUSE, A.S.
1961 'On Vowel Duration in English', *Journal of the Acoustical Society of America*, 33, 1174-1178.

HOUSEHOLDER, F.W.
1964 'Three Dreams of Modern Greek Phonology', *Supplement Word* 20, 17-27.

HUBERS, G.
1972 'Recente ontwikkelingen in het onderzoek naar intonatie en zinsaksent', *Handelingen van het 32ste Nederlandse Filologen Congres*, Groningen.

HUDDLESTON, R.
1970 'Some Remarks on Case-Grammar', *Linguistic Inquiry* 1, 501-511.

HUGGINS, A.W.F.
1968 'How Accurately Must a Speaker Time his Articulations?', *IEEE Trans. Audio AU-16*, 112-117.

HUNT, K.W.
1970 *Syntactic Maturity in School Children and Adults. Monograph of the Society for Research in Child Development 134, 35, 1.*

HUXLEY, R. & INGRAM, E., (eds.)
1971 *Language Acquisition:Models and Methods* , London/New York.

HUYBREGTS, M.A.C.
1972 'Adjacency Adjourned' (unpublished ms., University of Utrecht).

HYMES, D.
1964 *Language in Culture and Society*, New York.
1971 'Competence and Performance in Linguistic Theory', in Huxley & Ingram eds.

INGRAM, E.
1971 'The Requirements of Model Users', in Huxley & Ingram eds.

INHELDER, B. & PIAGET, J.
1958 *The Growth of Logical Thinking from Childhood to Adolescence*, New York.

JACKENDOFF, R.S.
1968 'An Interpretive Theory of Pronouns and Reflexives', *Foundations of Language* 6.
1969 *Some Rules of Semantic Interpretation for English*(Ph.D. Diss., MIT).
1971a 'Gapping and Related Rules', *Linguistic Inquiry* 2, 21-35.
1971b 'Modal Structure in Semantic Representation',*Linguistic Inquiry* 2, 479-514.

JACKSON, K.H.
1967 *A Historical Phonology of Breton*, Cambridge.

JACOBS, R.A. & ROSENBAUM, P.S., (eds.)
1970 *Readings in English Transformational Grammar*, Waltham, Mass.

JAKOBOVITS, L. & STEINBERG, D., (eds.)
1971 *Semantics:An Interdisciplinary Reader in Philosophy, Linguistics, and Psychology*, Cambridge University Press, New York.

JAKOBSON, R. & KAWAMOTO, Sh., (eds.)
1970 *Studies in General and Oriental Linguistics*, Tokyo.

JOHNSON-LAIRD, P.N. & WASON, P.C.
1970 'A Theoretical Analysis of Insight into a Reasoning Task', *Cognitive Psychology* 1, 134-148.

KAJITA, M.
1968 *A Generative-Transformational Study of Semi-Auxiliaries in Present-Day American English*, Tokyo.

KARTTUNEN, L.
1969 'Discourse Referents' (unpublished ms.).
1971 'Definite Descriptions with Crossing Coreference. A Study of the Bach-Peters Paradox', *Foundations of Language* 7, 157-182.
KATZ, J.J.
1964 'Mentalism in Linguistics', *Language* 40, 124-137.
KATZ, J.J. & POSTAL, P.M.
1963 'Semantic Interpretation of Idioms and Sentences Containing Them', *M.I.T. Research Laboratories of Electronics, Quarterly Progress Report 70.*
1964 *An Integrated Theory of Linguistic Descriptions*, Cambridge, Mass.
KEENAN, E.L.
1972 'Semantically Based Grammar' (unpublished ms.).
KENSTOWICS, M.J. & KISSEBERTH, C.W.
1971 'Unmarked Bleeding Orders', *Studies in the Linguistic Sciences* 1, 8-28, Urbana.
KIEFER, F. & RUWET, N., (eds.)
1973 *Generative Grammar in Europe*, Dordrecht.
KIMBALL, J.
1971 'Super Equi-NP Deletion as Dative Deletion', *Papers from the 7th Regional Meeting of the Chicago Linguistic Society.*
KIPARSKY, P.
1965 *Phonological Change* (IULC Repr. 1971).
1968 'Linguistic Universals and Linguistic Change', in Bach & Harms eds.
1970 'Über den deutschen Akzent', in *Studia Grammatica VII. Untersuchungen über Akzent und Intonation im Deutschen*, Berlin, 69 ff.
1972 'Explanation in Phonology' in Peters ed.
KIPARSKY, P. & KIPARSKY, C.
1970 'Fact', in Bierwisch & Heidolph eds.
KLATT, D.H.
1971 *A Theory of Segmental Duration in English. Paper Presented at the 82nd Meeting of the Acoustical Society of America, Denver, Col., 19-22.*
KLIMA, E.S.
1964 'Relatedness between Grammatical Systems', *Language* 40, 1-20.
KLOOSTER, W.G.
1972 *The Structure Underlying Measure Phrase Sentences, Foundations of Language, Suppl. Series Vol.17*, Dordrecht.
KOHNSTAMM, G.A.
1969 *Taalontwikkeling en milieu*, Amsterdam.
KOHNSTAMM, G.A. & VRIES, A.K. DE
1970 'Het taal-denkprogramma', *Kleuterwereld* 15, 221-247.
KOOIJ, J.G.
'Presuppositie, Topic en de plaats van het Indirekt Objekt', *Spektator* (forthcoming).
KOSTER, J.
1972 'PP over V en de theorie van J. Emonds' (unpublished ms., University of Amsterdam).
KOUTSOUDAS, A.
1971 'Gapping, Conjunction Reduction and Coordinate Deletion', *Foundations of Language* 7,3.
KRAAK, A.
1966 *Negatieve zinnen. Een methodologische en grammatische analyse*, Hilversum.
1967 'Presuppositions and the Analysis of Adverbs' (unpublished ms., MIT).
1971 'Zinsaccent en syntaxis', *Studia Neerlandica* 4, 41-62.
KRAAK, A. & KLOOSTER, W.G.
1968 *Syntaxis*, Culemborg/Keulen.
KUMMER, W.
1968 'Sprechsituation, Satztyp und Aussagecharakter', *Beiträge zur Linguistik und Informationsbearbeitung 14.*

KUMMER, W.
1971a 'Referenz, Pragmatik und zwei mögliche Textmodelle', in Wunderlich ed.
1971b 'Quantifikation und Identität in Texten', in Stechow von ed., 122-141.
KURODA, S. -Y.
1970 'Some Remarks on English Manner Adverbials', in Jakobson & Kawamoto eds., 378-396.
1971 'Two Remarks on Pronominalization', *Foundations of Language* 7, 183-198.
KYBURG, H.E.
1970 *Probability and Inductive Logic*, London.
LABOV, W.
1970 'The Study of Language in its Social Context', *Studium Generale* 23, 30-87.
1972 'On the Use of the Present to Explain the Past', *Preprints XIth International Congress of Linguists*, Bologna, 1110-1135.
LADEFOGED, P.
1967 'Linguistic Phonetics', *UCLA Working Papers in Phonetics 6*.
1968 *A Phonetic Study of West-African Languages*, Cambridge.
1971 *Preliminaries to Linguistic Phonetics*, University of Chicago Press.
LAKOFF, G.
1966 'Stative Adjectives and Verbs in English', *Report NSF-17, The Computation Laboratory*, Harvard University.
1967 'Instrumental Adverbs and the Concept of Deep Structure', *Foundations of Language* 4, 4-29.
1968a 'Pronouns and Reference' (unpublished ms.).
1968b 'Some Verbs of Change and Causation', *Report NSF-20, The Computation Laboratory*.
1970a 'Adverbs and Opacity: a Reply to Stalnaker' (unpublished ms., University of Michigan).
1970b *Irregularity in Syntax*, New York.
1970c 'Repartee, or a Reply to "Negation, Conjunction and Quantifiers"', *Foundations of Language* 6.
1970d 'Global Rules', *Language* 46, 627-640.
1970e 'An Example of a Descriptively Inadequate Interpretive Theory', *Linguistic Inquiry* 1, 539-542.
1971 'On Generative Semantics', in Jakobovits & Steinberg eds.
1972a 'Linguistic and Natural Logic', in Davidson & Harman eds., 545-665.
1972b 'The Global Nature of the Nuclear Stress Rule', *Language* 48, 285-303.
LAKOFF, G. & PETERS, S.
1969 'Phrasal Conjunction and Symmetric Predicates', in Reibel & Schane eds.
LAKOFF, G. & ROSS, J.R.
1970 'A Derived Nominal Requiring a Sentential Source', *Linguistic Inquiry* 1, 265-267.
LAKOFF, R.
1970a 'Questionable Answers and Answerable Questions', in *Papers in Honor of Henry and Renee Kahane* , University of Illinois Press.
1970b 'Tense and its Relation to Participants', *Language* 46, 838-849.
1971a 'If's, And's and But's about Conjunction', in Fillmore & Langendoen eds.
1971b 'Language in Context' (unpublished ms., University of Michigan).
LANGACKER, R.W.
1965 'French Interrogatives: a Transformational Description', *Language* 41, 587-600.
1969 'On Pronominalization and the Chain of Command', in Reibel & Schane eds.
LARKIN, D.
1969 'Some Notes on English Modals', *University of Michagan Phonetic Lab Notes* 4, 31-36.
LEES, R.B.
1960 *The Grammar of English Nominalizations*, The Hague.
LEES, R.B. & KLIMA, E.S.
1963 'Rules for English Pronominalization', *Language* 39, 17-29.
LEHISTE, I.
1970 *Suprasegmentals*, Cambridge, Mass.

LEHTONEN, J.
1970 'Aspects of Quantity in Standard Finnish', *Studia Philologica Jyväskyläensia 6.*
LENNEBERG, E.H.
1967 *The Biological Foundations of Language*, New York.
LEVELT, W.J.M.
1971 'Some Psychological Aspects of Linguistic Data', *Linguistische Berichte* 17, 18-30.
LEVELT, W.J.M. & SCHILS, E.D.J.
1970 'Psychologie en linguïstiek' (unpublished ms., University of Nijmegen).
LINDBLOM, B.E.F.
1968 'Temporal Organization of Syllable Production', *STL-QPSR 2-3.*
LINDBLOM, B.E.F. & RAPP, K.
1972 'Reexamining the Compensatory Adjustment of Vowel Duration in Swedish Words'. *Paper Submitted to the Symposium on 'Experimental and Theoretical Approaches to the Role of Time in Speech'*, Language Centre, University of Essex, Jan. 1972.
LIPKA, L.
1971 'Grammatical Categories, Lexical Items and Word-Formation', *Foundations of Language* 7, 211-238.
LYONS, J.
1968 *Introduction to Theoretical Linguistics*, Cambridge University Press.
1970 *Chomsky*, London.
LYONS, J. & WALES, R.J., (eds.)
1966 *Psycholinguistic Papers*, Edinburgh University Press.
MAKKAI, A.
1972 *Idiom Structure in English*, The Hague.
MALING, J.
1972 'On Gapping and the Order of Constituents', *Linguistic Inquiry* 3, 101-108.
MALMBERG, B., (ed.)
1968 *Manual of Phonetics*, Amsterdam.
MARTINET, A.
1939 'Un ou deux phonèmes?', *Acta Linguistica* 1, 94-103.
1949 'Occlusives and Affricates with Reference to Some Problems of Roman Phonology', *Word* 5, 116-123.
1965 *La linguistique synchronique*, Paris, Presses Universiatires de France.
MATALON, B.
1962 'Etude génétique de l'implication', *Etudes d'épistemologie génétique XVI. Implication, formalisation et logique naturelle*, Paris.
MATTENS, W.H.M.
1970 *De indifferentialis. Een onderzoek naar het anumerieke gebruik van het substantief in het algemeen bruikbaar Nederlands*, Assen.
MATTINGLEY, I.
1966 'Synthesis by Rule of Prosodic Features', *Language and Speech* 9, 1-13.
McCAWLEY, J.D.
1967 'Meaning and the Description of Language' (unpublished ms.).
1968a 'Concerning the Base Component of a Transformational Grammar', *Foundations of Language* 4,3.
1968b 'Lexical Insertion in a Transformational Grammar without Deep Structure', *Papers from the 4th Regional Meeting of the Chicago Linguistic Society.*
1968c 'The Role of Semantics in a Grammar', in Bach & Harms eds., 125-169.
1969 'Where Do Noun Phrases Come From?', in Jacobs & Rosenbaum eds., 166-183.
1970 'English as a VSO Language', *Language* 46, 286-299.
1972 'On Interpreting the Theme of this Conference' (unpublished ms.).
McNEILL, D.
1966 'Developmental Psycholinguistics', in Smith & Miller eds., 15-84.
1970 *The Acquisition of Language. The Study of Developmental Psycholinguistics*, New York.

MENYUK, P.
1969 *Sentences Children Use*, Cambridge, Mass.
MEY, J. DE
1974 'Induction and Linguistics' (this volume).
'Hoe empirisch is Chomsky's linguïstische theorie?' (forthcoming).
MEYS, W.J.
Transformational Generative Grammar and Word-Formation (forthcoming).
MILLER, J.E.
1970 'Stative Verbs in Russian', *Foundations of Language* 6, 488-504.
MINNIFIE, F.D., DARLEY, F.L. & SHERMAN, D.
1963 'Temporal Reliability of Seven Language Measures', *Journal of Speech and Hearing Research* 6, 139-148.
MORGAN, J.L.
1969 'On Arguing about Semantics', *Papers in Linguistics* 1, 49-70.
1970 'Sentence Fragments and the Notion "Sentence"', to appear in Kachru et al. (eds.), *Linguistic Studies Presented to Henry and Renee Kahane*, Chicago, 1970.
NAESS, A.
1962 'L'emploi de la disjonction chez les adolescents', *Etudes d'épistemologie XVI. Implication, formalisation et logique naturelle*, Paris.
NEISSER, U.
1967 *Cognitive Psychology*, New York.
NEWMEYER, F.J.
1970 'On the Alleged Boundary between Syntax and Semantics', *Foundations of Language* 6, 178-186.
NIEUWBORG, E.R.
1969 *Retrograde woordenboek van de Nederlandse taal*, Antwerpen.
NILSEN, D.L.F.
1972 *English Adverbials*, The Hague.
NOOTEBOMM, S.
1972 'Some Timing Factors in the Production and Perception of Vowels'. *Paper Submitted to the Symposium on 'Experimental and Theoretical Approaches to the Role of Time in Speech'*, Language Centre, University of Essex, Jan. 1972.
O'BRIEN, T.C., SHAPIRO, B.J. & REALI, N.C.
1971 'Logical Thinking, Language and Context', *Paper Presented at the Annual Meeting of the American Educational Research Association*.
OLMSTED, D.L.
1955 'Review of First Printing of Osgood and Sebeok (1965), *Language* 31, 46-59.
O'SEARCAIGH, S.
1925 *Foghraidheacht Ghaedhilge an Tuaiscirt*, Béal Feirste.
OSGOOD, C.E. & SEBEOK, T.A., (eds.)
1965 *Psycholinguistics: A Survey of Theory and Research Problems*, Bloomington.
OSSELTON, P.M.
1970 'The Well-Language'd Poet', *Universitaire Pers*, Leiden.
PARK, T-Z.
1970 'The Acquisition of German Syntax' (unpublished ms., University of Münster).
PARSONS, T.
1972 'Some Problems Concerning the Logic of Grammatical Modifiers', in Davidson & Harman eds., 127-141.
PERLMUTTER, D.
1967 'The Two Verbs "Begin"', in Jacobs & Rosenbaum eds., 107-119.
1970 'On the Article in English', in Bierwisch & Heidolph eds., 233-248.
1971 *Deep and Surface Structure Constraints in Syntax*, New York.
1972 'Evidence for Shadow Pronouns in French Relativization', in *The Chicago Hunt*, Chicago.
PETERS, P.S. & RITCHIE, R.W.
1969a 'A Note on the Universal Base Hypothesis', *Journal of Linguistics* 5, 150-152.
1969b 'On the Generative Capacity of Transformational Grammars'. To appear in *Information Sciences*.

PETERS, S., (ed.)
1972 *Goals of Linguistic Theory*, Englewood Cliffs, N.J.
PLATT, J.T. & PLATT, H.K.
1972 'Orientation of Manner Adverbials' (unpublished ms., Monash University).
POSTAL, P.M.
1968 *Aspects of Phonological Theory*, New York.
1969 'On So-Called "Pronouns" in English', in Reibel & Schane eds., 201-224.
1969a 'Anaphoric Islands', in *Papers from the 5th Regional Meeting of the Chicago Linguistic Society*.
1970 'On the Surface Verb REMIND', *Linguistic Inquiry* 1, 37-121.
1971 *Cross-Over Phenomena*, New York.
1972a 'A Global Constraint on Pronominalization', *Linguistic Inquiry* 3, 35-61.
1972b 'Two Remarks on Dragging', *Linguistic Inquiry* 3, 130-136.
1972c 'On Some Rules That are Not Successive Cyclic', *Linguistic Inquiry* 3.
POSTAL, P.M. & ROSS, J.R.
1971 '! Tough Movement Si, Tough Deletion No!', *Linguistic Inquiry* 2.
PUHVEL, J.
1969 *Substance and Structure of Language*, Berkeley, Los Angelos.
RAMSEY, F.P.
1965 'General Propositions and Causality', in R.B. Braithwaite (ed.), *The Foundations of Mathematics and Other Logical Essays*, London, 237-255.
REENEN, P.TH. VAN
1973 'Une syntaxe transformationelle importante du verbe français', *Rapports. Het Franse boek*, 43.
REESINK, G.
1970 *Milieuverschillen in het produktief taalgebruik van vijfjarige kinderen* (unp.).
REIBEL, D.A. & SCHANE, S., (eds.)
1969 *Modern Studies in English*, Englewood Cliffs, N.J.
REICHENBACH, H.
1966 *Elements of Symbolic Logic*, New York/London (First Free Press Paperback Edition).
REID, L.A., (ed.)
1972 *Philippine Minor Languages. Oceanic Linguistic Special Publication No.8*, University of Hawaii Press.
REULAND, E.J.
1971 'Iets over zogeheten "Boolean Conditions on Analyzability"', in S.C. Dik, *Taalwetenschap in Nederland 1971*, 51-64.
RIEMSDIJK, H. VAN
1971 'Een analyse van bepalingen van wijze' (unpublished ms., University of Amsterdam).
RIJK, R.P.G. DE
1967a 'Apropos of the Dutch Vowel System' (unpublished ms., MIT).
1967b 'Object Incorporation in Tongan and Dutch' (unpublished ms., MIT).
RIVERO, M-L.
1971 'Mood and Presupposition in Spanish', *Foundations of Language* 7, 305-336.
ROBERGE, J.J.
1970 'A Study of Children's Abilities to Reason with Basic Principles of Deductive Reasoning', *American Educational Research Journal* 7, 583-596.
ROBINSON, J.J.
1969 'Case, Category and Configuration', *Journal of Linguistics* 6, 57-80.
RODMAN, R.
1972 'On the Stranding of Prepositions', *UCLA Papers in Syntax 2*.
ROEPER, T.W.
1972 *Approaches to a Theory of Language Acquisition with Examples from German Children* (Ph.D. Diss., Harvard University).
ROSENBAUM, P.S.
1967 *The Grammar of English Predicate Complement Constructions*, Cambridge, Mass.
1970 'A Principle Governing Deletion in English Sentential Complementation', *in*

Jacobs & Rosenbaum eds., 20-29.

ROSS, J.R.
1967a 'Auxiliaries as Main Verbs', in W. Todd ed., *Studies in Philosophical Linguistics.*
1967b *Constraints on Variables in Syntax* (Ph.D. Diss., MIT).
1967c 'Gapping and the Order of Constituents', in Bierwisch and Heidolph eds.
1967d 'On the Cyclic Nature of English Pronominalization', in Reibel & Schane eds., 187-200.
1970 'On Declarative Sentences', in Jacobs & Rosenbaum eds.

RUKE-DRAVINA, V.
1965 'The Process of Acquisition of Apical /r/ and Uvular /R/ in the Speech of Children', *Linguistics* 17, 58-68.

SCHERMER-VERMEER, E.C.
1971 'De begrippen "topic" en "geïdentificeerde referent"', *Studia Neerlandica* 6, 333-350.

SCHLESINGER, I.M.
1967 'A Note on the Relationship between Psychological and Linguistic Theories', *Foundations of Language* 3, 397-402.
1971 'Production of Utterances and Language Acquisition', in D.I. Slobin ed., *The Ontogenesis of Language*, New York.

SCHREIBER, P.A.
1971 'Some Constraints on the Formation of English Sentence Adverbs', *Linguistic Inquiry* 2, 83-102.

SEARLE, J.R.
1969 *Speech Acts. An Essay in the Philosophy of Language*, Cambridge.
1971 *Sprechakte. Ein Sprachphilosophischer Essay*

SEBEOK, T.A.
1966 *Current Trends in Linguistics* 3, The Hague.

SEUREN, P.A.M.
1969 *Operators and Nucleus*, Cambridge Studies in Linguistics 2, Cambridge.

SLIS, I.H.
1971 'Rules for the Synthesis of Speech', *IPO Annual Progress Report 6.*

SLIS, I.H. & MULLER, H.F.
1971 'A Computer Programma for Synthesis by Rule', *IPO Annual Progress Report 6.*

SLOAT, C.
1969 'Proper Nouns in English', *Language* 45, 26-30.

SMITH, F. & MILLER, G.A.,(eds.)
1966 *The Genesis of Language. A Psycholinguistic Approach*, Cambridge, Mass.

SMITH, N.S.H.
The Acquisition of Phonology (forthcoming)

SMITH, N.S.H. & VAN RIEMSDIJK, H. VAN
Züritüütsch Phonology (forthcoming)

STECHOW, A. VON
1971 *Beiträge zur generativen Grammatik*, Braunschweig.

STOCKWELL, R.P. & MACAULY, K.S. (eds.)
1972 *Linguistic Change and Generative Theory*, Bloomington, etc.

TAI, J. H-Y.
1969 *Coordinate Reduction* (Ph.D. Diss., Indiana University).

TEMPLIN, M.C.
1957 *Certain Language Skills in Children. Their Development and Interrelationships.*

TOMBE, A.L. DES
1972 *Wat voor soort psychologie is taalkunde* (unpublished ms., University of Utrecht).

TOORN, M.C. VAN DEN
1971 'Enkele opmerkingen over het Indirekt Objekt', *Levende Talen* 274, 32-40.

TRAUGOTT, E. & CLOSS, E.
1969 'Toward a Grammar of Syntactic Change', *Lingua* 23, 1-27.

UHLENBECK, E.M.
1966 'Enige beschouwingen over Amerikaanse en Nederlandse linguïstiek', *Forum der Letteren* 7, 1-22.

UHLENBECK, E.M.
1967 'Some Further Remarks on Transformational Grammar', *Lingua* 17, 263-316.
VENDLER, Z.
1967 *Linguistics in Philosophy*, Ithaca, Cornell University Press.
VENNEMAN, T.
1972 'Explanation in Syntax' (unpublished ms., University of California, Los Angeles).
VERKUYL, H.J.
1972 *On the Compositional Nature of the Aspects, Foundations of Language, Suppl. Series Vol.15,*
VOSS, J.F., (ed.)
1969 *Approaches to Thought*, Menill Symposium.
WAKELYN, M.F.
1972 *English Dialects:An Introduction* , London.
WALMSLEY, J.B.
1971 'The English Comitative Case and the Concept of Deep Structure', *Foundations of Language* 7, 493-507.
WASON, P.C.
1966 'Reasoning', in Foss, B.M. (ed.), *New Horizons in Psychology*, Penguin Books.
WATT, W.C.
1970 'On Two Hypotheses Concerning Psycholinguistics', in Hayes ed., 127-220.
WEINREICH, U.
1966 'Explorations in Semantic Theory', in Sebeok ed., 395-477.
1969 'Problems in the Analysis of Idioms', in Puhvel ed., 23-81.
WILKINSON, R.
1970 'Factive Complements and Action Complements', in *Papers from the 6th Regional Meeting of the Chicago Linguistic Society,*
WUNDERLICH, D.
1971 'Pragmatik, Sprechsituation, Deixis', *Lili*
WUNDERLICH, D., (ed.)
1971 *Probleme und Fortschritte der Transformationsgrammatik,*
YNGVE, V.
1961 'The Depth Hypothesis', in Jakobson, R., ed., *Proceedings of the 12th Symposium of Applied Mathematics*, American Mathematical Society, 130-138.
ZIMMER, K.E.
1964 *Affixal Negation in English and Other Languages. An Investigation of Restricted Productivity*, Word 20, No.2, Monograph 5.
ZWARTS, F.
1973 'Pronominale sporen in relatieve zinnen: evidentie uit het Frans en Roemeens (unpublished ms.).

This volume contains the papers presented at the third and fourth annual meeting of the General Association for Linguistics which were held in Amsterdam on january 22, 1972 and january 20, 1973.
The papers represent work in progress on various linguistic topics, some of which are presently in the international focus of interest. The contributions range from purely descriptive to mainly theoretical, but include investigations of language use. They should be of interest both to any linguist for whom publications in Dutch are inaccessible, and to Dutch linguists and foreign-language teachers for whom this collection may serve as a review of the state of the art.
As a whole, this book gives an excellent idea of the linguistic activities that are going on in the Netherlands.

ISBN 90 232 1251 7