Word Order and Scrambling

Edited by Simin Karimi

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Word Order and Scrambling

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I dedicate this book to Kenneth Hale, a world-renowned linguist whose sad and untimely death arrived not long after he completed his contribution to this volume.

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Introduction

Simin Karimi

I.1 The Literature

Scrambling is a term employed in the literature for a phenomenon called *free word order*. Ross (1967), the first to use this term, had considered scrambling a *stylistic* rule that applies optionally, a view that was adopted later by other linguists as well (e.g. Chomsky and Lasnik 1977).

In early stages of research in the area of free word order and scrambling, there were two major approaches to this phenomenon: some authors considered it the result of base-generation, and others viewed it as a syntactic operation. From a base-generation point of view, languages were divided into two types: those with a flat structure, and thus *non-configurational* (Hale 1980 and Farmer 1980 for Japanese; Haider 1988 for German; Mohanan 1990 for Hindi and Urdu; É. Kiss 1994 for Hungarian; among others), and those with a structural hierarchy, and thus *configurational* (Saito and Hoji 1983, Hoji 1985, and Saito 1985 for Japanese; Bayer and Kornfilt 1994 for German; and Neeleman 1994 for Dutch; among others).

Standard analysis of scrambling as a syntactic movement goes back to Kerstens (1975), van Riemsdijk (1978), and de Haan (1979) who argue that adverbs have a fixed position, and that scrambling is an optional movement to the left of the adverb. Later on, advocates of movement theory examined different types of scrambling to determine whether they were instances of A(rgument)-movement or A′(non-argument)-movement. A-movement is a local operation that moves a phrasal expression into a Case position (e.g. the Specifier of the Inflectional Phrase – IP, or TP to employ the more recent term). The target position of an A′-movement is a Caseless position such as the Specifier of a Complementizer Phrase (CP) or an adjunct position. Passive and raising constructions are typical instances of A-movement, while WH-movement exemplifies A′-movement.

A- and A′-positions each have specific and distinct syntactic properties. For example, movement to an A-position is subject to locality, while movement to an A′-position is not. Consequently, binding of anaphors is possible from an A-position, but not from an A′-position. Furthermore, Weak Crossover can be

overridden if the movement is into an A-position, but not an A′-position, as illustrated by the following contrast.

(1) *Who$_i$ does it seem to his$_i$ father [that John loves t$_i$?] A′-movement

(2) Who$_i$ t$_i$ seems to his$_i$ father [t$_i$ to be happy?] A-movement

Conversely, A′-movement, but not A-movement, allows reconstruction for the purpose of binding (see the description of examples (5) and (6) below). Furthermore, only an element in an A′-position licenses parasitic gaps, as the following data show.

(3) What$_i$ did you file t$_i$ [$_{CP}$ before reading e$_i$?] A′-movement

(4) *[Those stories]$_i$ seem [t$_i$ to have been filed t$_i$ [$_{CP}$ without reading e$_i$]] A-movement

These and other diagnostic tools were employed to determine the nature of scrambling as a syntactic movement. Consequently, one type of scrambling was considered to be an instance of A-movement by various researchers (Deprez 1994; Mahajan 1990, 1994; Fanselow 1990; Santorini 1991, among others), who suggested that the landing site of this type of scrambled element is the Specifier of a functional head (e.g. the Specifier of an object-agreement phrase (AGRoP)), and that the movement is Case-driven. Another type of scrambling that was not driven by Case was considered an instance of A′-movement that either resulted in adjunction to a maximal projection (vanden Wyngaerd 1989; G. Müller and Sternefeld 1994; Mahajan 1994, among others) or would place the scrambled element in the Caseless Specifier of a head (Deprez 1994). The data in (5) and (6) illustrate A- and A′-scrambling, respectively:

(5) raam-ne$_i$ [apnii$_{i/*j}$ kitaab] mohan-ko$_j$ t loTaaii

⇑_____⌋

Ram-subject self book Mohan-IO returned-perf-f
"Ram$_i$ returned self's$_{i/*j}$ book to Mohan$_j$"

(6) [apnii$_{i/*j}$ kitaab] raam-ne$_i$ t mohan-ko$_j$ loTaaii (Mahajan 1990: 34–5)

⇑_____⌋

Considering the position of the direct object in (5) and (6), Mahajan assumes an A-movement in the case of the former, and an A′-movement in the latter. Therefore, reconstruction is possible in (6) (from an A′-position), but not in (5) (from an A-position).

Based on data from Hindi, Mahajan (1990, 1994) suggests that clause-initial scrambling could be either A-movement or A′-movement, an issue that remained a mystery until recently. Long-distance scrambling, however, has been viewed as

an A′-movement by almost all researchers in this area (Mahajan 1990, 1994; Saito 1985 and in subsequent work, among others).

Moreover, some authors considered A′-scrambling a distinct variant of the typical A′-movement (G. Müller and Sternefeld 1993, 1996; Dayal 1994). Finally, Webelhuth (1992) suggested a mixed landing site for scrambled elements, arguing that this position reveals both A- and A′-properties simultaneously since a scrambled element can bind an anaphor and license a parasitic gap at the same time (see also Browning and E. Karimi 1994 and Deprez 1994; but also see S. Karimi, this volume).

The optionality of scrambling, first proposed by Ross, had been supported by other authors as well (Saito 1985; Kuroda 1988; Fukui 1993, among others). These researchers consider scrambling a semantically vacuous operation that is undone at the level of Logical Form (LF). Optionality, however, has become a challenge for the Minimalist Program (Chomsky 1995 and work thereafter), a theory that allows syntactic movements only if they are triggered by morphological factors such as Case or WH-features. Since optionality is not an option within this theory, new solutions have been proposed to overcome this problem. Saito and Fukui (1998), as well as Bošković and D. Takahashi (1998), argue that scrambling is the result of *Merge*, a simple operation that takes a pair of syntactic objects (α and β), and forms a more complex unit. This analysis reveals, to some extent, a return to the base-generation approach, employing the tools of the Minimalist Program.

One of the questions that has been raised regarding parametric differences between scrambling and non-scrambling languages is this: why is this phenomenon allowed in some languages, but not in others? In other words, does scrambling derive from parametric properties of certain languages? Different types of responses have been offered in the literature. G. Müller and Sternefeld (1993), for example, discuss this issue with respect to parametric differences of adjunction sites. Neeleman (1994) analyzes the same issue by taking into account the θ-domain. Bošković and D. Takahashi (1998) suggest that Japanese-type languages allow arguments to move back into their θ-positions, while English-type languages do not.

Fukui (1993) explains the word order differences between English and Japanese on the basis of the notion of *cost* (Chomsky 1991) and Head Parameter Value of the two languages. Combining these two, he suggests that a grammatical operation is *costless* as long as it creates a structure consistent with the parameter value of a given language. This proposal suggests that while XP movement is costless, thus free, in the preverbal domain of SOV languages, it is only costless, and thus free, in the postverbal domain of SVO languages. The Head Parameter explains why the majority of scrambling languages are verb-final: the preverbal domain in these languages is a costless domain for movement. Saito and Fukui (1998) argue along the same lines. These authors suggest that adjunction in the traditional sense is compatible with the value of the Head Parameter. English is head-initial, and therefore, allows heavy NP-shift. Japanese is head-final, and thus scrambling is allowed in this language. The problem with the Head Parameter proposal is that, although the majority of scrambling languages exhibit an SOV order, there are also SVO languages that allow scrambling, such as Polish (Haegeman 1995)

and Russian (G. Müller and Sternefeld 1993). Furthermore, this hypothesis should allow free word order in the postverbal position in SVO languages, an issue not supported by empirical facts (see below).

I.2 Current State of Affairs

In recent years, authors actively engaged in research on word order and scrambling have provided evidence indicating that one type of A-scrambling is motivated by the Extended Projection Principle (EPP) (Lavine 1998b; Miyagawa 2001; Bailyn 2002; see also Miyagawa and Bailyn, this volume). EPP, first introduced by Chomsky (1981), is a D feature of T that requires the sentence to have a subject. A′-scrambling, both clause-bound and long-distance, is argued to be triggered by some discourse functional factors such as Focus (Miyagawa 1997; É. Kiss 1998b; S. Karimi 1999c; Bailyn 2001; see also Bailyn, Hale et al., and É. Kiss, this volume).[1] The double nature of scrambling, one motivated by EPP and the other by discourse functions, supports Mahajan's (1990, 1994) original insight indicating that clause-initial scrambling can be either an A-movement or an A′-movement. The target of the former, initially a mystery, is suggested to be the Specifier of IP (= TP), while the latter places an element in the Specifier of a functional head such as Focus.

The interaction of scrambling and specificity has been an issue discussed by a number of linguists (Diesing 1992; de Hoop 1992; see Dayal, S. Karimi, and Kornfilt, this volume, for a fresh analysis of this interaction). Other types of effects of the interaction of scrambling and semantic properties such as scope marking have also drawn much attention, and works in this area have led to interesting discoveries regarding the nature of scrambling in human language (Beck and S.-S. Kim 1997; Diesing 1997; Miyagawa 1997, 2001; S. Karimi, forthcoming, among others). The result of these works indicates that scrambling is not semantically vacuous, as originally assumed.

The acquisition of scrambling and the processing effects of scrambled elements have begun to attract attention in recent years (see Sarma, Iwasaki, Sekerina, and Friederici et al., this volume). Also the interaction of scrambling and prosodic properties of word order arrangements has been discussed (see Miyashita et al., this volume). Finally, Kayne's (1994) theory of Antisymmetric Syntax, which proposes a universal SVO order, calls for a re-examination of word order variations in SOV languages. Mahajan (this volume) is an effort in this regard.

If scrambling is triggered by specific features such as EPP, Topic and Focus, the optionality of movement will not be an issue anymore. We see in this volume, however, that certain types of word order variations are still considered to be optional, for example definite DPs in Dutch (de Hoop) and postverbal word order in Hungarian (É. Kiss).[2] The Head Parameter discussed in section 1 explains these cases: Dutch, an SOV language, allows optional order in its preverbal domain, while Hungarian, an SVO language, exhibits free order in the postverbal domain. However, we have seen that there are some problems with the Head Parameter proposal regarding SVO languages: word order is not free in the postverbal domain in English-type languages.

I.3 About this Volume

This book is the result of the International Conference on Word Order and Scrambling that was held on April 7–9, 2000, in Tucson, Arizona. The first drafts of the chapters published in this volume were first presented at that conference.

Three major questions are addressed in this volume. First, what kind of syntactic, semantic, and discourse informational factors are responsible for different types of word order variations, and how can these properties be explained within the scope of our current understanding of Universal Grammar? Second, is there any evidence indicating that scrambled constructions are available in early child language development and in second language acquisition? Finally, how are the word order variations processed and what do the processing facts reveal about the nature of these phenomena? The first ten chapters in this volume address the first set of questions by examining the discourse informational, syntactic, and semantic properties of scrambling in a number of different languages. The last four chapters discuss the acquisition of scrambling and how it affects processing.

Chapters 1–3 examine word order variations with respect to discourse functional factors. Chapter 1, by Kenneth Hale, Eloise Jelinek, and MaryAnn Willie, discusses a group of problems that arise in Navajo sentence structure, and argues that these problems are solved by taking into consideration two parametric properties of this language: its characteristics as a Pronominal Argument language and a Discourse Configurational language. The authors specify two distinct domains in Navajo sentence structure with respect to ordering of constituents, and discuss the central role of Voice Alternation and Animacy Hierarchy and their interaction with configurational and overt scope properties manifested in the syntax of this language. Chapter 2, by Katalin É. Kiss, examines the organization of the Hungarian sentence, and shows a primary split between a topic field and a predicate field. The predicate field, in turn, is divided into a preverbal operator field, and a postverbal argument field. The author argues that word order in this language is independent of grammatical functions of the constituents. The central goal of this paper is to demonstrate that word order variations are determined by several factors that exhibit different consequences in the three fields of Hungarian sentence structure. Chapter 3, by Mizuki Miyashita, Richard Demers, and Delbert Ortiz, discusses the ambiguity observed in Tohono O'odham sentences containing all third singular arguments. In order to explain speakers' interpretation of these sentences, the authors first examine their prosodic properties, and then turn their attention to the syntactic characteristics of O'odham as a Discourse Configurational language.

Chapters 4–6 examine the interaction of scrambling and specificity. In chapter 4, Veneeta Dayal investigates the validity of the generalization that scrambling of indefinites leads to loss of non-specific readings. Concentrating on Hindi, she examines the status of contrast that licenses the scrambling of non-specific nominals. She further discusses the correlation of contrast and the direction of scrambling in this language. Her ultimate goal is to identify discourse principles that would explain why contrast plays a crucial role in preserving non-specific readings of only leftward-scrambled nominals in Hindi. Chapter 5, by Simin Karimi, discusses the word order variations of objects in Modern Persian by identifying three

distinct positions for these elements: two base-generated positions, and the third one derived as the result of scrambling. She discusses the correlation between scrambling, discourse motivations, and specificity, and offers explanations for free application of scrambling to specific objects, and the restriction universally imposed on their non-specific counterparts. She employs several syntactic tests in an effort to support her proposals. Chapter 6, by Jaklin Kornfilt, discusses the relationship between scrambling and the typology of Case in Modern Turkish, and the interaction of these two with specificity. The analysis takes into consideration scrambling of the whole DP as well as Subscrambling (extraction out of the larger DP), and includes discussions of the Specificity Effect (Specificity Constraint in her terms), Condition on Extraction Domains, and Incorporation.

Chapters 7–9 focus on optionality of scrambling, and provide arguments against or in favor of this property. Chapter 7, by John Frederick Bailyn, provides evidence against optional scrambling in Russian by dividing this operation into two syntactic processes known in other languages: first, *Generalized Inversion*, revealing properties of A-scrambling, and second, *Dislocation* triggered by Information Focus, representing properties of A′-scrambling. Furthermore, the discussion in this section is a step toward the integration of Information Focus into the Minimalist framework. The optionality of scrambling is further challenged by Shigeru Miyagawa in chapter 8. The author argues that scrambling, despite its seemingly optional nature, is feature-driven, and that A-scrambling of objects is triggered by the feature representing the Extended Projection Principle (EPP). This type of movement correlates with the existence of certain morphological and syntactic properties in some languages that, in turn, provide more than one option to meet an obligatory requirement. Chapter 9, by Helen de Hoop, in contrast, reports that scrambling of definite noun phrases in Dutch is not driven by semantic or discourse considerations, and is fully optional. Employing the tools of Optimality Theory (OT), the author examines the tendency of anaphoric definites to scrambling, and explains why movement of these elements does not affect the interpretation of sentences containing them.

In chapter 10, Anoop Mahajan offers an analysis of two types of word order variation. He derives the SOV and SVO orders by adopting Kayne's Antisymmetric Syntax (Kayne 1994), and by employing (remnant) VP-movement as the replacement for the traditional verb movement. The author proposes parametric properties that trigger movements of different XPs, leading to two distinct surface arrangements of linguistic expressions in SOV and SVO languages.

Chapters 11 and 12 examine the acquisition of scrambled constructions. In chapter 11, Vaijayanthi Sarma argues that Tamil is a configurational language, and that flexible word order in this language is a well-defined syntactic operation with clear semantic consequences. Furthermore, the author examines the availability of word order rearrangements in the early stages of child language development. Chapter 12, by Noriko Iwasaki, concentrates on second language (L2) acquisition of Japanese Case particles in scrambled and non-scrambled constructions among adult English speakers. The author administers four tasks in order to investigate the linguistic knowledge of Japanese learners, and their use of distinct word order variations.

The final two chapters are devoted to an examination of the processing aspects of scrambling. Chapter 13, by Irina A. Sekerina, compares the processing complexity and the cost of constructions containing rearrangements (WH- and scrambling constructions) with those that represent canonical order, on the one hand, and the differences between WH-movement and scrambling, on the other. Similar constructions are examined in the final chapter, by Angela D. Friederici, Matthias Schlesewsky, and Christian J. Fiebach. These authors compare WH-movement with scrambling in a variety of experiments that directly observe brain activity and show that these two operations elicit different brain responses with respect to specific constructions.

I.4 Open Questions

Many problems remain. For example, assuming that the Head Parameter proposal is on the right track, we still cannot explain why free word order variation is allowed in some languages, e.g. Dutch and Hungarian (this volume), Japanese VP (Miyagawa 1997), but not in others (e.g. English). Second, A′-scrambling exhibits properties distinct from a typical A′-movement. For example, long-distance scrambling allows quantifier floating, a property of A-movement (Dayal 1994; S. Karimi, forthcoming), while a typical A′-movement does not. Third, only the original copy of an anaphor enters the binding relation in a scrambling language, while a typical A′-movement allows all copies, plus the antecedent, to enter the binding relation (cf. *which pictures of himself did Bill say John thought Max sold last Friday*, where the anaphor can be coindexed with all three DPs). The radical reconstruction property of scrambling was one of the factors that led researchers to suggest that scrambling was semantically vacuous, and thus had to be undone at LF. Moreover, the brain activities indicate a distinction between a typical A′-movement such as WH-movement and scrambling (Friederici, et al., this volume). Why should these distinctions exist between scrambling languages and their non-scrambling counterparts?

Scrambling languages share some specific properties: for example, scope is usually determined by surface (derived) positions of quantifiers in these languages (Hungarian, Persian, German, Navajo, among others). However, they differ in other aspects of scope determination. For example, many of these languages reveal consistent behavior with respect to the scope of WH-phrases since they exhibit obligatory WH-movement (Russian, German, Dutch, and Hungarian), although some others differ in this respect in that they lack structural WH-movement (Persian, Hindi, Japanese, Korean). The question is this: how can the dual property of scope marking in the latter group be explained? This question is not unique to scrambling languages since the dual behavior of scope marking (covert and overt) is manifested in non-scrambling languages, such as English, as well (overt WH-movement, but no overt movement of quantifiers for scope determination). These and other issues related to word order variations require further research leading to a better understanding of the nature of human language.

Notes

1 Movement representing discourse functions is not a new idea, and goes back to the early 1970s (Jackendoff 1972). See also Culicover and Rochemont (1983) and Rochemont (1986).
2 See also the free word order variation of direct versus indirect object in Japanese (Miyagawa 1997).

1

Topic and Focus Scope Positions in Navajo

Kenneth Hale, Eloise Jelinek, and MaryAnn Willie

1.1 Introduction

There are a number of long-standing problems in the analysis of Navajo relating to the structural positions and syntactic roles of nominals. Consider example (1):

(1) asdzáán at'éédałk'ésdisí yeiní'ą
woman$_i$ girl$_j$ candy$_k$ 3$_j$-to-3Obj$_k$-3Subj$_i$-gave
"The woman gave the candy to the girl"

In this example, the NPs are ordered according to their rank in the Navajo Animacy Hierarchy, highest to lowest, while the pronominal inflection on the verb is ordered according to grammatical relations: Oblique–Direct Object–Subject–V. Furthermore, the NP referring to the Goal is not adjacent to the Postpositional Phrase where the Dative inflection appears. This is typical of the kind of problem that arises if we assume that NPs are in argument positions in Navajo. In this paper, we show how this group of problems can be simultaneously resolved from the perspective of two important parametric properties of the language:

(2)a. Navajo is a Pronominal Argument language (Jelinek 1984; Willie 1991)
b. Navajo is a Discourse Configurational language
(as defined in É. Kiss 1987, 1995)

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In section 1.2, we discuss the theoretical considerations that underlie our analysis of Navajo; in section 1.3, we present the Navajo data that provide evidence in support of our claims. Section 1.4 gives a brief summary and concluding remarks.

1.2 Navajo Nominals as Operators

We use the term "NP" here to refer to "full" noun phrases with an open class Root serving as lexical head, and the term "Pronoun" to refer to one of a closed paradigmatic set of expressions with the Φ-features of person and number. We argue that languages vary parametrically in certain syntactic constraints on the distribution of NPs and pronouns at spellout. We show that in Navajo, nominals are excluded from argument positions, and appear in left-peripheral Topic/Focus operator scope positions. Argument positions are occupied exclusively by Pronominal Arguments (PAs) – pronouns serving as variables bound by the nominals in operator positions.

Navajo is Discourse Configurational; that is, the order of the nominals in operator scope positions reflects Information Structure, rather than grammatical relations. The overt pronominal variables in the Navajo clause are incorporated into the verb complex (M.C. Baker and Hale 1996), and appear at functional projections. The antecedent NPs appear either (a) earlier in the sentence, or (b) earlier in the discourse. The Pronominal Arguments are discourse anaphors, that are bound according to familiar discourse binding principles (Speas 1990), together with the Direct/Inverse Voice alternation, to be described below.

Not all Discourse Configurational languages have Pronominal Arguments. For example, Hungarian nominals in left-peripheral Topic/Focus operator positions bind traces or gaps in the clause. Furthermore, in some construction types in Hungarian, NPs appear in argument positions (see É. Kiss, this volume).

1.2.1 The exclusion of nominals from argument positions in Navajo

We identify Topic/Focus (Information) structure as part of the quantificational component of the grammar. Topical material forms Restrictive clauses, and the Focus corresponds to the nuclear scope of a tripartite quantificational structure (see Diesing 1992; Hajičová et al. 1998). We assume a level of representation of the Information Structure of the sentence by which Topic/Focus operators have been raised to Operator positions. This level of structure may be manifest in the overt spellout; this is a parametric option selected by languages as diverse as Hungarian and Navajo.

A major typological feature of Navajo is that the default interpretation of bare nouns is definite (Willie 2000; Fernald and Platero 2000). Compare:

(3)a. at'ééd yicha
girl 3Subj-cry
"The girl (familiar, presuppositional), she is crying"

b. at'ééd ła' yicha
girl one 3Subj-cry
"One of the (presupposed set of) girls, she is crying"

c. at'ééd léi' yicha
girl a 3Subj-cry
"A/some/a certain girl (ambiguous), she is crying"

Navajo has no simple, bare indefinites. Example (3a) cannot be used to introduce a new referent. Example (3b) also gives a presuppositional reading. Example (3c) is ambiguous; (a) it can be used to speak of a specific indefinite ("a certain girl") when it is presuppositional; or, (b) it may be used to introduce an unfamiliar, novel referent. In addition, Navajo NPs may appear as predicate nouns in copular constructions, where they are non-referential, and in overt existential contexts.[1] From their Topic/Focus operator positions, Navajo NPs bind definite pronouns in argument positions, as determined by matches in person, or in Topic/Focus features – to be specified in a moment.

Diesing's (1992) Mapping Hypothesis provides insight into these properties of the Navajo clause. The Mapping Hypothesis partitions the syntactic tree into two parts, IP and VP, which correspond to the domains of old versus new information. IP and VP map respectively into the restrictive and nuclear scope of the semantic representation of the tree.

(4) The Mapping Hypothesis
i. IP maps into the restriction (of an operator).
ii. VP maps into the nuclear scope (the domain of existential closure).

Universally, only indefinites can remain within the VP at Logical Form (LF); definites must escape from the predicate to avoid a type mismatch (Diesing and Jelinek 1995). Any NPs remaining in the VP by LF are subject to default existential closure. By LF, IP contains the presuppositional material; type mismatches are repaired, and quantified NPs are quantifier raised from the VP.

There is parametric variation across languages as to whether NPs and pronouns are required to occupy positions in the overt syntax that correspond to their LF distribution. The Navajo clause at spellout reflects features of the distribution stated in the Mapping Hypothesis: the definite/specific NPs and quantifiers are raised to operator positions. Heim's (1982) Rule of Quantifier Construal, and May's (1985) Rule of Quantifier Raising (QR) adjoin quantifiers to IP (or S). The pronominal variables bound by these operators appear at functional projections in IP. The lexical verb and the associated variables form the nuclear scope. In the case of the ambiguous NPs with *léi'*, there are two possible interpretations. The specific readings are interpretations of the nominal in its raised position, and we propose, following a suggestion by Diesing, that the indefinite reading of this particle is produced by interpreting the lower copy in a chain.

We should note here that whenever languages place restrictions on the distribution of nominals in the overt syntax with respect to their semantic type, these constraints produce a constituent order that is consistent with the Mapping Hypothesis.

For example, some languages require subjects to be definite. Egyptian Arabic (Jelinek 1983) and Dutch (Diesing 1992) restrict subjects (outside of overt existential contexts) to pronouns or NPs on a definite/specific reading. In contrast, no languages require subjects to be indefinite. And some languages, for example German, permit only definite, presuppositional objects to *scramble*, while there are no languages that permit only indefinite objects to scramble to IP, confining definite objects to the VP. These findings are consistent with the canonical distribution of old versus new information across the subject/predicate (or topic/focus) domains of the sentence in Universal Grammar, as stated in the Mapping Hypothesis.

1.2.2 The absence of *strong* Determiner Quantification

A striking attribute that is common to Pronominal Argument languages is the absence of *strong* Determiner Quantification (Jelinek 1983, 1995). Navajo has no determiners corresponding to *each*, *every*, *most*, *no*. Determiner Quantifiers derive quantified NPs where a bare indefinite noun states the restriction on the quantifier. Since bare nouns in Navajo are definite, there are no constructions of this type in the language. We include in section 1.3 below a discussion of adverbial quantification in Navajo.

1.2.3 The domains of Incorporation

Jelinek (1993) identifies the following Incorporation Principle: nominals may incorporate only in that domain of the sentence where they must appear by LF.

(5) The Incorporation Principle
   i. Indefinites may incorporate into the predicate.
   ii. Definite pronouns may incorporate (or encliticize) in IP.
   iii. Quantified NPs cannot incorporate at any level.

The Incorporation Principle is language universal. Among other things, it accounts for the syntax of noun incorporation and clitic raising across languages. The Principle applies to Navajo syntax as follows:

(6)a. There is no noun incorporation, since there are no simple indefinite nouns.
   b. The Pronominal Arguments incorporate at functional projections.
   c. Nominals appear at operator positions, and never incorporate.

We provide in section 1.3.5 below comparative evidence from Northern Athabaskan on this point.

1.2.4 The compositionality of argument Structure in Navajo

Recent work in the Distributed Morphology framework (Halle and Marantz 1993; H. Harley 1995; see also Ramchand 1998) demonstrates that argument structure

may be marked at functional projections that are independent of the lexical Root, which supplies the open class, lexical semantic features of the main verb. Argument structure in Navajo is checked at a Voice projection and an Aspectual projection. Oblique arguments (Dative, Benefactive, etc.) are introduced by Postpositional heads at an oblique projection.

(7) yeiníłóóz
3_j-to-3Obj$_k$-3Subj$_i$-led
"He$_i$ led him/it$_j$ to him$_k$"

The inflected verb complex is interpreted as a complete sentence, with pronominal referents. The morphological structure of the Navajo inflected verb, including incorporated postpositional phrases as shown in (7) is traditionally described as in (8):[2]

(8) [[Indirect Object–Postp] – [Direct Object–Mode–Subject–Classifier–Root]]
"Disjunct domain" "Conjunct domain"

The verb Root is preceded by the Classifier, which marks Voice and Transitivity alternations (Kibrik 1996). The Classifier is a *light* verb that derives the verb Stem, a predicate that specifies a particular argument structure. Consistent with this analysis is the fact that some nominal Roots may serve as the base for VPs derived by a Classifier (Young and Morgan 1987). If the Stem is marked Transitive, a Direct Object PA is licensed. The *Mode* projection corresponds to the Aspectual Complex where the Subject PA checks Case (McDonough 1990). The Direct Object Pronoun raises by clitic movement to its position above the Subject. Universally, Object clitics raise to preverbal positions in order to escape from the predicate, since they are definite (Diesing and Jelinek 1995). The Postpositional projection contains an incorporated oblique pronoun that is also definite; this entire projection raises to its position within the Disjunct domain for the same reason. Some postpositions and their objects incorporate into the verb complex and some remain phonologically detached, apparently for phonological reasons (Young and Morgan 1987). Thus, each argument appears at a functional projection (light verb) that is morphemically distinct from the verb Root. Note that the order of the object clitics, Goal–Theme, is precisely the same as that seen in other clitic raising languages such as Romance. In example (9), NPs are included at operator positions:

(9) diné$_i$ ashkii$_j$ łį́į'$_k$ yeiníłóóz
man$_i$ boy$_j$ horse$_k$ 3_j-to-3Obj$_k$-3Subj$_i$-led
Topic Outer Inner OFoc–IFoc–Top–V
Focus Focus
"The man led the horse to the boy"

NP Operator Domain	PA Argument Domain
[Topic–Outer Focus–Inner Focus]	[Oblique Obj–Direct Obj–Subject]–Stem
	Outer Focus–Inner Focus–Topic

Since the inflected verb alone can appear as a fully grammatical sentence, as we saw in (7), it necessarily has its own internal level of Information (Topic/Focus) Structure – a universal property of clauses. Checking the Topic/Focus features of the PAs with the features of the NPs in operator scope positions determines the coindexing between the NPs and the pronouns. In sum: in PA languages, including Navajo, referring expressions are distributed in the overt syntax according to their type-theoretic properties. NPs raise to Topic/Focus operator positions. The pronominal variables bound by NPs are definite and appear in argument positions at IP projections.

We turn now to an examination of the syntactic structure of the Navajo clause. We identify the problems that force us to conclude that NPs are not in argument positions in Navajo, and show how the analysis proposed in section 1.2 provides a solution to these problems.

1.3 Problems in the Order and Syntactic Function of NPs in the Navajo Clause

A familiar problem in the analysis of Navajo is the fact that any nominals included in the sentence need not be adjacent to the pronominal inflection they are coindexed with, nor do the NPs and pronouns appear in the same order in their respective domains. This distribution presents problems for an agreement analysis of the PAs, since agreement is defined as a relation involving locality. Compare examples (7) and (9) above. Example (7), with no nominals included, is a complete grammatical sentence, with Case-marked pronouns in argument positions. In fact, (7) is the only way to construct a Navajo sentence with pronominal referents and no contrastive emphasis on any argument, as we will see in a moment. Example (9) includes the full NP array that is permitted for the sentence, as determined by the number of Pronominal Arguments in the inflected verb.

It is possible to include only one or two of these NPs, and omit the others. In this circumstance, any remaining NPs preserve the relative order shown in (8). In fact, sentences such as (9), including the full NP array, are quite rare in discourse. A Navajo sentence typically includes at most one NP – depending on the speaker's judgment as to which referent, if any, needs (re)identification. Thompson (1996) found that in a count of sentences in printed material, only one out of a sample of 294 transitives had more than one NP.

The problem is: how is coindexing between the Pronominal Arguments and any included NPs determined in the absence of a locality requirement? All NPs are third person, and are not marked for Case or, in most instances, number. Let us first consider first and second person arguments, which cannot be coindexed with an NP other than a "free-standing" pronoun, and in which the Φ-features exclude any coindexing problems.

(10)a. ashkii yiiłtsą́
boy 3Obj-1sSubj-saw
Focus Focus–Topic–V
"The boy, I (Topic) saw him"

b. ashkii shiiłtsą́
boy 1sObj-3Subj-V
Focus Topic–Focus–Verb
"The boy, he saw me (Topic)" [I (Topic) was seen by the boy]

In both (10a, b) it is the NP *ashkii* "the boy" that is third person and the new information in this context, carrying Focus. "The boy" is a familiar referent, but the speaker judges that he needs to identify this third person referent as opposed to other possible ones. A first or second person argument is old information, familiar in the context, and is backgrounded or Topical. The NP must be coindexed with a third person pronoun, regardless of the grammatical relation of that pronoun. As an operator in the Focus position, the NP has scope over all the Pronominal Arguments, and checking Φ-features and the associated Focus feature of the pronoun determines the coindexing.

First and second person PAs may not be coindexed with a "full" NP, only with a free-standing or Independent pronoun. There is evidence that these Independent pronouns are also not in argument positions, as follows.

1.3.1 Independent pronouns and the contrastive Focus operator position

É. Kiss (1995) groups Discourse Configurational languages into subtypes, depending on whether there are operator positions for Topic, Focus, or both, and adds that there are also languages where there is a structural position for Contrast:

> where contrast may cut across, and supersede the functions of topic and focus: there is a sentence initial position (in addition to a topic position) that can be occupied by a contrasted element of either topic or focus function. (É. Kiss 1995: 6)

Finnish (Vilkuna 1995) is an example of such a language. In Navajo, also, an NP may appear at a sentence-initial Contrast position.

This Contrast position carries Contrastive Focus (which É. Kiss (1998b) designates "Identificational" Focus). In Contrastive Focus, the speaker picks out an individual or a subset from some presupposed set, and therefore this selection is quantificational. É. Kiss notes that across languages, cleft sentences are often employed to mark Contrastive Focus. A Navajo sentence with a nominal in the Contrastive Focus position is the semantic equivalent of a cleft construction. As in Finnish, the Contrastive Focus operator supersedes the ordinary Topic and Focus operators.

The Navajo Independent pronouns have inherent Contrastive Focus; they appear in the sentence-initial Contrast position.

(11)a. yááłti'
1sSubj-spoke
Topic–Verb
"I spoke"

b. shí yááłti'
I 1sSubj-spoke
CF Topic–Verb
"I, [I'm the one who] spoke"

Thus, a construction such as (7) above, with no Independent pronouns, is the only way to produce a sentence without contrastive emphasis on a pronoun. The Independent Contrastive pronouns, like "full" NPs, do not have Case, and may bind any Pronominal Argument that matches in Φ-features. In (11b) the Subject argument in an intransitive has Contrastive Focus. In a transitive sentence, either argument, regardless of grammatical relation, may have Contrast. Example (12) shows that it is also possible to add an adverb along with the Independent pronoun in the Contrast projection.

(12)a. t'áá ni niisisdląąd
just YOU 2sObj-1sSubj-believed
ADV CF Foc–Top–V
"Just you, I believed you"

b. t'áá shí niisisdląąd
just I 2sObj-1sSubj-believed
ADV CF Foc–Top–V
"Just I, I believed you"

Ordinarily, it is impossible to include more than one Independent pronoun in a simple sentence. In (13) below, both arguments cannot be given Contrastive focus; they cannot simultaneously appear in the sentence-initial position.

(13) *shí ni niisisdląąd
I you 2sObj-1sSubj-believed
CF CF Foc–Top–V

However, there is also a Contrastive Focus particle *ga'* which may be added after an initial Contrastive pronoun, producing a construction with two Contrastive Focus positions.

(14) shí ga' ni niisisdląąd
I CF you 2sObj-1sSubj-believed
CF CF Foc–Top–V
"(As for) me, it was you I believed"

Otherwise, an Independent pronoun must appear first in an operator array, in the Contrast position, and the NP must appear second, no matter what the grammatical relation of the coindexed Pronominal Arguments.

(15)a. shí ashkii yishhozh
CF boy 3Obj-1sSubj-tickled
CF Focus Foc–Top–V
"I, I'm tickling the boy"

b. shí ashkii shiłhozh
CF boy 1sObj-3Subj-tickled
CF Focus Foc–Top–V
"Me, the boy is tickling me"

In ditransitive constructions, any argument may be given Contrastive Focus by adding an Independent pronoun. Note that the verb complex following the contrastive pronoun is identical in (16a–c).

(16)a. shí nich'į'yíł'aad
I 2s-to-3Obj-1sSubj-sent
CF OFoc–IFoc–Top–V
"I, I sent him to you"

b. ni nich'į'yíł'aad
YOU 2s-to-3Obj-1sSubj-sent
CF OFoc–IFoc–Top–V
"You, I sent him to you"

c. bí nich'į'yíł'aad
HE 2s-to-3Obj-1sSubj-sent
CF OFoc–IFoc–Top–V
"He, I sent him to you"

Unlike English, Navajo does not use intonation to mark Contrastive Focus. The examples in (13)–(16) provide evidence that Independent pronouns appear only in a Contrastive Focus operator position from which the pronoun has scope over all the Pronominal Arguments, and can bind any one of them that matches in Φ-features. This is evidence against assuming that the Independent pronouns occupy A-positions.

1.3.2 Operator binding of third person pronouns: the Navajo Animacy Hierarchy and the direct/inverse voice contrast

We have seen that first/second person arguments can be coindexed only with Contrastive Focus Independent pronouns. Otherwise, they are backgrounded and topical. In (10) above, we saw sentences with (a) a first person argument, and (b) a third person argument coindexed with an NP. In this situation, the third person argument has default Focus, as does the coindexed NP, regardless of the grammatical relation of the third person PA.

As with Independent pronouns, it is possible to add the Contrastive Focus particle *ga'* after an initial NP, and produce a construction equivalent to a cleft:

(17)a. ashkii ga' yiiłtsą́
boy 3Obj-1sSubj-saw
CF Focus–Topic–V
"It was the boy that I saw"

b. ashkii ga' shiiłtsą́
boy 1sObj-3sSubj-saw
CF Topic–Focus–V
"It was the boy that saw me"

Now let us consider constructions where all arguments are third person. If there is an NP preceding the inflected verb, how are we to coindex it? This NP, in its operator position, has scope over all the pronominal variables, and the arguments do not differ in Φ-features, providing for coindexing. However, (18) is not ambiguous, unlike the comparable English construction.

(18) ashkii yiyiiłtsą́
boy 3Obj-3Subj-saw
Focus Focus–Topic–V
"The boy_i, he_j saw him_i" [He saw the boy]

How do we know that the NP in (18) is to be coindexed with the Patient pronoun, rather than the Agent, in the inflected verb? Navajo solves this problem via the Animacy Hierarchy and the associated Direct/Inverse Voice alternation, which determine which of two third person pronouns is topicalized and which is focused. Recall that first and second person arguments are topicalized; they are familiar, backgrounded information (see example 10 for the first person). All first and second persons are animate and human, while some third persons are not; thus, 1, 2 can be said to outrank 3 on an animacy scale.

(19) 1, 2 > 3 Rank on the Animacy Scale

The feature of animacy can also be employed to rank arguments within the category of third person. Hierarchies across languages have two dimensions:

(20)a. There is some semantic/pragmatic feature according to which elements are ranked.
b. There is some syntactic manifestation of this ranking.

Without this syntactic manifestation, we would have no means of knowing that a ranking is present: (a) the Navajo Animacy Hierarchy ranks referents along a person/animacy scale; and (b) this ranking is manifested in constraints on topicalization. Speakers may vary to some extent in the details of the particular animacy scale that they observe (Hale 1973; Hale et al. 1977a). A fine-grained Animacy Scale observed by some Navajo speakers would include, for the third person:

(21) Supernatural > Adult Human > Child > Infant > Large Animal > Small Animal > Insect > Inanimate

The manifestation of the scale in Topic/Focus structure is invariant: the higher ranked referent must be topicalized. The ranking of first and second over third, along with a ranking within the third person with respect to animacy, are commonly seen semantic/pragmatic features of hierarchies across languages, often manifested in Case splits (Dixon 1994). The Navajo Animacy Hierarchy is manifested in constraints on topicality. These constraints provide a syntactic mechanism whereby, in constructions with all third person arguments, NPs and Pronouns

may be coindexed. It provides a means of distinguishing among third person arguments by marking their respective Topic/Focus features.

The Voice alternation is the well-known *yi-/bi-* alternation, another much discussed problem in the analysis of Navajo grammar (Hale 1972, 1973; Platero 1982) that can be readily resolved from the perspective of Topic/Focus structure. The Voice alternation operates over transitive constructions with all third person arguments exclusively. In these contexts, one of two third person Object pronouns must appear.

(22) The Direct/Inverse Voice Alternation
   i. Direct Voice: the third person *yi-* pronoun marks an ordinary focused Object.
   ii. Inverse Voice: the third person *bi-* pronoun marks a topicalized Object.[3]

Example (23) shows that the Voice alternation marks a contrast in the distribution of the features [+Topic] and [+Focus] at functional projections, providing crucial evidence in support of the claim that these projections carry Topic/Focus features. If the Voice contrast can apply – that is, if all arguments are third person – it must apply. It applies when no NP operators are present.

(23)a. yiztał
3Obj-3Subj-kicked DIRECT
Focus–Topic–V
"He kicked it"

b. biztał
3Obj-3Subj-kicked INVERSE
Topic–Focus–V
"He was kicked by it"

The Inverse is a transitive construction with two direct arguments. In the Direct transitive, the Agent is topical; in the Inverse, the Patient is topical. For this reason, the Passive is often the best available English gloss. NP order reflects the Animacy Hierarchy, because of the requirement that, when arguments differ along the Animacy scale, the higher-ranked one must be topicalized. Example (24b) below, where this constraint on topicality is not observed, is excluded; (24c) is employed instead.

(24)a. ashkii łį́į́' yiztał
boy horse 3Obj-3Subj-kicked DIRECT
Topic Focus *Foc*–Top–V
"The boy kicked the horse"

b. *łį́į́' ashkii yiztał
horse boy 3Obj-3Subj-kicked DIRECT
Topic Focus *Foc*–Top–V
Intended meaning: "The horse kicked the boy"

c. ashkii łį́į' biztał
boy horse 3Obj-3Subj-kicked INVERSE
Topic Focus *Top*–Foc–V
"The boy was kicked by the horse"

The NP order in (24a, c) is invariant, as is the order of the pronouns. The crucial factor is the inversion of the Topic/Focus status of the pronouns.

In the highly unusual ditransitive sentences including three nominals, the three NPs appear in the following scope order: TOPIC–OUTER FOCUS–INNER FOCUS. Again, since the higher-ranked referents must be topicalized, this NP order reflects the animacy hierarchy.

(25)a. asdzáán ashkii łį́į' yeiníłóóz
woman boy horse 3-to-3Obj-3Subj-led DIRECT
Topic OFocus IFocus OFoc–IFoc–Top–V
"The woman led the horse to the boy"

b. asdzáán ashkii łį́į' beiníłóóz
woman boy horse 3-to-3Obj-3Subj-led INVERSE
Topic OFocus IFocus Top–IFoc–OFoc–V
"The woman had the horse led to her by the boy"
[The boy led the horse to the woman]

The gloss for (25b) is inadequate. This sentence is neither a Passive nor a Causative. It is a ditransitive construction in which the Goal is topicalized, the Agent given primary Focus, and the Theme secondary Focus. It would be an appropriate reply to a question such as "What happened to the woman?" The Voice alternation in ditransitives operates over the Agent and Goal, the two highest arguments on the Animacy Hierarchy; the Theme does not participate. Now consider example (26), where only one NP appears.

(26)a. łį́į' yeiníłóóz
horse 3-to-3Obj-3Subj-led DIRECT
FOCUS OFoc–IFoc–Top–V
"She led the horse to him"

b. łį́į' beiníłóóz
horse 3-to-3Obj-3Subj-led INVERSE
FOCUS Top–IFoc–OFoc–V
"She had the horse led to her by him"

(Gender is not marked in Navajo pronouns; we use it here as a device to mark co- and disjoint reference.) In the interpretations shown in (26), pragmatic factors play a role. Our real-world knowledge leads us to expect horses to be led, not to lead people nor have people be led to them. The hearer judges that the NP *łį́į'* "horse" should be coindexed with the Theme, not the Agent or Goal pronoun. Compare (26) and (27):

(27)a. ashkii yeiníłóóz
boy 3-to-3Obj-3Subj-led DIRECT
FOCUS OFoc–IFoc–Top–V
"She led it to the boy"

b. ashkii beiníłóóz
boy 3-to-3Obj-3Subj-led INVERSE
FOCUS Top–IFoc–OFoc–Verb
"The boy led it to her"

Now the hearer judges that it is plausible that the NP *ashkii* "the boy," which is high on the Animacy scale, should be coindexed with the Agent or Goal pronoun, so this is the preferred interpretation. The reliance on pragmatics in determining the interpretations of (26) and (27) is evidence that the preverbal position is not an argument position, but a Focus position. When the single NP is judged not to refer to the Theme, it is the Voice alternation that determines whether the NP is to be coindexed with the Agent or Goal pronoun.

Additional evidence in support of the claim that the Voice alternation is based on topicality is the following: if the third person arguments are the same on the Animacy scale, the Voice contrast may be employed to mark Discourse topicality.

(28)a. yizts'o̱s
3Obj-3Subj-kissed DIRECT
Foc–Top–V
"She (Topic) kissed him (Focus)"

b. bizts'o̱s
3Obj-3Subj-kissed INVERSE
Top–Foc–V
"He (Topic) was kissed by her (Focus)"

Discourse topicality determines the use of the Voice alternation when the arguments do not differ in animacy rank. Example (28a) is a suitable reply to "What did she do?," while (28b) is a suitable reply to "What happened to him?" The Voice contrast is marked on the third person pronoun in the highest object functional projection, whether it is a Theme or a Dative Goal.

(29)a. yich'į́ yááłti'
3-to 3Subj-spoke DIRECT
Foc Top–V
"He spoke to her"

b. bich'į́ yááłti'
3-to 3Subj-spoke INVERSE
Top Foc–V
"She was spoken to by him"

To summarize: NPs bind third person pronouns according to their Topic/Focus features. A nominal in the Topic scope position binds a Topical pronoun; a nominal with Focus scope binds a Focused pronoun. Multiple NPs always appear in Topic/Focus order, following the Animacy Hierarchy, and the pronouns always appear in an order determined by their grammatical relation. In earlier examples we have looked at coindexing in ditransitive constructions; example (30) shows simple transitive sentences with a nominal in a Focus position. In (30a), the Agent pronoun is topicalized; in (30b), the Patient pronoun is topicalized.

(30)a. ashkii yizts'o̱s
boy 3Obj-3Subj-kissed DIRECT
Focus Foc–Top–V
"She (Topic) kissed the boy (Focus)"

b. ashkii bizts'o̱s
boy 3Obj-3Subj-kissed INVERSE
Focus Top–Foc–V
"She (Topic) was kissed by the boy (Focus)"

In (31a) below, the Agent pronoun is topicalized; in (31b) we see a topicalized Dative pronoun.

(31)a. ashkii yich'į́ yááłti'
boy 3-to 3Subj-spoke DIRECT
Focus Foc Top–V
"She (Topic) spoke to the boy (Focus)"

b. ashkii bich'į́ yááłti'
boy 3-to 3Subj-spoke INVERSE
Focus Top Foc–V
"She (Topic) was spoken to by the boy (Focus)"

Finally, the examples in (32) show how coindexing proceeds in sentences with two NPs of equal rank, making use of the Voice alternation. Here the Animacy Hierarchy is not a factor, and NP order reflects discourse topicality.

(32)a. at'ééd ashkii yizts'o̱s
girl boy 3Obj-3Subj-kissed DIRECT
Topic Focus Foc–Top–V
"The girl (Topic) kissed the boy (Focus)"

b. at'ééd ashkii bizts'o̱s
girl boy 3Obj-3Subj-kissed INVERSE
Topic Focus Top–Foc–V
"The girl (Topic) was kissed by the boy (Focus)"

To conclude: there are two distinct domains of the Navajo sentence with respect to the ordering of constituents. NPs, in operator positions, are ordered according

to Information Structure and the related Animacy Hierarchy; Pronouns, in argument positions, are ordered according to grammatical relations. The central role of the Voice alternation and the Animacy Hierarchy in Navajo are made possible by the Discourse Configurational properties of the language, and the fact that operator scope relations are overt in the syntax.

There is an extensive list of quantifiers, negative, modal, and mood particles, in Navajo that occupy scope positions within the operator array above the inflected verb. An adequate discussion of these particles is outside the scope of this paper, and we refer the reader to Perkins (1978), and Young and Morgan (1987, 2000).

For comparison, see É. Kiss (this volume) for the identification of quantifiers in Hungarian occurring in the left-peripheral operator domain, along with NPs.

1.3.3 Adverbial quantification

Jelinek (1995) argues that there is no Determiner Quantification in Pronominal Argument languages; Faltz (1995) argues also that this is the case in Navajo. D. Lewis (1975) identifies unselective adverbial quantification as a language universal property. In (33a) below, the adverbial quantifier has scope over the object pronoun; in (33b), it has scope over the verb "blacken, dye black."

(33) ałtso yiish<u>íí</u>'
ALL 3Obj-1sSubj-blacken (with dye)
a. "I dyed them all black"
b. "I dyed it completely black"

Example (34), where the quantifier appears between two NPs, permits two interpretations:

(34) má'ii ałtso dibé baayijah
coyote ALL sheep 3:OBL-3plSubj-ran away
a. "The sheep were chased by all the coyotes"
b. "All the sheep were chased by the coyotes"

This is evidence that the quantifier is in an adverbial position. When the quantifier precedes the first NP or follows the second, it has scope only over the adjacent NP. Numerals and "weak" quantifiers such as *t'óó ahoyói* "many, numerous" show the same scope ambiguities as *ałtso* "all" in contexts such as (34).

We noted above that Navajo has no strong Determiner quantifiers corresponding to *each*, *every*, *most*, *no*. This is characteristic of Pronominal Argument languages, and is consistent with the claim that NPs are not in argument positions. Determiner quantifiers have scope over simple indefinite nouns in argument positions.

1.3.4 Adjoined relative clauses

There are no embedded clauses in Navajo – only adjoined subordinate clauses. This also follows from the fact that only pronouns occupy argument positions in

the Navajo clause. Navajo relative clauses are adjoined, and of the "internally headed" variety. They may optionally include NPs in operator positions. Problems with the binding theory arise if we assume that these relatives are in argument positions. Platero (1978), following work by Hale et al. (1977a), draws attention to the problems raised by the following construction type:

(35) adą́ą́dą́ą́' ashkii at'éédyiyiiłtsą́-nę́ę́ yidoots'o̜s
yesterday boy girl 3Obj-3Subj-saw-REL 3Obj-3Subj-will kiss
"The boy who saw the girl yesterday will kiss her"

In the complex sentence in (35), the arguments of the relative clause and the following main clause are obligatorily coreferent. If we assumed that the NP *ashkii* "the boy" is the main clause subject, and that the relativized and main clause verbs show agreement with this subject, we could account at least for coreference of the subject arguments across the clauses. The problem is that both the NPs are internal to the relative clause, which is under the scope of the temporal adverb *adą́ą́dą́ą́'* "yesterday," while the main clause has Future time reference. On a "pro-drop" and agreement analysis, we would have to assume an initial pro (the head of the relative) that would be coreferential with the NP *ashkii* within the relative clause.

(36) *[pro [adą́ą́dą́ą́' ashkii at'éédyiyiiłtsą́-nę́ę́]] pro yidoots'o̜s

This structure violates Condition C of the Binding theory, and should exclude the reading given. Suppose, however, that the entire relative clause, a derived nominal, is an adjunct that binds a pronoun in the main clause, as in (37).

(37) "The boy$_i$ who saw the girl$_j$ yesterday, he$_i$ will kiss her$_j$"

In (37), Condition C is irrelevant, and we must account for coreference of both arguments across the two clauses in some other way. Our claim is that this coreference follows from the fact that the Pronominal Arguments in (35) function as discourse anaphors. In each clause, the verb is inflected for both arguments. Within the relative clause, the NPs are in operator positions, and bind the coindexed Pronominal Arguments. The relative clause in turn is an adjunct that provides discourse antecedents for the main clause pronouns: in sequences of two transitive clauses with all third person arguments, there is obligatory coreference of these arguments across clauses (Willie 1991).

Since a relative clause by definition is predicated of some main clause argument, we have an account of the obligatory coreference of the head of the relative with one of the two arguments of the main clause. This obligatory coreference applies also when no nominals are present.

(38) adą́ą́dą́ą́' yiyiiłtsą́-nę́ę́ yidoots'o̜s
yesterday 3Obj-3Subj-saw-REL 3Obj-3Subj-will kiss
"He$_i$ who saw her$_j$ yesterday, he$_i$ will kiss her$_j$"

The obligatory coindexing shown in (38) does not apply if a nominal appears in the second clause, introducing a new referent as antecedent.

(39) adą́ą́dą́ą́' yiyiiłtsą́-nę́ę́ Baa' yidoots'o̜s
yesterday 3Obj-3Subj-saw-REL Baa' 3Obj-3Subj-will kiss
"He$_i$ who saw her$_j$ yesterday, he$_i$ will kiss Baa'$_k$"

Temporal/Conditional and other subordinate clause types are also adjoined; see Willie (1991).

1.3.5 Evidence from Northern Athabaskan

While Navajo and the other Apachean (Southern Athabaskan) languages have Pronominal Arguments, the Northern Athabaskan languages are not PA languages. In the Northern languages, NPs are in argument positions. There is noun incorporation and Determiner Quantification. There is no Direct/Inverse Voice alternation; in transitive sentences with object NPs there are no object pronouns to mark the voice contrast. The fact that these features form a cluster that is uniformly distributed is evidence in favor of the analysis proposed here.

In the Northern Athabaskan languages, there is subject AGR and "pro-drop." Important for our purposes is the fact that there are object clitics that are mutually exclusive with object NPs, and thus do not serve as variables bound by an NP. In this respect, Northern Athabaskan is parallel to other object clitic languages. These differences between the Northern and Southern branches represent parametric variation across the language family. Evidence for this claim is provided by a continuum of differences with respect to the distribution of object clitics – the kind of grade in feature differences that is often seen as a result of historical change across a language family. Crucially, this continuum involves the feature of definiteness.

(40) The distribution of NPs with respect to definiteness within the Athabaskan language family:
   i. Slave/Dogrib (Northern Athabaskan):
   All NPs, definite and indefinite, may appear in Object positions, and are mutually exclusive with object clitics.
   ii. Babine-Witsuwit'en (Northwestern Athabaskan):
   Only indefinite NPs are in Object positions, and are mutually exclusive with object clitics.
   iii. Southern Athabaskan (Apachean):
   No NPs appear in Object positions, and none are mutually exclusive with object clitics.

We have seen that bare nouns in Navajo have a definite interpretation. There are no simple indefinite nouns, and all derived NPs are either definite/specific or (in the case of NPs containing the particle *léi'*) ambiguous between "specific indefinite" and indefinite interpretations.

Southern Athabaskan and Pacific Athabaskan are outliers of the main body of Athabaskan, which comprises some 22 languages spoken in Alaska and Canada. It appears that Apachean is the most innovative division, where object clitics are present in all transitive clause types, whether or not any coindexed NPs are present. The next examples document the mutual exclusiveness of object NPs and object clitics in Northern Athabaskan, as shown by Rice (1989) for Slave and by Saxon (1986) for Dogrib. Compare Dogrib and Navajo:

Dogrib

(41)a. sú tuwele k'ágoweneli?
? soup 2sSubj-taste
"Have you tasted the soup?"

b. sú bek'ágoweneli?
? 3Obj-2sSubj-taste
"Have you tasted it?"

Navajo

(42)a. 'atoo' yínídlą́ą́'-ísh?
soup 3Obj-2sSubj-eat-?
"Did you eat the soup?"

b. yínídlą́ą́'-ísh?
3Obj-2sSubj-eat-?
"Did you eat it?"

In Dogrib, the object noun and the object clitic are mutually exclusive (41). In contrast, the Navajo verb always carries the object clitic, whether or not the nominal is present (42). Slave and Dogrib do not have the Voice alternation as seen in Navajo (Willie 2000). Possessive constructions in the two languages differ also.

Slave

(43)a. Charlie lı̨ -e
Charlie dog-POSS
"Charlie's dog"

b. be -lı̨ -e
3POSS-dog-POSS
"his dog"

Navajo

(44)a. Charlie bi -ł́íí'
Charlie 3POSS-horse
"Charlie's horse"

b. bi -ł́íí'
3POSS-horse
"his horse"

The Possessed suffix *-e* in (43) does not vary with person. The pronominal Possessor *be-* is absent in Slave when the Possessor nominal is present (43). In Navajo, the pronoun *bi-* is always present (44). Complex Possessive NPs also are confined to the operator array in Navajo.[4]

Navajo has no productive noun incorporation, since nouns are not in argument positions from which they could move and incorporate into the verb (Jelinek 1989). Since there are NPs in argument positions in Slave, we might expect to see noun incorporation in the language. Rice (1989) includes some Slave constructions that she identifies as showing noun incorporation, as follows:

(45) ni-yati-dé-ní-'ó
Preverb–Incorporate–Qualifier–Situation Aspect–Perf–Stem [verb]
"She blamed (Lit.: placed words)"

The noun *yati* "words" is indefinite, as incorporated nouns across languages are. This nominal appears in an object position within the verb complex. It is not in an operator position, and there is no Pronominal Argument to serve as a variable

for it to bind. The fact that indefinite nominals can incorporate into the predicate in Slave is just what we would predict, since they are arguments.

Gunlogson (forthcoming) shows that NPs cooccur with object pronouns in Babine-Witsuwet'en only where the NPs are definite. Examples of the contrast include:

(46)a. hida dinï yinılh'ën
moose man 3-at-3s-looks
"The moose is looking at the man"

b. dinï hida nılh'ën
man moose 3s-looks at
"The man is looking at a moose"

Example (46a) shows that this language does not have the kind of Animacy Hierarchy seen in Navajo. The object pronoun *yi-* does not appear in (46b) and the object NP is given an indefinite reading. Compare also:

(47)a. didinï yighiyelhdic
REFL-man 3s-about-3s-talks
"She's talking about her man"

b. awilhyïz dinï ghiyelhdic
always man 3s-talks-about
"She always talks about men"

Example (47a) includes a possessed noun, which is definite/specific; an object prefix is present. Example (47b) has an indefinite plural reading of the noun "man" and no object prefix. The fact that the cooccurrence of NPs and object pronouns is controlled by the feature of definiteness in Babine-Witsuwit'en lends support to the claim that the definiteness of NPs also underlies the contrast between Northern and Southern Athabaskan.[5]

To summarize, the data presented in section 1.3 relate to a number of familiar problems in Navajo syntax that may be resolved if we assume that NPs are in operator scope positions reflecting Information Structure, binding pronominal variables in argument positions in the clause. We omit for reasons of space a discussion of other traits of Navajo that are consistent with our analysis: there is no PRO in Navajo, no non-finite verb forms, no "control" phenomena, no "gaps," VP ellipsis, or other evidence that nominals are in argument positions. Reflexives and Reciprocals are invariant prefixes that derive Intransitive constructions. They appear at Object projections in the inflected verb, but cannot be bound by an NP – they are bound within the functional array.

1.4 Conclusions

We have argued that Navajo is a Pronominal Argument language, where bare nouns are definite, and where NPs occupy positions in the overt syntax that

correspond to their LF distribution. NPs are operators that bind variables in argument positions. We have shown that the order of the nominal operators reflects Topic/Focus structure (which is determined by the Animacy Hierarchy where the arguments are unequal in rank); in contrast, the pronouns are ordered according to their grammatical relations. Therefore, Navajo is a Discourse Configurational language (Willie and Jelinek 2000). We have shown that an NP in a left-peripheral position may be in the Contrast operator position, regardless of the grammatical relation of the pronoun it binds; that the Direct/Inverse Voice alternation determines operator scope when there are multiple third person arguments; and, that pragmatic considerations can influence the interpretation of nominal scope. We have identified unselective Adverbial Quantification in the language, and accounted for the absence of Determiner Quantification. We have argued that Navajo belongs to a parametric class of languages that exhibits the following traits at spellout:

(48)a. In Discourse Configurational Languages, nominals and quantifiers are in operator scope positions at spellout.
b. In Pronominal Argument languages, these operators c-command and bind overt pronominal variables in argument positions at spellout.

If a language has any NPs at all in argument positions, then it is not a Pronominal Argument language. Many languages have Subject AGR, and Object NPs and object clitics in alternation, as in Romance, Arabic, and Northern Athabaskan. And, all languages have some pronominal arguments, with optional NP adjuncts, as in:

(49) The doctor, he tells her what to do

In contrast, Navajo never has NPs in Argument-positions, and the distribution of NPs and Pronominal Arguments in the overt syntax in Navajo is in accordance with their type-theoretic properties, and with their LF distribution as stated in Diesing's Mapping Hypothesis. This distribution is an available parametric option in Universal Grammar.

Notes

1 Bare nouns serving as adjuncts to the object arguments of the "handling" verbs are also interpreted as definite. When there is no adjunct, an indefinite object is presupposed.
2 For a more recent analysis of the morphosyntax of the Navajo verb, see Hale (2001).
3 See discussion in Thompson (1996) on the traditional identification of *yi-* as an Obviative pronoun, and *bi-* as a Proximate pronoun in the literature on Athabaskan. In Athabaskan languages that lack the Voice alternation, the pronouns have these functions (Willie 2000).
4 See Willie (2000) for an analysis of the extension of the *yi-*/*bi-* alternation to Possessive constructions in Navajo. Horseherder (1998) gives an alternative analysis.
5 Across languages, there are constructions where definite versus indefinite objects differ in syntax, suggesting that there is a process we might call "abstract incorporation" of

indefinites. For example, in Eastern Algonkian, there is an "objective" form of the inflected verb, including object inflection, that occurs with definite object NPs. In Turkish and Finnish, indefinite objects are not Case-marked, while definites are (see Kornfilt, this volume). Persian also makes a distinction between (non-specific) indefinite objects and their definite counterparts in that only the latter is marked for Case (see Karimi, this volume). In the Austronesian family, there are languages where indefinite objects produce an intransitive clause.

2

Argument Scrambling, Operator Movement, and Topic Movement in Hungarian

Katalin É. Kiss

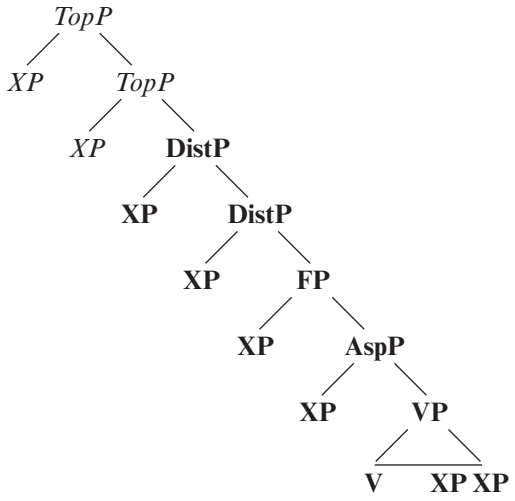
2.1 Introduction

The aim of this chapter is to demonstrate the different nature of the freedom of word order in three fields of the Hungarian sentence, and to discuss the descriptive problems that the different types of free word order raise in the Minimalist framework of Chomsky (1995, 1999).

The Hungarian sentence falls primarily into a topic part and a predicate part, which occupy the specifier and complement positions of a Top projection. The sentence can contain more than one topic constituent, presumably because the abstract Top head can have more than one specifier. The minimal predicate is a VP consisting of a V followed by its arguments. The VP is usually preceded by an aspectualizer sitting in the specifier of an Aspectualizer Phrase (AspP). AspP can be extended by a focus into a Focus Phrase (FP), which can be further extended by one or more distributive quantifiers into a Distributive Quantifier Phrase (DistP). Word order, which is independent of the grammatical functions of the constituents in every section of the sentence, is determined by different factors, and has different consequences in the argument field (the postverbal section of the predicate phrase), the operator field (the preverbal section of the predicate phrase, printed in bold in example (1)), and the topic field (the pre-predicate part of the sentence, printed in italic in example (1)).

I am grateful to an anonymous reviewer, and to the participants of the 2000 Tucson Conference on Scrambling, for helpful comments and suggestions.

(1)



Section 2.2 will discuss the word order of the argument field, which will turn out to be essentially free, influenced only by the specificity feature of the arguments to a certain extent. It will be argued on the basis of evidence involving Binding Principle C, WH-movement/Superiority, Weak Crossover, and idiom interpretation that the postverbal free order is the consequence of a flat VP in which the arguments mutually c-command each other.

Section 2.3 examines word order in the operator field. In the preverbal section of the Hungarian sentence, constituted by a strictly ordered hierarchy of aspectualizer, focus, and distributive quantifier positions, the placement of constituents determines both their operator function and their scope. An intricate pattern of obligatoriness and optionality raises difficult questions concerning the trigger of movement, and the nature of the morphological features involved. The interaction of operator movement and binding will also be examined. The expected reconstruction effect will be shown to be blocked if the direction of scope relation between two operators is the opposite of the direction of the binding relation between them.

In section 2.4 movement into the initial topic field of the Hungarian sentence will be analyzed. Though topic movement is basically an A′-movement, topics will turn out to differ from operators in various respects. Topics are associated with a [+referential], [+specific] interpretation – hence the relative order of topic constituents has no scopal effect. Since topics are outside the scope of operators, their reconstruction for binding interpretation is never blocked by scope relations. Topicalized quantifiers will be claimed to function as names of cardinality properties. Their apparent narrow scope will be argued to be an epiphenomenon.

Finally, section 2.5 summarizes the differences between the free, or variable word order found in the three fields of the Hungarian sentence, and attempts to answer the question of whether the phenomena identified are unique, typical, or universal.

2.2 Scrambling in the Argument Field

In Hungarian, argument order is flexible in every section of the sentence; however, its flexibility is of a different nature in the different areas. Word order in the postverbal argument field is genuinely free in the sense that no change in the postverbal argument order leads to ungrammaticality. There are preferred orders though: if the postverbal field contains both a [+specific] argument, denoting a given referent, and a [–specific] argument, introducing a new referent, the [+specific] [–specific] order sounds more unmarked than the [–specific] [+specific] order.

(2)a. Tegnap fel-hívta Péter Marit
yesterday up-called Peter Mary.ACC
"Yesterday Peter called up Mary"
b. Tegnap felhívta Marit Péter

(3)a. Tegnap fel-hívott Péter egy ügyvédet
yesterday up-called Peter a lawyer.ACC
"Yesterday Peter called up a lawyer"
b. ?Tegnap felhívott egy ügyvédet Péter

(4)a. Tegnap fel-hívta Pétert egy ügyvéd
yesterday up-called Peter.ACC a lawyer
"Yesterday a lawyer called up Peter"
b. ?Tegnap felhívta egy ügyvéd Pétert

According to Varga (1981), the constraint at work in (2)–(4) is prosodic: unstressed constituents must be adjacent to the verb. The work of Diesing and Jelinek (1995), Basilico (1998), Jelinek (2000), and others, on the other hand, suggests that what we attest in (3a) and (4a) may be predicate-phrase-internal topicalization, which is a cross-linguistic phenomenon motivated by the need to remove specific arguments from inside the lexical core of the VP (the domain of existential closure).

The question of whether or not the (a) word order variants in (2)–(4) are derived by internal topicalization is independent of whether or not the different word order possibilities can be traced back to an invariant, hierarchical underlying structure. In fact, as I argued in É. Kiss (1987, 1994), the usual symptoms of an underlying subject–object asymmetry are missing in Hungarian. Namely,

(i) the subject and the object have identical extraction possibilities.

(5)a. Melyik fiú melyik lányt hívta fel?
which boy which girl.ACC called up
"Which boy called up which girl?"
b. Melyik lányt melyik fiú hívta fel?

(6)a. Melyik fiú(t) nem tudod, hogy melyik lányt hívta fel?
which boy(–ACC) not know.you that which girl.ACC called up
"Which boy do you wonder called up which girl?"

b. Melyik lányt nem tudod, hogy melyik fiú hívta fel?
"Which girl do you wonder which boy called up?"

Apparently none of the examples in (5) and (6) violates the Minimal Link Condition. This is only possible if the subject and the object are equally close to the left periphery of the sentence, i.e. if both the subject and the object are extracted to WH-positions from inside the VP.

(ii) The subject, object, and other arguments interact with Binding Principle C in identical ways.

(7)a. *Tegnap fel-hívta Péter$_i$ anyja *pro*$_i$/őt$_i$
yesterday up-called Peter's mother *pro*/him
Intended meaning: "Yesterday Peter$_i$'s mother called him$_i$ up"
b. *Tegnap fel-hívta *pro*$_i$/őt$_i$ Péter anyja$_i$

(8)a. *Tegnap fel-hívta *pro*$_i$ Péter$_i$ anyját
yesterday up-called *pro* Peter's mother
Intended meaning: "Yesterday he$_i$ called up Peter$_i$'s mother"
b. *Tegnap felhívta Péter$_i$ anyját *pro*$_i$

The disjoint reference between the object and the Genitive specifier of the subject in (7a, b) indicates that in the Hungarian VP not only the subject c-commands the object, but also the object c-commands the subject, i.e. they are sister nodes in a flat VP. A change in their linear order does not affect interpretation either.

(iii) No Weak Crossover effect is attested either between a subject operator and a pronoun embedded in the object, or between an object operator and a pronoun embedded in the subject.

(9)a. Ki$_i$ hívta fel az *pro*$_i$ anyját?
who called up the *pro*'s mother.ACC
"Who$_i$ called up his$_i$ mother?"

b. Kit$_i$ hívott fel az *pro*$_i$ anyja?
whom called up the *pro*'s mother
"Who$_i$ did his$_i$ mother call up?"

If we derive the Weak Crossover effect from the Bijection Principle, the lack of Weak Crossover in (9a, b) will only fall out if both the subject variable c-commands the object, and the object variable c-commands the subject, i.e. if they mutually c-command each other. (Then both (9a, b) yield the Logical Form (LF) "for which x, called up x x's mother", in which the interrogative operator

variable-binds only the first occurrence of the pronoun, whereas the Genitive pronoun is A-bound by the variable.)[1]

(iv) In idioms the referential argument is not necessarily identical with the subject. The subject and the verb can also form an idiomatic unit, with the object or the oblique argument representing the referential argument.

(10)a. Jánosra rájár a rúd
John.at goes the shaft
"The shaft goes at John" [It is rough on John]

b. Jánost elkapta a gépszíj
John.ACC caught the driving-belt
"The driving belt has got John" [John has been roped in]

c. Jánost eszi a fene Mari után
John.ACC eats the plague Mary after
"The plague is eating John for Mary"
[John wants to have Mary so badly that he is quite mad]

If the non-idiomatic variable were to be represented invariably by the subject, this fact would serve as evidence for a hierarchical structure in which the subject asymmetrically c-commands the object – assuming that the steps of semantic composition correspond to those of syntactic composition. In fact, the non-idiomatic variable can be of any grammatical function; it merely has to be topicalized. This fact is compatible with the assumption that the arguments of the V are generated as sisters to each other, and any of them can gain prominence over the others if it undergoes Topicalization.

A subject/non-subject asymmetry has been attested in two areas of Hungarian grammar: anaphora and control. These phenomena, however, are presumably determined universally by a thematic hierarchy of arguments – rather than by c-command relations. Or, if they are determined structurally, we lose the explanation of the distribution of grammaticality in (1)–(9).

On the basis of the facts surveyed above (and many more) I proposed in É. Kiss (1994) that the arguments of a verb be generated in posthead position in a random order, as sisters to each other. It was the base-generation of postverbal arguments in a random order that I called *scrambling*. Notice that my analysis is not necessarily incompatible with the restrictive theory of syntax put forth in Kayne (1994). Kayne's Linear Correspondence Axiom essentially states that asymmetric c-command imposes a linear ordering of terminal elements. In my proposal the Hungarian V and its arguments, including the subject, are generated as sister nodes, mutually c-commanding each other. Then the V is raised to various functional heads (Tense, Mood, AGR, etc.), from where it asymmetrically c-commands its arguments, and also precedes them, as predicted by the Linear Correspondence Axiom. The mutual c-command among the postverbal arguments determines no linear sequence; hence they can be pronounced in any order.

2.3 Movement to the Operator Field

Whereas the variation in postverbal word order is felt by native speakers to be essentially free, preverbal word order clearly affects interpretation. Constituents in the different preverbal positions assume different operator functions, and they take scope over the domain they have come to c-command through movement. The operations filling the preverbal positions are clear instances of operator movement (cf. É. Kiss 1987; Horvath 1986; Brody 1990; Szabolcsi 1997; etc.); nevertheless, their description raises problems in the Minimalist framework, where movement is triggered by morphological features, and is never optional.

2.3.1 Movement to [SPEC, AspP]

In non-stative sentences the verb is preceded by an aspectualizer: a constituent specifying the aspect of the VP. The aspectualizer is a designated complement or adjunct predicate selected by the V. It is a phrase consisting of a mere head, which is preposed to [SPEC, AspP] via phrasal movement, but is incorporated into the V raised to Asp in phonology (unless the V has been moved on from Asp to a higher functional projection). The most common aspectualizer is the so-called verbal prefix, an adverb, which typically both modifies the lexical meaning of the verb, and perfectivizes it – see (11a, c). Alternatively, the aspectualizer is a bare noun functioning as a goal (11b), a theme (11d, f, g), or a result state (11e), which, by getting incorporated into a process verb, turns it into a potentially perfective verb of accomplishment.

(11)a. János $[_{AspP}$ el$_i$ $[_{Asp'}$ ment$_j$ $[_{VP}$ t_j t_i a színházba]]]
John away went the theater.to
"John went off to the theater"

b. János $[_{AspP}$ színházba$_i$ $[_{Asp'}$ ment$_j$ $[_{VP}$ t_j t_i]]]
John theater.to went
"John went to (some) theater"

c. János $[_{Asp}$ meg$_i$ $[_{Asp'}$ szervezett$_j$ $[_{VP}$ t_j t_i egy konferenciát]]]
John PREF organized a conference
"John organized a conference"

d. János $[_{AspP}$ konferenciát$_i$ $[_{Asp'}$ szervezett$_j$ $[_{VP}$ t_j t_i]]]
John conference.ACC organized
"John organized (some) conference"

e. János $[_{AspP}$ ketté$_i$ $[_{Asp'}$ vágta$_j$ $[_{VP}$ t_j t_i a kenyeret]]]
John two.into cut the bread.ACC
"John cut the bread into two"

f. János $[_{AspP}$ kenyeret$_i$ $[_{Asp'}$ vágott$_j$ $[_{VP}$ t_j t_i]]]
John bread.ACC cut
"John cut (some) bread"

g. [$_{AspP}$ Énekkar$_i$ [$_{Asp'}$ alakult$_j$ [$_{VP}$ t_j t_i]]]
choir.NOM formed
"(Some) choir was formed"

Although the semantic role of the aspectualizer in specifying the aspect of the predicate is not always well understood (for some discussion, see Pinon 1995), its syntactic behavior appears to be that of an operator. Namely, movement to [SPEC, AspP] is not necessarily local; under certain conditions it can also cross the boundary of a finite clause, as is typical of operator movement:

(12)a. János [$_{AspP}$ ebédet$_i$ [$_{Asp'}$ akarja$_j$ [$_{VP}$ t_j [$_{CP}$ hogy főzzünk t_i]]]]
John lunch.ACC wants that cook.SUBJ.1pl
"John wants that we cook lunch"

b. [$_{AspP}$ Be$_i$ [$_{Asp'}$ kellene$_j$ [$_{VP}$ t_j [$_{CP}$ hogy végre fejezd
up need.COND.3sg that at.last finish.SUBJ.2sg
t_i a munkádat]]]]
your work.ACC
"It would be necessary that you finish up your work at last"

It is matrix verbs not selecting an aspectualizer that allow the aspectualizer of their sentential complement to take matrix scope by moving up to the matrix [SPEC, AspP] position.

If we adopt the Minimalist framework of Chomsky (1995, 1999), in which movement is triggered by the need of feature checking, then movement to [SPEC, AspP] presumably involves the checking of the uninterpretable aspectual (e.g. [+perfective]) feature of the Asp head. The designated constituent to be moved to [SPEC, AspP] is assigned an aspectual feature in the lexicon, by the verb by which it is selected.

2.3.2 Movement to [SPEC, FP]

The minimal predicate, a VP extended into an AspP, can be dominated by a Focus Phrase (FP) (see (1) above). If FP is projected, V moves up to F crossing the aspectualizer in [SPEC, AspP]. The focus constituent is sitting in [SPEC, FP], left-adjacent to the V in F. The focus functions as the value of an operator expressing exhaustive identification. This operator operates on a set of individuals present in the domain of discourse (those for which the VP can potentially hold), exhaustively identifying the subset for which the VP actually holds. The phrase in [SPEC, FP] names the subset identified.

(13)a. [$_{FP}$ PÉTER$_i$ [$_{F'}$ hívta$_j$ [$_{AspP}$ fel t_j t_i Marit]]]
Peter called up Mary.ACC
"It was Peter who called up Mary"

b. [$_{FP}$ MARIT$_i$ [$_{F'}$ hívta$_j$ [$_{AspP}$ fel t_j t_i Péter]]]
"It was Mary who Peter called up"

The presence of the operator performing exhaustive identification can be pointed out by various semantic tests – see Szabolcsi (1981). A test is based on minimal pairs of the following type:

(14)a. Péter MARIT értesítette
Peter Mary.ACC notified
"It was Mary who Peter notified"

b. Péter MARIT ÉS ÉVÁT értesítette
Peter Mary.ACC and Eve.ACC notified
"It was Mary and Eve who Peter notified"

If the (a) sentence is not a logical consequence of the (b) sentence, i.e. if the two sentences cannot be simultaneously true – as is the case in (14), then their non-identical arguments (*Marit* versus *Marit és Évát*) express exhaustive identification.

Exhaustive identification is a type of quantification performed on an unordered set of distinct individuals – hence any argument or adjunct denoting an individual can appear in [SPEC, FP] as the value of the exhaustive identification operator, or in another terminology, as the focus of the sentence. In fact, non-individual denoting adverbs and predicative bare nouns can also be moved there – see (15a, b), because, as shown by Szabolcsi (1983), they can be individuated, i.e. looked upon as distinct members of a set of relevant alternatives.

(15)a. János [$_{FP}$ PONTATLANUL [$_{F'}$ írta$_i$ [$_{AspP}$ le t_i a telefonszámot]]]
John inaccurately put down the phone-number
"It was inaccurately that John put down the phone number"

b. János [$_{FP}$ GAZDAG LÁNYT$_i$ [$_{F'}$ vett$_j$ [$_{AspP}$ el t_j t_i]]]
John rich girl.ACC married PREF
"It was (some) rich girl that John married"

Exhaustive identification, whose value the constituent in [SPEC, FP] represents, has scope over the domain c-commanded by the constituent in [SPEC, FP], and enters into scope relations with other scope-bearing elements of the sentence. For example, in (16a) exhaustive identification takes scope over the VP-internal universal quantifier, whereas in (16b) the universal quantifier moved to [SPEC, DistP] takes scope over exhaustive identification. In (16c) the focus is moved long distance, as a result of which exhaustive identification has scope over matrix negation and the matrix VP-internal quantifier.

(16)a. JÁNOS hívott fel mindenkit
John called up everyone.ACC
"It was John who called up everyone"

b. Mindenkit JÁNOS hívott fel
everyone.ACC John called up
"For everyone, it was John who called him up"

c. JÁNOST nem akarta senki, hogy meg-hívjuk
John.ACC not wanted nobody that PREF-invite.we
"It was John who nobody wanted that we invite"

In addition to having quantificational semantics and occupying a scope position, the focus also has a further operator property: it "reconstructs" for binding, i.e. it is the root of the focus chain that participates in binding interpretation. Examples (17a, b) illustrate reconstruction for Binding Condition A, (17b) illustrates reconstruction for Binding Condition B, whereas (17c) illustrates reconstruction for Binding Principle C.

(17)a. PÉTER$_i$ festette le önmagát$_i$
Peter painted PREF himself.ACC
"It was Peter who portrayed himself"

b. János$_i$ ŐT$_i$/ÖNMAGÁT$_j$ szeretné, ha Péter$_j$ le -festené t_j
John him/himself would-like if Peter PREF-painted
"As for John$_i$, it is him$_i$/himself$_j$ that he would like if Peter$_j$ portrayed"

c. *PÉTER$_i$ APJA festette le őt$_i$/*pro*$_i$
Peter's father painted PREF him/*pro*
Intended meaning: "It was Peter$_i$'s father who portrayed him$_i$"

At the same time, a focus containing a bound variable is hard, or impossible, to reconstruct if the binder of the variable is an operator in the scope of the focus.

(18)a. ??CSAK AZ *pro*$_i$ APJÁT hívta fel mindenki$_i$
only the *pro*'s father.ACC called up everybody
"It was only his$_i$ father that everybody$_i$ called up"

b. *CSAK AZ *pro*$_i$ APJA hívott fel mindenkit$_i$
only the *pro*'s father called up everybody.ACC
Intended meaning: "It was only his$_i$ father who called up everybody$_i$"

(Examples (18a, b) are only acceptable if *mindenki* "everybody" is stressed, in which case it has wide scope, and the sentence means: "For everybody, it was his father that he called up.") The non-existent readings of (18a, b) are obviously circular: the interpretation of the universal quantifier depends on the focus, which takes scope over it, whereas the interpretation of the focus depends on the universal quantifier, which binds part of it. (On the grammaticality difference between (18a, b), indicating a slight subject–object asymmetry, see note 1.)

If analyzed in the Minimalist framework, focus movement involves the checking of a [+Focus] feature – see Brody (1990, 1995). Certain types of constituents, e.g. interrogative pronouns, negative existential quantifiers, *only* phrases, adverbs of negative frequency or negative degree, must land in [SPEC, FP]; hence they obviously have an intrinsic [+Focus] feature.

(19)a. [$_{TopP}$ Péter [$_{FP}$ KIT hívott fel?]]
Peter whom called up
"Who did Peter call up?"
b. *Kit Péter fel-hívott?
c. *Péter fel-hívott kit?

(20)a. [$_{TopP}$ Péter [$_{FP}$ KEVÉS LÁNYT hívott fel]]
Peter few girl.ACC called up
"Peter called up few girls"
b. *Péter fel-hívott kevés lányt

(21)a. [$_{TopP}$ Pétert [$_{FP}$ CSAK MARI hívta fel]]
Peter.ACC only Mary called up
"Only Mary called Peter up"
b. *Pétert fel-hívta csak Mari

The (b) examples under (19)–(21) are ungrammatical because the intrinsically [+Focus]-marked constituent has remained in the VP. At the same time, in a sentence containing two or more [+Focus] constituents, only one of them can surface preverbally, in the operator field; the other one must be left in the VP:

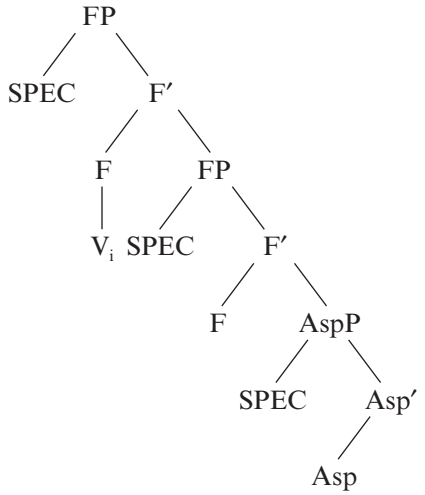
(22) [$_{FP}$ KI hívta fel CSAK MARIT?]
who called up only Mary.ACC
"Who called up only Mary?"

The least controversial description of this situation would be to claim that focus movement is triggered by the uninterpretable [+Focus] feature of the F head, which needs to be checked by a lexical [+Focus] element. (The V feature of F is also uninterpretable, triggering V-to-F movement.) The [+Focus] feature of lexical constituents, on the other hand, is interpretable, that is why the second, third, etc. [+Focus] constituents are not attracted to [SPEC, FP] prior to spellout. Presumably they need not move to [SPEC, FP] covertly, either, or if they do, then post-spellout movement does not affect scope in Hungarian – given that a focus in situ always has narrow scope with respect to the focus in [SPEC, FP].

(23) CSAK HÁROM DIÁK olvasott el CSAK KÉT KÖNYVET a vizsgára
only three student read PREF only two book.ACC the exam.for
a. "It was only three students that read only two books for the exam"
b. *"It was only two books that only three students read for the exam"

An alternative possibility would be to claim that the [+Focus] feature of the lexical focus constituents is also uninterpretable, requiring pre-spellout checking, and to allow the iteration of the FP projection. Then each [+Focus] constituent would move to a [SPEC, FP] position overtly. The second, third, etc. focus would nevertheless be pronounced postverbally because the V would move up from F-to-F, checking the V-feature of each F head.

(24)



KI hívta$_i$ CSAK MARIT t_i fel t_i
who called only Mary.ACC up

This solution, however, raises at least two problems. First: If the sentence contains two postverbal foci, they can be interpreted in any scope order, i.e. they have identical scopes – despite the fact that the first of them asymmetrically c-commands the other. Thus the following sentence variants have identical meanings:

(25) miért olvasott el csak három diák csak két könyvet?
why read PREF only three student only two book.ACC
a. "Why was it only three students that read only two books?"
b. "Why was it only two books that only three students read?"

(26) MIÉRT olvasott el CSAK KÉT KÖNYVET CSAK HÁROM DIÁK?
a. "Why was it only two books that only three students read?"
b. "Why was it only three students that read only two books?"

Furthermore, if the focused constituents were sitting in adjacent [SPEC, FP] positions, we would expect them to be separated at most by the verb, moving from the lower F to the higher F position. In fact, other constituents can also intervene between them.

(27) [$_{FP}$ MIÉRT hívta$_i$ [$_{??}$ fel [$_{??}$ Péter [$_{FP}$ CSAK MARIT t_i [$_{AGRsP}$ t_i?]]]]]
why called up Peter only Mary.ACC
"Why was it only Mary that Peter called up?"

Therefore I propose to adopt the previous solution, i.e. to assume a single instance of pre-spellout focus movement per clause, and to interpret the scope of foci in their spellout positions.

2.3.3 Movement to [SPEC, DistP]

The operator field of the Hungarian sentence can also host distributive quantifiers. They occupy the leftmost positions of the predicate phrase, identified as the specifier positions of DistP – (cf. É. Kiss 1991; Szabolcsi 1997). Interestingly, the V, moving from V-to-Asp-to-F, does not move on to the head position of DistP – which may be an argument for a Quantifier-Raising-type, adjunction analysis of distributive quantifier movement. Nevertheless, because of the unclear theoretical status of operator adjunction, I opt for the substitution analysis represented in (28):[2]

(28)a. $[_{\text{DistP}}$ **Mindenkit$_{\text{i}}$** $[_{\text{FP}}$ PÉTER hívott fel $t_{\text{i}}]]$
everybody.ACC Peter called up
"For everybody, it was Peter who called him up"

b. $[_{\text{DistP}}$ **Mindenki$_{\text{i}}$** $[_{\text{FP}}$ MARIT hívta fel $t_{\text{i}}]]$
everybody Mary.ACC called up
"For everybody, it was Mary who he called up"

The Dist head – sometimes spelled out as the particle *is* "also, even" cliticized to the constituent in [SPEC, DistP] – is understood to be an operator distributing the content of its complement (an AspP, FP or DistP) over every element in the domain of the quantifier in [SPEC, DistP].

(29)a. $[_{\text{DistP}}$ **Minden rendőr$_{\text{i}}$** $[_{\text{AspP}}$ meg -állított t_{i} minket]]
every policeman PREF-stopped us
"Every policeman stopped us"

b. $[_{\text{DistP}}$ **Két rendőr is$_{\text{i}}$** $[_{\text{AspP}}$ meg -állított t_{i} minket]]
two policeman DIST PREF-stopped us
"Two policemen (each) stopped us"

(30)a. $[_{\text{TopP}}$ A rendőrök $[_{\text{DistP}}$ **mindenkit$_{\text{i}}$** $[_{\text{AspP}}$ meg -állítottak $t_{\text{i}}]]]$
the policemen everybody.ACC PREF-stopped
"The policemen stopped everybody"

b. $[_{\text{TopP}}$ A rendőrök $[_{\text{DistP}}$ **két férfit is$_{\text{i}}$** $[_{\text{AspP}}$ meg -állítottak $t_{\text{i}}]]]$
the policemen two man.ACC DIST PREF-stopped
"The policemen stopped two men"

Owing to the distributive operator, (29b) and (30b) can only be understood to involve two stopping events. Example (29a) involves as many stopping events as the number of policemen in the domain of discourse, and (30a) involves as many stopping events as the number of relevant non-policemen in the domain of discourse.

Distributivity appears to be an intrinsic feature of universal quantifiers and phrases modified by *is* "also, even." If the particle *is* is added to cardinal numeral phrases, it loses its literal meaning and acts as a distributivity marker – cf. (30b). If *is* is dropped, the numeral phrase cannot be moved to [SPEC, DistP], but it can

be focused – as in (31a) – or topicalized – as in (31b) – and it is no longer obligatorily distributive but is ambiguous between a collective and a distributive reading.

(31)a. [$_{FP}$ KÉT RENDŐR állított [$_{AspP}$ meg minket]]
two policeman stopped PREF us
"It was two policemen who stopped us"

b. [$_{TopP}$ Két rendőr sajnos [$_{AspP}$ meg -állított minket]]
two policeman unfortunately PREF-stopped us
"Two policemen unfortunately stopped us"

Movement to [SPEC, DistP] shares the formal properties of operator movement. Thus it can cross a clausal boundary:

(32) [$_{DistP}$ **Mindenkit$_i$** [$_{VP}$ szeretnék [$_{CP}$ ha eljönne t_i]]]
everyone.ACC I.would.like if come.COND.3sg
"I would like everyone to come"

Furthermore, distributive operators occupy scope positions: their linear order relative to each other (cf. (33)) and to other operators in the sentence (cf. (34)) corresponds to their scope order.

(33)a. [$_{DistP}$ **Mindenkit$_i$** [$_{DistP}$ **többen** **is$_j$** [$_{AspP}$ fel-hívtak t_i t_j]]]
everybody.ACC several (pro) DIST up-called
"Everybody was called up by several persons"

b. [$_{DistP}$ **Többen is$_i$** [$_{DistP}$ **mindenkit$_j$** [$_{AspP}$ fel hívtak t_i t_j]]]
"Several persons called up everybody"

(34) [$_{DistP}$ **Többször** **is** [$_{DistP}$ **mindenkit** [$_{FP}$ KÉT FIÚ hívott fel]]]
several-times DIST everybody.ACC two boy called up
"On several occasions, for everybody it was two boys that called him up"

None of these sentences is ambiguous. As the paraphrase intends to express, in the only interpretation of (34) the quantifier *többször is* "on several occasions" has scope over the quantifier *mindenkit* "everyone," which has scope over the focus *két fiú* "two boys.'

Distributive quantifiers reconstruct for Binding Condition A (35a), Binding Condition B (35b), and Binding Condition C (35c, d):

(35)a. [$_{DistP}$ **Önmagát$_i$** **is** [$_{AspP}$ felelősnek tartja János$_i$]]
himself.ACC also responsible considers John
"Himself, too, John considers responsible"

b. [$_{TopP}$ János$_i$ [$_{DistP}$ **őt$_i$** **is** [$_{AspP}$ szeretné [$_{CP}$ ha [$_{AspP}$ meg -hívnánk t$_i$]]]]]
John him also would.like if PREF-invited.we
"Him$_i$, too, John$_i$ would like us to invite"

c. *[$_{DistP}$ **Minden fiú$_i$ apja** [$_{AspP}$ be -csapta őt$_i$]]
every boy's father PREF-deceived him
Intended meaning: "Every boy$_i$'s father deceived him$_i$"

d. *[$_{DistP}$ **A fiúk$_i$ apja is** [$_{AspP}$ be -csapta őket$_i$]]
the boys' father also PREF-deceived them
Intended meaning: "The boys$_i$' father, too, deceived them$_i$"

At the same time referential circularity, i.e. the situation when an operator in the scope of a distributive quantifier binds a subconstituent of the distributive quantifier, blocks "reconstruction." The following sentences are ungrammatical because the Genitive pro of DistP1 is bound by DistP2, even though DistP2 is in the scope of DistP1.

(36)a. *[$_{DistP1}$ *pro*$_i$ **Két fiát is** [$_{DistP2}$ **minden apa$_i$** [$_{AspP}$ be -csapta]]]
pro's two sons DIST every father PREF-deceived
Intended meaning: "Two of his$_i$ sons, every father$_i$ deceived"

b. *[$_{DistP1}$ *pro*$_i$ **Minden fia** [$_{DistP2}$ **két apát is$_i$** [$_{AspP}$ be -csapott]]]
pro's every son two father.ACC DIST PREF-deceived
Intended meaning: "Every one of his$_i$ sons deceived two fathers$_i$"

In the Minimalist framework, in which syntactic movement is motivated by the requirement of feature checking, the trigger of movement to [SPEC, DistP] must be the uninterpretable [+distributive] feature of the Dist head. The fact that the number of distributive quantifiers in the operator field is not limited to one could be handled by a recursion of DistPs, i.e. by the assumption that each distributive phrase is attracted by a different Dist head to the specifier of a different DistP.

The range of variation attested in the obligatoriness of distributive quantifier movement and the scope interpretation of quantifiers seems harder to account for. The following facts have to be taken into consideration:

(i) Distributive quantifiers can also stand postverbally. If they bear stress (marked by ′ in the examples below), their scope extends over FP, i.e. they are interpreted with respect to scope as if they were sitting in the specifier position of a DistP.

(37) [$_{FP}$ KÉT FIÚ hívott [$_{AGRsP}$ fel ′**mindenkit**]]
two boy called up everybody.ACC
"For everybody, it was two boys that called him up"

In (37) the focus is in the scope of the universal quantifier. Given that in every other case Hungarian operators take scope over the domain they c-command from their spellout position, (37) is analyzed as a phonological, stylistic variant of the sentence in which the quantifier occupies [SPEC, DistP] at spellout. Since [SPEC, DistP] is a position to which phrasal stress is assigned, the stress of the

postverbal wide scope quantifier also confirms the intuition that it has been stylistically transposed from [SPEC, DistP].

This approach predicts that a sentence which contains a stressed distributive quantifier both in [SPEC, DistP], and in postverbal position, is ambiguous – because the stylistically transposed quantifier can be "reconstructed" to a [SPEC, DistP] either below or above the [SPEC, DistP] spelled out in the operator field. Indeed, this is what we attest in (38):

(38) [$_{\text{DistP}}$ **Két fiú** **is** [$_{\text{AGRsP}}$ fel hívott **′mindenkit**]]
two boys DIST up called everybody.ACC
a. "Two boys each called up everybody"
b. "Everybody was called up by two boys"

(ii) Postverbal unstressed distributive quantifiers have narrow scope with respect to the focus and/or negation.

(39)a. [$_{\text{FP}}$ TEGNAP emelte [$_{\text{AspP}}$ fel mindenki a zongorát]]
yesterday lifted PREF everybody the piano
"It was yesterday that everybody lifted the piano"

b. [$_{\text{TopP}}$ Tegnap [$_{\text{NegP}}$ nem emelte [$_{\text{AGRsP}}$ fel mindenki a zongorát]]]
yesterday not lifted PREF everybody the piano
"Yesterday not everybody lifted the piano"

Beghelli and Stowell (1997) analyze universal quantifiers of this type as bound variables, not possessing the feature [+distributive], and hence not attracted to [SPEC, DistP]. I tentatively adopt their solution, although the content of the predicate is distributed over the variables in the domain of the universal quantifier in such cases, as well, i.e. the lifting of the piano referred to in (39a, b) is understood as an action performed individually by the persons in question.

2.4 Movement to the Topic Field

The predicate phrase of the Hungarian sentence, consisting of a VP and a pre-VP operator field, is preceded in the unmarked case by one or more constituents of topic role. The topic names an individual (a person, object, group, etc.) already present in the universe of discourse: that which will be predicated about in the sentence.

The predication relation between the topic and the predicate is assumed to be mediated by a Top head. The topic constituent occupies the specifier of TopP, whereas the predicate phrase occupies its complement position. The point of division between the topic and the predicate can be made "visible" by sentence adverbials, whose rightmost position in the sentence is the pre-predicate position. (In Hungarian, where phrasal stress is assigned to the left branch of constituents, the topic–predicate articulation is also "audible": the first obligatory stress of the sentence, which is also the strongest one, falls on the left edge of the predicate.)

(40)a. [$_{\text{TopP}}$ *Mari*$_{\text{i}}$ valószínűleg [$_{\text{AspP}}$ ′értesítette t_{i} Pétert]]
Mary probably informed Peter.ACC

b. [$_{\text{TopP}}$ *Pétert*$_{\text{i}}$ valószínűleg [$_{\text{FP}}$ ′MARI értesítette t_{i}]]
Peter.ACC probably Mary informed
"Peter was probably informed by Mary"
[As for Peter, probably it was Mary who informed him]

As is also clear from (40a, b), any [+referential], [+specific] argument of the V can be moved to [SPEC, TopP].[3] Referential locatives and temporals (which I consider optional arguments) can also be topicalized:

(41)a. [$_{\text{TopP}}$ *Tegnap*$_{\text{i}}$ [$_{\text{AspP}}$ fel-hívta János Marit t_{i}]]
yesterday up-called John Mary.ACC
"Yesterday John called up Mary"

b. [$_{\text{TopP}}$ *A sarki telefonfülkéből*$_{\text{i}}$ [$_{\text{FP}}$ MARIT hívta fel János t_{i}]]
the corner phone-booth.from Mary.ACC called up John
"From the phone booth on the corner John called up MARY"

The number of topic constituents is not restricted to one (an event can also be described as a statement about two of its participants). The order of topicalized constituents relative to each other has no semantic import, thus the following sentences have identical meanings:

(42)a. [$_{\text{TopP}}$ *Marit*$_{\text{i}}$ *János*$_{\text{j}}$ [$_{\text{AspP}}$ fel-hívta t_{i} t_{j} telefonon]]
Mary.ACC John up-called by.phone
"It is stated about Mary and John that he phoned her"

b. [$_{\text{TopP}}$ *János*$_{\text{i}}$ *Marit*$_{\text{j}}$ [$_{\text{AspP}}$ fel-hívta t_{i} t_{j} telefonon]]
"It is stated about John and Mary that he phoned her"

Since these sentences appear to involve a single act of predication, I propose to generate a single TopP with two specifiers to host them.

A non-specific noun phrase, denoting an individual whose existence is not presupposed, is ungrammatical in topic position, with topic intonation:

(43) *[$_{\text{TopP}}$ *Egy tó* [$_{\text{AspP}}$ ′keletkezett]]
a lake was-formed
Intended meaning: "(As for) a lake, (it) was formed"

Since a topic is a [+referential], [+specific] expression, it is always outside the scope of the operators in the operator field. So topic movement does not create scope (unless we attribute to referential expressions a maximally wide scope existential quantifier).

As is well known from other languages, e.g. from Japanese, as well, in addition to [+referential], [+specific] noun phrases, bare nominals, predicative adjectives,

and apparently narrow scope quantifiers can also appear in sentence-initial position, presumably in [SPEC, TopP] – provided they are contrasted. The fact that their Topicalization is licensed by their contrastive intonation suggests that they assume the features [+referential], [+specific] through being set into an explicit or implicit contrast (see É. Kiss 1999, adopting ideas of Szabolcsi 1983).

(44)a. [$_{\text{TopP}}$ *Verset* [$_{\text{FP}}$ PÉTER ír]] (novellát pedig
poem.ACC Peter writes short-story.ACC on the other hand
János (ír))
John writes
"Poems, Peter writes (short stories, on the other hand, John writes)"

b. [$_{\text{TopP}}$ *Gazdag* [$_{\text{NegP}}$ nem vagyok]] (Bőkezű azért vagyok)
rich not am.I generous nevertheless am.I
"Rich, I am not (Generous, nevertheless, I am)"

c. [$_{\text{TopP}}$ *Legalább három könyvet* [$_{\text{FP}}$ CSAK KÉT DIÁK olvasott el
at-least three book.ACC only two student read PREF
a vizsgára]]
the exam.for
"At least three books were read only by two students for the exam"
(Háromnál kevesebb könyvet több diák is elolvasott)
"(Less than three books were read by several students)"

As a result of being contrasted with *novella* "short story," *vers* "poem" in (44a) is presented as a distinct member of the set of properties including *vers* and *novella*, i.e. it functions as the name of a property. What is more, since the contrasted alternatives, one of which is represented by the topicalized predicative element, are present in the domain of discourse, the contrasted element is not only referential but is also specific. As such, it can be predicated about; it is stated about it that *János* writes representatives of it. Similarly, *gazdag* "rich" and *bőkezű* "generous," set into contrast in (44b), are understood to denote distinct properties, in fact, specific individuals. The contrasted quantifier in (44c) denotes the property "set of books consisting of at least three members", as opposed to the property "set of books consisting of at most two members." It is the former property that is predicated about in the sentence. What is predicated about a property is realized on various representatives of the property. That is, (44c) can be paraphrased as follows:

(45) "It is stated about the property 'set consisting of at least three books' that only two students read a representative of it for the exam."

The representatives of the property "set consisting of at least three books" read by the two students in question need not coincide. Nevertheless, this does not mean that the expression *legalább három könyvet* "at least three books" is a quantifier in the scope of *két diák* "two students." On the contrary, *legalább három könyvet* functions as the name of a set property, i.e. it is outside the scope

of all quantifiers. Its referential variance that is reminiscent of narrow scope quantifiers follows from the fact that the predicate stated of the property is realized on various representatives of the property. In addition to capturing the interrelation of contrastive intonation, predicate-external position, and referential variance, this analysis also makes it possible to maintain the generalization that in Hungarian scope is interpreted in the spellout positions of constituents.

In view of these observations, movement to [SPEC, TopP] seems to represent a special case of A′-movement: it does not create scope in the strict sense of the word, but it forces referential interpretation, which is equivalent to a maximally wide scope existential quantification.

The A′-movement analysis of topic movement is supported by the fact that it can cross clausal boundaries.

(46) [$_{\text{TopP}}$ *János(t)*$_i$ [$_{\text{DistP}}$ **többen *pro* is** szeretnénk [$_{\text{CP}}$ ha
John.ACC several *pro* DIST would.like.1pl if
[$_{\text{AspP}}$ el -jönne t_i]]]
PREF-came
"John, several of us would like to come"

A topic constituent apparently reconstructs for the interpretation of the Binding Principles (47a, b), and for bound variable interpretation (48a, b):

(47)a. [$_{\text{TopP}}$ *Önmagában*$_i$ [$_{\text{FP}}$ csak PÉTER$_i$ bízik]]
himself-in only Peter trusts
"In himself$_i$, only Peter$_i$ trusts"

b. *[$_{\text{TopP}}$ *Péter*$_i$ *anyja* [$_{\text{AspP}}$ bízik benne$_i$]]
Peter's mother trusts in.him

(48)a. [$_{\text{TopP}}$ *Az* pro$_i$ *autóját* [$_{\text{DistP}}$ mindenki$_i$ otthon hagyta]]
the *pro*'s car.ACC everyone at.home left
"His$_i$ car, everyone$_i$ left at home"

b. [$_{\text{TopP}}$ *A* pro$_i$ *felesége* [$_{\text{DistP}}$ minden résztvevőt$_i$ elkisérhetett]]
the *pro*'s wife every participant.ACC could.accompany
"His$_i$ wife could accompany every participant$_i$"

If only referring expressions can be moved to [SPEC, TopP], then the topicalization of an anaphor in (47a), or the topicalization of a constituent containing a bound variable in (48a, b) is actually problematic. My intuition is that in these cases abstract notions are predicated about: in (47a), the notion of "self," in (48a), the notion of "self's car," in (48b), the notion of "self's wife." In any case, these sentences sound better to me than (18) and (36a, b) – presumably because, the topic not being an operator with scope, (47a) and (48a, b) do not involve the referential circularity arising when a subconstituent of an operator is bound by another operator in its scope.

The fact that the constituent moved to [SPEC, TopP] must be [+referential] and [+specific] suggests that these are the features triggering topic movement. Since not all [+referential], [+specific] constituents are attracted to [SPEC, TopP] visibly, it is presumably the uninterpretable [+referential], [+specific] features of the abstract Top head that need to be checked by the matching features of an argument. What remains unclear under these assumptions is what causes the occasional movement of the second, third, etc. [+referential], [+specific] constituents to further [SPEC, TopP] positions. Intuitively, only those [+referential], [+specific] constituents are topicalized that are also associated with the function "logical subject of predication" – however, this function is hard to identify with a morphological feature triggering movement.

A related question is whether a TopP is projected by every sentence, including those which lack a visible topic constituent. É. Kiss (in press) argues that the TopP projection is optional in the case of sentences expressing quantification, i.e. those containing a focus and/or a distributive quantifier. Non-quantificational sentences, on the other hand, serve to express predication – hence they must project a TopP, and must involve movement to [SPEC, TopP]. In sentences describing an event (unlike in stative sentences) [SPEC, TopP] can also be void of phonologically salient material.

(49) [$_{\text{AspP}}$ Költözik a Varga család]
is-moving the Varga family
"The Varga family is moving"

Such sentences are interpreted as expressing predication about the given situation: "here and now," or "there and then," and are analyzed as having an anaphorically or contextually bound pronominal element in [SPEC, TopP] (see also Erteschik-Shir 1997 for a similar analysis).

2.5 Conclusion: How General are Hungarian Facts?

In this paper I have argued that the word order of the Hungarian sentence is in part free, in part variable. Word order in the postverbal argument field of the sentence is expected to be determined by the grammatical functions of constituents. In fact, it is not; if anything affects postverbal order it is the specificity feature of arguments. Postverbal word order appears to be genuinely free in the sense that it does not feed or bleed syntactic processes; it does not even affect binding. The freedom of postverbal word order has been derived from the assumption that in the Hungarian verb phrase the arguments mutually c-command each other. In the framework of the Antisymmetry theory of Kayne (1994) this has the consequence that the linearization of the VP is only partially fixed (inasmuch as the V raised to T and AGR asymmetrically c-commands, hence precedes, its arguments); the arguments are generated in a random order. This situation must be rare in the languages of the world (or perhaps it only seems to be rare; in fact, in few apparently free word order languages have the symptoms of subject–object asymmetry been exhaustively examined).

The variable word order in the middle, operator field of the Hungarian sentence is semantically determined: the middle field of the Hungarian sentence consists of a strict hierarchy of an aspectual operator, a focus, and distributive quantifiers. These operators are moved into specifier positions of functional projections via substitution. Their preposing, traditionally motivated by the Scope Principle, can also be reinterpreted as movement triggered by the need to check the formal operator features of the functional heads in question. The Asp and F heads also trigger V-to-Asp-to-F movement. The resulting preverbal focus is fairly general in the languages of the world. An examination of 35 European languages in the framework of the EUROTYP project pointed out a preverbal focus position in almost 50 percent (17 of the languages examined) – see É. Kiss (1998a). As for the cross-linguistic existence of a DistP projection, observations concerning Arabic (cf. Khalaily 1995), KiLega (cf. Kinyalolo 1990), etc. seem to suggest that universal quantifiers – irrespective of their grammatical function – gravitate to a fixed position in other languages, as well. The recognition of a distributive quantifier position in many languages is perhaps hindered by the optionality of quantifier movement attested also in Hungarian, and by the difficulty of distinguishing a narrow scope quantifier from an individuated set property.

The initial, topic field of the Hungarian sentence harbors constituents which are not operators but externalized arguments, functioning as the (logical) subjects of predication. Unlike the constituents in the operator field, the topic constituents must be [+referential] and [+specific]. Since they are outside the scope of all operators, their order relative to each other has no semantic (or syntactic) consequences. At the same time, topic movement resembles A′-movement in the respect that it can cross a clause boundary.

Sámuel Brassai (1860, 1863–65), the Hungarian linguist who was the first to describe the topic–predicate articulation of sentence structure, suspected that the topic–predicate articulation is universal; languages with a subject–predicate sentence structure represent a language type in which, for some reason, only the subject can be topicalized. According to findings of the EUROTYP project, topic movement to predicate-external position is, indeed, a universal process. Topic selection is not limited to the subject in the great majority of languages, and even in apparently subject–predicate languages like English [+specific] subjects in fact undergo topic movement. This claim can be proven by showing that specific and non-specific subjects occupy different positions in the sentence: the former, a predicate-external topic position, the latter, a predicate-internal [SPEC, AGRsP] position. In English a large number of unrelated, otherwise inexplicable facts (discussed in detail by É. Kiss 1996) point to this conclusion. Namely:

(i) Specific and non-specific subjects occupy different positions with respect to sentence adverbials; the former can, the latter cannot, precede them without a comma intonation. This fact falls out if we assume that the predicate phrase (which sentence adverbials must be external to) coincides with AGRsP in English, and, whereas all subjects move to [SPEC, AGRsP] to check their Nominative Case, only non-specific subjects stay there; specific subjects move on to [SPEC, TopP].

(50)a. [$_{TopP}$ The inspector$_i$ to my great surprise [$_{AGRsP}$ t_i appeared at the door]]
b. ??[$_{AGRsP}$ Policemen to my great surprise appeared at the door]
c. To my great surprise, [$_{AGRsP}$ policemen appeared at the door]

(ii) The negative particle cannot follow a non-specific subject; it can, at best, precede it (see Guéron 1980). This fact, again, falls out if the negative particle, as is generally the case across languages, is external to the predicate phrase, and the non-specific subject occupies [SPEC, AspP], and the specific subject, [SPEC, TopP].

(51)a. [$_{TopP}$ The inspector$_i$ did [$_{NegP}$ not [$_{AGRsP}$ t_i appear on the scene]]]
b. *[$_{AGRsP}$ A policeman did not appear]
c. [$_{NegP}$ Not [$_{AGRsP}$ a policeman appeared]]
cf. d. *[$_{NegP}$ Not [$_{TopP}$ the inspector appeared]]

(Naturally, (51b) is only ungrammatical if *a policeman* is associated with a non-specific (i.e. non-partitive) interpretation.)

(iii) VP deletion cannot take place in case the subject of the sentence is non-specific. This apparently *ad hoc* constraint will get a natural explanation if VP deletion is interpreted as AGRsP deletion. Then in the case of a non-specific – hence AGRsP-internal – subject, the identity condition for AGRsP-deletion is not satisfied.

(52)a. [$_{AGRsP}$ A riot occurred] *and then [$_{AGRsP}$ a flood did] (see Guéron 1980)
cf. b. [$_{TopP}$ The riot$_i$ [$_{AGRsP}$ t_i caused a shock] and then [$_{TopP}$ the flood$_i$ did [$_{AGRsP}$]]]

Tag-question-formation cannot take place in the case of sentences with a non-specific subject for the same reason: because it would also involve AGRsP deletion:

(53)a. *Policemen arrived, didn't they?
cf. b. The inspector arrived, didn't he?

(iv) As is well known, the extraposition of a PP or CP is only possible from a non-specific subject. If the "extraposed" PP or CP is, indeed, base-generated in a VP-adjoined position, as Rochemont and Culicover (1990) propose, then a specific subject preposed to [SPEC, TopP] is presumably too far to be linked to the PP or CP adjoined to the VP.

(54)a. [$_{AGRsP}$ A man [$_{VP}$ appeared with green eyes]] (cf. Guéron 1980)
b. *[$_{TopP}$ The inspector$_i$ [$_{AGRsP}$ t_i [$_{VP}$ appeared with green eyes]]]

(v) If *only* appears in front of a specific subject, its scope extends only over the subject. If, on the other hand, it stands in front of a non-specific subject, it can also be attributed sentential scope.

(55)a. [Only [$_{DP}$ the inspector]] [$_{AspP}$ appeared on the scene], *nothing else happened
b. [Only [$_{AspP}$ a policeman appeared on the scene]], nothing else happened

The reason for the interpretational difference between (55a, b) must be that *only* is a phrasal operator; its maximal scope is the extended VP (i.e. AGRsP). Since it is not a clausal operator, in (55a) it can only be assigned DP scope. In (55b) its scope extends over AGRsP, which happens to coincide with the clause. (For further arguments, and the clarification of questions concerning V movement to functional heads, the location of expletives, etc., see É. Kiss 1996).

The fact that in English, topic selection is not free but a [+referential] and [+specific] subject must be topicalized, obviously follows from Economy considerations. The English subject must move up to [SPEC, TenseP/AGRsP] to check its Nominative Case; the object, on the other hand, remains in the VP (at least until spellout); hence the subject is a closer checker of the relevant feature of the Top head than the object or an oblique argument would be.

Notes

1 If the constituent containing the bound pronoun precedes the operator, then a subject–object asymmetry will surface (as observed by Marácz 1989), particularly if the operator is a universal quantifier:

(i)a. (?)Az *pro*$_i$ anyja kit$_i$ hívott fel?
the *pro*'s mother whom called up
"Who$_i$ did his$_i$ mother call up?"

b. Az *pro*$_i$ anyját ki$_i$ hívta fel?
the *pro*'s mother.ACC who called up
"Who$_i$ called up his$_i$ mother?"

(ii)a. ??Tegnap fel-hívott az *pro*$_i$ anyja minden gyereket$_i$
yesterday up-called the *pro*'s mother every child.ACC
"Yesterday, his$_i$ mother called up every child$_i$"

b. Tegnap fel-hívta az *pro*$_i$ anyját minden gyerek$_i$
yesterday up-called the *pro*'s mother.ACC every child
"Yesterday, every child$_i$ called up his$_i$ mother"

For an evaluation of these facts, see É. Kiss (1994).

2 Even if adjunction should turn out to be fully legitimate again, Quantifier-Raising (Q-Raising) would have to be reformulated – in view of the results of Beghelli and Stowell (1997) and Szabolcsi (1997). As they have demonstrated, different types of quantifiers have different landing sites, so Q-Raising should be limited to the subset of quantifiers sharing the feature [+distributive].

3 I use the term [+specific] in the sense of Enç (1991), according to whom a noun phrase is [+specific] if it denotes a subset of a set of referents already present in the domain of discourse. A definite noun phrase is always [+specific]; an indefinite noun phrase, on the other hand, is only [+specific] if it denotes a member of a set previously introduced into the conversation.

3

Grammatical Relations in Tohono O'odham: an Instrumental Perspective

Mizuki Miyashita, Richard Demers, and Delbert Ortiz

3.1 Introduction

Languages vary parametrically in the inventory of grammatical features that are expressed overtly or obligatorily, versus those that speakers can supply via the syntactic or pragmatic context. For example, the definiteness/indefiniteness contrast is obligatorily marked in English, but it is not marked in Salish, where nouns are typically interpreted as definite outside of existential contexts. In Mandarin Chinese, nouns following the verb are interpreted as indefinite, while nouns preceding the verb are read as definite. Furthermore, while the INFL feature of Tense is typically marked at a functional projection across languages, in Mandarin this is not the case; a temporal context can be supplied by adverbs or by the discourse context.

We would like to propose in this chapter that Tohono O'odham (henceforth O'odham) is of typological interest because there is complete ambiguity in establishing grammatical relations in a sentence containing all third person arguments; we suggest that this follows from the fact that O'odham is a Pronominal Argument language with a Discourse Configurational syntax.[1] We will return to these points below. The fact is that O'odham transitive sentences such as *Ka: 'o* "He heard him" with all third person singular arguments are referentially ambiguous. Compare an English sentence such as "He heard him." Note that in the discourse context, when the speaker and hearer both know what referents are under discussion, and which one is topical, this sentence can be assigned an interpretation that is unquestioned. The crucial property of O'odham is that this kind of interpretative

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strategy is necessary even when nominals are present in the sentence, because the nominals are not arguments, but adjuncts that bind the pronominal variables. In order to show that there is no overt means of marking grammatical relations in third person sentences in O'odham we must show that there are no regular prosodic features (stress, intonation) that function to establish grammatical relations. We report in this chapter the results of a pilot experiment that supports the position that O'odham speakers do not employ consistent prosodic features to disambiguate sentences with two third person arguments. Our conclusion is that these sentences are ambiguous, and O'odham speakers must rely on discourse features alone to interpret them.

The Tohono O'odham language (formerly known as Papago) is still spoken by approximately 20,000 people in southern Arizona and northern Mexico. The O'odham people mostly live on a large reservation in southwestern Arizona. The language is a member of the Tepiman branch of the Uto-Aztecan family, one of the largest language families in North America (including Mexico). The primary language data used in this chapter are from Delbert Ortiz, one of the authors of this chapter. Delbert Ortiz was an undergraduate student at the University of Arizona when research for this chapter was undertaken.

The chapter is organized as follows: section 3.1 provides an overview of O'odham sentences structure, and section 3.2 discusses the ambiguous properties of sentences with two third person arguments. In section 3.3 we report on the results of an acoustic study that investigated the possibility that prosodic features may serve in a regular way to disambiguate O'odham sentences. In section 3.4 we propose a pronominal argument syntactic analysis for O'odham and show that the intonation contours that have been proposed as evidence for earlier configurational analyses can be generated without the assumption of configurationality. Section 3.5 discusses some of the discourse configurational properties of O'odham, and a summary and conclusions are given in section 3.6.

3.2 O'odham Syntactic Properties

Word order in O'odham is basically free, with the major constraint being that an obligatory auxiliary constituent (INFL) appear in second position in declarative sentences. The freedom of word order is shown by the sentences in (2), and all have the same meaning as sentence (1). Tohono O'odham speakers have borrowed the Spanish names *Juan* (English John) as *Huan* and *José* (Joe) as *Husi*.

(1) Huan 'o g Husi ka:
John 3sub-imp det Joe hear
"John is hearing Joe"

(2)a. Huan 'o ka: g Husi
b. Husi 'o g Huan ka:
c. Husi 'o ka: g Huan
d. Ka: 'o g Huan g Husi
e. Ka: 'o g Husi g Huan

Another property of O'odham is exhibited in these sentences; nouns are accompanied by a preceding nominal marker *g* when no other noun phrase constituent precedes (e.g. a demonstrative). Zepeda (1997) uses the term "g-determiner" for this marker, which fills the determiner node, although it has certain special properties. It precedes every non-pronominal nominal, and does not carry any features such as definite or indefinite. When nominals appear in sentence-initial position, however, this *g* is never present. These distributional properties of *g* are exhibited in (1) and (2).

3.3 Grammatical Relations and Ambiguity

We propose in this chapter that Tohono O'odham is a pronominal argument language (Jelinek 1984, in press). A pronominal argument language is defined as one whose argument positions are exclusively and exhaustively satisfied by pronominal affixes or clitics. Any accompanying nominals are adjunctival constituents of their sentences, with the consequence that no nominals are dominated by a verb phrase node. The pronominal arguments are discourse variables and we can view the nominals as operators that bind the pronouns in their argument positions (see Hale et al., this volume). This binding in the case of two third person adjuncts is determined by various strategies in particular languages, or may be left undetermined.

A Tohono O'odham sentence, then, will always carry pronominal marking for its subject, and its object if the sentence is transitive. The subject marking appears in the obligatory INFL constituent, and object pronouns are marked as prefixes on the verb. The INFL also bears aspect and mood marking, and in most of our example sentences the imperfect aspect is present, which we roughly translate using the progressive aspect in English. The O'odham pronoun system is given in (3) below.

(3)

Subject (Second Position INFL)			Object (Verbal Prefix)		
	sg	*pl*		*sg*	*pl*
1st	'añ	'ac	*1st*	ñ-	t-
2nd	'ap	'am	*2nd*	m-	'em-
3rd	'o	'o	*3rd*	Ø-	ha-

As is typical in pronominal argument languages, there are independent pronouns that, like nouns, are also adjuncts. They have all the word order freedom of nouns and, like nouns, are not Case-marked. They are linked to the pronominal arguments by matching Φ-features, and they are used to provide emphasis. In (4) both pronouns are emphasized.

(4)a. 'A:ñi 'añ m -ka: 'a:pi
1sg 1sg subj imp 2sg obj-hear 2sg
"*I* am hearing *you*"

b. 'A:ñi 'ap ñ -ka: 'a:pi
1sg 2sg subj imp 1sg obj-hear 2sg
"*You* are hearing *me*"

In sentence (4a) the first person is the subject and in sentence (4b) it is the object. In contrast the second person is the object in sentence (4a) and the subject in (4b). No ambiguity is present since the grammatical relations are marked in the second position INFL and in the cliticized object prefix. Delbert Ortiz has stated that sentence-final position is a position with some emphasis, and we tentatively propose that it is a second focus position.

The lack of morphological Case-marking in the third person, in contrast, leads to ambiguous readings in sentences with two third person singular arguments. In a sentence where a third person argument is plural and the subject is singular, no ambiguity is present, as shown in (5).

(5) Huan 'o ha -huhu'id g gogogs
John 3subj imp 3pl obj-chase det dogs
"John is chasing the dogs"

Consider again the sentence given in (1), which is repeated here as (6).

(6) Huan 'o g Husi ka:
"John is hearing Joe" or "Joe is hearing John"

These two readings are also available for all of the other word orders present in (1) and (2). Moreover, the same variable readings are also available when one of the adjuncts is not present.

(7) Ka: 'o g o'odham
hears 3subj imp det man
"3rd is hearing the man" or "The man is hearing 3rd"

These same two readings are also available when the position of the nouns and verbs is "scrambled" into all possible orders.

Ambiguity of grammatical relations is not common in the world's languages. Most natural languages employ some means to mark grammatical relations, and the mechanisms are quite varied as shown in (8) below.

(8) Means by which Grammatical Relations are Determined

	Example Languages
a. Overt Case-marking on arguments	
Nominative/Accusative	Finnish, German
Ergative/Absolutive	Dyirbal
b. Word Order	English, Chinese
c. Direct/Inverse	Navajo, Patowatomi
d. Voice Shift	Lushootseed

Voice Shift is a syntactic mechanism that requires that sentences with two third person nominals appear in the passive voice. This requirement insures that sentences with two third person nominals have unambiguous subject and object marking. Lushootseed, a Coast Salish language spoken in Western Washington,

does not permit transitive sentences with two third person noun arguments. A sentence such as (9a) does not occur.

(9)a. *ʔuqʾʷib -t -s ti dxʷsqiqʾalikʷ ti čʾačʾas
remove -CTRANS-him, the policeman, the boy
Intended meaning: "The policeman removed the boy"

b. ʔuqʾʷib -t -s ti čʾačʾas
remove -CTRANS-3subj the boy
"He removed the boy"

c. ʔuqʾʷib -t -b ti čʾačʾas ʔə ti dxʷsqiqʾalikʷ
remove -CTRANS-pass the boy by the policeman
"The boy was removed by the policeman"

A single noun is possible when a pronoun subject is present, and the noun is always interpreted as an object adjunct. Such a sentence is shown in (9b). Lushootseed speakers can talk about events in constructions including two third person nouns, but these events must be expressed in the passive voice, as shown in (9c). This use of Voice Shift (from active to passive) produces sentences in which grammatical relations are unambiguous, which would not be the case if sentences such as (9a) were possible. Other Salish languages that are closely related to Lushootseed, for example, Lummi, permit sentences such as (9a), and these sentences are, in fact, ambiguous. Although there is a general default interpretation where the subject adjunct is first, discourse features can permit the other interpretation.

(10) leŋ-nə -s -Ø cə słənčɔʔəł cə swiqʔɔʔəł
see-nonctrans-3subj-3Obj det girl det boy
"The girl sees the boy" or "The boy sees the girl"

The Salish languages discussed above do not have the free word order found in O'odham; the predicate (and a few sentence-level adverbs) are always sentence-initial and any adjunct nominals must follow.

O'odham, in contrast, does not have a regular default interpretive principle involving word order that establishes grammatical relations. The lack of overt mechanisms to mark grammatical relations gives O'odham a special status among the world's languages. Given the lack of overt morphological marking and the observation that O'odham speakers typically succeed in interpreting a sentence, the possibility presents itself that O'odham speakers make use of (a) prosodic feature(s) if there is a strongly perceived need to make clear whether a noun is a subject or object adjunct. That such prosodic features may play a role is suggested by Zepeda:

> Occasionally this flexibility of word order makes the meaning of a sentence ambiguous. For example, "Ceoj 'o g gogs huhu'id" can mean either "The boy is chasing the dog", or "The dog is chasing the boy." In such cases the native speaker uses different devices in order to get the correct or appropriate meaning for the sentence. These

> devices include the context of the sentence, increased stress on the subject, and the intonation of the entire sentence, which in some cases give clues as to which is the subject and which is the object. (Zepeda 1997: 32)

Based on these types of comments we set up a pilot experiment to learn whether we could determine what prosodic features, if any, were used to mark grammatical relations in O'odham.

3.4 An Acoustic Analysis of Tohono O'odham Sentences

In this section, we outline our experiments and our results. Delbert Ortiz was instructed to produce O'odham sentences in which he was to make clear "who was doing what to whom." All of his sentences were recorded and stored on a Kay Computerized Speech Laboratory (CSL). For example, he was asked to produce an O'odham sentence that corresponded to the English sentence "John is hearing Joe." We asked him to preserve the meaning of "John is hearing Joe" for each of the word orders found in (2). We then took a break and after a few minutes asked him to provide an O'odham sentence that means "Joe is hearing John," making clear that Joe is the one doing the hearing. We then had him record the same sentence with the word orders found in (2). As before, he was to "make sure" that each of the sentences meant "Joe is hearing John." Since the same words are found in both paradigms, any difference in meaning would have to be carried by prosodic features.

Next, we asked Delbert Ortiz to translate sentence pairs whose translations contained the interrogative pronoun *do*: "who." In one member of the pair, *do*: questioned the subject, and in the other member it questioned the object. As is common in many languages, O'odham requires interrogative pronouns to appear in a fixed sentence-initial Focus position.

(11)a.	Do: 'o ñeid g Mali:ya?	"Who is Mary seeing?"
b.	Do: 'o ñeid g Mali:ya?	"Who is seeing Mary?"
c.	Do: 'o ka: g Husi?	"Who is Joe hearing?"
d.	Do: 'o ka: g Husi?	"Who is hearing Joe?"
e.	Do: 'o huhu'id g kawyu?	"Who is the horse chasing?"
f.	Do: 'o huhu'id g kawyu?	"Who is chasing the horse?"
g.	Do: 'o kuḍut g Husi?	"Who is Joe bothering?"
h.	Do: 'o kuḍut g Husi?	"Who is bothering Joe?"

After the sentences were recorded we made spectrograms for each sentence and overlaid pitch contour tracks and amplitude spectra. We also made measurements of syllable length, when such differences appeared in sentences that had the same words but were intended to be different in meaning. One of the first prosodic cues that we noticed that we thought might be significant was an intonation bump on nominals coindexed with objects. Such an intonation bump is shown in figure 3.1.

In figure 3.1 the sentence *Huan 'o g Husi ka*: is displayed with the intended meaning of "Joe is hearing John." In figure 3.2, the sentence *Huan 'o g Husi ka*: is

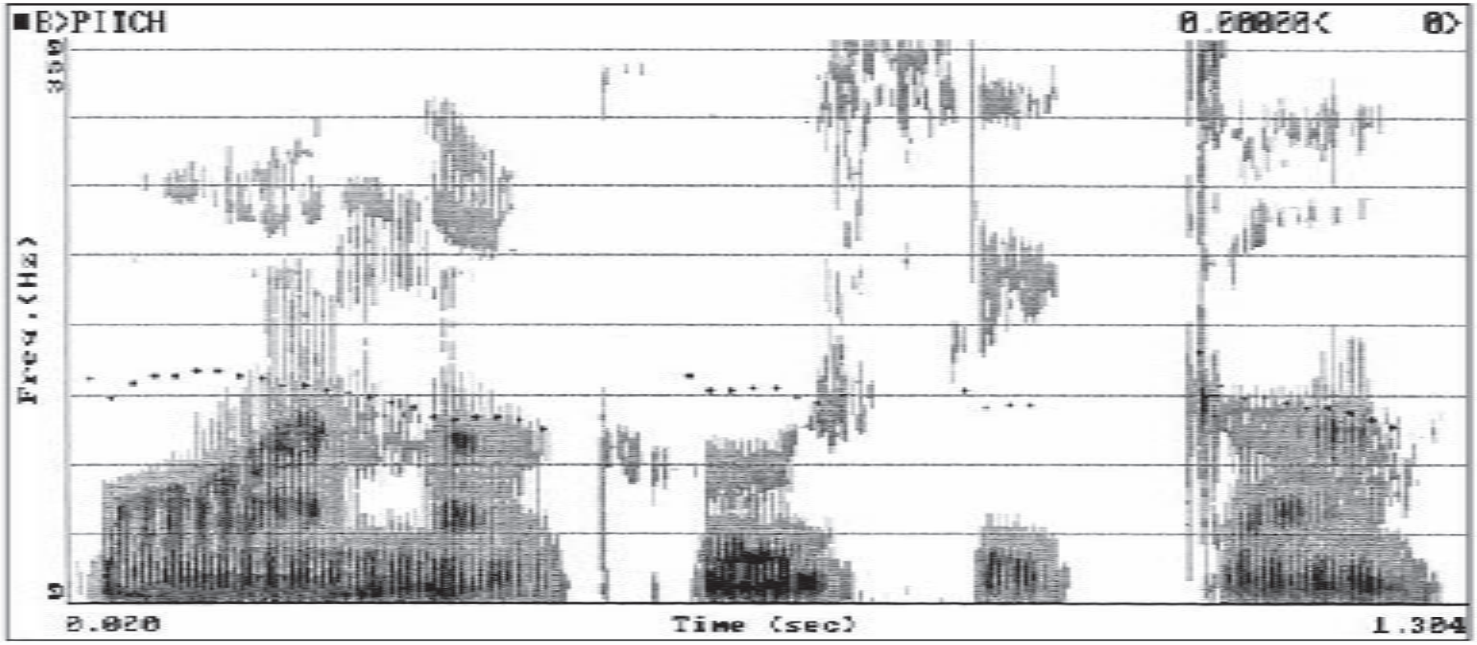


Figure 3.1 The O'odham sentence *Huan 'o g Husi ka*: "Joe hears John" is displayed with an accompanying pitch contour. There is an intonation bump on *Huan*, the object, that is not present on figure 3.2.

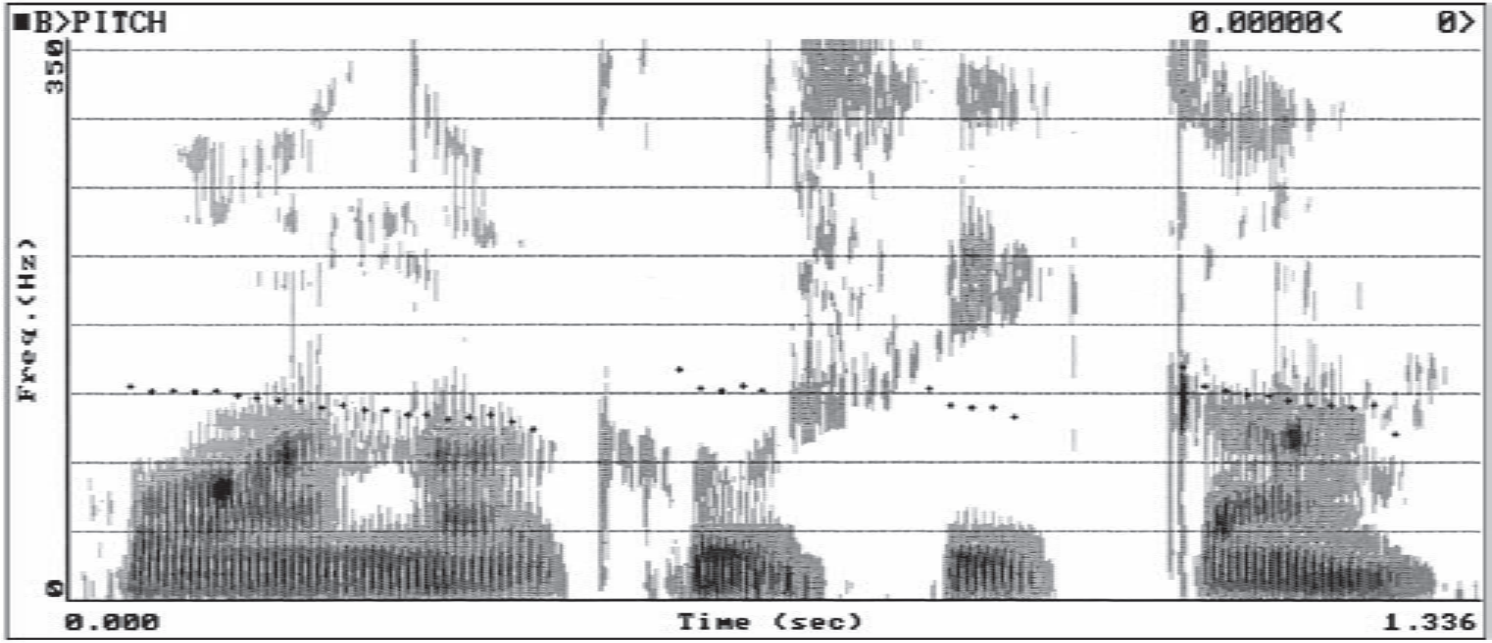


Figure 3.2 *Huan 'o g Husi ka*: "John hears Joe." The intonation bump present on *Huan* in figure 3.1 is lacking.

displayed with the intended meaning "John is hearing Joe." In figure 3.2 the intonation bump that appears on *Huan* in figure 3.1 (seen as a series of dots that runs linearly through the spectrogram) is not present. The intonation bump that appears on object adjuncts was not present in every sentence, however, and we had to abandon our initial hypothesis that this bump was the significant cue that could be consistently used to indicate which of the nouns was the object adjunct when two third person singular nouns appear in a sentence.

In our study of the *do*: sentences we were able to find some properties that distinguished the sentence pairs that differed in the interpretation of what was subject and what was object. These properties included pitch and length differences on the verb when *do*: was binding the subject, as well as the intonation bump on the object that we observed earlier in the sentences with two nouns. Nevertheless, we were not able to discern consistent and predictable prosodic features that we could be confident were being used to help distinguish grammatical relations of the arguments.

Our next step was to play back to Delbert Ortiz the sentences that he had recorded earlier. The sentences were randomly presented from our database, and we learned that he could not consistently give us back the same translation that he had given us earlier. We present in table 3.1 the results of one session where we played back sentences that we had recorded earlier. The table contains 11 sentences which we played first in one order for the 11, and then in reversed order of presentation of those same 11 sentences. Nine of the 22 sentences presented were given different translations from those he assigned them when he first recorded them. Sentences 3 and 20 as well as 10 and 13 were both times given a different translation from the original. In all of the other sentences where a different translation was given, the other (first or second) presentation yielded the same translation as the original. Of the original 11 sentences, only four (2, 7, 8, and 11) were consistently given the same translation as the original. Delbert Ortiz' judgments are consistent with our conclusion from the acoustic study that no invariant salient prosodic feature functions in the language to mark grammatical relations. Our conclusion is, then, that discourse features play the pivotal role in determining the grammatical relations in potentially ambiguous sentences with two third person arguments.

(12) The O'odham sentences and the English translations were those originally produced by Delbert Ortiz when asked to produce an O'odham sentence in different word orders that translated the English sentences shown in the table. When these sentences were played back to him we asked him to provide an English translation. When these translations were the same as the original, we recorded "Same," and when they were different, we recorded "Different."

In sentences 1 and 4, the "incorrect" subject is interpreted as bound by the noun at the end of the sentence. Sentence-final position is our tentative candidate for a second focus position, and perhaps this is the reason Delbert Ortiz was led to this interpretation.

Our pilot study with one speaker leads us to the hypothesis that no prosodic feature in O'odham marks grammatical relations. In elicited contexts at least,

Table 3.1

File	*No.*	*O'odham sentence*	*Target translation*	*Interpretation*
1	027	Ceoj 'o cendad g cehia	The boy is kissing the girl	Different
2	038	Uwĭ 'o g o'odham ñeid	The man is seeing the woman	Same
3	035	Uwĭ 'o ñeid g o'odham	The man is seeing the woman	Different
4	028	Cendad 'o g ceoj g cehia	The boy is kissing the girl	Different
5	029	Cehia 'o g ceoj cendad	The boy is kissing the girl	Different
6	037	Uwĭ 'o g o'odham ñeid	The woman is seeing the man	Same
7	036	Uwĭ 'o ñeid g o'odham	The woman is seeing the man	Same
8	033	O'odham 'o ñeid g uwĭ	The man is seeing the woman	Same
9	030	Cehia 'o g ceoj cendad	The girl is kissing the boy	Different
10	031	Ceoj 'o g cehia cendad	The girl is kissing the boy	Different
11	034	O'odham 'o ñeid g uwĭ	The man is seeing the woman	Same
12	034	O'odham 'o ñeid g uwĭ	The man is seeing the woman	Same
13	031	Ceoj 'o g cehia cendad	The girl is kissing the boy	Different
14	030	Cehia 'o g ceoj cendad	The girl is kissing the boy	Same
15	033	O'odham 'o ñeid g uwĭ	The man is seeing the woman	Same
16	036	Uwĭ 'o ñeid g o'odham	The woman is seeing the man	Same
17	037	Uwĭ 'o g o'odham ñeid	The woman is seeing the man	Different
18	029	Cehia 'o g ceoj cendad	The boy is kissing the girl	Same
19	028	Cendad 'o g ceoj g cehia	The boy is kissing the girl	Same
20	035	Uwĭ 'o ñeid g o'odham	The man is seeing the woman	Different
21	038	Uwĭ 'o ñeid g o'odham	The man is seeing the woman	Same
22	027	Ceoj 'o cendad g cehia	The boy is kissing the girl	Same

speakers can make use of such features to try to help the listener, but discourse features play the major role and can, it appears, supersede any prosodic property. We now turn to an analysis of O'odham sentences that accounts for the ambiguity of grammatical relations in this language.

3.5 Tohono O'odham Syntax and the Lack of Marking of Grammatical Relations on Nouns

Prior analyses of Tohono O'odham syntax (Hale et al. 1977b; Hale and Selkirk 1987; Truckenbrodt 1999) have assumed a basic underlying structure whose various constituents can undergo movement. The base sequence is the domain of a single tonal assignment, and each moved constituent creates a new domain for tonal assignment.

The tonal contour which is assigned to each domain is given in (13). The high tone is assigned to the leftmost stressed vowel and the low tone on the left is spread leftward to any available unstressed syllables. The high tone then spreads to the right to all syllables except to final unstressed syllables. These final syllables receive a low tone. Further discussion of the properties of O'odham tone assignment are found in Hale et al. (1977b) and Hale and Selkirk (1987).

(13) The Tohono O'odham tonal contour: *(L)HL*

An example of a sentence from Hale and Selkirk that contains a single intonation contour is given in (14).

(14) (L HHH HHH H L)
N -at g wakial g wisilo cepos?
Inter -(3PERF) det cowboy det calf brand:PERF
"Did the cowboy brand the calf?"

In Hale and Selkirk's account, whenever this basic word order is altered, the moved constituent becomes the domain for a new tonal assignment, and as shown in (15), the two nouns have been moved to the right of the verb.

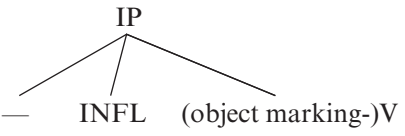
(15) (L H L) (HLL) (H LL)
N -at cepos g wisilo g wakial?
Inter -AUX:3sg.PERF brand det calf det cowboy
"Did the cowboy brand the calf?"

Slightly different mechanisms are proposed in each of the three papers mentioned above to account for the tonal assignment domains. Central to all three accounts, nevertheless, is the positing of a basic word order, and derived configurations through movement occasion additional iterations of tonal assignment.

The analysis proposed in this chapter is not of the configurational type proposed by the earlier authors. That is, we want to suggest an alternative syntactic analysis for Tohono O'odham that has very different grammatical properties. We leave for future research the possible motivation for a more abstract underlying syntactic structure in which subjects (pronominal in this case) are part of a verb phrase and then are moved to a higher functional projection.

As a starting point we would like to propose that an O'odham sentence has two obligatory constituents, an INFL that marks an obligatory pronominal subject, aspect, and sentence mood, and a verb which, if transitive, must mark (as a prefix) an obligatory pronominal object. Moreover, preceding the INFL is a position (topic/focus position, see below) that must be filled with a constituent of the sentence. Filling this position always results in INFL being in second position. Roughly speaking, a surface canonical O'odham sentence must have the following form, as shown in (16).

(16)

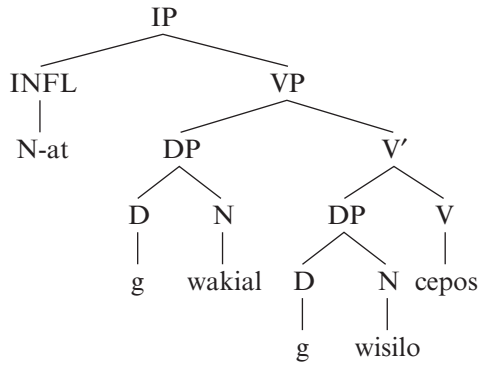


In the cases where no additional sentential material is present, the open slot at the beginning of the sentence must be filled by the verb. The slot at the beginning will also be obligatorily filled by items such as interrogative pronouns (cf. the sentences in (11) and the yes/no question marker *N-* as seen in (14)).

In the case of transitive sentences in which two nouns are present, all of the possibilities for the linear occurrence of these nouns in the open positions in the sequence in (16) are instantiated. Since they are adjuncts, they are attached to IP directly and are not part of the verb phrase.

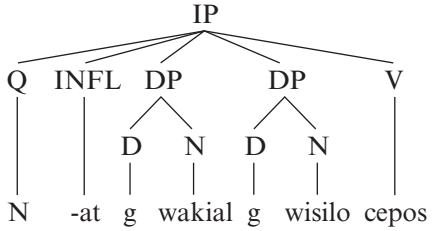
The sequence in (16) is much simpler than Truckenbrodt's (1999) highly structured configuration shown in (17) for the sentence in (14).

(17)



In contrast, we propose the following structure for this sentence. The position preceding INFL is filled with the yes/no question marker *N*-, which we designate with the label Q.

(18)



We do not think that it is movement that triggers new applications of tone assignment, but rather O'odham is subject to the following surface structure conditions.

(19)a. In the case when the leftmost constituent is a combination of a yes/no question marker and an INFL, and the rightmost constituent is a verb, this sentence has a single intonation contour (figure 3.9, see below).

b. Otherwise, *all major constituents* have the tonal contour given in (13) (figures 3.3–3.8, see below).

c. INFL constituents are encliticized onto major grammatical categories (e.g. nouns, verbs) on their left, forming a single domain of tone assignment.

The conditions in (19) describe the two types of intonation patterns found in O'odham sentences, those with a single (L)HL pattern encompassing the entire

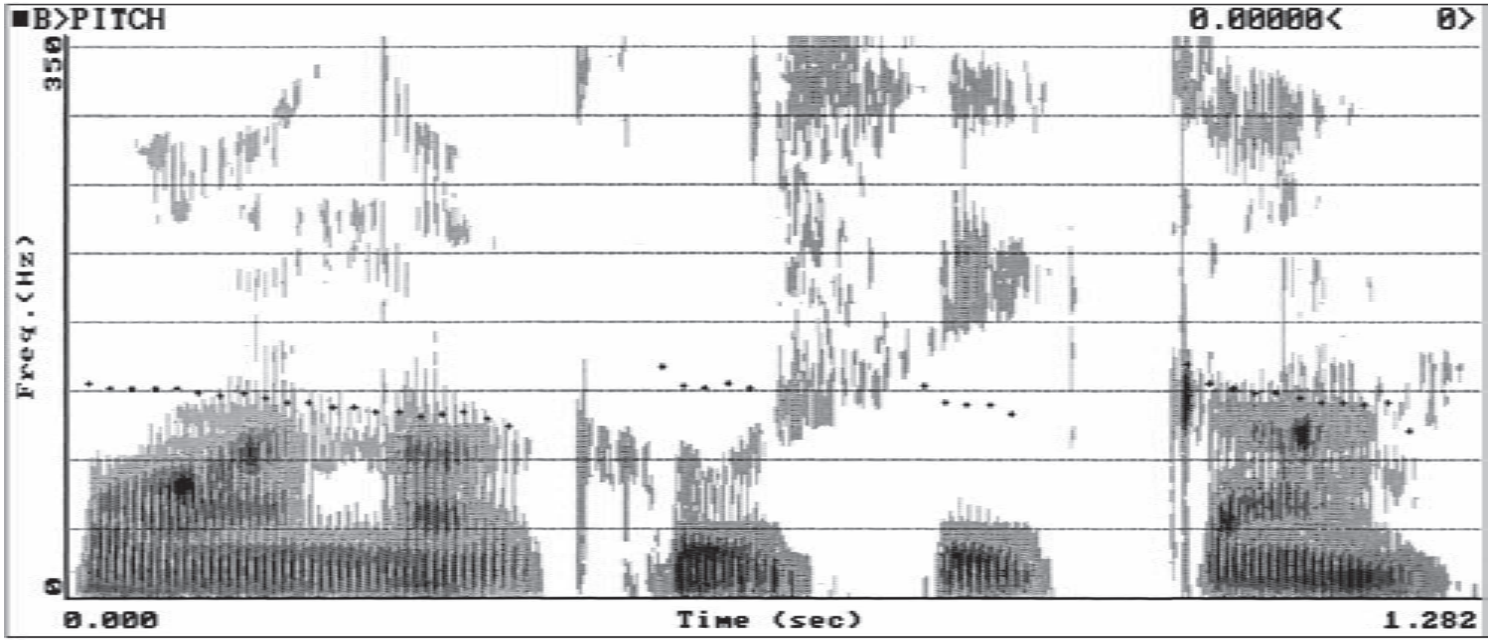
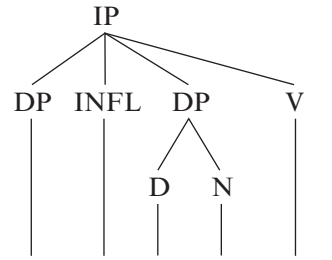


Figure 3.3 *Huan 'o g Husi ka*: "John hears Joe"

sentence, and those with a sequence of (L)HL patterns. As a consequence of the principles in (19), no *declarative* sentence has a single tonal contour, regardless of the order of the constituents (figures 3.3–3.8). We should note that the basic tonal contours that we have encountered in our research are in complete accordance with those described by other researchers (Hale et al. 1977b; Hale and Selkirk 1987).

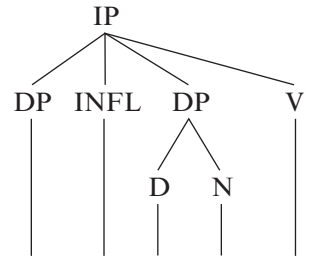
We present now our proposed syntactic configurations for the sentences in (1) and (2) and the spectrograms that we recorded for these sentences.

(20)



"John hears Joe"

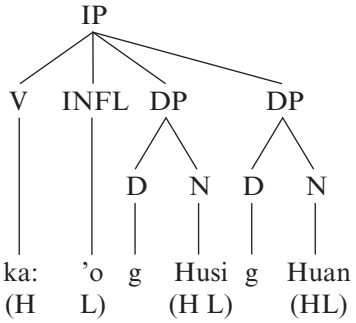
(21)



"Joe hears John"

The sentences in (20) and (21) contain the same words in the same order, but were given with the English translation as a prompt. The intonation contour on the first word, *Huan*, does show a small bump, a cue which we originally thought was decisive when *Huan* was an object adjunct. As the results in (12) show, however, interpretations of sentences such as (20) and (21) can vary.

(22)



"John is hearing Joe"

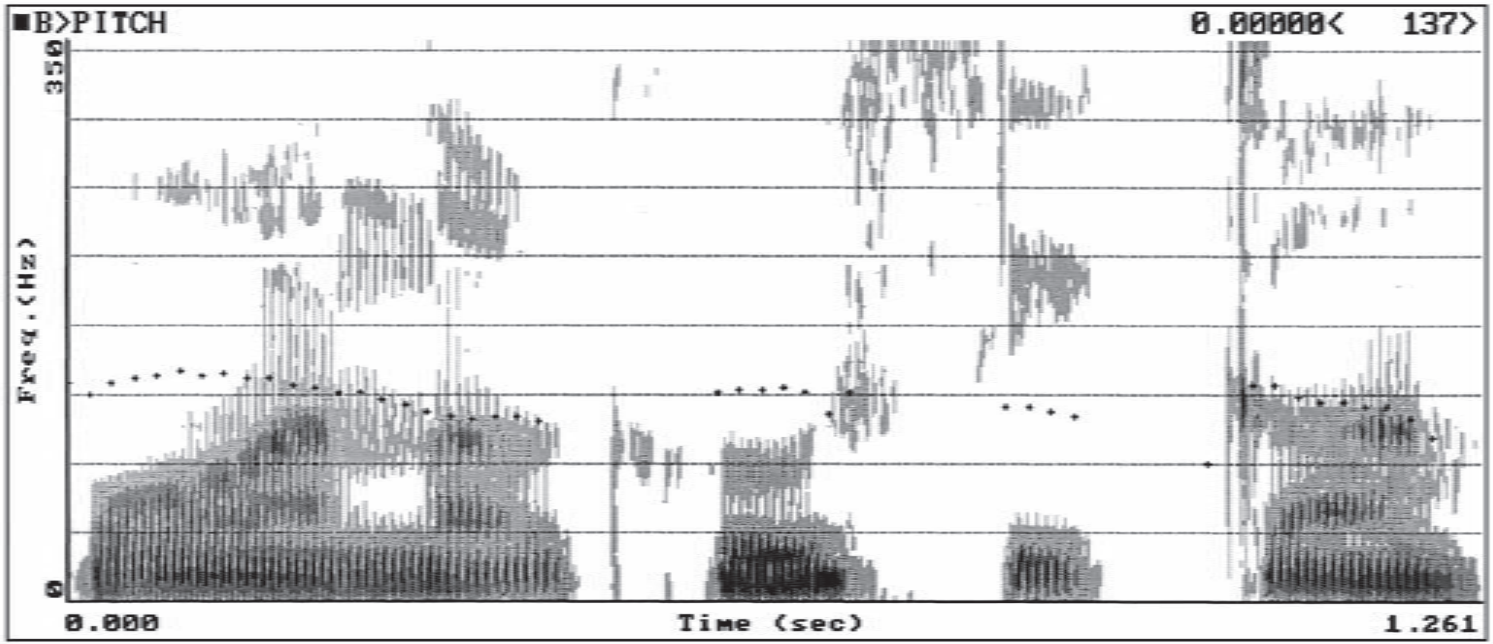


Figure 3.4 *Huan 'o g Husi ka*: "Joe hears John." A slight intonation bump is present on *Huan*, the object, that is not present on this word in figure 3.3, where *Huan* is the subject.

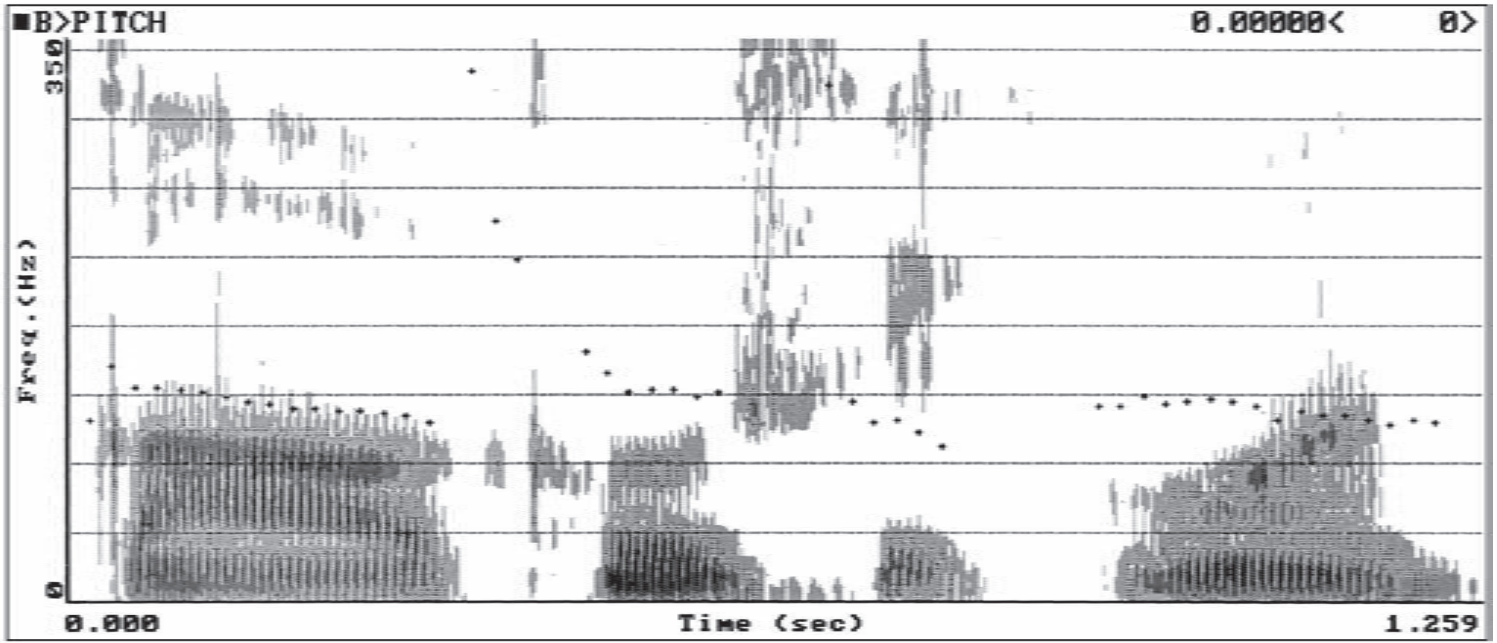


Figure 3.5 *Ka: 'o g Husi g Huan*: "John is hearing Joe"

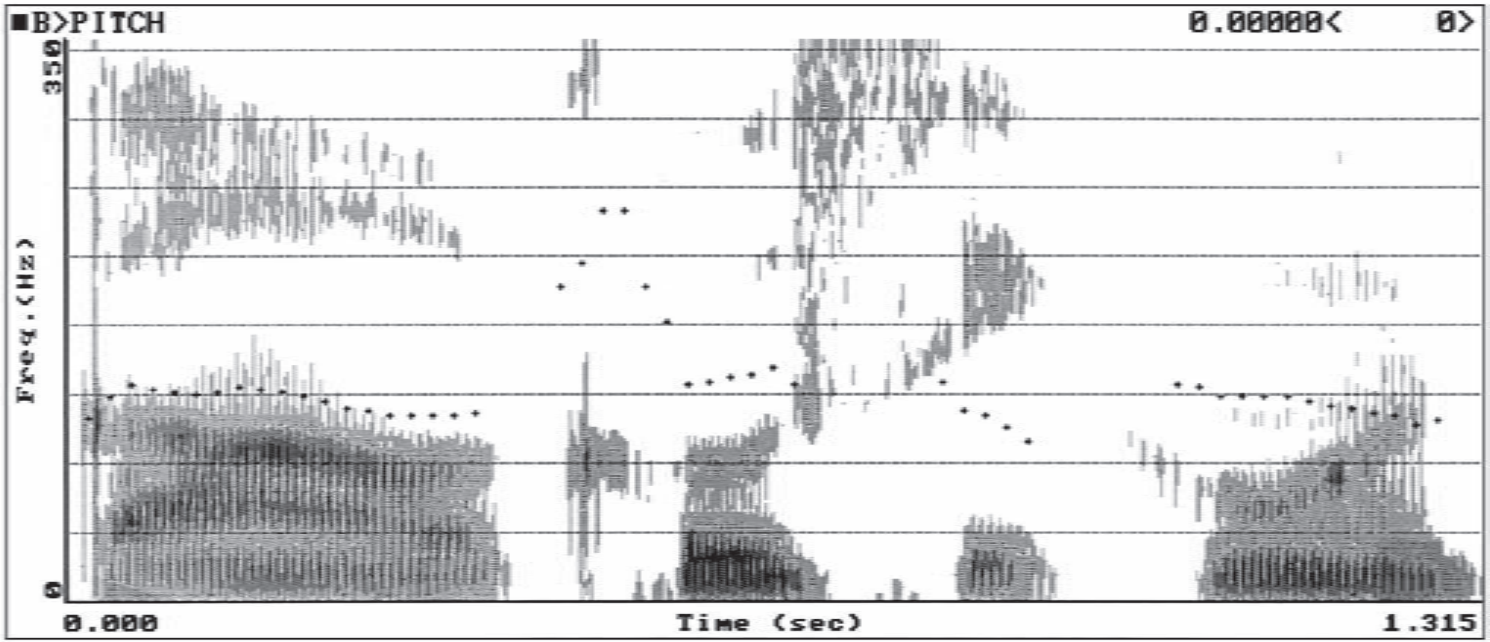
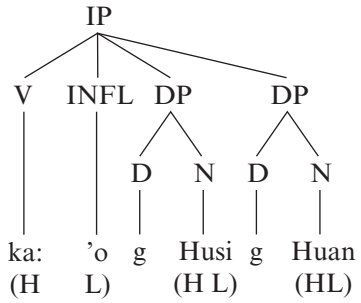


Figure 3.6 *Ka: 'o g Husi g Huan*: "Joe is hearing John"

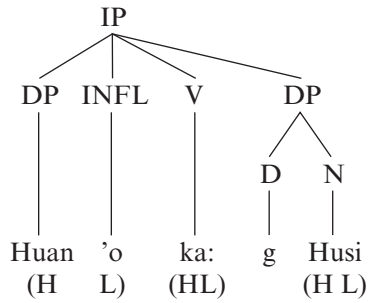
(23)



"Joe is hearing John"

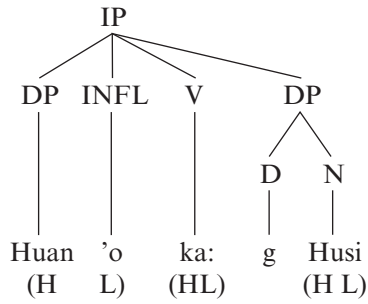
Figure 3.6 does reveal a slight (and short) intonation bump in the word *Huan*, the object adjunct, but this is a slight acoustic effect, and one which we have seen is not decisive.

(24)



"Joe is hearing John"

(25)



"John is hearing Joe"

The spectrograms in figures 3.7 and 3.8 reveal that distinctive intonation bumps do not always appear on the object adjunct. Both *Huan* and *Husi* have similar intonation bumps in both sentences. This is the type of evidence that forced us to abandon our initial hypothesis that an intonation bump was available as the invariant property that marked object adjuncts in syntactically ambiguous sentences.

We now discuss the case where a single intonation phrase encompasses a sentence. In this sentence type, shown in (26), the yes/no question marker N- fills the sentence-initial position, and the final word is a verb. That the single (L)HL covering the entire sentence is not the marking of the interrogative mood can be shown by the fact that when any or both of the adjunct nouns follows the verb they receive their own separate (L)HL intonation contours.

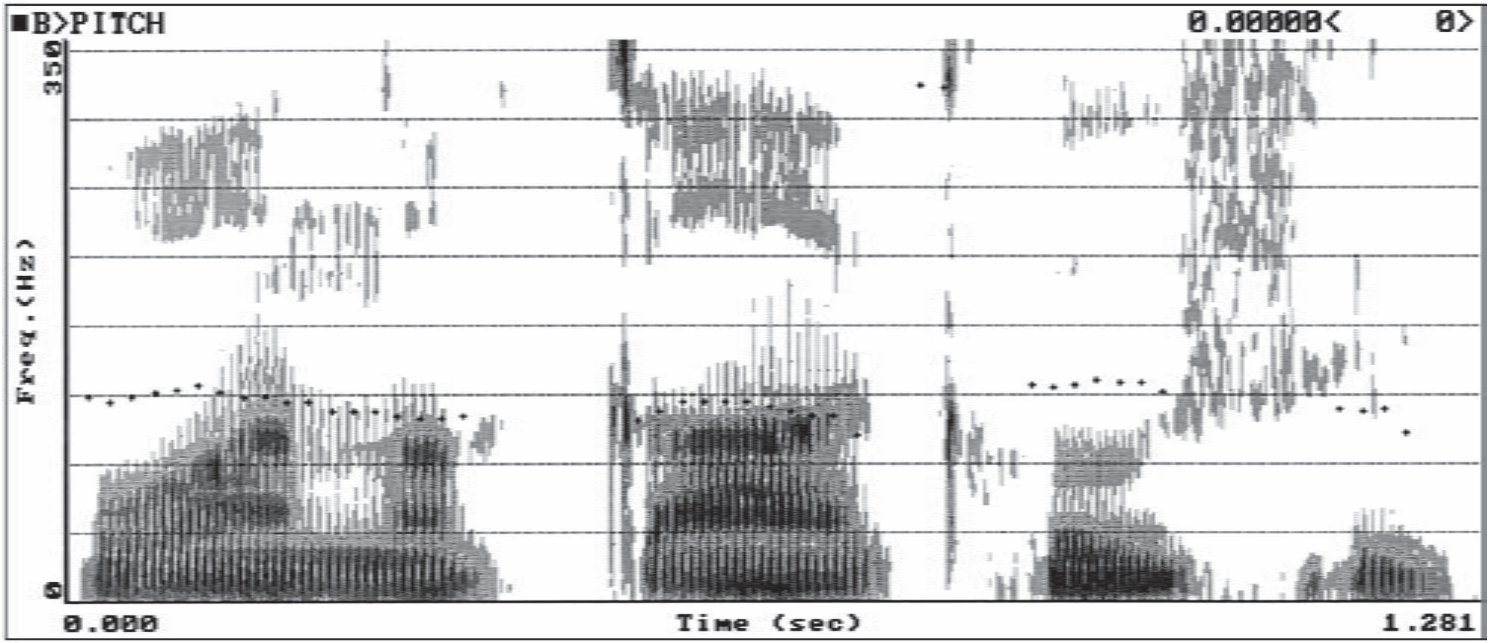


Figure 3.7 *Huan ʼo ka: g Husi*: "Joe is hearing John"

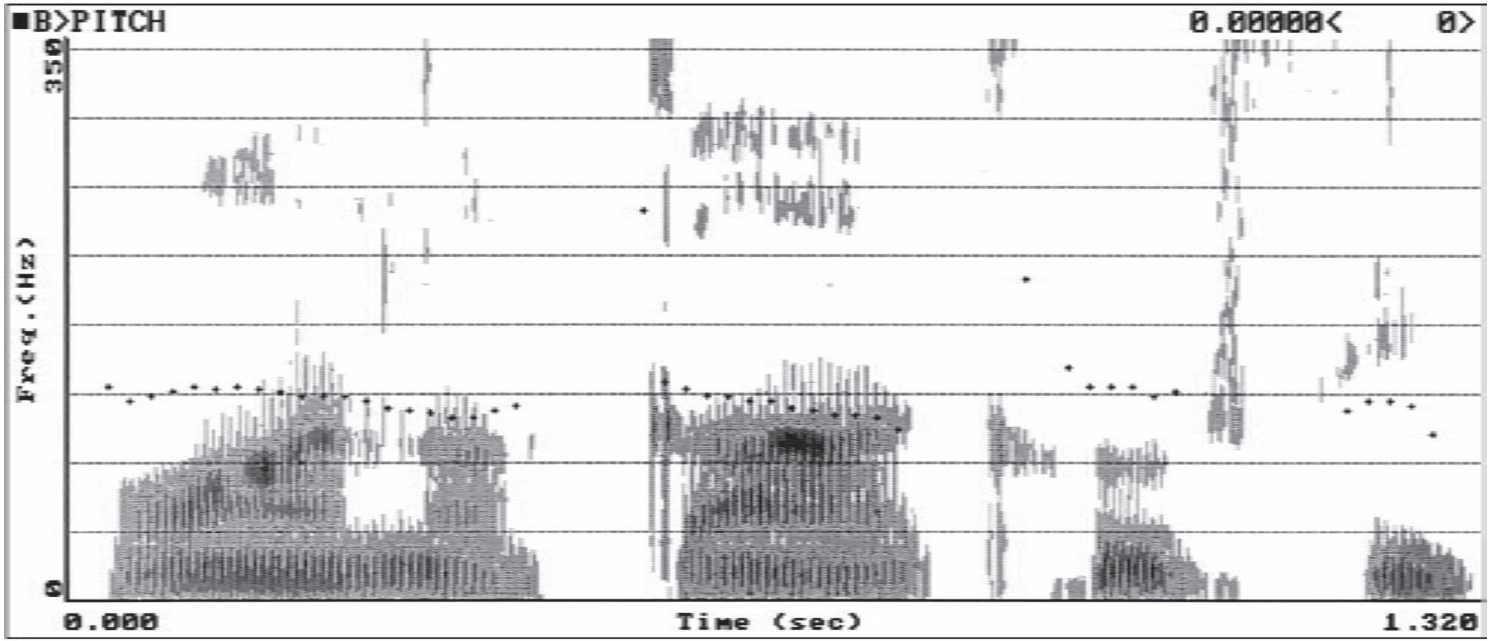


Figure 3.8 *Huan 'o ka: g Husi*: "John is hearing Joe"

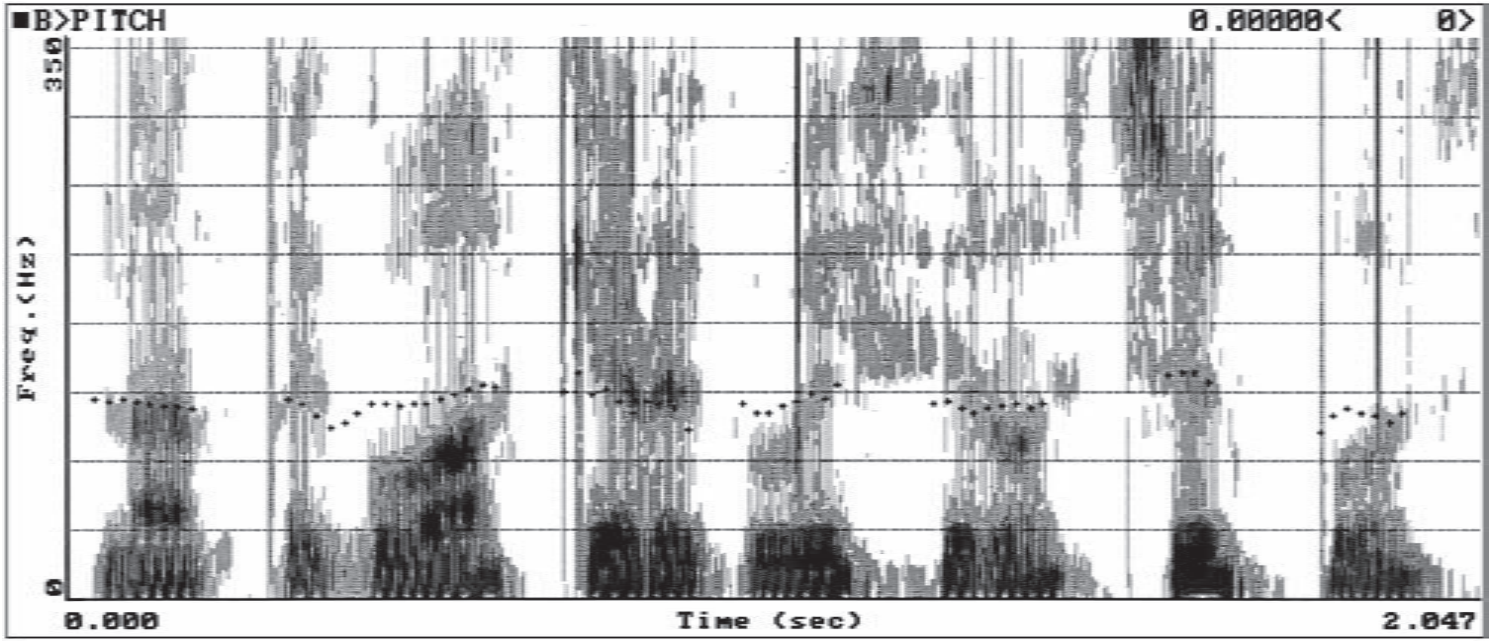
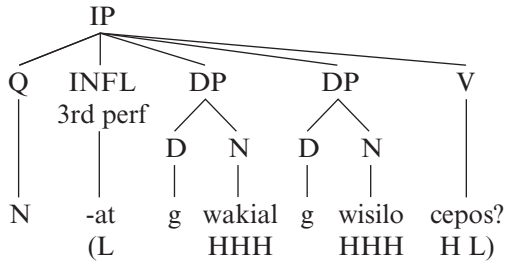


Figure 3.9 *N-at g wakial g wisilo cepos?* "Did the cowboy brand the calf?" The intonation contour in this case is essentially flat over the constituents of the sentence, with a slight peak appearing on the first syllable of the last word *cepos*.

(26)



"Did the cowboy brand the calf?"

There may be other sentence types that have a single tonal contour, and we leave the discovery and account of these types to future researchers. At this point we have no account of the fact that this small subset of O'odham sentences (yes/no questions) has a single tonal contour.

3.6 O'odham as a Discourse Configurational Language

The word order freedom found in O'odham is consistent with its characterization as a Discourse Configurational language (É. Kiss 1995, 1998b). Discourse Configurational languages are identified as those satisfying one or both of the two following criteria (É. Kiss 1995: 6):

A. The (discourse-)semantic function "topic," serving to foreground a specific individual that something will be predicated about (not necessarily identified with the grammatical subject), is expressed through a particular structural relation, in other words, it is associated with a particular structural position).
B. The (discourse-)semantic function "focus," expressing identification, is realized through a particular structural relation (that is, by movement into a particular structural position).

In O'odham the position of the nominals reflects information (topic/focus) structure and not grammatical relations. It is very clear that the topic functions independently from the notional categories of subject and object. The sentence-initial position can be either the topic or the focus position in O'odham, and it can be filled with any major sentential constituent. The following sentences illustrate the topic role of the initial position. If an O'odham speaker is asked "What's that noise?", in response to a commotion outside, an O'odham answer might be:

(27) Gogs 'o huhu'id g mi:stol
dog 3IMP chase det cat
"The dog is chasing the cat"

If the question is asked, "What's the dog doing?", the answer can be:

(28) Mi:stol 'o huhu'id g gogs
cat 3IMP chase det dog
"The dog is chasing the cat"

As is typical in many languages, there is no syntactical or morphological distinction between words that are topics or focused. Whether a word in sentence-initial position has one of these two functions will be determined by discourse features.

O'odham also has a cleft construction with a relative clause for marking focused constituents. Such a sentence is given in (29).

(29) Ḍ ʼo mi:stol mo g gogs huhu'id (ḍ < wuḍ)
copula 3IMP cat comp det dog chase
"It was the cat that the dog chased"

Contrastive emphasis can also be marked in O'odham (Zepeda, personal communication) by increasing the amplitude in the pronunciation of the word to be highlighted. Given the rich word order possibilities found in O'odham sentences, many additional discourse features are waiting to be investigated. We hope that this chapter will provide an impetus for future researchers to study these questions.

3.7 Summary, Conclusions, and Future Directions

Tohono O'odham has free word order in its major lexical categories (e.g. nominals and verbs), which results in ambiguity when two third person singular arguments are present in a sentence. Speakers may make use of extemporaneous prosodic features in an attempt to disambiguate a sentence with two third person arguments. However, these features are not used systematically and discourse features appear to be able to overwhelm any prosodic features.

The lack of marking of grammatical relations on its nominals follows from the identification of Tohono O'odham as a pronominal argument language. The pronominals are discourse variables, and any accompanying nominal adjuncts can be viewed as operators that bind the pronouns. The position of nominals in a Tohono O'odham sentence is not the result of "movement" in the traditional sense, and all of the tonal properties that have been ascribed to movement can be accounted for in another way (the principles stated in (19)).

In sum, the primary mechanism for interpreting ambiguous sentences must be features of the discourse (context). Of typological interest is the fact that interpretation must be carried out using principles in which discourse background interacts with the presentation of information in an O'odham sentence. We must therefore add the interpretation of the function of nominals to the list of grammatical properties such as definiteness, tense, and others, that are determined by abstract principles of inference/interpretation when they are not overtly present in sentences.

Note

1 We will employ the following abbreviations in our interlinear glosses: person marking will be given with numbers, e.g. 3 = third person; subj = subject; imp = imperfect aspect; perf = perfective aspect; det = determiner; ctrans = control transitive; non-ctrans = non-control transitive; inter = interrogative; comp = complementizer.

4

Bare Nominals: Non-Specific and Contrastive Readings under Scrambling

Veneeta Dayal

4.1 Introduction

This article explores the empirical validity of the generalization that scrambling of indefinites correlates with the loss of non-specific readings. There are two issues relevant to the generalization that have not been fully investigated in previous literature. The first is the status of contrastive readings which do survive scrambling. If contrastive readings are non-specific, and it is argued here that in some cases they must be, the generalization has to be restated to prohibit non-specific indefinites from scrambling *without* the additional support of contrast. It will be shown, furthermore, that a more liberal notion of contrast than is generally assumed is sufficient to license the scrambling of non-specifics. The second issue relevant to the generalization is the directionality of scrambling. The constraint on scrambling of non-specifics must be restricted to leftward scrambling since rightward scrambling readily allows non-specific readings without contrast.

The article uses these empirical facts to assess current approaches to the question of how syntactic displacement relates to interpretation. The fact that non-specific readings are preserved under scrambling, albeit with contrast, suggests that scrambling cannot be restricted to a class of expressions we may be willing to classify as specific. Approaches that take scrambled nominals to be mapped outside the domain where non-specific readings could arise also appear to be

Thanks to the audience at the April 2000 Conference on Word Order and Scrambling, University of Arizona (Tucson), in particular Helen de Hoop and Katalin É. Kiss. Research for this article was partially supported by NSF grant no. 0001669. The views expressed here do not reflect those of NSF.

untenable. An approach that allows expressions to scramble, regardless of their inherent or compositional semantics, but imposes discourse requirements appears more promising. Obviously, such requirements would have to be sensitive to the directionality of scrambling, since contrast behaves differently in the two cases. The ultimate goal is to identify discourse principles which would explain why contrast plays a crucial role in preserving non-specific readings of leftward scrambled nominals, but is not required for preserving such readings of rightward scrambled nominals. This paper is an attempt in this direction.

The primary data are drawn from scrambled bare nominals in Hindi. Nominals without overt determiners are of particular importance to this study since they can be shown not to have specific indefinite readings. Bare plurals in English, for example, cannot take scope over negation, adverbials, or attitude verbs. If such nominals have indefinite readings under scrambling, they would have to be characterized as non-specific. Since English does not allow scrambling it is not possible to test the effects of scrambling on bare plurals, though discussion of scrambling in other Germanic languages can be used to illustrate our current understanding of the issue. Hindi bare nominals are similar in relevant respects to English bare plurals and the language freely allows both leftward and rightward scrambling, providing adequate paradigms for testing the validity of the generalization and its theoretical consequences.

The paper begins by outlining current views on non-specific readings of English bare plurals and discussing current treatments of scrambled bare plurals in German and Dutch. Diesing (1992) and de Hoop (1992) propose two ways of dealing with the semantic impact of syntactic displacement but neither account can deal with contrastive readings of scrambled bare plurals. We conclude that accounts limited to sentential semantics cannot adequately explain the possibility of non-specific contrastive readings.

The next section expands the empirical base by including bare nominals from Hindi, a language which reveals a difference in interpretive possibilities based on directionality of scrambling. It is shown how an approach connecting word order variation to discourse contexts, such as Vallduví (1992), might handle the directionality question. The extension of Vallduví's theory proposed here is similar in spirit to Choi's (1999) account of contrastive readings for scrambling of German and Korean indefinites but differs crucially in not making scrambling dependent on any semantic feature of the nominal itself. Rather, it proposes that contrast is one of several features that allows the fulfillment of the relevant discourse principles. That is, the connection between leftward scrambled nominals and the marking of contrast is less direct than one may expect. This change, argued for on the basis of the Hindi facts, should be applicable to other languages as well. A distinction between leftward and rightward scrambling is also suggested that may account for their interpretive difference but rightward scrambling is not analyzed at length.

The paper ends by relating these claims to a recent study of children's acquisition of indefinites under scrambling. Acquisition data appear to be consistent with the view espoused here that non-specific indefinites are not barred from scrambling as long as certain discourse constraints are satisfied.

4.2 Non-Specificity and Contrastiveness

4.2.1 Quantification and bare plurals

I will begin this section by laying out the special semantic properties of bare nominals and outlining current views on the proper analysis of those properties. In doing so, I will focus on bare plurals in English but the facts generalize to other Germanic languages (see Krifka et al. 1995 for an in-depth survey). This is relevant since English does not allow scrambling but scrambling of bare plurals in German and Dutch has been studied at some length.

As the discussion in Carlson (1977) made clear, English bare plurals have a variety of readings. They can be arguments of kind-level predicates, i.e. those that can hold of a species but not of an ordinary individual:

(1)a. Dogs are common/rare/extinct
b. *A dog is common/rare/extinct
c. *Some dogs are common/rare/extinct
d. *Fido and Rover are common/rare/extinct

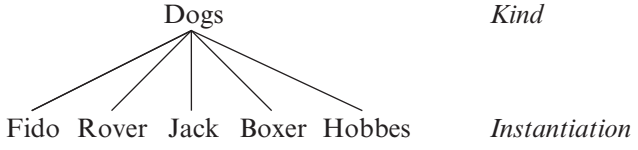
Additionally, bare plurals can be arguments of object-level predicates, those that hold of ordinary individuals. Here there is a difference in their quantificational force, depending on whether the predicate is individual-level or stage-level. With individual-level predicates bare plurals have generic, or quasi-universal force whereas in stage-level contexts they have existential force. Example (2a) suggests that all/most (at least typical) dogs have the property of barking. Example (3a) says so of only a subset of dogs in the given context:

(2)a. Dogs bark
b. A dog barks
c. Some dogs bark
d. Fido barks

(3)a. Dogs are barking
b. A dog is barking
c. Some dogs are barking
d. Fido is barking

Carlson argued that since sentences like (1) cannot be reduced to quantification over individuals (cf. the contrast between (1a, d) in particular), bare plurals have to be recognized as names of kinds. Semantically, they denote intensional entities linked to their individual instantiations in given worlds:

(4)



He further argued that the bare plural itself has no inherent quantificational force, its generic and existential readings deriving from the lexical and aspectual properties of the predicate. The individual instantiations associated with the kind term, accessible for predication, achieves quantificational force in virtue of the compositional semantics.

One of the key arguments against positing inherent quantificational force for bare plurals was the differential behavior of bare plurals and ordinary indefinites:

(5)a. Mary didn't see spots on the floor
b. Mary didn't see a spot/some spots on the floor

(6)a. Mary wants to meet movie stars
b. Mary wants to meet a movie star/some movie stars

(7)a. Mary killed rabbits for an hour
b. Mary killed a rabbit/some rabbits for an hour

As shown above, the bare plural necessarily takes narrow scope in each case while the regular indefinite is able to take scope over another operator. Example (5a) is not compatible with there being spots seen by Mary while (5b) is, showing the inability of the existential associated with the bare plural to take scope over negation. The same fact is shown in relation to the attitude verb *want* in (6). The version with the bare plural does not have a reading in which there are particular individuals whom Mary wishes to meet. The examples in (7) present a somewhat different angle on the phenomenon. Unlike (5) and (6) where the indefinite has an extra reading in addition to a shared reading with the bare plural, here the two have distinct readings. As expected by now, the bare plural takes scope under the adverbial, allowing for the plausible reading where different rabbits are involved in each killing. The indefinite, on the other hand, only takes wide scope, leading to the implausible reading where iterative killing of the same rabbits must occur. The narrow scope reading is missing.

On the basis of such facts Carlson argued that indefinites are existential quantifiers while bare plurals denote kinds. It follows from this that indefinites can take scope over other operators while bare plurals cannot. Further, given the intensional nature of kinds, it is possible for semantic operations to access their instantiations. Due to this, though bare plurals are non-quantificational they are able to obtain (distinct) quantificational force in individual and stage-level contexts.

While Carlson's claim that bare plurals denote kinds has been maintained, an alternative account for the generic/existential readings was proposed by Krifka (1988) and Wilkinson (1991). Noting that the behavior of bare plurals mirrors that of (singular) indefinites in this respect, they argue that bare plurals are ambiguous between kinds and properties.[1] The former meaning comes into play with kind-level predicates but with individual- and stage-level predicates their property level meaning is relevant. By positing lexical ambiguity, this line of approach could draw on the influential analysis of Kamp (1981) and Heim (1982) (see also

D. Lewis 1975), where (singular) indefinites get universal or existential force depending on whether they are mapped into the restrictor or the nuclear scope of a tripartite structure. The general schema and the logical representations of (2a, b) and (3a, b) under this approach are shown below:

(8)a.

OP [Restrictor] ∃ [Nuclear Scope]

b. GEN x [dogs/dog(x)] ∃ [bark/barks(x)]

c. ∃x [dogs/dog(x) & is/are barking(x)]

Apart from providing a unified explanation for the parallel behavior of two sets of expressions, this move has another welcome consequence. The quantification is no longer fully determined by properties of the verb, as in Carlson's original proposal. The ambiguity of sentences like (9), due to Barbara Partee (Carlson 1989), was shown to be problematic for that approach:

(9)a. Computers compute weather forecasts

b. GEN x [computers(x)] ∃y [weather forecasts(y) and compute(x,y)]

c. GEN x [weather forecasts(x)] ∃y [computers(y) and compute(y,x)]

By loosening the tie between the lexical and aspectual properties of the verb and the quantificational force of its arguments, it becomes possible to map the bare plurals more freely. Under one mapping, we get the reading where it is a property of computers in general to compute some daily forecast, under another the more salient reading is captured whereby it is a general property of weather forecasts that they are computed by some computer. Of course, identifying the principles behind the mapping of arguments is not trivial and considerable research has gone into understanding what governs the tripartite representation in different cases (see Krifka et al. 1995 and section 4.2.2 below).

While treating bare plurals along the lines of singular indefinites has obvious advantages, it blurs the distinction between them shown in (5)–(8), a major motivation for Carlson's treatment of bare plurals as kinds. These two approaches, however, are not necessarily incompatible. The account advocated by Chierchia (1998) can be seen as combining elements of both (see also Carlson 1989). Briefly, Chierchia argues for a Carlsonian approach to bare plurals as uniformly kind denoting. Bare plurals are predicative terms which can combine with determiners to yield quantified DPs if they are projected in the syntax as common nouns (cf. (10a)). In argument positions, however, they must type-shift to kind terms via the nominalizing operator defined in (10b). The noun phrase can now combine with kind-level predicates without further adjustment but when it occurs with individual or stage-level predicates, the rule of Derived Kind Predication (DKP) (10c) is triggered. DKP utilizes the predicativizing operator which takes a kind and yields the set of its instantiations in the given world (10d) (see Partee (1987) for the general picture of flexible types for noun phrases):

(10)a. $[_{DP}$ every $[_{NP}$ dog]] = $\lambda Q\ \forall x\ [dogs(x) \rightarrow Q(x)]$,
where *every* = $\lambda P \lambda Q\ \forall x\ [P(x) \rightarrow Q(x)]$ and *dog* = $\lambda x\ [dog(x)]$

b. For any property P and world/situation s, $^{\cap}P = \lambda s\ \iota P_s$

c. Derived Kind Predication (DKP):
If P applies to objects and k denotes a kind, then $P(k) = \exists x\ [^{\cup}k(x)$ and $P(x)]$

d. For any kind k and any world/situation s, $^{\cup}k = \lambda x\ [x \leq k_s]$ where k_s is the plural individual that comprises all of the atomic members of the kind.

The empirical force of these operations can be best understood with the help of concrete examples:

(11)a. extinct ($^{\cap}$dogs)

b. GEN [$\exists x\ [^{\cup\cap}dogs(x)]]\ \exists\ [bark(x)] \Rightarrow$ GEN x [$^{\cup\cap}dogs(x)$] [bark(x)]

c. $\exists x\ [^{\cup\cap}dogs(x)$ and are-barking(x,s)]

In (11a) the kind term is an appropriate argument for the predicate but not in (11b, c). In these cases, the kind term is of the right semantic type (entity type *e*) but it is of the wrong semantic sort (a *kind* entity instead of an *object* entity) – the predication is about regular individuals, not the species. Semantic access to instantiations due to DKP comes into play, giving us existential quantification over instantiations. Now, depending on whether the argument is mapped into the nuclear scope or the restriction, it gets existential or generic force. This is because existential quantifiers in Dynamic Predicate Logic are so defined that their quantification can be undone by operators having scope over them (see Chierchia 1992 for discussion). Examples (11b, c) encode essentially the same truth conditions as the bare plurals in (8b, c).

Although Chierchia's approach and the Krifka/Wilkinson approach converge on the semantics of bare plurals in the basic cases, there is a substantive difference between them with respect to the source of the quantificational force. For Chierchia existential quantification comes in as part of the local sort adjustment that bare plurals as kind terms undergo in the context of predicates that apply to regular individuals. As such, existential quantification necessarily takes narrowest scope. In the case of indefinites, existential quantification comes from the meaning of the determiner. The noun phrase being quantificational, it is free to interact scopally with other operators. For Krifka/Wilkinson bare plurals and singular indefinites gain their quantificational force from the same source, that is, by being bound by NP-external operators, predicting parallel behavior. The distinction between the two approaches can be seen by examining the contrast between (5a, b). For Chierchia, (5a) is interpreted as (12) while (5b) is structurally ambiguous between (13a, b). For Krifka/Wilkinson, (5a, b) are predicted to have the same readings, namely (13a, b), since bare plurals and singular indefinites are treated as identical:

(12) $\neg$ see(m,$^{\cap}$spots-on-the-floor) $\Rightarrow$ *(via DKP)* $\neg\ \exists x\ [^{\cup\cap}$s-o-t-f(x) and see(m,x)]

(13)a. $\exists x$ (s-o-t-f(x) and $\neg$ see(m,x))
b. $\neg \exists x$ (s-o-t-f(x) and see(m,x))

Diesing (1992), working within the Krifka/Wilkinson approach, provides a potential solution to the scope problem. Indefinites, in addition to their predicative meaning which allows binding by generic operators or existential closure, are claimed to be quantifiers with inherent existential force. Under this view, negation could be obligatorily assigned scope over existential closure. In cases like (13a) the wide scope existential would, then, be due to the quantifier meaning of the indefinite. A similar option would not be available to the bare plural.

This proposal would still be unable to account for the differential behavior of indefinites and bare plurals with respect to adverbials, illustrated in (7a, b):

(14)a. Mary killed rabbits for an hour
$\forall t$ [t $\in$ an hour $\rightarrow$ killed-at-t(m,$^\cap$rabbits)]
via DKP $\Rightarrow$ $\forall t$ [t $\in$ an hour $\rightarrow$ $\exists x$ [$^\cup{}^\cap$rabbits(x) and killed(m,x)]]

b. Mary killed a rabbit/some rabbits for an hour
$\exists x$ [rabbits(x) and $\forall t$ [t $\in$ an hour $\rightarrow$ killed-at-t(m,x)]]

We can infer from the missing narrow scope reading for the indefinite that the adverbial takes scope under the domain of existential closure. Taking the lexical semantics of the adverbial to induce quantification over relevant occasions within an interval, the verb–adverb complex denotes $\forall t \in$ one-hour $\rightarrow$ kill-at-t(x,y). The kinds-based approach predicts different readings for the bare plural and the indefinite. In the first case, the kind term replaces the variable *y* followed by *DKP*-induced existential quantification. In the second case, the indefinite is quantified in. The problem for the alternative approach is the following. Since bare plurals and indefinites are both predicative, and bare plurals can only get existential force via existential closure, it is impossible to block a parallel derivation for indefinites.

It might be worth pointing out that it is not essential for deriving the scope facts in Chierchia's approach that indefinites be treated as quantified noun phrases whose existential operator can be wiped out by the generic operator. The explanation could be maintained even if indefinites were taken to get the relevant reading through existential closure. Crucial to Chierchia's explanation is the definition of the sort adjusting operation *DKP*. As in Carlson's original version, the bare plural does not have scope over other operators since it is a name but it differs from ordinary names in allowing *DKP* to introduce existential quantification over its instantiations. Note also that since Diesing takes the bare plural and the indefinite to be ambiguous (in different ways), her position on indefinites comes closer to that of Chierchia (1992) than the original Kamp/Heim view of indefinites. She would get the same coverage if she took indefinites to unambiguously denote dynamic existential quantifiers able to be bound by generic or existential closure.

Let us assess, against this background, the status of bare plurals with respect to specificity. While it remains an open issue what exactly constitutes specificity, an influential early account states that a noun phrase is specific if it takes widest scope in relation to other operators (J.D. Fodor and Sag 1982). By this criterion,

proper names canonically qualify as specific. Since bare plurals under the Carlsonian view are names of kinds, they could in some sense be considered specific. However, if we focus on their existential reading and use the scope facts as diagnostic they must clearly be classified as non-specific. Though the noun phrase denotes a kind-level individual, it cannot be used to refer to any particular set of instantiations. This may be worth keeping in mind as we turn to the behavior of bare plurals under scrambling.

I have summarized in this section the basic generalizations about the interpretation of bare nominals and the primary approaches developed to account for them. I personally adopt a Carlsonian view of bare plurals as uniformly kind denoting, partly due to its success in explaining the scope effects and partly having to do with evidence from Hindi discussed in Dayal (1999, in preparation). It should be clear, however, that not all aspects of one approach are necessarily at odds with the other. Unless the differences are relevant to the issue under discussion, I do not make reference to kinds in this paper.

4.2.2 Bare plurals under scrambling

Current understanding of the semantic behavior of bare plurals under scrambling is based largely on German and Dutch since English does not allow scrambling. English does allow optional syntactic displacement in the form of topicalization. Although the results of scrambling and topicalization overlap to some extent, we will confine our discussion here to scrambling. In doing so, we will focus on analyses proposed by Diesing (1992) and de Hoop (1992) (see also Kratzer 1995, whose account is close to Diesing's).

The basic generalization about scrambling can be demonstrated with the following German examples. Example (15a), with the bare plural in base-position, asserts the existence of some children playing in the street while (15b), with the bare plural scrambled, makes a statement about children in general:[2]

(15)a. weil [$_{IP}$ ja doch [$_{VP}$ Kinder auf der Strasse spielen]]
since indeed children in the street play
"Since indeed there are children playing in the street"

b. weil [$_{IP}$ Kinder$_i$ ja doch [$_{VP}$ t$_i$ auf der Strasse spielen]]
"Since indeed children play in the street"

Diesing argues on the basis of such facts for the Mapping Hypothesis in (16):

(16) Material from VP is mapped into the nuclear scope.
Material from IP is mapped into a restrictive clause.

(17)a. $\exists$x [children(x) and playing in the street(x)]
b. Gen x [children(x)] [play in the street(x)]

Subjects of stage-level predicates such as the one in (15) originate in [SPEC, VP]. In German they may remain in that position or appear outside the VP boundary, marked by the particle *ja doch*, due to scrambling. Diesing's point is that movement

of this kind results in the difference in interpretation noted above. The Mapping Hypothesis derives (17a) as the representation of (15a) and (17b) as the representation for (15b).[3]

Before going further into the semantics of scrambling, let us make note of some underlying assumptions about the creation of tripartite structures and the mapping of arguments. A crucial factor is the aspectual specification of the predicate, where a broad distinction can be made between aspects that support generic/habitual readings and those that yield episodic readings.[4] The simple present in English, for example, supports the kind of generic interpretation we see in (17b) while the progressive forces the episodic interpretation of the kind seen in (17a). In German the present tense morphology in (15) is compatible with both construals.

To understand the full import of the Mapping Hypothesis, we must distinguish between two close but distinct readings possible in generic sentences. The difference between the two readings can be brought out once a variable over times and locations (or situations) is introduced. The truth conditions are affected by whether the bare plural is mapped into the nuclear scope or the restrictor. Consider the logical representations in (18a, b). Example (18a) says that for most contextually relevant times there are children playing in the street while (18b) says that for most contextually relevant times and children, the children play in the street at the time. In a situation where most children do not in fact play in a particular street, but it is still true that at most contextually relevant times the street is occupied by children playing, (18b) would be false. This is because it counts the number of children who play in the street. In the same situation (18a) would be true since it counts the number of relevant situations when the street is in use to see if there are children playing there. The Mapping Hypothesis in (16) predicts that the scrambled bare plural in (15b) should only have the logical representation in (18b):

(18)a. Gen t [times(t) and C(t)] ∃x [children(x) and play in the street(x) at t]
b. Gen t x [times(t) and C(t) and children(x)] [play in the street(x) at t]

One question that immediately arises has to do with the behavior of scrambled bare plurals in sentences with episodic interpretations. Here there is a difference between bare plurals and regular indefinites. The following Dutch examples from de Hoop show that scrambling of bare plurals leads to ungrammaticality while the scrambling of indefinites leads to the loss of a weak or non-specific reading. Example (19a) with a scrambled bare plural is unacceptable. Example (19b) with a scrambled indefinite has a partitive reading, presupposing a known set of linguists. The non-scrambled version of the sentence would also be compatible with a situation where the speaker had no particular set of linguists in mind, i.e. with a non-specific or weak reading:

(19)a. *dat de politie taalkundigen$_i$ gisteren t$_i$ opgepakt heeft
that the police linguists yesterday arrested has
Intended meaning: "that the police arrested linguists yesterday"

b. dat de politie [veel taalkundigen]$_i$ gisteren t$_i$ opgepakt heeft
that the police many linguists yesterday arrested has
"that the police arrested many *(of the) linguists yesterday"

In order to explain such contrasts, Diesing introduces the distinction between bare plurals and indefinites discussed in section 4.2.1 in relation to the scope problem. According to her, (19a) is unacceptable because the bare plural is outside the domain of existential closure. Since there is no generic operator in the construction, the variable cannot be bound. Example (19b) is acceptable because the indefinite is not dependent on a binder for its quantificational force, it can get a partitive reading by virtue of its quantificational meaning.

Let us turn now to the explanation proposed for these facts in de Hoop (1992). Her conception of the relation between scrambling and semantic interpretation is substantively different from Diesing's. She makes a three-way correlation between scrambling, Case assignment, and interpretation. According to her, verbs can assign strong or weak Case. NPs with strong Case have strong readings while those with weak Case have weak readings. Strong readings of indefinites include partitive, referential (or specific), generic, and generic collective readings. Their weak readings involve predicate modification. Finally, NPs with weak Case cannot move from their base-position which has the consequence of restricting weak readings to base-positions. She extends her account to include subjects, claiming that in Dutch and German weak Nominative Case is assigned to [SPEC, VP] where subjects of unergative verbs may appear; strong Nominative Case is assigned to [SPEC, IP] for subjects that move. Consequently, VP-internal subjects have weak readings while VP-external subjects have strong readings.

Obvious differences notwithstanding, de Hoop's and Diesing's accounts make similar predictions for the cases considered so far. Instead of going into facts that separate the two accounts (see de Hoop 1992), I would like to present some data bearing directly on the question of how syntactic displacement impacts on interpretation which remain elusive under both accounts. Examples like (19a), which are unacceptable because a bare plural has scrambled in the absence of a generic operator, are known to become acceptable with the aid of contrastive focus. Example (20), with the scrambled bare plural phonologically stressed, implies that some other comparable group of individuals was not arrested. As de Hoop herself notes, the only plausible reading for the bare plural in these cases is of a non-specific existential. Under either account this should not be possible:

(20) dat de politie TAALKUNDIGEN$_i$ gisteren t_i opgepakt heeft
"that the police arrested LINGUISTS (not physicists) yesterday"

Let us consider the interpretation one might associate with contrastive focus, basing our discussion on in situ contrastive focus in English. Example (21a) has three distinct components of meaning (21b–d):

(21)a. John ate APPLES
b. $\exists x$ [apples(x) and ate(john,x)]
c. $\exists x$ [John ate x]
c′. {John ate apples, John ate pears, John ate oranges, . . . }
d. $\forall x$ [C(x) and ate(john,x)] [apples(x)]
d′. $\forall x$ [C(x) and ate(john,x)] $\exists y$ [apples(y) and y = x]
e. $\forall x \forall y$ [apples(x) and ate(john,y)] [ate(john,x)]

Example (21b) encodes the minimal truth conditions of the statement, asserting the existence of apples that John ate. Example (21c) captures the presupposition that John ate something, and is derivable from the focus semantic value of (21a) (Rooth 1985), given in (21c′). There is, of course, a standard contextual restriction on the relevant set of objects but it should minimally include at least one other item. Examples (21d, d′) are slightly different ways of encoding the intuition that the statement excludes the possibility of John eating something else, where *C* refers to the set in (21c′). While (21b, c) are non-controversial, it is not clear whether (21d, d′) is part of the semantics or an implicature that need not be semantically represented. Note that (21d, d′) will entail (21b), assuming with Von Fintel (1994) that natural language quantification presupposes non-empty domains of quantification. Deciding whether exhaustivity is an entailment or an implicature is a non-trivial task but it is not essential to settle the question in order to make the point relevant for the present discussion.[5] Whether we take (21b) or (21d, d′) as the correct logical representation for (21a), the focused phrase crucially is not interpreted in the restrictor. Any attempt to do so leads to wildly incorrect truth conditions, as would be obvious from examining (21e).

Taking note of the position at which the focused phrase is interpreted is particularly relevant in the case of scrambling, since it has often been claimed in the literature that focused phrases move to operator positions, typically at the left periphery of the clause. If so, one might be able to argue that it is such movement that forces the creation of a tripartite structure of the kind seen in (21d, d′). The fact that the scrambled focused phrase must still be interpreted in the nuclear scope, however, shows quite clearly that Diesing's simple tree-splitting algorithm in (16) is not adequate. To maintain de Hoop's account, one could perhaps recast the notion of strong readings for indefinites to include contrastive readings but that would not be in keeping with the conceptual underpinning of the notion *strong reading*.

Given the availability of contrastive readings for scrambled bare plurals, then, we are forced to revise the generalization that scrambling leads to loss of non-specific readings. We must instead look for an approach that allows scrambling, regardless of the specificity of the noun phrase, and find alternative explanations for the fact that scrambling is not unrestricted. In the next section I turn to the task of developing such an alternative. The crucial respect in which this alternative approach will differ from the approaches considered so far is in looking for explanations not only in the internal properties of scrambled sentences but also in their relationship to prior discourse.

4.3 Scrambling as a Discourse-Regulated Phenomenon

4.3.1 Hindi bare nominals and scrambling

Switching to Hindi, a language with freer word order than German or Dutch, let me begin by establishing the connection between Hindi bare nominals and English bare plurals. I will then discuss the impact of scrambling on interpretation before introducing a discourse-theoretic approach to word order variation as a way of handling the problem of contrastive non-specific readings under scrambling.

In addition to bare plurals, Hindi also has bare singulars and both types of bare nominals display a familiar range of readings. They are compatible with kind-level predicates, and have generic or existential interpretations with object-level predicates. While bare singulars and bare plurals do not have identical behavior, the differences do not affect the point under discussion here (see Dayal 1999, in preparation). I demonstrate only with the singular case, which in some cases is better translated with the definite singular generic in English and in some cases with an indefinite:

(22)a. kutta aam jaanvar hai
dog common animal be-PR
"The dog is a common animal"

b. *kutta bhauNktaa hai*
dog bark-PR
"The dog barks"/"Dogs bark"

c. anu kitaab paRh rahii hai
Anu book read-PROG-PR
"Anu is reading a book"

One respect in which the Hindi bare nominal differs from the Germanic bare nominal is in its ability to refer to a contextually salient antecedent, as demonstrated in (24). At an intuitive level, the possibility of definite readings for the bare nominal correlates with the absence of a definite determiner in the language. For purposes of this paper let us assume that the Hindi bare nominal is ambiguous between kinds and definites, though in Dayal (1999, in preparation) the two meanings are related in principled ways:

(23) Some children$_i$ came. *Children$_i$ were happy

(24) *ek baccaa$_i$ aayaa. baccaa$_i$ bahut khush lagaa*
one child came child very happy seemed
"A child came. The child seemed very happy"

What this means is that in generic and existential contexts like (22b, c) the bare nominal has, in addition to the readings discussed above, also a definite reading where it refers to a contextually salient entity in the discourse. Example (22b) can also be a habitual sentence about a particular dog or set of dogs, (22c) about a statement about a familiar book or set of books.[6]

Limiting ourselves to the range of readings that aligns Hindi bare nominals with English bare plurals, the following examples show that they too display obligatory narrow scope:[7]

(25)a. anu kitaab nahiiN paRhegii
Anu book not read-F
"Anu won't read any book"

b. anu ek kitaab nahiiN paRhegii
Anu one book not read-F
"There's a book Anu will not read" and "Anu won't read any book"

(26)a. anu kitaab paRhnaa cahtii hai
Anu book read-INF want-PR
"Anu wants to read a book (no particular book)"

b. anu ek kitaab paRhnaa cahtii hai
Anu one book read-INF want-PR
"Anu wants to read a (particular) book"

(27)a. anu puure din machhlii pakaRtii rahii
Anu whole day fish catch-PAST
"Anu kept catching fish the whole day"

b. anu puure din ek machhlii-ko pakaRtii rahii
Anu whole day one fish -ACC catch-PAST
"Anu kept catching a fish the whole day"

Having established the basic properties of Hindi bare nominals, let us turn to their behavior under scrambling. While the canonical order in Hindi is SOV, it has leftward and rightward scrambling. The OSV order is shown in (28) and SVO order in (29):

(28)a. kitaab anu paRh rahii hai
book Anu read-PROG-PR
"Anu is reading the book"

b. tofaa anu -ne ravii-ko bhejaa hai
gift Anu-ERG Ravi-ACC send-PERF-PAST
"Anu has sent Ravi the gift"

(29)a. anu paRh rahii hai, kitaab
Anu read-PROG-PR book
"Anu is reading a/the book"

b. anu-ne ravii-ko bhejaa hai tofaa
Anu-ERG Ravi-ACC send-PERF-PAST gift
"Anu has sent Ravi a/the gift"

As we can see from the translations, there is a difference between leftward and rightward scrambling with respect to the preservation of non-specific readings. This has been noted previously by Gambhir (1981) and Mohanan (1995) (see also Mahajan 1990; Kidwai 1995). The bare nominal scrambled to the left only has a definite reading, in conformity with what we know from German and Dutch. In contrast, nominals scrambled to the right retain both the definite and the

non-specific existential reading. Example (30) shows that contrastive focus on the nominal restores the non-specific reading of leftward scrambled nominals:[8]

(30)a. KITAAB anu paRh rahii hai
book Anu read-PROG-PR
"Anu is reading a book (not a newspaper)"

b. TOFAA anu -ne ravii -ko bhejaa hai
gift Anu-ERG Ravi-ACC send-PERF-PAST
"Anu has sent Ravi a gift (not something else)"

It is clear how Diesing's and de Hoop's accounts would apply to leftward scrambling in Hindi, the facts being essentially parallel to German and Dutch, but let us see how they would extend to rightward scrambling. I have assumed so far that leftward scrambling involves movement, a position consistent with most leading accounts of the phenomenon. The same might be expected to apply to rightward scrambling. In the wake of Kayne's (1994) proposal, however, this is no longer a given. Mahajan (1997), for example, has argued that Hindi is SVO, with apparent cases of rightward scrambling being cases of stranding (see also Dwivedi 1999 for this view and Dayal 1996 for arguments against it).

In de Hoop's account, movement of indefinites should correlate with loss of non-specific readings. The fact that rightward scrambling does not display this effect might suggest that it could be explained within her theory if the Kaynean view of Hindi syntax is adopted. Note, however, that this position would become inconsistent with the explanation for weak readings in SOV structures since those orders would have to be derived by movement. Thus, the difference between leftward and rightward movement with respect to non-specific readings of bare nominals appears problematic for de Hoop's account whether the base order of Hindi is taken to be SOV or SVO.[9]

Let us see how the paradigm fits into Diesing's approach. The availability of non-specific readings with rightward scrambled nominals suggests that they are within the VP when mapping to semantics occurs. Under the traditional SOV account of Hindi, rightward scrambling must then be analyzed as adjunction to a maximal phrase, which we might take to be VP. However, Diesing argues explicitly against adjoined elements being treated inside the VP for mapping. Again, we must also consider how Diesing's approach would work under a Kaynean analysis of Hindi. Her account might be expected to fare better than de Hoop's since it is not tied to Case. Bare nominals, generated to the right, could fall within the domain of existential closure. More importantly, they may be said to remain within this domain even when moved to the left of the verb in SOV structures. It is only when movement goes beyond the VP boundary, as in the OSV cases we considered, that it would move out of the domain of existential closure and lose its non-specific reading. While this explanation appears promising, it breaks down on further investigation. Consider the case of a rightward scrambled subject, an OVS structure, where the direct object is interpreted non-specifically:

(31)a. kitaab paRh rahii hai, anu
"Anu is reading a book"

b. $[_{XP}\ book_j\ read_v\ [_{VP}\ Anu\ [t_{v\text{-}read}\ t_{j\text{-}book}]]]$

Without getting into the nitty gritty of the derivation, we might still assume that if all cases of rightward scrambling are, in fact, cases of stranding, a derivation for (31a) would involve movement of the direct object and the verb outside the phrase marker that contains the subject. Taking the subject to be generated in [SPEC, VP], this would minimally have to be a case of VP adjunction. The non-specific reading for the direct object would incorrectly be ruled out by the Mapping Hypothesis.

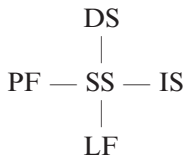
It would appear, then, that the difference between leftward and rightward scrambling remains recalcitrant on both approaches. This may well be because directionality does not have formal status in either account. In the next section we will see whether an approach to word order variation in which directionality plays a more central role provides a better handle on the phenomenon.

4.3.2 A discourse-based approach to word order variation

Work on word order variation within the functionalist tradition relates order of elements to discourse contexts. There are many different proposals for determining the units of the sentence relevant to the principles governing discourse. Instead of summarizing them here, I will take one recent proposal and try to show how it would approach the problem posed by contrastive and non-specific readings of bare nominals under scrambling.

Vallduví (1992) argues that word order variations do not encode truth conditional differences but are still informationally distinct. Such variations are sensitive to the discourse contexts in which they can be appropriately uttered. A proper analysis of such phenomena involves an independent level of grammar, Information Structure (IS), that relates to the other components as given below. The point to note is that there is no direct connection between IS and Logical Form (LF), the level that mediates between syntax and interpretation. This captures Vallduví's claim that word order variation is related to discourse without having any impact on truth conditional semantics, a significant departure from Diesing's and de Hoop's positions:

(32)



Vallduví further argues for three informational units at the sentential level, as given in (33). Of these, the two Ground elements represent old information, while Focus encodes new information. The distinction between Ground: Link and Ground: Tail has to do with the relative salience in discourse of old information. Sentences obligatorily have Focus, and may optionally have Link and Tail. This yields four different informational structures, each with its own processing routine. The processing required for each sentence type constrains the contexts in which they may be embedded:

(33) S = {Focus, Ground}
Ground = {Link, Tail}

(34)a. All-Focus: RETRIEVE-ADD (focus)
b. Link-Focus: GO-TO (link), RETRIEVE-ADD (focus)
c. Link-Focus-Tail: GO-TO (link), RETRIEVE-SUBSTITUTE (focus)
d. Focus-Tail: RETRIEVE-SUBSTITUTE (focus)

(35) The boss hates broccoli

To get an intuitive sense of what the different routines involve, consider a sentence like (35) and its relation to different contexts. If uttered against a background where the speaker starts by saying something like *Things at the office party last night went really badly . . .* , none of the key pieces of information contained in the three syntactic units [*the boss*], [*hates*] and [*broccoli*] would be informationally old, making (35) an All-Focus sentence. If the same sentence were uttered in a context where the speaker and hearer are talking about the boss, [*the boss*] would be the link to the previous discourse and [*hates broccoli*] the new information. Here, (35) would instantiate Link-Focus, requiring update of information for the linked element as a first step in the processing. If the context makes salient some relation between the [*boss*] and [*broccoli*] and (35) is uttered as information about what that relation is, it would be a Link-Focus-Tail sentence, requiring the particular relation to be substituted for a variable. It is also possible for [*the boss*] and [*hates*] to be new information and [*broccoli*] to be old but not prominent information. That would be a case of Focus-Tail and would not require [*broccoli*] to provide the anchor for the processing.

In English the primary manifestation of information status is intonation but there is also some correlation with directionality, with old information tending to precede new information (see, for example, Sgall et al. 1986). There are languages, however, where the connection between directionality and information status appears to be tighter and Vallduví uses Catalan as an example. He postulates the domain of Focus in Catalan to be IP, with left detachment corresponding to topicalization, acceptable in contexts where the left detached expression is under discussion. Right detachment is an instance of old information relegated to a less prominent role than the topic of discussion. It is now possible to predict that certain information structures will be unacceptable in certain contexts. Neither (36b) nor (36c) could be acceptable responses to *What does the boss hate?* because the constituent that conveys new information would be in positions reserved for old information:

(36)a. L' amo odia el bròquil
The boss 3s-hate the broccoli
"The boss hates broccoli"
b. El bròquil l'amo l_1'odia t_1
c. L'amo l_1'odia t_1, el bròquil$_1$

Two features of Vallduví's theory clearly relevant to the issues in scrambling of concern here are the formal status of directionality in explanations using IS and the disassociation of fronting with any particular semantic feature (though constraints may enter as a consequence of the processing requirements of informational units).

Clarifying the relation between the notion of old versus new information in the literature on IS and the distinction between familiar versus novel entities in File Change Semantics may be useful here. The fundamental difference is that the classification of a syntactic unit as representing old or new information is relational while the familiarity or novelty requirements associated with syntactic units is internal to that unit. The internal semantics of a nominal, of course, may have a bearing on its ability to play particular informational roles. Consider, for example, how the inherent semantics of definite and indefinite noun phrases impacts on their ability to function as Ground: Link elements:

(37)a. The book fell
b. A book fell

(38) What happened?

Example (37a) has a definite in subject position and this means that the sentence can only be embedded in contexts where the existence of a unique salient book is part of the common ground. Example (37b) has an indefinite and this means that it can only be embedded in contexts where the intended referent of the noun phrase is not part of the common ground. Now, consider how Ground: Link elements function. They encode the instruction to update information about a (pre-existing) address/entity. For the nominal to qualify as Link, then, its referent must be in the immediate context. This means that an indefinite, by virtue of its inherent semantics, is not a potential Link. The inherent semantics of definites, on the other hand, readily lends itself to being a Link. It should be kept in mind, however, that familiarity of definites is not a sufficient condition for being a Link or even a Ground element. As shown by the fact that (37a) is a completely acceptable answer to (38), an All-Focus interpretation for a sentence with a definite is quite possible. This is because satisfaction of the inherent requirement of familiarity does not entail satisfaction of the relational requirement of givenness. It is only compatible with it.

Let us turn now to the task of determining how an IS account of word order variation might help with the issues in scrambling discussed above. Gambhir (1981), in the first extensive study of Hindi word order within the generative tradition, articulates a position that clearly anticipates Vallduví's. Her central claim is that scrambling does not affect truth conditions but is constrained by discourse considerations. In particular, she identifies leftward movement as motivated by the need for emphasis. We might take this to be akin to Vallduví's idea that left dislocation is for purposes of Linking to discourse. Her discussion of rightward movement makes it clear that it is harder to identify a single discourse function for it. The list she gives includes movement for emphasis, de-emphasis, expression of afterthought, ease of processing, and creation of suspense. While each of these functions is empirically justified, the common denominator among them is not obvious. In the next section I will focus on leftward scrambling of bare nominals and show why non-specific readings are incompatible with their role as Link elements and how contrast reconciles the conflict. I will not discuss rightward scrambling any further, except to characterize it in negative terms as

Non-Link. While I consider a proper analysis of rightward movement important to a full understanding of scrambling as a discourse-sensitive phenomenon I must be content here with demonstrating the usefulness of the approach on the basis of leftward scrambling alone.[10]

4.3.3 Leftward scrambled nominals as ground: link elements

Let us begin with the claim that leftward scrambled nominals are Ground: Link elements. This can be justified on the basis of paradigms like (39). The question in (39a) can be answered with (39b) under a definite or an indefinite reading for the bare nominal in base-position. It cannot be answered with (39c) even under the definite reading for the scrambled bare nominal:

(39)a. anu kyaa kar rahii hai?
Anu what do-PROG-PR
"What is Anu doing?"

b. anu kitaab paRh rahii hai
Anu book read-PROG-PR
"Anu is reading the book"

c. #kitaab anu paRh rahii hai
book Anu read-PROG-PR
"Anu is reading the book"

Though the sentence is grammatical, it is not informationally appropriate. Scrambling requires an update of information regarding a contextually salient book, but the question makes it clear that the information provided by the scrambled nominal is new.

It would be obvious, then, that non-specific readings should not be available with leftward scrambling. Such readings, by definition, are not associated with any particular discourse entity to which the update function associated with their discourse role as Links could apply.[11] Turning to the role of contrast in redeeming the situation, one might now pose the question in the following way. What is it about contrast that provides the necessary link to discourse? My claim, which I will elaborate and refine below, is that this follows from the semantics of contrastive focus. The focus semantic value of the scrambled nominal in (40a), for example, would be a set of alternatives of the kind given in (40b). The Link condition can now be satisfied if the update looks for some entity in this set and deletes the non-focused information from that address before entering it correctly. In other words, (40a) would be acceptable in contexts where the statement has been made about something other than a book that *Anu* is reading it. Example (40a) is, overtly or implicitly, a negation of that statement:

(40)a. KITAAB anu paRh rahii hai (akhbaar nahiiN)
book Anu read-PROG-PR (newspaper not)
"Anu is reading a BOOK (not a newspaper)"
b. {book, newspaper, magazine}

A similar account for the loss of non-specific readings for scrambled indefinites has been proposed in Choi (1999). She differs, however, in her explanation of the role of contrast in making such readings available. Briefly, she modifies Vallduví's classification by distinguishing two types of Focus, Contrastive and Completive Focus. She also adopts the notion of prominence as significant in characterizing four units, as shown in (41). By restricting leftward scrambling to [+prominent] elements, she allows indefinites with contrastive focus but not completive focus to participate in it:

(41) Topic: [–New], [+Prominent]
Tail: [–New], [–Prominent]
Contrastive Focus: [+New], [+Prominent]
Completive Focus: [+New], [–Prominent]

Choi also presents an Optimality Theoretic account of cross-linguistic variation in scrambling, focusing primarily on differences between German and Korean. Keeping our discussion of her work limited to the problem at hand, her account of contrast makes the same predictions as mine for the data we have looked at so far. There are further facts, however, that separate them, having to do with acceptable cases of non-specific non-contrastive scrambled nominals. In each case, we will see, there are semantic cues from other elements that seem to be relevant.

The first case in (42) differs from (40a) in having contrastive focus not on the scrambled nominal but on the subject. It says that it was *Anu* (not someone else) who was reading a book. No particular book need be in the common ground. That is, the scrambled nominal is easily construed as non-specific. The relevant reading can be made clearer by embedding the sentence in a context where two people are arguing whether *Ravi* is at work. Person A says that he could not be because he just looked through the window and saw *Ravi* reading a book. B may now respond with (42):[12]

(42) kitaab ANU paRh rahii hai (ravii nahiiN)
book Anu read-PROG-PR (Ravi not)
"Anu is reading a book (not Ravi)"

The second case of a non-specific non-contrastive scrambled bare nominal is (43), fashioned after examples from Gambhir. Here the subject occurs with the particle, indicating that someone other than the subject has also lied. The point to keep in mind is that the speaker and hearer are not talking about any specific lie:

(43) jhuuTh anu -ne bhii bolaa
lie Anu-ERG also spoke
"Anu also told a lie/lied"

What is common to these cases of unexpected scrambling, I would like to claim, is that the sentences they occur in contain semantic cues that assist the update function associated with Ground: Link. Example (42), for example, has focus on

the subject and, as discussed earlier, this invokes the alternative set {anu, ravi}. One member of this set is claimed to have an erroneous entry *is reading a book*. The update function removes this before proceeding with entering the information at the correct address. By virtue of the wrong entry, however, *book* may be taken to be a Ground element. In the case of (43) the particle *also* can only be felicitously used in a context where there exists at least one other individual for whom the information *tells lies* has been entered, again making *lies* a Ground element. Though the scrambled nominal is not a link, it is included in the link and this appears to be sufficient to license scrambling.

Note that satisfaction of the givenness associated with Ground: Link does not require referential identity. For example, in (43) *lies* qualifies for scrambling because it is old information, due to the implicature that someone else also told lies. However, the particular lies told must be distinct for it to qualify as non-specific. In a theory of bare nominals using kinds, the kind term $^{\cap}$*lies* in each entry could be identical without the two existential instantiations $\exists x\ x \cup {}^{\cap}$*lies* being the same. In theories treating bare nominals as indefinites, the properties would be identified, not the output of existential closure.[13]

Finally, there are cases of generic sentences where the presence of some adverbial element seems obligatory. Example (44a), similar to an example from Gambhir, does not mean that for all days and decisions, it is the speaker who makes them. It is quite compatible with other people also making decisions. Similarly, (44b) says that for many contextually relevant times *Anu* lies, for example, at times when she thinks she will get into trouble, not that she tells many of the relevant lies:

(44)a. faislaa ham *(roz) kartee haiN
decisions we everyday do-PR-PROG
"We make decisions everyday"

b. jhuuTh anu *(aksar) boltii hai
lie Anu often speak-PR
"Anu often tells lies"

(45)a. ALL t x [day(t) and decision(x)] [we make x at t]
b. MANY t x [C(t) and lies(x)] [anu tells x at t]

(46)a. ALL t [day(t)] ∃x [decisions(x) and we make x at t]
b. MANY t [C(t)] ∃x [lies(x) and anu tells x at t]

A relevant fact about these data is that they involve verbs of creation. Logical representations of the kind given in (45), with the scrambled nominal in the restrictor, presuppose the prior existence of decisions and lies, which is incompatible with there being objects of creation verbs. The only reasonable interpretation for these sentences, therefore, would be the ones given in (46) where the relevant objects are interpreted in the nuclear scope.[14]

The explanation for (44) is somewhat different. Let us take the unacceptable version first and try to understand what is at the root of its unacceptability. If [*we make decisions*] in (44a) were all new information, as in answer to the question

What do you do?, scrambling would not be acceptable. Taking [*decisions*] to be Ground: Link and [*we make*] to be Focus, then requires [*decisions*] to be in prior discourse. Note that there are no plausible alternatives to *make* since decisions in the sense relevant here cannot be read or written. One possibility for there to be another entry involving *decisions* would be to have [*make decisions*] be predicated of another individual, say *them* as in *They make decisions*. But in that case, we would get contrastive focus on the subject. In the case under consideration, it is the adverbial that provides an alternative way of satisfying the discourse requirement for scrambling. It does so by evoking a different set of alternatives, namely {everyday, on certain days, seldom, never}. Given such an alternative set, (44a) can be understood to be a possibly implicit negation of a statement like *You seldom make decisions*. An explanation along the same lines can be given for (44b). It may be worth noting here that in discussing scrambling of objects in Dutch and German de Hoop also proposes a *Principle of Contrastiveness* that is meant to deal with similar effects. The account I am outlining may be seen as providing the conceptual motivation for such a principle.

To sum up the main claims of this section, I have argued that fronting of nominals cannot be explained in terms of the inherent semantic features of the nominal. In particular, there is no absolute ban on nominals that cannot be classified as specific. However, since fronting signals a link to previous discourse it is easy to construct appropriate contexts for definites. Their inherent semantics already requires them to be familiar in the context and the discourse requirement is simply a stronger version of that. Scrambled definites are therefore deemed acceptable when presented without a context. As we have seen, if they are embedded in particular contexts, acceptability is contingent on the nature of their relation to prior discourse. In the case of bare nominals, and by extension regular indefinites, the inherent semantics is at odds with the discourse requirement. This means that unless a link can be formed via other means, they will be judged unacceptable. Contrast, either on the nominal itself or on other expressions, provides the bridge that allows the inherent novelty requirement and discourse givenness to be simultaneously satisfied. While I have argued at some length that leftward scrambling forms a Ground:Link structure, I have not attempted a characterization of rightward scrambling beyond defining it negatively as Non-Link. This minimally allows non-specific readings without contrast for rightward scrambled nominals, of immediate concern to us here.

4.4 Conclusion

I would like to conclude by relating the main claims of this paper to a recent study of children's acquisition of indefinites by Krämer (1998a, b) showing that children's understanding of Dutch scrambled nominals is at odds with that of adults. Example (47a) has the indefinite object in base-position with negation and the indefinite article incorporated. In (47b) the indefinite object has scrambled before negation. The adult grammar assigns a narrow scope interpretation for the indefinite in base-position and a wide scope interpretation for it in scrambled position:

(47)a. De jongen heeft geen vis gevangen
The boy has no fish caught ¬∃

b. De jongen heeft [een vis]$_i$ niet t_i gevangen
The boy has a fish not caught ∃¬

Krämer found that children between the ages of 4 and 7.10 agreed with adults on the interpretation of the unscrambled sentence, but not on the interpretation of the scrambled sentence. Eighty-four percent of the children tested interpreted (47b) as ¬∃.

There are two questions about the acquisition of indefinites raised by these data. How can children assign an interpretation to the scrambled indefinite that is unavailable in adult grammar? Why is the specific reading of the scrambled indefinite not available to them? Let us see how these questions could be answered in light of the analysis presented here. What we have argued for here is that scrambled nominals can, in principle, have the same interpretations that they have in their base-position as long as they can satisfy the discourse requirement on Ground: Link. This meaning is derived via the standard compositional semantics for moved elements operative at LF, namely, by positing a variable in trace position and by lowering the meaning of the moved expression into that position by lambda conversion at the adjunction site. What comes in the way of such interpretation for adults, we have shown, is the need for satisfaction of the discourse requirement. If children do not acquire the IS constraint till later stages of acquisition they would be expected to have precisely the response they do. Turning to the other question, the fact that they are unable to assign specific readings for indefinites does not follow directly from anything we have said so far. Krämer notes that children by the age of four produce scrambled objects, showing that the problem lies with the interpretation of a construction they have acquired rather than in comprehension of a structure they have yet to acquire. It may be that specific readings of indefinites are marked and the acquisition of marked meanings follows the acquisition of discourse constraints that would make the unmarked meaning of the indefinite infelicitous. Even though these remarks do not explore the issues in adequate detail, I believe they indicate that acquisition data support the central thesis of this paper.

In conclusion, then, I have argued on empirical grounds against the generalization that scrambling leftwards is restricted to expressions which are inherently specific or results in loss of non-specific readings. The perceived restriction is an artifact of the discourse principles that regulate such movement. I have shown that this requires a theory separating discourse conditions from semantic interpretation. In future work, I hope to elaborate on the formal implementation of the ideas presented here.

Notes

1 (2a, b) have universal force but not (2c). Bare plurals, therefore, are parallel to indefinites with *a*.

2 (15a) also has another reading, as we will see. I thank Markus Hiller, Cecile Meier, and Susanne Preuss for discussion.

3 Subjects of individual-level predicates originate in [SPEC, IP] and, being outside VP, lack existential readings. Also, mapping of arguments in English differs from mapping in German in not being constrained by S-structure. Subjects of stage-level predicates in English obligatorily move at S-structure to [SPEC, IP] but have the option of reconstructing to the base-position before interpretation.

4 For quantificational structures created by quantified noun phrases in the absence of genericity, see Heim (1982) and Kamp (1981).

5 Discussions of exhaustivity in cleft constructions underscore the nature of the problem. Horn (1981) does not include exhaustivity in the semantics, claiming that it enters when focus in clefts is combined with *only*: *I know Mary ate a pizza, but I've just discovered that it was only a pizza that she ate* but #*I know Mary ate a pizza, but I've just discovered that it was a pizza that she ate*. É. Kiss (1998b), however, includes exhaustivity: *It was a hat and a coat I bought* does not entail *It was a hat I bought* while *A hat and a coat I bought* entails *A hat I bought*.

6 I set aside the role of Case-markers in establishing (in)definiteness since the correlation between them is not straightforward (Dayal 1999).

7 Consider

(i) $\exists x$ [book(x) and $\neg$read(a,x)]
(ii) $\neg\exists x$ [book(x) and read(a,x)]
(iii) $\neg$read[a,ιx(book(x))]

The two existential readings are compatible with there being several books salient in the context. Sentences with these representations should be felicitous as continuations to *There are many books here . . .* Those with the representation in (ii) could also continue *There are no books here . . .* The definite, however, carries a uniqueness and existence presupposition. Sentences with the representation in (iii) could not be felicitously uttered in the above contexts. The existential readings are, of course, truth conditionally distinct, only (i) is compatible with there being books that *Anu* will read. (25a) allows readings (ii) and (iii). (25b) allows (i) and (ii).

8 The phonological stress on the scrambled *gifts* (30b) may be interpreted as simple emphasis, appropriate in contexts where the word may have been inaudible in a previous utterance. It is somewhat hard to think of alternatives to gifts but if the relevant set of alternatives can be constructed, the expected contrastive meaning surfaces readily.

9 Alternatively, Hindi may generate complements in both directions, predicting weak readings in SVO and SOV orders since neither would involve movement. This is doubtful, however, since WH-questions, for example, are sensitive to the SOV/SVO distinction (Dayal 1996; Mahajan 1997).

10 Gambhir's (i) shows that rightward scrambled nominals can be the locus of new information. It cannot therefore be equated with the Ground: Tail analysis of Catalan right detachment:

(i) aaj kaa programm pesh kar rahe haiN, ek bahut mashoor kalaakaar
today-GEN program present-PROG-PR a very famous artist
"A very famous artist is presenting today's program"

11 Hindi questions like *Which book is Anu reading?* with OSV order do not pose a problem for Linkhood of the fronted object, if we take questions to have existence

presuppositions (Dayal 1996). The question could be uttered in a context where an entry for a book being read by *Anu* was available and the update function would include an instruction to enter information about the book's identity after the question is answered.

12 Thanks to Utpal Lahiri and Anoop Mahajan for Hindi judgments. Also, Korean bare nominals are said to have definite and indefinite readings in base-position but indefinite readings only with contrastive focus when scrambled (Choi 1999). However, sentences like (42)–(43) readily allow indefinite readings (Se-kyung Kim, Jinsoo Lee, and Hye-Won Choi, personal communications). The generalization clearly extends beyond Hindi.

13 Dayal (1999, in preparation) posits distinct denotations for singular and plural kinds, not relevant here. See É. Kiss (1999) for connections between focus and the representation of indefinites as properties.

14 See von Stechow (2000) for issues concerning existential quantification and verbs of creation. Such verbs do not allow scrambling in German, as predicted by Diesing. Scrambled nominals are mapped into the restrictor and treated as presuppositional, which is incompatible with their status as objects of creation. See also de Hoop (1992).

5

On Object Positions, Specificity, and Scrambling in Persian

Simin Karimi

5.1 Introduction

Specific and non-specific objects in Persian, a verb-final Indo-Iranian language, exhibit syntactic, morphological as well as semantic asymmetries. The specific DP, definite or indefinite, is always followed by the particle *-râ*, while its non-specific counterpart lacks this element.[1] Furthermore, non-specific objects are adjacent to the verb in a neutral word order, while specific objects precede the indirect object. The examples in (1) and (2) display this distinction.[2]

(1)a. Kimea aghlab barâ mâ she'r mi -xun -e
Kimea often for us poem hab-read-3sg
"It is often the case that Kimea reads poetry for us"

b. Kimea aghlab barâ mâ ye she'r az Hafez mi -xun -e
Kimea often for us a poem from Hafez hab-read-3sg
"It is often the case that Kimea reads a poem by Hafez for us"

(2)a. Kimea aghlab hame-ye she'r -â -ye tâza -sh -ro barâ mâ mi -xun -e
Kimea often all -Ez poem-pl-Ez fresh-her-râ for us hab-read-3sg
"It is often the case that Kimea reads all her new poems for us"

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b. Kimea aghlab ye she'r az Hafez-ro barâ mâ mi -xun -e
Kimea often a poem by Hafez-râ for us hab-read-3sg
"It is often the case that Kimea reads a (particular) poem by Hafez for us"

The non-specific object is adjacent to the verb in (1a, b). This element can be separated from the verb only in a very limited fashion, by representing contrastive focus. This is shown in (3).

(3) Kimea aghlab (ye) ketâb-e dâstân barâ bachche-hâ mi -xun -e
Kimea often (a) book -Ez story for child -pl hab-read-3sg
"Kimea often reads (a) STORY-BOOK for children (rather than a poetry book)"

The specific object may precede the adverb as in (4), or appear in sentence-initial position, as in (5). In these cases, it receives topic or contrastive focus interpretation depending on the stress it carries.

(4) Kimea in ketâb-e dâstân-ro aghlab [$_{VP}$ barâ bachche-hâ mi -xun -e]
Kimea this book -Ez story -râ often for child -pl hab-read-3sg
"Kimea reads THIS STORY BOOK often for children" or
"As for this story book, Kimea often reads (it) for the children"

(5) in ketâb-e dâstân-ro Kimea aghlab [$_{VP}$ barâ bachche-hâ mi -xun -e]
this book -Ez story -râ Kimea often for child -pl hab-read-3sg
"Kimea reads THIS STORY BOOK often for children" or
"As for this story book, Kimea reads (it) often for children"

The appearance of a specific object in a higher position than its non-specific counterpart (cf. (2)) could be argued to represent a syntactic phenomenon widely discussed in the literature as *object shift* (Holmberg 1986; vanden Wyngaerd 1989; among others), or a movement into a functional position triggered by Case and specificity (Mahajan 1992; D.-B. Kim 1992; Browning and E. Karimi 1994; among others). Some authors have considered the presence of this element in a position preceding an adverb (cf. (4) and (5)) as a movement triggered by semantic motivations (Diesing 1992, 1997; Diesing and Jelinek 1995; among others). The majority of previous analyses base-generate the direct object adjacent to the verb, and move the specific DP into a higher position mainly for the purpose of Case assignment.

In this chapter I offer an alternative analysis for the surface positions of objects by analyzing different properties of Persian object DPs. I propose that non-specific objects and the verb receive a unified meaning based on their structural position. This proposal is presented within a version of the framework of Distributed Morphology (Halle and Marantz 1993). Based on the syntactic and morphological characteristics of specific and non-specific objects in Persian, and their semantic relationship with the verb, I suggest two distinct base-positions for them within the VP. This proposal accounts for the asymmetry between the two types of objects with respect to a number of syntactic and semantic relations, including

binding, anti-Weak Crossover effects, and scope reading. I further suggest a third object position. In other words, I argue that the specific object is either in an A-position (specifier of VP) or an A′-position at spellout. My analysis shows that (a) the movement of the specific object into a derived position is an instance of scrambling, (b) scrambling itself is a reflection of discourse information such as topic and focus, (c) this movement places the object DP in the specifier position of a functional head representing a discourse function, and (d) scrambling may have semantic consequences when quantified elements are involved. Crucially, the analysis in this chapter is an attempt to clarify the peculiarities of all those cases in which a DP binds an anaphor and licenses a parasitic gap simultaneously. Thus it obviates the need to posit the existence of a functional head (AGRo) and a landing site with dual syntactic properties. Finally, the discussion in this chapter provides an explanation as to why scrambling is available to specific objects, but is highly limited with respect to their non-specific counterparts.

The organization of this chapter is as follows: section 5.2 provides a discussion of specificity. The morphological, semantic, and syntactic asymmetries between the two types of objects are discussed in section 5.3, where an explanation is offered to account for the properties of non-specific objects. The proposal regarding the existence of two distinct base-positions for the two types of objects is also outlined in this section. Section 5.4 examines the distribution of objects inside and outside the VP, and proposes a third position for these elements. Arguments in favor of the proposals outlined in sections 5.3 and 5.4 are presented in section 5.5. Section 5.6 includes a summary of this chapter and provides concluding remarks.

5.2 Specificity

An important factor underlying the analysis in this chapter is *specificity* and its interaction with word order. Authors have taken either a semantic or a pragmatic approach towards this phenomenon in the literature. Kripke (1977), for example, takes specificity as a matter of pragmatics, while Donnellan (1966) and Diesing (1992), among others, consider it a semantic notion. Since specificity is closely related to the quantificational property of elements and word order variations, I follow those who consider it a semantic notion. The discussions in the following sections support this position.

The first question to answer is this: what elements are specific? In general, definite DPs are considered specific, while indefinite DPs can be ambiguous with respect to this notion, as suggested by C.L. Baker (1966), Abbott (1976), Karttunen (1976), and Enç (1991), among others. The following example illustrates this ambiguity.

(6) Mary was looking for a pencil
She found one (non-specific)
She found it (specific)

Several factors can help to disambiguate an indefinite DP. Certain verbs are among these factors, as indicated by the following examples, borrowed from Karttunen (1976: 368).

(7) John tried to find *a piano* (but he didn't succeed in finding *one*)

(8) John tried to lift *a piano* (but he didn't succeed in lifting *it*)

The noun phrase *a piano* receives a non-specific reading in (7) and a specific reading in (8) due to the predicates *try to find* and *try to lift*, respectively.

In what follows, I first discuss Enç's definition of specificity, and provide a revised version of her definition to account for the data in Persian. This discussion is followed by an analysis of the interaction between specificity and scope.

5.2.1 Enç's definition of specificity

The definition of specificity has been discussed by different authors who have each taken a distinct position with respect to the function of this term. Enç (1991) defines specificity in terms of *strong antecedent* and *weak antecedent*. She states that a *definite* DP requires a *strong antecedent*. That is, there is an *identity* relation between this type of DP and its previously established discourse referent. Therefore, definite DPs are always specific.[3] Proper names, pronouns, and noun phrases modified by a demonstrative or a definite article are definite, and thus specific. An indefinite DP is specific if it denotes an inclusion relation to previously established discourse. In this case, it represents a *weak antecedent.* A non-specific DP lacks an antecedent in the discourse altogether.[4] The following contrast, representing Turkish, illustrates the distinction between a specific indefinite, denoting a partitive interpretation, and a non-specific indefinite, lacking an antecedent.

(9)a. Odam-a birkaç çocuk girdi
my-room-DAT several child entered
"Several children entered my room"

b. iki kɨz-ɨ taniyordum
two girl-ACC I knew
"I knew two girls" (two girls of that specific group)

c. iki kɨz taniyordum
two girl I knew
"I knew two girls" (two girls not included in that group) (Enç 1991: 6)

According to Enç, certain indefinites such as partitives and universal quantifiers are predicted to be specific.[5] In sum, specific noun phrases, definite or indefinite, have one feature in common: they are linked to previously established discourse. It is only the type of linking that distinguishes between definites and specific indefinites. As for non-specific DPs, they cannot be linked to the previous discourse, and hence denote novelty of reference.

There are some problems with regard to Enç's definition of specific indefinites. First, although an indefinite DP with a partitive reading is always specific, *inclusion* is not a necessary property of specific indefinites. For example, both object

DPs in (10) and (11) are followed by the specificity marker *-râ*, and hence are specific. However, the indefinite object DP in (10) receives a partitive interpretation while the one in (11) does not.

(10) Kimea se -tâ ketâb-ro na -xund-e
Kimea three-part book -râ NEG-read -3sg
"Kimea has not read three (specific) books"

(11) man emruz se -tâ bachcha-ro did -am ke bâ ham da'vâ
I today three-part child -râ saw-1sg that with each other argue
mi -kard-an
hab-did -3sg
"Today I saw three children that were arguing with each other"

The DP *se-tâ ketâb* "three books" in (10) receives a partitive reading. Therefore, this sentence can be paraphrased as *Kimea se-tâ az ketâb-â-ro na-xund-e* "Kimea has not read three of the books." The DP *se-tâ bachche* "three children" in (11), on the other hand, does not denote inclusion: these children are specified and distinguished in the discourse by the appositive relative clause *that were arguing with each other*. Therefore, the sentence will be incomplete without this clause, as in (12).

(12) *man emruz se -tâ bachcha-ro did -am
I today three-part child -râ saw-1sg

These data indicate that specific indefinites do not necessarily receive partitive interpretations.

The second problem with Enç's definition of specificity has to do with non-specific indefinites. According to her, all non-specific DPs lack any kind of link to discourse. The following data, borrowed from Karttunen (1976: 369), contradict this conclusion.[6]

(13) John wants to catch *a fish* *Do you see the fish from here?

(14) John managed to find *an apartment* The apartment has a balcony

The italic noun phrases in (13) and (14) are non-specific indefinites. However, *a fish* in (13) has absolutely no referent, and therefore cannot be referred to by a definite DP. The noun phrase *an apartment* in (14), on the other hand, has established some sort of referent: it exists. Therefore, it can be referred to by a definite DP. In summary, non-specific DPs can be [± Existential].

Persian clearly shows this distinction: the non-specific DP with no referent appears as a bare DP (a DP that lacks a determiner) in the object position, while the non-specific DP that denotes existence appears as a DP modified by a numeral in that position. None of these noun phrases is followed by the specificity marker *-râ*. The Persian counterparts of (13) and (14), presented in (15) and (16), respectively, exhibit this contrast.

(15) Kimea tunest mâhi be -gir -e
Kimea managed fish subj-catch-3sg
"Kimea managed to catch fish"

*un xeyli châgh-e
it very fat -be3sg
Intended meaning:
"It is very fat"

(16) Kimea tunest ye âpârtemân peydâ kon-e
Kimea managed an apartment find do -3sg
"Kimea managed to find an apartment"

un xeyli ghashang-e
it very pretty -be3sg
"It is very pretty"
(Karimi 1999b)

The bare DP in (15) is non-specific without any kind of discourse referent. The indefinite DP in (16), although non-specific, denotes existence. Let us call the first type of non-specific DPs *kind-level*, and the second type *existential*. Enç's definition of non-specific DPs is compatible only with the kind-level DPs in (13) and (15), but not with the existential ones in (14) and (16).

The distinction between these two types of non-specific DPs with respect to *existence* is further supported by their interaction with the operator *negation*. This element forces a non-specific reading that lacks any kind of referent (cf. Karttunen 1976), as in the following examples.

(17) Bill is not a linguist

(18) Bill did not write a letter

The noun phrases *a linguist* and *a letter* lack existence. This fact is supported by the awkwardness of the following example, taken from Abbott (1995):

(19) ?Sue couldn't find *a pencil that would work. It* was on the floor

The kind-level DPs in (17) and (18) can only correspond to bare DPs in nominal predicate and object positions in Persian, as in (20) and (21), respectively.

(20) Bill zabânshenâs nist
Bill linguist is not
"Bill is not a linguist"

(21) Bill nâme na -nevesht
Bill letter NEG-wrote
"Bill did not write a letter"

An indefinite DP, which implies existence, cannot replace them, as in (22) and (23).

(22) *Bill ye zabânshenâs nist
Bill a linguist is not

(23) *Bill ye nâme na -nevesht
Bill a letter NEG-wrote

The sentences in (22) and (23) become grammatical in a context where the numeral receives contrastive stress. The sentence in (24) reveals this issue with respect to (23).

(24) Bill YE nâme na-nevesht, DO-tâ nevesht
Bill one letter NEG-wrote, two-part wrote
"Bill did not write ONE letter, he wrote TWO"

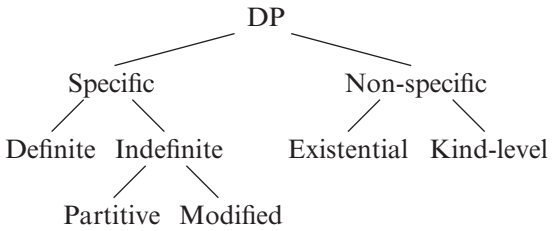
It seems to be the case that non-specific DPs that denote existence can be in the scope of negation only when they are contrastively stressed. This restriction does not hold for kind-level non-specific DPs, as evidenced by the grammaticality of (20) and (21).[7]

Note that Persian lacks a definite determiner equivalent to *the* in English. Thus the bare object DP becomes definite only when it is followed by *-râ*, as in the following example.[8]

(25) Kimea ketâb-ro xund
Kimea book-râ read
"Kimea read the book"

The following diagram summarizes the definition of specificity discussed in this section.

(26)



In English-type languages, non-specific indefinite DPs denote either kind-level or existential interpretations. In Persian-type languages, non-specific indefinites are existential while bare DPs are kind-level.[9]

5.2.2 Specificity and scope

Having discussed different types of specific and non-specific DPs, I now turn to the relationship between specificity and scope. There is some disagreement among authors regarding the scope property of specific elements. Fodor and Sag (1982), for example, suggest that a specific NP correlates with a scope operator: an NP is considered specific when it has wide scope over an operator (see also Partee 1972 and Karttunen 1976 on this issue). Diesing (1992) suggests that specific (= presuppositional) DPs have quantificational force, and are subject to Quantifier-Raising. Ioup (1977) and Enç (1991), on the other hand, argue that the scope relationship is not the right criterion to distinguish specific NPs from their non-specific counterparts. The reason is that there are cases in which the specific NP

has narrow scope with respect to other operators. This suggestion seems to be borne out by the following Persian examples: the quantifier *har* "every" forces a distributive reading in the following contexts although the *DP+râ* in (28b) receives a specific reading.

(27)a. har dâneshju-i chan -tâ she'r bâyad be -xun -e?
every student -ind how many-part poem must subj-read-3sg
"How many poems does every student have to read?"

b. har dâneshju-i ye she'r bâyad be -xun -e har >> DP
every student -ind one poem must subj-read-3sg
"Every student has to read one poem"

(28)a. har dâneshju-i chan -tâ az in she'r -â -ro bâyad
every student -ind how many-part of this poem-pl-râ must
be -xun -e?
subj-read-3sg
"How many of these poems does every student have to read?"

b. har dâneshju-i ye she'r -ro bâyad be -xun -e har >> *DP+râ*
every student -ind one poem-râ must subj-read-3sg
"Every student has to read one poem (out of a specific set)"

In (27b), each one of the students reads a different poem, and the poems are not specifically chosen (any poem, randomly). The quantifier *har* "every" in (28b) still receives a wide scope over the specific object, forcing a distributive reading. The difference between the two answers in (27) and (28) is that the *DP+râ* in the latter is selected from a set of poems: *Each student reads a particular poem from a specifically chosen set of poems* (e.g. thirteenth-century poetry), but each one of them reads a different one nevertheless.

One of the major effects of scrambling in Persian is determining the scope of quantified elements by creating scope ambiguity (S. Karimi, forthcoming). Thus the scrambled version of (28b) gives us (29) in which the dislocated specific object receives a primary wide scope reading, although a narrow scope reading is still available in this case.

(29) ye she'r-ro$_i$ har dâneshju-i t$_i$ bâyad be-xun-e *DP+râ* >> har;
⇑_____| har >> *DP+râ*

Primary reading: "There is one poem such that every student has to read that poem"

The sentence in (29) indicates that specific DPs have quantificational force, although they do not necessarily receive a wide scope reading when they interact with other quantificational elements. In Persian, scrambling provides the wide scope reading for specific DPs in these cases.

Another piece of evidence supporting the claim that specific DPs have a quantificational force comes from the fact that specific objects may take wide

scope with respect to negation while non-specific objects never do. Consider the following example.

(30) Joe didn't invite a professor

This sentence has two readings, as discussed by Heim and Kratzer (1998: 216).

(31)a. He did not invite any professor
b. There was one professor he failed to invite

The ambiguity of (30) disappears in Persian since the specific direct object is followed by *-râ*. Thus (32a, b) correspond to (31a, b), respectively.

(32)a. un ostâd da'vat na -kard
he professor invitation NEG-did
"He didn't invite any professor"

b. un ye ostâd -ro da'vat na -kard
he one professor-râ invitation NEG-did
"There was one professor he failed to invite"

The discussion in this section indicates that specific DPs are quantificational, and therefore, they may enter into a scope interaction with other quantified elements.

5.3 Specific versus Non-Specific Objects

As suggested in the introduction, there are syntactic, semantic, and morphological asymmetries between specific and non-specific objects in Persian. These differences are discussed in section 5.3.1. The rule of Syntactic Word Formation (SWF) which accounts for the close syntactic and semantic relationship between the non-specific object and the verb is presented in 5.3.2. In 5.3.3, a Two Object Position Hypothesis (TOPH) is proposed.

5.3.1 Asymmetries

First, the non-specific object and its specific counterpart exhibit distinct semantic relationships with respect to the verb. The non-specific object (kind-level or existential) is part of the *event*, rather than the *participant in the event*. That is, it creates an abstract semantic unit with the verb describing the event or the state. Therefore it is part of the description of the predicate. The following examples exhibit this property.[10]

(33) a. Kimea barâ bachche-hâ (ye) ketâb xund
Kimea for child -pl (a) book read
"Kimea read books/a book for the children"
(Kimea's action toward the children was "(a) book reading")

b. Kimea har shab (ye) sib mi -xor-e
Kimea every night (an) apple hab-eat-3
"Kimea eats apples every night"
(Kimea does "(an) apple eating" every night)

The sentences in (33a, b) are, respectively, the most natural answers to questions like: *What did Kimea do for the children?* and *What does Kimea do every night?*

In contrast, the specific object followed by the specificity marker *-râ* is a *particular individual* that undergoes the event described by the verb. The sentences in (34a, b) are, therefore, the most natural answers to questions like *Which book did Kimea read for the students?* and *What did Kimea do about the house?*, respectively.

(34)a. Kimea român-e jadid-e Daneshvar-o barâ shâgerd-â xund
Kimea novel -Ez new -Ez Daneshvar-râ for student-pl read
"Kimea read Daneshvar's new novel for the students"

b. Kimea belaxare un xuna -ro xarid
Kimea finally that house-râ bought
"Kimea finally bought that house"

Second, adverbial modifiers are utilized as diagnostic tools for the event expressed by the predicate (cf. Dowty 1979; among others). As Ghomeshi and Massam (1994) show, the *DP+râ* is compatible with adverbials denoting accomplishment (such as *in an hour*), while the bare object is compatible with adverbials denoting a process (such as *for an hour*).

(35)a. (man) sib -râ dar do daghighe xord-am
I apple-râ in two minutes ate -1sg
"I ate the apple in two minutes"

b. *(man) dar do daghighe sib xord-am
I in two minutes apple ate -1sg
Intended meaning: "I ate apples in two minutes"

(36)a. *(man) sib -râ barâye yek sâ'at xord-am
I apple-râ for one hour ate -1sg
Intended meaning: "I ate the apple for an hour"

b. (man) barâye yek sâ'at sib xord-am
I for one hour apple ate -1sg
"I ate apples for one hour" (Ghomeshi and Massam 1994: 190–1)

As the contrast between (a) and (b) in (35) and (36) shows, the *DP+râ* is only compatible with the frame adverbial *dar do daghighe* "in two minutes," which denotes accomplishment, while the bare DP is only compatible with the durative adverbial *barâye yek sâ'at* "for an hour," which indicates the duration of the event.

The third piece of evidence indicating the asymmetry between the non-specific and specific object comes from the similarities between the former and the non-verbal element of a complex verb. Persian exhibits a growing set of complex verbs consisting of a *light verb* and a nonverbal element (Mohammad and S. Karimi 1992; among others). Although those constructions are different from predicates consisting of a non-specific object and a real verb, they share a number of similarities.[11] For example, the nonverbal element of the complex verb is generated in a position adjacent to the light verb, and constitutes a semantic unit with it, as in (37).

(37)a. Kimea be râdio [$_{\text{complex V}}$ gush dâd]
Kimea to radio ear gave
"Kimea listened to the radio"

b. Kimea in otâgh-ro be mehmun [$_{\text{complex V}}$ extesâs dâd]
Kimea this room-râ to guest allocation gave
"Kimea allocated this room to the guest"
(Mohammad and Karimi 1992: 202)

Furthermore, the nonverbal element and the nominalized light verb can constitute a compound noun. The same fact is true of the non-specific object and the verb: the italicized elements are instances of nominalized complex verbs in (38) and non-specific objects plus nominalized verbs in (39).[12]

(38)a. *da'vat kardan-e* Kimea kâr -e dorost-i na -bud
invitation doing -Ez Kimea work-Ez right -ind NEG-was
"Inviting Kimea was not the right thing to do"

b. *gush dâdan* be in harf-â xeyli hosele mi -xâd
ear giving to this chat-pl much patience hab-want
"Listening to these chats requires a lot of patience"

(39)a. *ghazâ poxtan* barâ Kimea kâr-e saxt-i y-e
food cooking for Kimea job-Ez difficult-ind-is
"Cooking is a difficult task for Kimea"

b. Kimea *ketâb xundan*-ro be *ghazâ poxtan* tarjih mi -d -e
Kimea book reading-râ to food cooking prefer hab-give-3sg
"Kimea prefers (book) reading to cooking"

Moreover, the nonverbal element of a complex verb, being part of the semantic description of the verb, can never follow it, as in (40).

(40) *Kimea mehmun-â -ro kard da'vat
Kimea guest -pl-râ did invitation

The same restriction holds for non-specific objects, but not their specific counterparts, as the data in (41) and (42) indicate.

(41)a. Sepide emruz hayât -o tamiz kard
Sepide today courtyard-râ clean did
"Sepide cleaned the courtyard today"

b. Sepide emruz hayât tamiz kard
"Sepide cleaned courtyards today"

c. Sepide emruz tamiz kard *hayât-o*
"Sepide DID clean the courtyard today"

d. *Sepide emruz tamiz kard *hayât*

(42)a. man mi -xâ -m deraxt-e kâj -o be -kâr -am
I hab-want-1sg tree -Ez pine-râ subj-plant-1sg
"I want to plant the pine tree"

b. man mi-xâ-m deraxt-e kâj be-kâr-am
"I want to plant pine trees"

c. man mi-xâ-m be-kâr-am deraxt-e kâj-o
"I want to PLANT the pine tree"

d. *man mi-xâ-m be-kâr-am deraxt-e kâj

The specificity marker *-râ* follows the direct object in (a) and is absent in (b). Both sentences are perfectly well formed. The presence and absence of *-râ* seems to be responsible for the contrast between the sentences in (c) and (d), where the object follows the verb.

Fourth, binding relations clearly indicate an asymmetry between the specific and non-specific object: the non-specific object is unable to bind an anaphor.

(43)a. man se -tâ bachche-hâ-ro be hamdige mo'arrefi kard-am
I three-part child -pl -râ to each other introduction did -1sg
"I introduced the three children to each other"
b. *man se-tâ bachche be hamdige mo'arrefi kard-am

Note that the word order is not responsible for the ill-formedness of (43b) since the non-specific object may scramble away from the verb when contrastively focused, as in (44).

(44) man se -tâ dâneshju be dust -am mo'arrefi kard-am
I three-part student to friend-my introduction did -1sg
"I introduced three STUDENTS to my friend" (not professors)

Fifth, as we saw in the previous section, the specific object takes scope over a quantified element when scrambled into a higher position. This is illustrated by the contrast between (28b) and (29), repeated below in (45) and (46):

(45) har dâneshju-i ye she'r -ro bâyad be -xun -e har >> *DP+râ*
every student -ind one poem-râ must subj-read-3sg
"Every student has to read one poem (out of a specific set)"

(46) ye she'r-ro$_i$ har dâneshju-i t$_i$ bâyad be-xun-e *DP+râ* >> har;
⇑_____⌋ har >> *DP+râ*

Primary reading: "There is one poem such that every student has to read that poem"

The same situation does not hold with respect to the non-specific object, as in (47).

(47) ye she'r$_i$ har dâneshju-i t$_i$ bâyad be-xun-e har >> DP
⇑_____⌋

The only difference between the sentence in (47) and its non-scrambled version (cf. 27b) is that the non-specific DP in the former receives a heavy stress and a contrastive reading.

Sixth, an additional piece of evidence indicating that the specific and non-specific objects are syntactically different comes from the fact that they cannot appear together in a coordinate construction.

(48)a. man diruz in aks -ro va un ketâb-ro xarid -am
I yesterday this picture-râ and that book-râ bought-1sg
"Yesterday I bought this picture and that book"

b. man diruz aks va ketâb xarid -am
I yesterday picture and book bought-1sg
"Yesterday I bought pictures and books"

c. *man diruz in aks -ro va ketâb xarid -am
I yesterday this picture-râ and book bought-1sg

Coordination of two specific or two non-specific objects is allowed, as in (48a, b), respectively. Coordination of a combination of the two renders the sentence ungrammatical, as in (48c).

Finally, and crucially, the most neutral surface position of the non-specific object is the one adjacent to the verb, as in (49a) (see also (1)), while the most neutral position of the specific object is the VP-initial position, as in (49b) (see also (2)).

(49)a. Ramin barâ Kimea pirhan xarid
Ramin for Kimea shirt bought
"Ramin bought shirts for Kimea"

b. Ramin pirhan-ro barâ Kimea xarid
Ramin shirt -râ for Kimea bought
"Ramin bought the shirt for Kimea"

As discussed thus far, there are semantic, morphological, and syntactic asymmetries between the specific and non-specific objects. A summary of these differences is stated below.[13]

1. *Semantic asymmetries*:
   a. Non-specific objects are part of the description of the predicate; specific objects are not.
   b. Non-specific objects are compatible with adverbs denoting process; specific objects are compatible with adverbs denoting accomplishment.
   c. Specific objects enter scope interaction when scrambled; non-specific objects do not.

2. *Syntactic asymmetries*:
   a. Specific objects can bind the indirect object; non-specific objects cannot.
   b. Non-specific objects have to precede the verb and be adjacent to it; specific objects are not subject to this restriction.
   c. Specific and non-specific objects cannot appear together in a coordination construction.

3. *Morphological asymmetries*:
   Non-specific objects allow a process of lexicalization (compounding) with the verb; specific objects do not.

5.3.2 Syntactic Word Formation (SWF)

In order to account for the special relation between the verb and its non-specific object, I adopt a version of Distributed Morphology (DM) (Halle and Marantz 1993) developed by Marantz (1997). In this framework, three different lists are recognized, as in (50):

(50) List 1 ⇒ Computational system (Syntax)

$$\downarrow \qquad \downarrow$$

List 2 ⇒ Phonology LF
Phonetic Interface Semantic Interface ⇐ List 3

(Marantz 1997: 204)

List 1 contains the narrow lexicon that syntax operates on. List 2 consists of the vocabulary that determines the connection between terminal nodes from the syntax and their phonological realizations. List 3 is called the *Encyclopedia*, and consists of complex elements denoting *special* meanings. It is the last list that is of interest to this study.

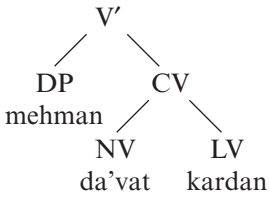
The Encyclopedia is the locus of semantic knowledge. The idea is that *special* sound and *special* meaning do not coincide inside the word, and thus Encyclopedic knowledge is not part of the computational system at the point of Numeration where lexical information is mapped onto syntax.[14] The claim is that the domain of the Encyclopedic knowledge is the *phrase* rather than the *word*. I call the

process that creates this Encyclopedic domain *Syntactic Word Formation* (SWF), and suggest V′ to be the structural domain where the Encyclopedic knowledge consisting of the special meaning of the verb and its modifiers is obtained. This is stated in (51).

(51) The Domain of Syntactic Word Formation (SWF)
V′ is the domain of SWF that operates on DP-V, and provides the Encyclopedic knowledge.

Returning to Persian non-specific objects, we saw that their semantic, syntactic, and morphological properties suggest the existence of a special bond between them and the verb they appear with. Semantically, the verb and its non-specific object provide a special meaning that cannot be produced directly by the lexicon, and is obtained in syntax within the domain of SWF. Within this domain, the special meaning of complex elements builds up in a binary format between elements that enter a sisterhood relation.[15] Consider the following configuration, where CV stands for *Complex Verb* consisting of a light verb and a nonverbal element.

(52)



The light verb (LV) *kardan* "to do" is syntactically, and thus semantically, closer to the nonverbal element (NV) *da'vat* "invitation" than the non-specific object *mehman* "guest." Therefore, LV combines with the NV and provides not only the semantic concept *to invite*, but also the special event and argument structure of the whole CV. The next syntactic word formation, and thus semantic fusion, applies between the complex verb and its sister, the non-specific object, creating one single syntactic and semantic unit.[16] This operation saturates one argument position, and the result has the effect of [N+Ving] interpretation, as indicated by the examples in (33). SWF also accounts for the compounding facts, as well as the binding and adjacency constraints (see below). Furthermore, it explains why the non-specific object is part of the *event*, and therefore, cannot be a *participant in the event*.

5.3.3 Two Object Position Hypothesis (TOPH)

The specific object, as the argument of the verb that undergoes the event expressed by the verb, must occupy a higher position than V′ in order to escape SWF. The phrase structures in (53) exhibit the differences between the specific and non-specific objects.[17]

(53) Two Object Position Hypothesis (TOPH)[18]
a. $[_{VP}\ DP_{[+Specific]}\ [_{V'}\ PP\ V]]$
b. $[_{VP}\ [_{V'}\ PP\ [_{V'}\ DP_{[-Specific]}\ V]]]$

The phrase structure rules (PSRs) in (53) are compatible with the syntactic, semantic, and morphological asymmetries between the two types of object.[19] They also explain a number of asymmetries between these two elements as discussed below.[20]

5.4 Scrambling and the Third Object Position

As mentioned before, the appearance of an object in a higher position, traditionally known as *object shift*, has in general been attributed to morphological Case (Holmberg 1986) and/or specificity (Mahajan 1992; Diesing and Jelinek 1995). Considering Persian, Browning and E. Karimi (1994: 69) suggest that the specific DP moves into a VP-external position where its Case is licensed by an inflectional head, and is realized as *-râ*. In what follows, I show that what we know as object shift is divided into two categories: specific object DPs in the specifier position of VP (cf. 53a), and object DPs in a derived position created by scrambling. This movement generally applies in this language to satisfy discourse functional considerations such as topicalization or contrastive focus. The type of object shift triggered by scrambling has a semantic effect as well since it may alter the scope relation of quantificational elements involved. A similar situation has been observed with respect to scrambling in other languages such as German and Yiddish (Diesing 1997) (see also Miyagawa, this volume). The fact that scrambling is not available to non-specific objects in a number of languages, or applies to them in a very restricted fashion, follows from the syntactic properties of scrambling and the semantic properties of non-specific objects: non-specific objects lack certain semantic properties that are required for the application of this movement.

5.4.1 Distribution of objects

Definite objects may remain in their base-position, as evidenced by the following examples.

(54) Kimea porsid [$_{CP}$ ke Sepide diruz [$_{VP}$ ketâb-ro kojâ gozâsht]]
Kimea asked that Sepide yesterday book -râ where put-3sg
"Kimea asked where Sepide put the book yesterday"

(55) Kimea porsid [$_{CP}$ ke Sepide diruz [$_{VP}$ ketâb-ro be ki dâd]]
Kimea asked that Sepide yesterday book -râ to whom gave
"Kimea asked to whom Sepide gave the book yesterday"

The specific object follows the adverb in both sentences. This fact suggests that the object is in its base-position, the specifier of VP.

Before going any further, a note on adverb positions is needed in order to explain the data in this section: adverbs have been assumed to mark the VP-boundary in many languages (Jackendoff 1972; Holmberg 1986; Webelhuth 1992; among others). Similarly, Cinque (1999) shows that sentence adverbials precede VP adverbs in a VP-external position. He further suggests that these elements

appear in a fixed order with respect to each other universally. He argues, however, that adverbs may also appear VP-internally in certain cases.[21] In these cases, they do not have to follow the rigid order they are subject to in the pre-VP position. VP-internal adverbs, however, do not seem to exist in Persian since their order is always fixed. Consider first the following adverbial orders:

(56)a. ehtemâlan (probably) >> shâyad (perhaps)
*shâyad >> ehtemâlan

b. xoshbaxtâne (luckily) >> bedun-e shak (undoubtedly)
*bedun-e shak >> xoshbaxtâne

Examples are provided in (57):

(57)a. Kimea xoshbaxtâne bedun -e shak in kâr-ro mi -kon-e
Kimea luckily without-Ez doubt this job-râ hab-do -3sg
"Kimea will luckily undoubtedly do this job"
b. *Kimea bedun-e shak xoshbaxtâne in kâr-ro mi-kon-e

The same rigid order has to be obeyed even when the adverbs follow the specific direct object. The following examples illustrate this observation.

(58)a. Kimea in kâr-ro xoshbaxtâne bedun-e shak mi-kon-e
"As for this job, Kimea will luckily undoubtedly do (it)"
b. *Kimea in kâr-ro bedun-e shak xoshbaxtâne mi-kon-e

The rigid adverbial order must be obeyed even in the post-object position, as the ill-formedness of (58b) indicates.[22] If Cinque's analysis is on the right track, the contrast in (58) indicates that the adverbs are in the VP-external positions in these examples. Thus this fact supports the claim that the specific objects in (54) and (55) must be in their base-position inside the VP. It also suggests that in cases where the adverb follows the specific direct object, the latter must be in a VP-external position. Note that the object might intervene between the two adverbs, as in (59). A violation of adverbial order will render the sentence ungrammatical, as illustrated by (59b).

(59)a. Kimea xoshbaxtâne in kâr -ro bedun-e shak mi -kon-e
Kimea luckily this work-râ undoubtedly hab-do -3sg

b. *Kimea bedun-e shak in kâr -ro xoshbaxtâne mi -kon-e
Kimea undoubtedly this work-râ luckily hab-do -3sg

In (59), the specific direct object has scrambled into a position between the two adverbs. The adverbial order has to be observed in this case as well.[23] Once again, this contrast supports the claim that the objects in (54) and (55) are in their base-position inside the VP. Furthermore, it suggests that the objects in (60) and (61), where they precede the adverbs, must be in VP-external positions. The

object receives a topic interpretation in these cases in the absence of a contrastive stress.

(60) Kimea porsid [$_{CP}$ ke [ketâb-ro]$_i$ diruz [$_{vP}$ Sepide [$_{VP}$ t_i kojâ gozâsht]]]

⇑_____|

Kimea asked that book -râ yesterday Sepide where put-3sg
Lit.: "Kimea asked, as for the book, where did Sepide put (it) yesterday"

(61) Kimea porsid [$_{CP}$ ke [ketâb-ro]$_i$ diruz [$_{vP}$ Sepide [$_{VP}$ t_i be ki dâd]]]

⇑_____|

Kimea asked that book -râ yesterday Sepide to whom gave
Lit.: "Kimea asked, as for the book, to whom did Sepide give (it) yesterday"

Note that unlike typical Discourse Configurational languages such as Hungarian (É. Kiss, this volume), contrastively focused or topicalized elements may appear in different positions in Persian. See section 5.4.2 on this issue.

Superlative definites may also stay in situ, as in (62).

(62) Kimea hamishe [$_{VP}$ behtarin mo'allem-ro barâ bachche-hâ entexâb
Kimea always best teacher -râ for child -pl choice
mi -kon-e]
hab-do -3sg
"Kimea always chooses the best teacher for the children"

The superlative DP *behtarin mo'allem* "the best teacher" is still in its base-position in (62). Scrambling into a derived position is also possible, as in (63). The interpretation of the sentence changes, however, as its English translation reveals.

(63) Kimea [behtarin mo'allem-ro]$_i$ hamishe [$_{VP}$ t_i barâ bachche-hâ entexâb
mi-kon-e

⇑_____|

"When it comes to choosing teachers for children, Kimea always chooses the best one"

The sentence in (63) is not as natural as the one in (62). Diesing (1997) suggests that superlatives denote some sort of novelty. This novel interpretation might be responsible for the more natural reading of (62) where the specific object is still within the VP, the domain of novel interpretation (Heim 1982).

Specific objects, including universal quantifiers, are always followed by the specificity marker *-râ* when in the object position, as we saw in section 5.2. They may stay in situ by spellout, as in (2a, b), repeated below in (64) and (65).

(64) Kimea aghlab [$_{VP}$ hame-ye she'r -â -ye tâza -sh -ro barâ mâ mi -xun -e]
Kimea often all -Ez poem-pl-Ez fresh-her-râ for us hab-read-3sg
"It is often the case that Kimea reads all her new poems for us"

(65) Kimea aghlab [$_{VP}$ ye she'r az Hafez-ro barâ mâ mi -xun -e]
Kimea often a poem by Hafez-râ for us hab-read-3sg
"It is often the case that Kimea reads a (particular) poem by Hafez for us"

We saw in section 5.2 that scrambling creates new scope relationships in this language when quantified elements are involved. This is shown by the contrast in (66).

(66)a. yeknafar har ketâb-i -ro mi -xun -e DP >> har
someone every book -ind-râ hab-read-3sg
"There is someone who reads every book"

b. har-ketâb-i-ro yeknafar t_i mi-xun-e har >> DP; DP >> har
⇑_____⌋
Primary reading: "As for each book, there is a (different) person who reads it"

The contrast in (67) provides further support for the claim advanced in sections 5.2 and 5.3: the extracted object takes scope over the adverb in (67b).

(67)a. Kimea hichvaght [$_{VP}$ har film-i -ro do bâr ne -mi -bin-e]
Kimea never each film-ind-râ two times NEG-hab-see-3sg
"Kimea never sees each movie twice" (She only sees them once)

b. Kimea [har film-i-ro]$_k$ hichvaght [$_{VP}$ t_k do bâr ne-mi-bin-e]
⇑_____⌋
Primary reading: "It is never the case that Kimea sees each movie twice" (She sees only some of them twice)

The sentence in (67b) has a weak secondary reading: the one presented for (67a).[24]

The examples in (54), (55), (62), (64), (65), and (67a) show that a specific DP can remain in situ inside the VP by spellout. If this is the case, the appearance of the specific object in a derived position in (60), (61), (63), and (67b) cannot be due to Case, contrary to previous assumptions (cf. Browning and E. Karimi 1994). That is, if Accusative Case were responsible for the movement of the specific object in Persian, this element would always have to appear in a derived position at spellout since Case checking cannot be both overt and covert in the same language.

We have seen thus far that the scrambled specific object DP receives either a topic interpretation or a contrastive focus interpretation (if heavily stressed). In contrast, non-specific objects undergo scrambling in this language only if contrastively focused:

(68) Kimea [(ye) ketâb]$_i$ barâ-sh t_i xarid
⇑_____⌋
Kimea (a) book for -her bought
"Kimea bought a BOOK for her"

Since the non-specific object either lacks existence (cf. kind-level) or is existential (cf. indefinite), it does not have the required ingredients to be topicalized: it either lacks any kind of discourse referent or, if existential, it cannot denote old information since it asserts novelty. Therefore, it cannot be topicalized. The awkwardness of the following sentence attests this fact.

(69) ??pirhan$_i$ Ramin goft Kimea barâ dust -esh t$_i$ xarid

⇑_____⌋

shirt Ramin said Kimea for friend-her bought

"As for shirts, Ramin said Kimea bought (them) for her friend"

The non-specific object can scramble only if contrasted, as mentioned before. In that case, it is individuated (see É. Kiss, this volume), and is placed within a discourse background. The novelty of a contrasted non-specific object, together with its discourse-linked property, allows this element to scramble (see also Dayal, this volume).

The discussion in this section has the following implications. First, the Persian data show that object movement is not due to Case in this language, but is an instance of scrambling, a general movement in this language that is triggered by discourse functional factors (see section 5.4.2).

Second, the semantic properties of non-specific objects predict their limitation with respect to scrambling: (a) They cannot be topicalized due to the fact that they either lack existence or cannot carry old information, and (b) They can move only in languages in which contrastive focus may trigger movement.

Third, the analysis thus far suggests that the surface positions of specific objects in Persian are partially explained by the structure in (53a), and partially by the rule of scrambling. Finally, if Persian specific objects can in fact remain in situ at spellout, and if their movement out of their base-position is motivated by discourse functional factors rather than Case, there is no need to stipulate a functional head (such as AGRo) in order to check the Accusative Case of the object. Thus the notion *object shift* takes on a new meaning since it is divided now into two categories (base-generated and scrambled), and is unrelated to Case.[25]

5.4.2 Landing site of scrambled objects

The idea that overt movement is a way to present the discourse information goes back to Jackendoff (1972), and has been discussed in literature since (Rochemont 1986; Vallduví 1992; Neeleman 1994; É. Kiss 1995; Bailyn 1995; among others). Furthermore, it has been argued that movement representing discourse information is triggered by features such as Focus (or Topic) (Rizzi 1997; Miyagawa 1997; S. Karimi 1999c; among others. See also Bailyn, this volume, and É. Kiss, this volume).

Following these authors, I suggest that discourse functions are represented by features that trigger movement in Persian. Thus the landing site of a scrambled object is the specifier of a functional head that represents a functional feature such as Top(ic) or Foc(us). These features are general properties of scrambling in

Persian, and are not restricted to objects (S. Karimi, forthcoming). The following configuration illustrates this issue:

(70) $[_{FP}\ XP_i\ [F\ [_{YP}\ \ldots.\ t_i\ \ldots\ldots]]]$

In (70), F represents a functional head such as Foc or Top. This feature must be matched with a corresponding F′ that is carried by an XP (Chomsky 1999). Therefore, it triggers the movement of an XP, including the object DP, into the specifier position of the FP.

Persian, unlike Hungarian, allows Topic and Focus to appear in different positions: they can surface in sentence-initial positions (cf. (5)), or in a TP-internal position (cf. (4); see also the data in section 5.4.1).

Allowing specific features to represent discourse functions is supported by the fact that focus and topic are morphologically realized in some languages. Topic, for example, is represented by the affix *-wa* in Japanese. In Yaqui, the suffix *-su* marks focus (Jelinek and Escalante 1991), and Navajo has a particle that marks focus (Barss, Hale, Speas, and Perkins 1991). In the absence of an overt morphological element, it is conceivable to assume the existence of features representing these discourse functions.[26]

In the next section, I discuss supporting evidence in favor of the existence of two distinct object positions (TOPH) inside the VP, an additional position outside of VP, and the Syntactic Word Formation rule (SWF), proposed in previous sections.

5.5 Supporting Evidence

In what follows, arguments are presented supporting the Two Object Position Hypothesis stated in (53), the rule of Syntactic Word Formation, and the third object position created by scrambling.

5.5.1 Support for SWF and TOPH

Syntactic Word Formation accounts for the distinctions between specific and non-specific objects with respect to scope, apparent anti-Crossover effects, and object–verb order. Furthermore, SWF together with TOPH in (53), explain the contrast between the two types of objects with respect to binding relations in double object constructions. All these issues are addressed in this section.

5.5.1.1 Scope

SWF explains why the non-specific object cannot take scope over negation.

(71) Kimea (YE) ketâb na -xarid
Kimea (a) book NEG-bought
"Kimea did not buy (ONE) book/books"

This sentence has the interpretation in (72a), but not the one in (72b):[27]

(72)a. It is not the case that Kimea bought one book/books
b. *There is a book/are books such that Kimea bought it/them

The rule of SWF accounts for the semantic fusion between the verb and its non-specific object, a process that blocks scope over negation by the non-specific object.

Furthermore, we saw in section 5.3 that the non-specific object cannot take scope over a quantifier, even when it is scrambled into a higher position. This is not true in the case of its specific counterpart, as shown in that section. Lack of wide scope reading in the case of non-specific objects is explained if these elements are syntactically and semantically part of the verbal description due to SWF.

5.5.1.2 Anti-Weak Crossover effect and binding

SWF accounts for apparent Weak Crossover (WCO) violations. Consider the following contrast:

(73)a. Kimea$_i$ [ye dâneshju]$_k$ be hamshâgerdi-hâ-sh$_{i/*k}$ t mo'arrefi kard

⇑_____|

Kimea a student to classmate -pl -her introduction did
"Kimea introduced one student to her classmates"

b. Kimea$_i$ ye dâneshju-ro$_k$ be hamshâgerdi-hâ-sh$_{i/k}$ mo'arrefi kard

The sentence in (73a) is well-formed only if the pronominal affix is coindexed with the subject. In (73b), the pronominal affix can be coindexed with either the subject or the specific object. The fact that coindexation between the scrambled non-specific object and the affix is not available seems to suggest an instance of WCO violation. However, the sentence in (74) shows that WCO does not explain the ungrammatical reading of (73a).

(74) Kimea$_i$-ro mâdar-esh$_i$ t$_i$ dust dâr-e

⇑_____|

"As for Kimea, her mother loves (her)"

If WCO were responsible for the ungrammatical reading of (73a), the sentence in (74) should be ruled out on the same basis. The fact that this sentence is well formed suggests that the ungrammatical reading of (73a) must be due to the fact that non-specific objects are part of the predicate, and therefore cannot enter the binding relation.

There seems to be a piece of counter evidence regarding the claim that non-specific objects cannot bind an anaphoric element. Let us re-examine the contrast between the kind-level and existential non-specifics discussed in section 5.2, (15)–(16). The examples provided in that section are repeated below in (75) and (76).

(75) Kimea tunest *mâhi* be -gir -e *un xeyli châgh-e
Kimea managed fish subj-catch-3sg it very fat -be3sg
"Kimea managed to catch fish" Intended meaning:
"It is very fat"

(76) Kimea tunest *ye âpârtemân* peydâ kon-e un xeyli ghashang-e
Kimea managed an apartment find do -3sg it very pretty -be3sg
"Kimea managed to find an apartment" "It is very pretty"
(S. Karimi 1999b)

While the kind-level non-specific DP cannot be the antecedent of a pronoun, its existential counterpart can. However, if the ungrammatical readings of (73a) and the second clause in (75) are due to the claim that the object is part of the verbal unit in these examples, the grammaticality of (76) becomes a problem, since words are islands and therefore lack transparency. That is, a portion of a complex word cannot independently bind a pronoun as attested by the ill-formedness of **John is a car dealer. It is brown*.

The problem disappears, however, if we assume that the existential non-specific DP lacks transparency only within its own clause where the process of SWF takes place. That is, the semantic interpretation of these elements applies within the cycle where SWF applies, and not beyond that cycle. This seems to be borne out, as evidenced by the ungrammatical reading of (73a). In this example, the existential non-specific object fails to bind the pronominal affix within its own clause due to SWF.

*5.5.1.3 *V–$O_{[-specific]}$ order*

Finally, SWF explains why the non-specific object cannot follow the verb, although this restriction does not hold for the specific object, as the contrasts in (41c, d) and (42c, d) indicate. These data are repeated below in (77) and (78).

(77)a. Sepide emruz tamiz kard *hayât -o*
Sepide today clean did courtyard-râ
"Sepide DID clean the courtyard today"
b. *Sepide emruz tamiz kard hayât

(78)a. man mi -xâ -m be -kâr -am deraxt-e kâj -o
I hab-want-1sg subj-plant-1sg tree -Ez pine-râ
"I want to PLANT the pine tree"
b. *man mi-xâ-m be-kâr-am deraxt-e kâj

If the non-specific object is interpreted as a semantic part of the predicate, the ill-formedness of the (b) sentences in (77) and (78) is explained since the object has to remain in its lexical domain. The implication of this proposal is that the verb can move to a higher node independent of the specific direct object, while this movement is not possible independent of the non-specific object: the latter has to move with the verb in order to be interpreted as part of the predicate.[28] This seems to be justified as indicated by the following examples.

(79)a. Kimea be bachche-hâ ghazâ dâd
Kimea to child -pl food gave
"Kimea gave food to children"

b. Kimea [ghazâ dâd]$_i$ be bachche-hâ t_i
"Kimea FED the children"

c. *Kimea [dâd]$_i$ be bachche-hâ ghazâ t_i

The non-specific object and the verb have moved together in (79b). The ill-formedness of (79c) shows that the verb cannot move independent of the non-specific object.[29]

We have seen, however, that the non-specific object *can* in fact be separated from the verb if contrasted, as in (3), repeated below in (80).

(80) Kimea aghlab (ye) ketâb-e dâstân$_i$ barâ bachche-hâ t_i mi -xun -e

Kimea often (a) book-Ez story for child -pl hab-read-3sg
"Kimea often reads (a) STORY-BOOK for children (rather than a poetry book)"

Contrastively focused non-specific objects may move into a higher position. The non-specific object in these cases receives a heavy stress.

(81) Pirhan$_i$ Ramin barâ Kimea t_i xarid

shirt Ramin for Kimea bought
"SHIRTS Ramin bought for Kimea (not dresses)"

A sentence containing a scrambled non-specific object becomes awkward if the object is not contrastively stressed (cf. 69).

In sum, the non-specific object can be separated from the verb only if it is contrasted with another nominal DP that could narrow the semantic scope of the verb and provide a new special meaning. We also saw that scrambling does not provide wide scope for the non-specific object. This fact clearly implies that the non-specific object is interpreted in its base-position when scrambled. Therefore, the copy fulfills its semantic portion of the predicate when it is extracted.

The question that immediately emerges is this: what prevents the same rule from applying to the verb? That is, why does the copy of the non-specific object, but not the copy of the verb, serve to provide the semantic interpretation of the predicate. If this were the case, (79c) would be grammatical.

This asymmetry might have to do with another language specific property of Persian: it could be argued that the non-specific object is unable to follow the verb because (a) it is separated from the verb only when focused, and (b) focal elements can only appear in the preverbal position in this language, as evidenced by the following data.

(82)a. *Ramin barâ Kimea xarid *Pirhan -ro*
Ramin for Kimea bought SHIRT-râ

b. *Ramin goft ke Sasan barâ Kimea xarid *Pirhan -ro*
Ramin said that Sasan for Kimea bought SHIRT-râ

Note that WH-phrases are barred from the postverbal position as well. These elements are focal, bearing new information.

(83)a. *Ramin barâ Kimea xarid chi / chi -ro
Ramin for Kimea bought what / what-râ

b. *Ramin goft ke Sasan barâ Kimea xarid *chi / chi -ro*
Ramin said that Sasan for Kimea bought what / what-râ

The sentences in (82) and (83) suggest that focus, representing new information, can only appear in the preverbal position in this language. Thus the non-specific object cannot appear in the postverbal position since its separation from the verb must be correlated with contrast, and a contrastive element cannot appear in the postverbal position.[30, 31]

5.5.1.4 Binding in double object constructions

The syntax of Persian specific direct objects and the indirect objects is in some respects the mirror image of English double object constructions as discussed by Barss and Lasnik (1986). That is, there is evidence indicating that the indirect object has to be in the domain of the specific direct object in Persian. This is supported by the following examples.[32]

(84) man [se -tâ bachche-hâ-ro]$_i$ be hamdige$_i$ mo'arrefi kard-am
I three-part child -pl -râ to each other introduction did -1sg
"I introduced the three children to each other"

(85) *Kimea be bachche-hâ$_i$ hamdiga$_i$ -ro mo'arrefi kard[33]
Kimea to child -pl each other-râ introduction did

Let us discuss (85) first. It could be argued that the ungrammaticality of this sentence is due to the fact that the indirect object is within a prepositional phrase, and hence cannot c-command the direct object. However, similar facts are observed in German, a language which allows binding of the indirect object by the direct object, as in (86).

(86) dass wir die Gäste$_i$ einander$_i$ vorgestellt haben.
that we the guests.ACC each other.DAT introduced have
"That we have introduced the guests to each other"
(G. Müller and Sternefeld 1994: 351)

German does not allow the direct object to be bound by the indirect object, although the latter is not embedded within a prepositional phrase in this language.[34]

(87) *dass wir den Gästen$_i$ einander$_i$ vorgestellt haben
that we the guests.DAT each other.ACC introduced have
(G. Müller and Sternefeld 1994: 352)

Now I turn to the sentence in (84). It has been argued in the literature that the direct object is base-generated adjacent to the verb, and moves to the specifier of AGRo for the purpose of Case assignment. Therefore, it cannot undergo reconstruction (Mahajan 1990 for Hindi; Moltmann 1991 for German; among others). This analysis suggests that the structure of (84) is the one in (88).

(88) man [$_{AGRoP}$ [se-tâ bachche-hâ-ro]$_i$ [$_{VP}$ be hamdige t$_i$ mo'arrefi kard-am]]

For Mahajan and Moltmann, the object trace within the VP is an NP-trace since its antecedent is in an A-position (cf. the specifier position of AGRo), and therefore reconstruction is not allowed to that position. Regarding the Persian object, Browning and E. Karimi (1994) argue along the same lines.

Assuming TOPH in (53a), in which the specific object is in the specifier position of VP, the binding relations in (84) and (85) (and also (86) and (87)) will be accounted for in a simple way. That is, the specific direct object cannot be in the domain of the indirect object in its base-position, and hence the latter cannot bind the former.

5.5.2 Support for the third object position

The discussion in this section provides support not only for SWF and TOPH, but also for the third object position created by scrambling. I start the discussion with parasitic gap constructions. An examination of the combination of binding relations and parasitic gap constructions will follow this discussion.

5.5.2.1 Parasitic gap constructions

SWF and TOPH in (53) explain why parasitic gaps are licensed by specific objects but not by their non-specific counterparts. Consider the following contrasts.

(89)a. Kimea [$_{DP}$ in ketâb-ro]$_i$ [$_{CP}$ ghablaz-inke *pro* e$_i$ be -xun -e]
Kimea this book -râ before -that subj-read-3sg
be man dâd
to me gave
"Kimea gave me this book before reading (it)"
b. *Kimea [$_{DP}$ ketâb]$_i$ [$_{CP}$ ghablaz-inke *pro* e$_i$ be-xun-e] be man dâd

(90)a. Kimea [$_{DP}$ ye kâregar-ro]$_i$ [$_{CP}$ ghablaz-inke *pro* e$_i$ estexdâm be -kon-e]
Kimea a worker -râ before -that hiring subj-do -3sg

be kâr vâdâsht
to work forced
"Kimea forced a (specific) worker to work before hiring (her)"

b. *Kimea [$_{DP}$ ye kâregar]$_i$ [$_{CP}$ ghablaz-inke *pro* e$_i$ estexdâm be-kon-e] be kâr vâdâsht

(S. Karimi 1999b: 704)

Similar to adverbs, adjunct clauses such as those in (89) and (90) represent the VP-boundary in Persian. This is due to their syntactic and semantic similarities with adverbs: they appear in the same position, and have scope over the VP. Thus the objects in (89) and (90) are in a VP-external position. Since parasitic gaps can only be licensed by a DP in an A′-position (Chomsky 1982; among others), the objects in these examples should be able to license them. As these examples show, only the specific object can license the gap, but not its non-specific counterpart. The solution to this puzzle is that the gap is specific by virtue of being a *pro*, and therefore, it can only be licensed by an argument that is structurally and semantically comparable with it, as I have argued for in S. Karimi (1999b). Thus SWF and TOPH account for the contrast in (89) and (90).

5.5.2.2 Binding and parasitic gap constructions

Based on German data, Webelhuth (1992) suggests a position with a *dual* property for the scrambled object: a position that exhibits A/A′-properties simultaneously:

(91) Peter hat jeden$_i$ Gast [ohne e$_i$ anzuschauen] seinem$_i$ Nachbarn t$_i$
Peter has every guest without looking at his neighbor
vorgestellt
introduced
"Peter has every guest, without looking (at him), to his neighbor introduced"

Jeden Gast "every guest" in (91) binds the pronoun (the property of an A-position), and licenses a parasitic gap (the property of an A′-position). Thus the object in this sentence has to be in a position with mixed properties. Consider now the Persian example in (92).

(92) Kim [bachche-hâ-ro]$_i$ [$_{CP}$ ghablaz-inke [$_{TP}$ *pro* **e**$_i$ be kelâs be -frest-e]]
Kim child -pl -râ before -that to class subj-send-3sg
[$_{VP}$ t$_i$ be hamdige$_i$ mo'arrefi kard]
to each other introduction did
"Kim introduced the children to each other before sending (them) to class"

Given the phrase structure rule in (53a), the reciprocal in (92) is bound by the copy of the object in an A-position, while the gap is licensed by the scrambled object in an A′-position. This is shown in (93).

(93) Kim [bachche-hâ-ro]$_i$ [$_{CP}$ ghablaz-inke [$_{TP}$ *pro* **e**$_i$ be kelâs be-frest-e]]

[$_{VP}$ t$_i$ be hamdige$_i$ mo'arrefi kard]

Thus TOPH, together with scrambling that creates the third object position, account for the sentence in (92) and similar cases.

The following data, taken from German (Deprez 1994: 128), provide support for the analysis advanced in this section.

(94)a. weil Maria *jeden Gast*$_i$ [ohne seinem Partner e$_i$ vorzustellen] allein lässt
"Because Maria leaves each guest alone without introducing (him) to his partner"

b. weil Maria *jede Frau* [ohne ihrem Partner vorzustellen] allein lässt
"Because Maria leaves each woman alone without introducing (her) to her partner"

Given the phrase structure in (53a) and the rule of scrambling, the structures of (94a, b) are those in (95a, b).

(95)a. weil Maria *jeden Gast*$_i$ [ohne e$_i$ *seinem*$_i$ *Partner* vorzustellen][$_{VP}$ t allein lässt]

b. weil Maria *jede Frau*$_i$ [ohne e$_i$ *ihrem*$_i$ *Partner* vorzustellen][$_{VP}$ t allein lässt]

The gap is licensed by the object in an A′-position in both sentences. Furthermore, the pronoun is c-commanded by the gap in an A-position.

The proposals advanced in this chapter regarding the existence of three distinct object positions in scrambling languages such as Persian account for the peculiarity observed by Webelhuth (1992) without the need to assume a landing site with dual syntactic properties. Furthermore, these proposals seem to have the potential to be extended to other scrambling languages as well, as in the case of German in (91) and (94).

5.6 Conclusion

In this chapter, I have first examined the syntactic, semantic, and morphological asymmetries between specific and non-specific direct objects in Persian. A summary of this discussion appears in table 5.1. These properties give rise to the proposal regarding the existence of two object positions (TOPH) for specific and non-specific objects in this and similar languages. They also explain why scrambling applies freely with respect to the specific object, but is restricted in the case

(96)

Table 5.1 Summary of asymmetries

	Non-specific	*Specific*
Frame adverbial	No	Yes
Durative adverbial	Yes	No
Compounding	Yes	No
Binding of IO	No	Yes
Scope over neg	No	Yes
Scope over Q	No	Yes
Licensing parasitic gap	No	Yes

of its non-specific counterpart. That is, only a contrastive reading that maintains the novelty of the non-specific object and places it within a discourse background allows it to scramble.

Furthermore, TOPH together with the rule of Syntactic Word Formation (SWF) proposed in this chapter account for the syntactic asymmetries between the two types of objects with respect to scope identification, binding, apparent anti-Weak Crossover effects, and parasitic gap constructions in a simple and elegant fashion.

Additionally, a third object position, created by scrambling, was proposed. It was shown that scrambling, triggered by discourse functional features such as topic and contrastive focus, extracts the object DP from its base-position and places it in the specifier position of a functional projection representing one of the two discourse functions. It is also argued that the proposal regarding the existence of the two distinct positions for specific objects accounts for cases in which the same DP binds an anaphor and licenses a parasitic gap simultaneously. This proposal has the potential to account for similar facts in other scrambling languages (such as German).[35]

Finally, if the analysis advanced in this chapter is on the right track, there is no need to stipulate a position with mixed properties for scrambled objects (Webelhuth 1992; Deprez 1994), or to assume the existence of a functional head (such as AGRo) in order to block the reconstruction process of the object into its base-position.

Notes

1 The particle *-râ* appears as *-o* and *-ro* in the colloquial language, and marks an object DP for specificity (S. Karimi 1990, 1996).

2 **Abbreviations**: sg = singular, pl = plural, hab = habitual, part = particle, ind = indefinite, neg = negation, subj = subjunctive, Ez = Ezafe Particle. The *Ezafe construction* involves a DP consisting of an element with the feature [+N] such as N or A, its modifier(s), an optional possessive DP, and the Ezafe particle *-e* that is structurally utilized as a link between the head and its modifiers (and the possessive DP). See Samiian (1983), S. Karimi and Brame (1986), and Ghomeshi (1997) for analysis.

3 Rapoport (1995) suggests that attributive definites are non-specific, as in (i) and (ii):

(i) I consider John the man for the job
(ii) The man who murdered Smith is insane

The non-specific interpretation of the noun phrase in (ii), for example, is that the speaker is asserting that whoever murdered Smith is insane, without necessarily having a particular individual in mind.

4 In the recent literature, the tendency is to utilize the term DP for specific noun phrases, and NP for non-specific ones. I will not make this distinction in this chapter.

5 The fact that universal quantifiers are sensitive to the Specificity Effect supports the claim that these elements are specific. Consider (i):

(i) *Who did you see every/most picture(s) of?

Furthermore, they cannot appear in an existential environment as in (ii)–(iv):

(ii) *There is every hat on the table
(iii) *It was every French professor that I met at the party
(iv) *What I saw was every picture of Mary

In Persian, universal quantifiers behave like other specific DPs: they are followed by the specificity marker *-râ* if in an object position, and are sensitive to the Specificity Effect (S. Karimi 1999a; S. Karimi and Lobeck 1997). In Turkish, too, these quantifiers are followed by the suffix *-I* in an object position, similar to other specific objects:

(v) Ali bUtUn kilaplar-*(I) akudu "Ali read all the books"
(vi) Ayshe her kitab-*(I) okudu "Ayshe read every book"

The Turkish examples are from Engin Sezer (personal communication).

6 Many thanks to Richard Oehrle for helpful discussions on this issue.

7 I do not have any explanation for this contrast at this point, and will leave it for future research.

8 In this respect Persian is different from the genetically related Hindi and Urdu. Porterfield and Srivastav (1988) and Dayal (1992) have shown that bare object DPs in Hindi/Urdu can be interpreted as either definite or generic. Persian bare objects, on the contrary, can never receive a definite interpretation.

9 A thorough discussion of Persian and English bare plurals is beyond the scope of this study.

10 Due to the semantic interpretation of the kind-level DP and the verb in examples such as those in (33), grammarians and linguists have considered them *compound verbs*.

11 There are differences between a complex verb consisting of a nonverbal element and a light verb, on the one hand, and the predicate consisting of a non-specific object and a real verb, on the other. For example, the combination of a non-specific object and the verb saturates one argument, and hence the complex verb becomes intransitive. This is not the case regarding the complex verb consisting of a light verb and a nonverbal element since the latter is not an argument of the former. Furthermore, the nonverbal element of the complex verb and the non-specific object can both be scrambled away from the verb. However, only the latter can be contrastively focused outside the V′. Moreover, the non-specific object can appear as the complement of a nominalized verb in an *Ezafe* construction. This is not the case with regard to the nonverbal

element of the complex verb (see Mohammad and S. Karimi 1992: 202). On different approaches regarding Persian complex predicates, see Heny and Samiian (1991), Ghomeshi and Massam (1994), Vahedi-Langrudi (1996), Dabir-Moghaddam (1995), and S. Karimi (1997a, b).

12 Turkish non-specific objects exhibit similar properties. That is, they function as part of the semantic scope of the predicate (Engin Sezer, personal communication).

13 The syntactic and semantic differences between the specific and non-specific objects are not restricted to Persian. The adjacency requirement, for example, seems to hold in a number of other languages including Turkish (Kornfilt 1990; Enç 1991), Dutch (de Hoop 1992), Greenlandic (Van Greenhoven 1996), German (Diesing 1992; Van Greenhoven 1996), Hindi (Mahajan 1990; Mohanan 1992), and Urdu (Butt 1993). See also Dayal (this volume) and Kornfilt (this volume).

14 *Special* meaning in this context is reminiscent of *idiomatically combined* meaning in the sense of Nunberg, Sag, and Wasow (1994): an idiomatic meaning based on the composition of lexical elements. See also S. Karimi (1997a, b) on this issue. *Special* sound receives a similar meaning: the composition of the sounds of different lexical items.

15 This is reminiscent of syntactic word formation in the spirit of Dowty (1979) and *covert* incorporation in the sense of Safir (1996) and M.C. Baker (1996).

16 Considering the element adjacent to the verb as part of the predicate is not a novel idea. This issue has been discussed by a number of authors, including Chomsky (1975) and Larson (1988) with respect to indirect objects, Carlson (1977) with respect to bare plurals, Szabolcsi (1986) with respect to indefinite objects, and de Hoop (1992) with respect to objects with weak Case (= non-specific).

17 A version of this hypothesis appeared in S. Karimi (1999b).

18 Generating the object in different positions is not a novel proposal. On this issue, see Mohammad and S. Karimi (1992), Neeleman (1994), and Rapoport (1995), among others.

19 The two object positions proposed in (53) violate M.C. Baker's Uniformity of Theta Assignment Hypothesis, restated in (i).

(i) Uniformity of Theta Assignment Hypothesis (UTAH)
Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.
(M.C. Baker 1988: 46)

Discussing argument structures and the lexical expression of syntactic relations, Hale and Keyser (1993: 53) state that structures that express the relations among the arguments of the verb are characterized by the operation of two fundamental principles. These principles, which they have borrowed from Kayne (1984) and Chomsky (1986b), are restated in (iia, b), respectively.

(ii) Lexical Relational Structure (Argument Structure)
a. Unambiguous Projections
b. Full Interpretation (Hale and Keyser 1993: 77)

The phrase structures in (53) satisfy both of these principles: the non-specific DP is part of the predicate structure, while its specific counterpart does not have this semantic role. Therefore, the non-specific object, in a position adjacent to the verb, satisfies the locality requirement for the syntactic word formation, and the *full interpretation* of the verbal construction. Furthermore, the two distinct object positions satisfy the principle of "Unambiguous Projections."

20 Since we are giving up thematic roles in (53), one problem immediately emerges. That is, given these phrase structures, is there any principle in the grammar that would prevent the generation of a linguistic expression with two objects in two different positions? The answer is *no*. However, only one of the objects will be checked for Accusative Case, and the Case feature of the other one will remain unchecked, causing the structure to crash.

21 Cinque's arguments are heavily based on Italian and French, although he provides data from a variety of other languages as well.

22 Scrambling cannot change the order of adverbs for reasons not clear to me at this point. I leave this issue for future research.

23 The example in (59a) supports Cinque's claim that adverbs have their own separate projections, and are not adjunctions, nor do they appear in multiple specifiers of the same projection. This is because the object is in the specifier position of a functional head in all scrambling cases. See section 5.4.2 for discussion.

24 See Miyagawa (this volume) for similar ambiguities created by scrambling in Japanese and Korean.

25 In fact, Holmberg (2000a) rejects the hypothesis that object shift is triggered by Case. Based on data from Finnish, he suggests that the object is externalized when it is marked as [-Focus].

26 Persian does not have an overt focus marker, but EMPHATIC elements are marked by *-ke*, as in (i)–(ii).

(i) to -ke hanuz injâ -i (I didn't expect you here)
you-EMPH still here-2sg
"You are still here"

(ii) ketâb-ro-ke na -xund-i (I expected you to have read it)
book -râ-EMPH NEG-read -2sg
"The book, you haven't read"

27 In this sense, Persian non-specific objects behave like English bare plurals:

(i) John didn't see spots on the floor (Carlson 1977: 19)

(iia), but not (iib), is the interpretation of (i):

(ii)a. It is not the case that John saw spots on the floor
b. *There were spots on the floor that John did not see

Carlson suggests that English bare plurals can only take a narrow scope since they are part of the semantics of the verb (see also Bittner 1994 and Van Greenhoven 1996 with respect to bare plurals in Greenlandic). This observation is identical to the position taken in this chapter regarding the semantics of non-specific objects in Persian.

28 In S. Karimi (1989), I have accounted for the asymmetry between the specific and non-specific elements in the postverbal position by resorting to (a) directionality of government, (b) the internal structure of the non-specific object containing an empty category, and (c) the Empty Category Principle (ECP). I had arrived at the conclusion that ECP was responsible for the absence of non-specific objects in the postverbal position. This analysis is not universally valid, however, due to the fact that such an ECP effect is not observed in other languages, including English, since non-specific DPs may appear in ungoverned positions in these languages (Lobeck 1995).

29 It is worth mentioning that there are cases in which the non-specific object may follow the verb.

(i) mi -xor-i châ'i?
hab-eat -you tea
"Would you like tea?"

(ii) xarid -i ketâb?
bought-2sg book
"Did you buy books?"

The appearance of the non-specific DPs *tea* and *book* in the postverbal position in an interrogative sentence contradicts the generalization discussed in the text. However, these counterexamples seem to be well-formed only as a few "cliché" cases. Otherwise, their appearance in a postverbal position is in general ungrammatical:

(iii) dishab dâsht-am mi -xord -am châ'i *(-ro) ke to telefon kard-i
last night had -1sg hab-drunk-1sg tea -râ that you call did -2sg
"Last night, I was drinking *(the) tea when you called"

(iv) hichvaght ne -mi -fahm -e ketâb *(ro)
never NEG-hab-understand-3sg book râ
"She never understands *(the) book"

As the asterisks indicate, the sentences in (iii) and (iv) are not grammatical in the absence of the particle *-râ*, an observation that is compatible with the discussion in the text. Note that [V–$O_{-Specific}$] is not allowed in a regular interrogative sentence, either, evidenced by the ungrammaticality of the following examples:

(v) *Shost-i malâfe?
wash -2sg sheet

(vi) *tamiz kard-i hayât?
clean did -2sg courtyard

30 Focus is restricted to the preverbal position in some other languages as well. Hungarian, for example, places a focal element in a specific position in the preverbal domain (Horvath 1981, 1986; É. Kiss 1994. See also É. Kiss, this volume). Persian differs from Hungarian, however, since the contrastive interpretation is not restricted to one specific position (see section 5.4.2).

31 Persian directional WH-phrases violate the generalization discussed in the text since these elements may appear in the postverbal position:

(i) raft -i kojâ?
went-2sg where
"Where did you go?"

This exception might be related to the fact that directional elements may appear postverbally without affecting the neutral intonational pattern of the sentence, as in (ii), suggesting that the postverbal position is the canonical position for these elements.

(ii) Kimea raft madrese
Kimea went school
"Kimea went to school"

If the neutral position of directional elements is the postverbal position, it could be argued that new information is available only in the preverbal *and* in the canonical position of a linguistic expression in this language.

32 In this chapter, I discuss only data relevant to the binding of reciprocals. I am leaving out the reflexive *xod* (self) since it is primarily subject oriented. This element, employed only in a bookish style now, appears with a pronominal affix in the spoken language. In that case, it can take an antecedent other than the subject; *xod*+affix, however, loses its anaphoric property since it becomes pronominal.

33 Persian does not allow a word-final *-a* (except for *na* "no" and *va* "and," two highly productive words). Therefore, the underlying final *-a* in *hamdiga* shows up when this element takes a suffix, as in (85). In the final position, it shows up as *-e*, as in (43a, b).

34 Note that this restriction holds for pure anaphors. See Moltmann (1991) on this issue. See also G. Müller and Sternefeld (1994) for a different type of analysis of these data.

35 See S. Karimi (forthcoming) for an analysis of object positions in other scrambling languages, including Hindi, Korean, Japanese, and Russian.

6

Scrambling, Subscrambling, and Case in Turkish

Jaklin Kornfilt

6.1 Aims of this Study

This paper has essentially three aims.

The primary aim is to look at some new facts concerning scrambling out of larger DPs (a phenomenon which I refer to here as "subscrambling") in Turkish[1] and establish relationships between these facts with types of Case. Thus, one focus of concern here is a typology of Case. I will be particularly interested in the question of the extent to which specificity plays a role in these interactions between scrambling, subscrambling, and a typology of Case.

The second aim is to use Turkish facts in order to show that, as proposed previously (e.g. Diesing 1992; Mahajan 1992), there is no *Specificity Effect* per se, as an independent principle of grammar. Rather, this is an effect of independent syntactic principles, in particular of the Condition on Extraction Domains (CED), as proposed by Huang (1982), a condition possibly itself an effect of subjacency (as has been proposed by Chomsky (1986a) and applied as such by Diesing (1992) to the Specificity Effect).

The third aim is to demonstrate insufficiency of the CED with respect to some of the Turkish facts: while the CED, however expressed, may account for the subextraction facts reported on previously for English and German (and even in

I wish to thank Simin Karimi and Terry Langendoen for inviting me to the Scrambling workshop held in Tucson, Arizona, where most of the material in this paper was presented, to Simin Karimi and to the participants of the workshop for their questions and comments, to Simin Karimi for her comments on a preliminary version, and to Uwe Junghanns, Markus Steinbach, and Ralf Vogel, for discussion of some of the issues and for help with some references during the writing of the paper, and to Mehmet Yanılmaz, Cem Mansur, and Bahar Arsoy for their native judgments. None of these colleagues is responsible for any mistakes, misconceptions, or other shortcomings in this paper; responsibility for those rests with me alone.

Turkish, with respect to oblique hosts), it runs into problems when faced with some of the Turkish subscrambling facts, especially those involving hosts with structural Case. I propose an account based on syntactic incorporation (of Ns into verbs), following M.C. Baker (1988). I also suggest that the Specificity Effect (as derived from the CED) does hold in Turkish (and might be universal), but does so weakly, as expressed in certain tendencies and preferences seen in some word orders, but not as an absolute explanatory principle. Incorporation, which does explain the more robust facts of Turkish studied here, might be found in fewer languages and, where it is found, might represent a further step along Diesing's proposal (in Diesing 1992) that non-presuppositional DPs remain within the VP, while presuppositional DPs are external to the VP.

I assume in this paper that scrambling is a movement phenomenon. This movement is to A′-positions (in particular, non-argument positions of *topic* and *presuppositional background*), thus creating A′-dependencies. In Turkish (and probably many other languages), the topic position(s) is/are clause-initial, while the presuppositional backgrounding position(s) is/are clause-final (or at least postverbal[2]). The notion of specificity will be assumed to be directly related to the presuppositions of the speaker concerning the reference of certain DPs.

The organization of this paper is as follows: in section 6.2, I discuss specificity and Case. Subscrambling in Turkish is examined in section 6.3, followed by an analysis of the Specificity Constraint in section 6.4. The interaction between subscrambling and Oblique Case is the subject of section 6.5. The Specificity Constraint in other languages and the CED-based explanations are discussed in sections 6.6 and 6.7, respectively. Section 6.8 contains my proposal regarding incorporation. Section 6.9 concludes this paper.

6.2 Specificity and Case

In this section, I present and briefly discuss certain interactions between specificity and Case in Turkish. These facts are well known, especially where they concern the Accusative (e.g. Dede 1986; Enç 1991; Erdal 1981; Erguvanlı-Taylan 1984; Kornfilt 1997; Nilsson 1986; Tura 1986; but also most traditional reference grammars of Turkish). I claim that similar facts hold for other structural Cases as well. (In Turkish, structural Cases are Accusative, Genitive, and Nominative.) I further claim that only structural Cases are fully sensitive to specificity; Oblique Cases are not sensitive to specificity, or only in subtle, less robust and clear-cut ways.

6.2.1 Specificity and structural Case

In Turkish, there is a correlation between the overt realization of Accusative Case on direct objects as well as of Genitive Case on the subjects of nominalized embedded clauses on the one hand, and of the specificity (in a presuppositional sense, i.e. a specific DP is one whose reference is presupposed by the speaker and usually also by the hearer), on the other. These Cases are overtly realized on specific DPs, while corresponding non-specific DPs do not bear overt Accusative

and Genitive Case morphemes. I shall call the "disappearance" of these overt Case morphemes "Accusative drop" and "Genitive drop," respectively. This usage is for ease of reference only. I do not wish to imply that there is an actual rule of morpheme deletion.

A brief sketch follows, consisting essentially of examples illustrating the behavior of arguments with structural Cases.

Overt Accusative on specific direct objects (definite and indefinite):

(1)a. Ahmet dün akşam *pasta-yı* ye -di
Ahmet yesterday evening cake -ACC eat-PAST
"Yesterday evening, Ahmet ate the cake"

b. Ahmet [dün akşam yap -tığ -ım] *şahane bir pasta-yı*
Ahmet yesterday evening make-F.NOM-1sg fantastic a cake -ACC
ye -di
eat-PAST
"Ahmet ate *a* fantastic cake which I made yesterday evening"

Overt Genitive on specific subjects of nominalized embedded clauses (definite and indefinite):

(2)a. *(Bir) arı -nın* bugün çocuğ-u sok -tuğ -un]-u
a bee-GEN today child -ACC sting-F.NOM-3sg-ACC
duy -du -m
hear-PAST-1sg
"I heard that the bee/a bee [+specific] stung the child today"

"Accusative drop" on non-specific, generic direct objects:

(1)c. Ahmet dün akşam *pasta* ye -di
Ahmet yesterday evening cake eat-PAST
"Yesterday evening, Ahmet ate cake"

"Accusative drop" on non-specific, indefinite direct objects:

(1)d. Ahmet dün akşam şahane *bir pasta* ye -di
Ahmet yesterday evening fantastic a cake eat-PAST
"Ahmet ate a fantastic cake yesterday evening"[3]

"Genitive drop" on non-specific subjects of nominalized embedded clauses:

(2)b. [Çocuğ-u bugün *(bir) arı* sok -tuğ -un]-u duy -du -m
child -ACC today a bee sting-F.NOM-3sg-ACC hear-PAST-1sg
"I heard that today bees/a bee [–specific] stung the child"

While direct objects with overt Accusative and subjects with overt Genitive can freely scramble to a variety of positions, their "bare" counterparts with "dropped" structural Case cannot do so. Instead, they must remain in a position to the immediate left of the verb.

Scrambled Accusative direct object:

(3) Ahmet şahane *(bir) pasta-yı* dün akşam ye -di
Ahmet fantastic a cake -ACC yesterday evening eat-PAST
"Ahmet ate the/a fantastic cake [+specific] yesterday evening"

Unsuccessfully scrambled non-specific direct object (generic or indefinite) with Accusative drop:

(4) *Ahmet *(bir) pasta* dün akşam ye -di
Ahmet a cake yesterday evening eat-PAST
Intended meaning: "Ahmet ate (a) cake [–specific] yesterday evening"[4]

Genitive (specific) subjects in positions other than left-adjacent to the verb:

(5)a. [Bugün *(bir) arı -nın* çocuğ-u sok -tuğ -un]-u
today a bee-GEN child -ACC sting-F.NOM-3sg-ACC
duy -du -m
hear-PAST-1sg
"I heard that today, the bee/a bee [+specific] stung the child"

b. [*(Bir) arı -nın* bugün çocuğ-u sok -tuğ -un]-u duy -du -m
a bee-GEN today child -ACC sting-F.NOM-3sg-ACC hear-PAST-1sg
"I heard that the bee/a bee [+specific] stung the child today" (= (2a))

Unsuccessful occurrences of non-specific, "Genitive-dropped" subjects of nominalized clauses in positions other than left-adjacent to the verb:

(6)a. *[Çocuğ-u *(bir) arı* bugün sok -tuğ -un]-u duy -du -m
child -ACC a bee today sting-F.NOM-3sg-ACC hear-PAST-1sg

b. *[*(Bir) arı* çocuğ-u bugün sok -tuğ -un]-u duy -du -m
a bee child -ACC today sting-F.NOM-3sg-ACC hear-PAST-1sg
Intended meaning for (a) and (b): "I heard that bees/a bee [–specific] stung the child today"

The relevant observational generalization is that non-specific direct objects and subjects with "dropped" structural Case are confined to the immediate left of verbs, while their specific counterparts with overt Accusative and Genitive, respectively, are not so confined.[5] This generalization carries over to subjects of non-nominalized, tensed clauses, with the proviso that Nominative does not correspond to an overt morpheme in Turkish. This is illustrated by the following examples:

Specific (definite and indefinite) Nominative subject in canonical, clause-initial position:

(7) *(Bir) arı* çocuğ-u sok -tu
a bee child -ACC sting-PAST
"A/the bee [+specific] stung the child"[6]

Non-specific, generic Nominative subject in pre-verbal position:

(8) Çocuğ-u *arı* sok -tu
child -ACC bee sting-PAST
"Bees stung the child"[7]

Non-specific indefinite subject in pre-verbal position:

(9) Çocuğ-u bir *arı* sok -tu
child -ACC a bee sting-PAST
"A bee [non-specific] stung the child"[8]

I view specific subjects of the kind illustrated in (7) as having "strong" Nominative, while non-specific subjects as in (8) and (9) are genuinely "bare" and have a general "weak" structural Case (cf. de Hoop 1992) – the same Case which is found in non-specific counterparts of specific Accusative direct objects and specific Genitive subjects, respectively.

I postpone discussion of Case licensing until later. The important point at this juncture is that only structural Cases are sensitive to specificity, in the sense that non-specific arguments with *structural* Case *must* be bare; as we shall see soon, *Oblique* Case is realized on non-specific as well as specific DP/NPs.

Secondly, the limitation of non-specific DP/NPs to the immediate left of the verb is stricter for constituents with "weak" structural Case than it is for non-specific oblique DP/NPs, as we shall see in the next section.

6.2.2 Specificity and Oblique Case

Oblique Cases are: (a) Always overt (i.e. they never undergo "Case-Drop"); thus, non-definite oblique DPs are systematically ambiguous between specific and non-specific readings; and (b) Oblique DPs can scramble, even when they are non-specific – although, admittedly, their preferred position is to the immediate left of the verb:

(10) Ahmet her zaman *haydut-lar-dan* kaç-ar
Ahmet each time robber-pl -ABL flee-AOR
"Ahmet always flees from robbers [+ or –specific]"
(Preferred: [–specific])

(11) Ahmet dün akşam *sinema -ya* git-ti
Ahmet yesterday evening cinema-DAT go-PAST
"Ahmet went to the cinema [+ or –specific] yesterday evening"
(Preferred: [–specific])

In these examples, we have instances of two Oblique Cases: Ablative and Dative. Note that in both examples, the DPs marked for these Oblique Cases are ambiguous between specific and non-specific readings. In other words, where Oblique Cases are concerned, the previously observed correlation between non-specificity and obligatory covertness of Case does not hold.

The second previously observed correlation, i.e. that between non-specific DPs and their inability to scramble away from immediately preverbal position, does not hold either; oblique non-specific DPs can scramble away from the (admittedly, preferred) preverbal position without losing their non-specific reading:

(12) Ahmet *haydut-lar-dan* her zaman kaç-ar
Ahmet robber-pl -*ABL* each time flee-AOR
"Ahmet always flees the robbers [+specific]/robbers [–specific]"

(13) Ahmet *sinema-ya* dün akşam git-ti
Ahmet cinema-DAT yesterday evening go-PAST
"Ahmet went to the cinema [+specific]/to the movies [–specific] yesterday evening"

In both examples, the objects bearing Oblique Case-marking are ambiguous between a non-specific reading and a specific reading, despite the fact that they are not immediately preverbal. As we saw earlier, this ambiguity is not found with DPs that are either overtly or covertly assigned structural Case.

With respect to scrambling, the generalization appears to be that overtly Case-marked constituents can scramble, regardless of specificity. This observation strongly implies that word order possibilities, insofar as they are sensitive to specificity, are not dictated by specificity *directly*, but only via the mediation of Case. This shows, in turn, the importance of a typology of Case, based on structural versus Oblique Cases.

Now that we have gone through a rough sketch of correspondences between specificity, overt versus covert Case, and scrambling possibilities in Turkish, I turn to a discussion of the main issue of this chapter, namely scrambling out of DPs.

6.3 Subscrambling in Turkish

We saw earlier that Turkish is a language where scrambling applies to overtly Case-marked DPs. As a matter of fact, Turkish has traditionally been described as rather word-order free – to such an extent that even non-verb-final orders are possible; this is claimed in the typological literature as a rare phenomenon for languages whose basic word order is verb-final, as is Turkish. However, subconstituents of phrases like DPs and PPs cannot usually be moved out in Turkish:

(14)a. Dün sokak-ta [[çok yaşlı] bir adam]-a rasla-dı -m
yesterday street -LOC very old a man -DAT meet-PAST-1sg
"Yesterday I met a very old man in the street"

b. *Dün sokak-ta [e_i bir adam]-a rasla-dı-m *çok yaşlı*$_i$
(Examples like (14b) can be found in poetry, but not in prose.)[9]

It is striking that the following example, where the modifier of the DP, i.e. the very same Adjectival Phrase (AP), has scrambled out of the DP, is much better than the ungrammatical (14b):

(14)c. Dün sokak-ta [e_i bir adam] gör-dü -m *çok yaşlı*$_i$
yesterday street-LOC a man see-PAST-1sg very old
"Yesterday I saw a very old man in the street"

In this study, I shall propose an account for the contrast illustrated in (14b) versus (14c).

Why is (14b) ungrammatical? I propose that this ungrammaticality is due to locality constraints: the modifier AP cannot scramble out of its DP to its post-V target position in one step, due to reasons of locality: as I shall claim later, the trace of the scrambled subconstituent needs to be antecedent-governed, and this would not be possible in such a derivation.

Furthermore, an intermediate step of an AP adjoining to its DP prior to further movement is not possible, either: in the spirit of the Barriers-framework (cf. Chomsky 1986a) nothing can adjoin to the DP (since it is an argument) before moving further. We can indeed show that the putative intermediate step in the derivation of (14b) is ungrammatical, too:[10]

(15) *Dün sokak-ta [e_i bir adam]-a *çok yaşlı*$_i$ rasla-dı-m

One exception to the generalization that subscrambling out of a DP is severely limited is the (apparent) possibility to scramble a possessor in possessive DPs; this is always possible, irrespective of the Case of the host:

(16)a. [Ahmed-in karı-sın]-ı tanı -mı -yor -um
Ahmet-GEN wife-3sg-ACC know-NEG-PR.PROG-1sg
"I don't know Ahmet's wife"

b. [*pro*$_i$ karı-sın]-ı tanı-mı-yor-um *Ahmed-in*$_i$

The empty category in possessor position is *pro*, licensed and identified by the AGR-head of the possessive DP.[11] Other empty categories which are bound by scrambled subconstituents of a DP are not thus licensed and cannot therefore be *pro*. Note also that the possessor cannot adjoin to the argument DP, either – the prohibition of Chomsky (1986a) against subconstituents adjoining to an argument holds for possessors, as well:

(16)c. *[*pro*$_i$ karı-sın-ı] *Ahmed-in*$_i$ tanı-mı-yor-um

The apparently scrambled possessor in (16b), then, can be analyzed as a right-dislocated constituent, and the *pro* which is bound by that constituent is a resumptive pronoun. As is well known, violations of locality constraints can be "repaired" by resumptive pronouns in the positions of empty categories, provided that these pronouns are licensed and/or are not ruled out for independent reasons.

Our preliminary generalization here is that subconstituents of argument DPs cannot scramble out in general, unless there is a resumptive pronoun in their original position. This explains the ungrammaticality of (14b).

But why, then, is (14c) well formed, thus leading to an unexpected contrast with (14b)? An immediate answer is that this has to do with specificity. Where the AP can scramble out of its containing DP, that DP is non-specific, as in (14c). In contrast, at least with respect to the examples we have seen so far, where such an AP cannot scramble out of its DP, as in (14b), the primary reading of that DP is that of an indefinite, but specific DP, given the definite past tense and perfective aspect on the verb as well as the verb's semantics.

In previous literature there has been a constraint, called the *Specificity Effect*, which essentially stipulates that extraction out of a specific DP is blocked (cf. Bowers 1988; Chomsky 1973, 1977; Diesing 1992; Enç 1991; Erteschik-Shir 1973; Fiengo and Higginbotham 1981; S. Karimi 1999a; Mahajan 1992).[12]

It appears then that the so-called "Specificity Effect" (or as I shall refer to it, the "Specificity Constraint") is the solution to both our questions: it explains why (14b) is ungrammatical, and it also explains the contrast between (14b, c).

In the next section, we shall first look at some further examples which can be explained as instances of the "Specificity Constraint." We shall then turn to further contrasts which at first glance seem to be of the same sort, but where further consideration shows that they must be due to some other factor than (or at least in addition to) specificity.

6.4 (Apparent?) Effects of the "Specificity Constraint"

We just saw the result of trying to scramble an Adjective Phrase modifier out of its containing DP, with varying success. Similar facts hold for scrambled PP modifiers:

(17)a. ?Bir daha [e_i bir terzi] bul -a -ma -m [*sen -in gibi*]$_i$
one time a tailor find-ABIL-NEG-1sg you-GEN like
"I won't ever be able to find a tailor [–specific] like you again"

b. *Bir daha [e_i bir terzi] -*yi* bul -a -ma -m [*sen -in gibi*]$_i$
one time a tailor-ACC find-ABIL-NEG-1sg you-GEN like
Intended meaning: same as for (17a), but with the difference that the object *bir terzi* "a tailor" is intended to have a [+specific] interpretation.[13]

The ungrammaticality of (17b), in contrast to the grammaticality of (18a), is clearly due to scrambling, as the sources of both examples are grammatical:

(18)a. Bir daha [[*sen -in gibi*] bir terzi] bul -a -ma -m
one time you-GEN like a tailor find-ABIL-NEG-1sg
"I won't ever be able to find a tailor [–specific] like you again"

b. Bir daha [[*sen -in* *gibi*] bir terzi] -*yi* bul -a -ma -m
one time you-GEN like a tailor-ACC find-ABIL-NEG-1sg
"I won't ever be able to find a tailor [–specific] like you again"

Given that the ungrammaticality of (17b) is due to scrambling out of a specific DP, we can explain it by appealing to the Specificity Constraint mentioned above.

Not surprisingly, the "bare" direct object which can function as the host of a scrambled subconstituent cannot scramble itself – a fact which is expected, given that the "bare" direct object is non-specific and thus patterns with any non-specific bare direct object in its inability to scramble away from its position immediately preceding the verb. In contrast, the overtly Case-marked direct object (which cannot be the host of scrambling) can scramble, in its turn patterning with all specific DPs in this respect.

This is illustrated by the following minimal pair of examples, where the direct object is separated from the verb by an adverbial phrase; this separation is successful in (19b), where the direct object is specific (and overtly marked for Accusative), but unsuccessful in (19a), where the direct object is non-specific and lacks overt marking for Accusative. Comparison of this minimal pair with the pair in (17) shows that our observational generalization is correct: the direct object that can scramble cannot serve as a *host* of subscrambling, while the direct object that cannot scramble *can* serve as a host of subscrambling:

(19)a. *[[*Sen-in* *gibi*] bir terzi] bir daha bul -a -ma -m
you-GEN like a tailor one time find-ABIL-NEG-1sg
Intended meaning: "I won't ever be able to find a tailor [–specific] like you again"

b. [[*Sen-in* *gibi*] bir terzi] -yi bir daha bul -a -ma -m
you-GEN like a tailor-ACC one time find-ABIL-NEG-1sg
"I won't ever be able to find a tailor [+specific] like you again"

Similar observations obtain where the (potential) host of subscrambling scrambles to the right itself:

(20)a. *Bir daha bul -a -ma -m [[*sen -in* *gibi*] bir terzi]
one time find-ABIL-NEG-1sg you-GEN like a tailor
Intended meaning: "I won't ever be able to find a tailor [–specific] like you again"

b. bir daha bul -a -ma -m [[*sen -in* *gibi*] bir terzi] -yi
one time find-ABIL-NEG-1sg you-GEN like a tailor-ACC
"I won't ever be able to find a tailor [+specific] like you again"

So far, the facts appear to back up the Specificity Constraint, i.e. the contrast in (17) would follow from that condition as a Specificity Effect.

Most of the examples that I have used to illustrate the complementary distribution between entire DPs and their subconstituents with respect to their ability to

scramble have involved direct objects (with the exception of (14b) and (15), where an oblique host was involved). Similar facts also hold for subjects, as can be seen from the following examples:

(21)a. Köy -ü [[*dev gibi*] beş haydut] bas -tı
village-ACC giant like five robber attack-PAST
"Five giant-like robbers attacked the village"

The subject DP follows the direct object. As mentioned earlier, this marked word order is found either when the subject is focused (in which case it is usually ambiguous between specific and non-specific readings), or else if it is non-specific, even when it is not focused. Given the context of this example, the likeliest reading for the subject is that it is non-specific.

Given the array of facts concerning the ability of modifiers to scramble out of direct objects, we would expect the PP modifier of the subject to be able to scramble out of the DP; this expectation is fulfilled:

(21)b. Köy -ü [e_i beş haydut] bas -tı [*dev gibi*]$_i$
village-ACC five robber attack-PAST giant like
"Five robbers ([–specific]) attacked the village (who were) like giants"

The reading for the subject is here of an unambiguously non-specific DP. This is just as expected, if subjects pattern along with direct objects in allowing subconstituents to scramble out when they are non-specific, and if they themselves, due to their lack of specificity, are positioned to the immediate left of the verb.

When the subject is in its canonical IP-initial position, the reading is one of specificity. As expected, the corresponding subconstituent cannot scramble out of such a subject:

(22)a. [[*Dev gibi*] beş haydut] köy -ü bas -tı
giant like five robber village-ACC attack-PAST
"Five robbers (who were) like giants ([+specific]) attacked the village"

b. ??/*[e_i Beş haydut] köy -ü bas -tı [*dev gibi*]$_i$
five robber village-ACC attack-PAST giant like
Intended meaning: "Five robbers ([+specific]) attacked the village (who were) like giants"

At this point, we should ask ourselves to what extent Case plays a role in scrambling *out of* DPs. We saw earlier that Case does play a role in the scrambling of main constituents of a sentence, in addition to specificity: while non-specific DPs with *structural* Case cannot scramble away from their position immediately preceding the verb, we saw that non-specific *oblique* DPs can do so.

On the other hand, subscrambling, at least so far, has seemed to be blind to Case distinctions. The condition that allows for this marked process has been, in all instances, something like the Specificity Constraint: where the host of the scrambling subconstituent is non-specific, the result is fine, but where the potential

host of such scrambling is specific, the result is ill-formed. While the specificity of the potential host is obviously crucial, its Case has been irrelevant so far. In most of our examples the potential host had structural Case, but the initial contrast concerning scrambling *out of* DPs did involve a potential oblique host (cf. 14b). While that oblique DP did not permit scrambling of its AP-modifier, that DP was specific, which might have been a sufficient reason to preclude scrambling of the subconstituent.

What we need, then, are examples involving potential hosts of scrambling that are oblique as well as non-specific. It is to such examples that I now turn.

6.5 Subscrambling and Oblique Case

Oblique Cases pattern along with *overt* structural Case, irrespective of specificity. This is illustrated by the next examples, which are very similar to each other: the verb is the same, as well as the (potential) host of the scrambling subconstituent. Scrambling leads to ill-formed results in all instances:

(23)a. *[e_i bazı haydut-lar]-*dan* kaç-mış -lar [*dev gibi*]$_i$
some robber-pl -ABL flee-REP.PAST-3pl giant like
Intended meaning: "They reportedly fled from some robbers [specific *or* non-specific] (big) like giants"

The Ablative object, an oblique DP, can be interpreted as specific or non-specific. Due to the *reported* past tense, the non-specific reading is stronger.

Interestingly, the modifier phrase cannot scramble out of the oblique DP, irrespective of whether the DP is interpreted as having a specific or non-specific reading.

This is not an exception, as the next examples show clearly:

(23)b. *[e_i Haydut-lar]-*dan* kaç-malı -sın [*dev gibi*]$_i$
robber -pl -ABL flee-NEC-2sg giant like
Intended meaning: "You must flee from robbers [specific *or* non-specific] (big) like giants"

Again, while both the specific and the non-specific readings are possible for the oblique object, the non-specific reading is much stronger, due to the necessitative mood. Yet, scrambling of the modifier out of the oblique DP is ill-formed even under this strong reading of [–specific] for the host.

Similar observations hold for the next example, where the aorist aspect (which signals a habitual action) strengthens the non-specific reading for the oblique host of scrambling; yet, subscrambling yields an ill-formed result even for this stronger reading:

(23)c. *[e_i Haydut-lar]-*dan* kaç-ar -ım [*dev gibi*]$_i$
robber -pl -ABL flee-AOR-1sg giant like
Intended meaning: "I (habitually) flee from a robber [specific *or* non-specific] (big) like giants"

All the sources of the examples we just saw are grammatical – crucially, this is true of the sources of the ungrammatical examples, as well. (Due to space considerations, these sources will not be listed here; however, they are easy to construct, by reconstructing the subscrambled constituents into their original positions, marked by the co-indexed empty category, within their respective hosts).

Looking at these facts from the perspective of the Specificity Constraint, the ungrammaticality of (23a–c) under a non-specific reading is a serious problem.

What is of central interest to us is the fact that oblique objects cannot function as hosts to subscrambling out of them, even when they are non-specific. In this respect, they are very different from objects that have structural Case. This is not a disturbing fact for one of the generalizations formulated earlier: a constituent that can scramble does not allow its subconstituents to scramble, while a constituent that cannot scramble does allow its subconstituents to scramble. Why should this generalization hold?

Before I turn to answering this question, I would like to summarize the relevant observations for Turkish on which this generalization is based.

(24) Summary of observations made for Turkish scrambling and subscrambling

a. Morphology:
Structural Cases (Nominative, Genitive, Accusative): Overt for specific DPs; "drop" for non-specific DP/NPs.
Oblique Cases (Dative, Ablative, Locative): Always overt (i.e. for specific and non-specific constituents alike).

b. Word order:
Structural Cases: Non-specific "bare" DP/NPs confined to the immediate left of the verb; specific DPs with overt Case free to scramble.
Oblique Cases: Immediate left of the verb preferred for non-specific oblique constituents, but not obligatory; both specific and non-specific constituents can scramble, albeit with different degrees of felicity.

c. Possibility of hosting a "subscrambling" subconstituent (which does not leave a resumptive pronoun):
Structural Cases: Non-specific, "bare" constituents to the immediate left of the verb can host subscrambling; specific, overtly Case-marked constituents cannot.
Oblique Cases: Neither specific nor non-specific constituents can host subscrambling.

I now turn to the question of why a larger constituent that can scramble cannot host subscrambling. With this purpose in mind, I present a brief discussion of the Specificity Constraint[14] as it has been appealed to for some languages. Although we just saw that the Specificity Constraint makes wrong predictions with respect to scrambling subconstituents out of oblique objects in Turkish, it is nevertheless clear that the specificity of the potential host does play a role, especially in some languages studied in the literature in this context.

6.6 The Specificity Constraint in Some Other Languages with Respect to Scrambling

The Specificity Constraint states that non-specific DPs allow subscrambling out of them, while specific DPs do not. We saw that the first statement is problematic for Turkish, because non-specific oblique DPs do not allow scrambling out of them; only non-specific DPs with *structural* Case do. However, the second statement has remained unchallenged: specific DPs do not allow subscrambling (unless a resumptive pronoun is left behind).

One language where considerable attention has been paid to scrambling and its interactions with other factors, in particular with scrambling, is German. A particularly interesting and wide-reaching line of investigation is found in the works of Kratzer (e.g. 1995) and Diesing (e.g. 1992). Based on previous work by Davidson (cf. 1967), Kratzer and Diesing claim (roughly) that the subjects of stage-level predicates are (or rather can be) VP-internal, while the complements of individual-level predicates are VP-external (the subjects of stage-level predicates can be VP-external, as well). Along with this generalization, Diesing (1992) claims that specific complements can scramble to a position outside of the VP, while non-specific complements must remain within the VP.

A further claim is that VP-external DPs act as barriers to scrambling, while VP-internal DPs do not. This patterning is explained as a CED effect (following Huang 1982): VP-external non-argument positions are not governed, and therefore they block extractions out of them. VP-internal DPs are governed, and thus do not act as barriers for such extractions.

Some German examples follow that illustrate Diesing's approach:

(25)a. . . . daß Otto immer [$_{DP}$ Romane von Joseph Roth] gelesen hat
that Otto always novels of Joseph Roth read has
". . . that Otto has always read novels by Joseph Roth"
(Diesing 1992: 129, (86a))

b. *Was*$_i$ hat [$_{IP}$ Otto immer [$_{VP}$ [$_{DP}$ t_i für Romane] gelesen]]?
what has Otto always for novels read
"What kind of novels has Otto always read?"
(Diesing 1992: 129, (86b))

(26)a. . . . daß Otto [$_{DP}$ Romane von Joseph Roth] immer gelesen hat
that Otto novels of Joseph Roth always read has
". . . that Otto has always read novels by Joseph Roth"
(Diesing 1992: 129, (87a))

b. **Was*$_i$ hat [$_{IP}$ Otto [$_{DP}$ t_i für Romane]$_j$ [$_{VP}$ immer t_j gelesen]]?
what has Otto for novels always read
(Diesing 1992: 129, (87b))

Diesing's generalization is that extraction is not possible out of scrambled positions. This is explained as subjacency violation, following Chomsky's (1986a) reformulation of Huang's (1982) CED, i.e. under a Barriers approach.[15]

If this account is on the right track, we would have an explanation, or at least a formal statement for the correlation we spelled out before and which I repeat for convenience: DPs that can scramble do not allow for subconstituents to scramble out of them, while DP/NPs that cannot scramble do allow for scrambling of subconstituents. However, we have to insert a proviso to account for the Turkish facts. We saw that non-specific oblique DPs in Turkish can scramble to VP-external positions. Therefore, in this approach, we have to say that overtly Case-marked DPs of all types can (and in fact must) scramble to VP-external positions, while DPs which are "bare" for Case remain within VP. To make the CED work for the subscrambling facts in Turkish, we must make scrambling contingent upon overt Case (in the sense discussed previously, i.e. including the Nominative), rather than on specificity.

English has some instances of the Specificity Constraint, too, as the following contrast shows:

(27)a. Who did you see pictures of?
b. *Who did you see the picture of? (cf. Mahajan 1992: 510, (1) and (2), following Chomsky 1973 and Fiengo and Higginbotham 1981)

Mahajan's proposal is as follows (cf. 1992): non-specific objects receive a structural Case under government by the V; specific objects receive Case in different ways; in particular, in Specifier position of AGRoP. In that non-θ-governed position, extraction out of specific objects is not possible, due to a CED violation. Thus, Mahajan's approach is akin to Diesing's. No special Specificity Constraint is necessary.

Clearly, the CED is a more principled account than the Specificity Constraint, which is merely stipulative. However, the CED runs into problems with respect to certain languages like Persian; and even German, on which a good part of this approach has been based, poses some challenges, as will be shown shortly.

The problems posed by Persian for the CED are due to the fact that presuppositional and VP-external DPs *can* host subextractions in certain instances.

Due to space considerations, I shall not discuss those Persian facts here; I refer the reader to S. Karimi (1999a) for a detailed discussion.

The problems posed by German are similar: there exist examples where the host of subextraction is presupposed and has scrambled to a VP-external position; yet, subextraction is successful:[16]

(28) Worüber$_i$ würde [einen solchen Schmähartikel t_i]$_j$ selbst Postal
what+about would a such maligning article even Postal
nicht t_j zu schreiben wagen?
not to write dare
"About what would even Postal not dare write such a maligning article?"

(29) Darüber$_i$ würde [einen solchen Schmähartikel t_i]$_j$ selbst Postal
this+about would a such maligning article even Postal
nicht t_j zu schreiben wagen!
not to write dare
"About this, not even Postal would dare write such a maligning article!"

Subextraction (WH-movement in the first example and subscrambling in the second) applies here successfully, resulting in perfectly acceptable results, despite the fact that the host has scrambled to a VP-external position.

I have no solution to the problem posed by the well-formedness of examples like (28) and (29), as opposed to the ungrammaticality of (26b). However, it is clear that the CED is only partially successful in explaining the effects of the Specificity Constraint even in some of those languages for which it was devised. More relevantly for the present paper, I would like to claim that the CED is even more problematic with respect to subscrambling in Turkish.

6.7 CED-Based Explanations: How Well are they Motivated?

6.7.1 Assumptions needed to make the CED work for Turkish subscrambling

I mentioned earlier that Huang's CED does make correct predictions about the Turkish facts at issue, but only if we assume that all overtly Case-marked DPs (among which are also subsumed Nominative DPs, as explained earlier) are positioned outside of the VP – whether via scrambling or base-generation. Specificity would not play a direct role in this placement.

We can formalize this idea by proposing that overtly and *structurally* Case-marked complements of V move to [SPEC, AGRoP] (as also mentioned in the discussion of Mahajan's proposal), to have their Case checked, and are thus VP-external. Complements with Oblique Case might adjoin to AGRoP. Further scrambling is in the service of either topicalization (and places a DP either in an IP-adjoined position or in the specifier position of a Topic Phrase that dominates IP – I will not take a stand on these positional alternatives here), or of backgrounding, which places the DP in a postverbal position (as we saw in most of our examples of subconstituent scrambling).

Subjects are base-generated VP-internally (cf. Koopman and Sportiche 1991). Suppose that they remain there if they are non-specific (and thus "bare," i.e. not Case-marked); this is true for Nominative as well as Genitive subjects. If they are specific (and thus Case-marked for either Nominative or Genitive, depending on the verbal or nominal category of their domain), they have to move out of VP, to [SPEC, AGR], where their Case is checked. From there, they can scramble for reasons of pragmatics (or so-called "information structure"), leftwards or rightwards, similarly to objects.

The CED would correctly predict the subscrambling facts we saw earlier, under the following assumptions made earlier: (a) all overtly (or, perhaps more appropriately, morphologically) Case-marked DPs (including Nominative DPs) are external to the VP; and (b) only constituents within the VP are properly governed.

Now the question is: why should there be such a principle as the CED? As it stands, it is a stipulative principle. As mentioned earlier, Diesing (1992) claims that the effects of CED are derivable from subjacency. A scrambled DP which is VP-external, as well as a DP which is base-generated VP-externally, is a barrier (in a Barriers-based model), because it is not L-marked by the verb (albeit still θ-marked by the verb). When a subconstituent is moved out of such a VP-external

DP, it has to cross at least two bounding nodes, namely its own DP as well as IP.

At least insofar as the Turkish facts are concerned, I doubt whether these can be explained by subjacency alone. It is well known that subjacency effects are, while certainly existent, rather weak, when compared to Empty Category Principle (ECP)-effects. The contrasts I have presented here appear to be too robust to be explainable by appealing to subjacency alone.

6.7.2 Some weaknesses of the CED as applied to Turkish subscrambling

A more serious problem arises when we consider the structure of VP and the position of oblique objects. As far as *structural* objects are concerned, the analysis of "bare" objects remaining in complement position and of overtly Case-marked structural objects having their Case checked in [SPEC, AGRoP] is well motivated, and I follow Mahajan (1992) in applying that analysis to Turkish.

However, what is the position of *oblique* objects? Given that their Cases depend on idiosyncratic, or at least lexical, properties of the verb, it would make sense to have those Cases checked within the VP. But if they remain within the VP, we would expect them to allow subscrambling (under the CED), but we saw that oblique objects act as barriers to subscrambling. On the other hand, if oblique objects move out of the VP, they would presumably adjoin to AGRoP, as mentioned earlier as a possibility. This would make them VP-external, and would enable any CED-based account to correctly predict that subscrambling out of obliques is impossible.

This analysis has a number of problems.

(i) The movement of obliques out of VP is not motivated: Oblique Cases are checked within VP, rather than in [SPEC, AGRoP]. It is possible that specific obliques adjoin to AGRoP (or move to specifier positions of higher functional projections) via scrambling, for reasons of topicalization. But this cannot be maintained for *non-specific* obliques; yet, the latter cannot act as hosts of subscrambling either.

(ii) Word order problems: the CED-based analysis predicts that oblique objects should precede overtly marked structural objects. While this may be correct for German, it is probably not correct for Turkish, given that native speakers tend to report that oblique objects have to follow, rather than precede, overtly Case-marked structural objects in unmarked utterances:

(30)a. Ali kitab-ı Hasan-a ver -di
Ali book-ACC Hasan-DAT give-PAST
"Ali gave the book to Hasan"

Here, the Accusative object precedes the Dative, i.e. oblique, object. This word order is usually judged as the unmarked one. I interpret this fact as meaning that the Accusative object is placed in a hierarchically higher position than the Dative object. If the Accusative object is positioned in [SPEC, AGRoP], then the Dative

object cannot be adjoined to AGRoP: if it were, it would have to precede the Accusative object.

Where is the Dative object, then? It is either still within the VP, where it presumably originates, or else it is adjoined to VP, so as to be lower in the tree hierarchy than the Accusative object. Either way, it is difficult to say that it is VP-external and therefore a barrier to subscrambling.

Of course it is possible to say that the Dative object is, after all, adjoined to AGRoP, and that the Accusative object has been scrambled out, to some higher position, from its intermediate position in [SPEC, AGRoP]. However, without clear-cut motivation for such movement, it is difficult to justify such an assumption. Especially given that the order illustrated in (30a) is pragmatically unmarked, it is hard to motivate further movement of the Accusative object from [SPEC, AGRoP] to higher levels in the tree.

Note that the reverse order between the two objects leads to an interpretation where the Accusative object is focused:

(30)b. Ali Hasan-a kitab-ı ver -di
Ali Hasan-DAT book-ACC give-PAST
"Ali gave THE BOOK to Hasan"

(iii) Yet another problem, related to the one just discussed, arises from a consideration of non-specific oblique objects. We saw earlier that those have a tendency to be close to the verb, although this is not an absolute requirement.[17] An analysis along the lines of those proposed by Diesing (1992) and Mahajan (1992), namely that the proximity of these non-specific oblique DPs to the verb signals the fact that these DPs are VP-internal, would be reasonable.

However, both the original Specificity Constraint and its formalization as a CED-effect would make the wrong prediction that such (putatively) VP-internal oblique objects should allow for subscrambling, but they do not, or at least not readily. A list of examples follows where we appear to have a "squish," in the sense that judgments seem to follow a gradation:

(31)a. **[e_i Bir dilenci-ye] dün akşam rasla-dı -m *çok yaşlı*]$_i$
a beggar-DAT yesterday evening meet-PAST-1sg very old
Intended meaning: "Yesterday evening I met a very old beggar"

The oblique object, i.e. the putative host of the attempted subscrambling, is topicalized and is quite clearly VP-external. Given that the oblique object is topicalized, the reading as specific is strong.

(31)b. ?//*Dün akşam [e_i bir dilenci-ye] rasla-dı -m [*çok yaşlı*]$_i$
yesterday evening a beggar-DAT meet-PAST-1sg very old

This example has the same intended meaning, with the temporal adverbial topicalized, and the oblique object close to the verb. Here, the oblique object is ambiguous between specific and non-specific. While one might analyze the object

as VP-external (despite its string adjacency to the verb) under the specific reading, it would certainly be in the spirit of all the analyses mentioned so far that the same object, under the non-specific reading, should be VP-internal. Yet, even under that reading, the result of subscrambling is quite ill-formed, although admittedly better than the previous example, where the same object is further removed from the verb and clearly external to the VP.

Still, the best result of subscrambling is where the object is a *structural*, rather than oblique, object, is non-specific (and thus "bare") and, therefore, is next to the verb:

(31)c. (?)Dün akşam [e_i bir dilenci] gör-dü -m [*çok yaşlı*]$_i$
yesterday evening a beggar see-PAST-1sg very old
"Yesterday evening, I saw a very old beggar"

While we can explain the difference (although subtle) between (31a, b) via the CED, this is not possible for the difference between (31b, c). We clearly have to pursue an avenue of explanation that takes into account the overtness of Case on the potential host of subscrambling. It is to such a direction of explanation that I turn in the next section.

6.8 Subscrambling, Scrambling, and Incorporation

6.8.1 The nature of the proposal

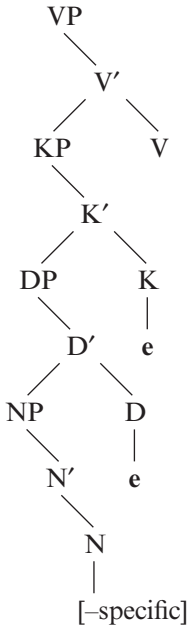
The idea of incorporation (cf. M.C. Baker 1988) will be pursued here within an approach which is, in a sense, akin to Lamontagne and Travis (1987) in their proposal that sequential adjacency facts concerning "bare" DPs is an ECP effect, as well as to de Hoop's (1992) proposal of strong (here: morphologically overt for [+specific] DPs) and weak (here: "bare" for [–specific] DPs) Cases.

I sketch such an account as applied to the Turkish facts: Let us assume that overt Case enters syntax already pre-attached to its phonological host. This is crucial for Oblique Case, so as to enable the DP to receive a θ-role. For structural Case, on the other hand, overt Case is not necessary for this purpose, and the appropriate θ-roles can be assigned to arguments that may bear overt (structural) Case as well as to those arguments that are bare (i.e. those that have non-overt, "weak" structural Case).

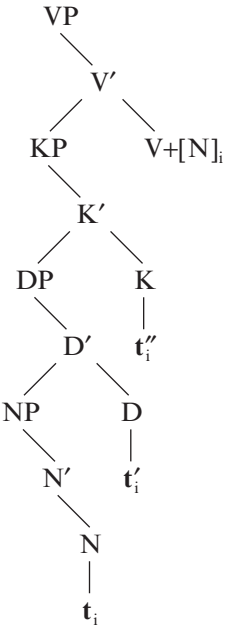
Assume now further that DPs are actually embedded within Case Phrases (KPs), as complements of a K-head. Where such a K-head is phonologically filled with an overt Case-marker (as it always has to be for Oblique Case and may be so filled for structural Case), the N-head of the DP's NP complement cannot move further up (via D) into the V;[18] even if it could, its trace would not be governed by the V: the overtly headed KP would act as a barrier to government. I am further assuming that nominal functional heads like K and AGR cannot incorporate into the lexical category V. Thus, the NP-complement of a DP, in turn the complement of a KP or of an AGRP (cf. Kornfilt 1984, corresponding to DP in Abney 1987), is never stranded as a result.[19]

Where the K-position is empty, the N can move into that position, and further into the V; the traces left behind would both be properly governed.[20] (Note, incidentally, that if the assumptions made here are correct, we would have an additional argument in favor of M.C. Baker's claim that incorporation is syntactic.) The following examples illustrate the structures before and after noun incorporation:[21]

(32) Before incorporation



After incorporation



As far as scrambling of main constituents is concerned, this account would explain why "bare" DPs must remain (left-)adjacent to the verb. However, we had an alternative account earlier in the paper, when introducing the main facts of scrambling in Turkish: I mentioned the possibility that abstract, syntactic (rather than morphological and overt) Case might need, in addition to government, also adjacency of assignee to the assignor. Thus, as far as scrambling per se is concerned, it is difficult to distinguish between these alternatives.

This is different, however, when subscrambling is considered. The account based on syntactic Case assignment under adjacency (in addition to government) has nothing in particular to say about the possibilities of subscrambling. On the other hand, incorporation accounts for the facts of both scrambling and subscrambling. It obviously accounts for the facts of scrambling, as the incorporated head of the NP (within the "bare" DP) cannot scramble away. It also accounts for the various possibilities of and constraints on subscrambling, as just illustrated above.

On the other hand, while this account covers the facts of Turkish DPs without overt structural Case,[22] it is not immediately corroborated by word-order facts, since Turkish is head-final, and it is not obvious that noun incorporation indeed strands the remainder of the NP: the sequential order between the (putatively) stranded material and its head would remain the same after incorporation.

Furthermore, N-incorporation in Turkish would not involve any change in grammatical relations for the remainder of the DP – a phenomenon of particular interest for some of the languages studied by M.C. Baker.

In spite of these inconclusive points, I would like to claim that, through the interaction of scrambling and incorporation, Turkish does make an interesting contribution with respect to incorporation. Note that these facts have remained undiscussed in the literature on Turkish syntax so far. Furthermore, they are of a type expected by M.C. Baker's theory and yet are not often found, or, if found, are "murky" (cf. M.C. Baker 1988: 103).

6.8.2 How the account works

The observed correlations between incorporation and scrambling, on the one hand, and incorporation and subscrambling, on the other, follow from this account as follows.

There is a weak Subjacency violation in all of the subscrambling examples, and this explains why even the better examples are not perfect. If so, it is irrelevant for the (im)possibility of adjunction to an argument DP whether there is a trace (left by incorporation) in the head position of the NP (and thus also of the DP that dominates the NP) as in (17a), or whether there is an overt N as in (17b) and all three examples in (23); such adjunction to an argument is always (weakly) ruled out, as I mentioned in the introductory sections of this chapter.

In order to explain why the ungrammatical examples (e.g. (17b) and all three examples in (23)) are worse, I will take recourse to the notions of government and Case (as checked under government).

I shall assume, along with M.C. Baker (1988) and Chomsky (1986a), that a verb can govern its complement and the head of that complement, but not the rest of that complement phrase. In other words, the maximal projection node dominating the complement phrase acts as a barrier between the verb and the non-head part of the phrase. However, when the head of the phrase moves into the verb, a movement chain is established between the trace in head position and the antecedent within the complex verb. According to M.C. Baker, the head of the previous barrier is now *not distinct* from the complex V, due to this movement chain (since the complex V includes the antecedent of the trace in the head position of the former barrier); therefore, the phrasal projection is not a barrier any longer. The verb will now govern whatever material the incorporated head governed previously (cf. M.C. Baker 1988: 64, definition 65 of the Government Transparency Corollary: "A lexical category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position").

Why should government by the verb be important for the trace left by subscrambling? Note that this trace is governed by the head of the DP/NP in the ungrammatical examples; hence, no ECP violation should ensue.

However, the subscrambling trace needs to be antecedent-governed, since it is not θ-governed (cf. Chomsky 1986a: 17). Where the NP/DP out of which scrambling has taken place is overtly headed, the NP-projection (and thus, by inheritance, the DP-projection that dominates it) will act as a barrier to antecedent-government.

On the other hand, where incorporation has applied, the NP/DP is not a barrier to government, as just explained. I assume that the subscrambled antecedent has adjoined to VP; if so, the VP is not a barrier to antecedent-government either (since it does not exclude the adjoined antecedent).

What is important here is not that the verb governs the scrambling trace, but rather that antecedent-government of that trace is not blocked – either by the NP/DP itself, or by the verb as a closer governor. The latter is due to Minimality: according to Chomsky's definition of "narrow" Minimality (cf. 1986a: 42, (91)) the verb would not be a closer governor than the antecedent, since the VP does not immediately dominate the subscrambling trace; Rizzi's (1990) notion of Relativized Minimality would have the same effect, since V would be a "Head-Governor" and not an "Antecedent-Governor." What is important, rather, is that the original barrierhood of the NP/DP is voided, due to incorporation of its head (and the "non-distinctness," in M.C. Baker's terms, of the head of the NP/DP and the complex V). As a result, antecedent-government of the subscrambling trace becomes possible.

What about incorporated subjects? M.C. Baker states that incorporation out of subjects is impossible. Indeed, as we saw, subscrambling is not possible out of subjects that are in *canonical* subject position, i.e. in [SPEC, AGRsP]. However, as we also saw, subscrambling is well-formed out of "bare" subjects that remain in their underlying VP-internal positions. I suggest here that such subjects incorporate out of this position into the verb, in ways just discussed for "bare" objects. As a consequence, subscrambling out of those subjects is possible. In both instances, then, what we have is incorporation of an N-head out of a host with "weak Case."

Note that the array of the scrambling and incorporation facts we have seen is just as predicted by M.C. Baker via his Government Transparency Corollary. However, M.C. Baker also states that while possessor stranding examples due to N-incorporation are found, they are more restricted than his theory would predict (1988: 103), and also that "complement raising" is apparently not found (1988: 104), while predicted by the theory; both types of "data [regarding stranded phrase remnants due to incorporation – J.K.] available in the literature are unfortunately murky and unclear" (1988: 104). If the treatment of the Turkish stranding facts offered here is on the right track, the data are of the kind predicted and, while coming from an unexpected source, are neither murky nor unclear.

6.8.3 Some problems for incorporation and their resolution

Incorporation accounts for all the facts of Turkish scrambling and subscrambling that have been discussed in this paper. It explains why "bare" DPs with structural syntactic Case are (at least mostly) limited to showing up in the position left-adjacent to the verb, why there is no such constraint on DPs with overt Case (irrespective of whether this is Oblique or structural Case), and it explains also why subscrambling is limited to constituents of "bare" DPs.

However, there are some problems that this analysis faces. I shall discuss the two main types of such problems.

The first problem has to do with the possibility of separating the incorporated N-head of a "bare" DP from the verb by focus particles like *-mI*,[23] the focusing Yes/No question particle, the particle *-DA*[24] "also, too," or particles like *bile* "even":

(33)a. Hasan pasta-*mı* ye -me -di?
Hasan cake -*Q* eat-NEG-PAST
"Did Hasan not eat CAKE?" (i.e. "Was it CAKE that Hasan didn't eat?")

b. Hasan pasta-*da* ye -me -di
Hasan cake -*too* eat-NEG-PAST
"Hasan didn't eat CAKE, either"

c. Hasan pasta *bile* ye -me -di
Hasan cake *even* eat-NEG-PAST
"Hasan didn't even eat CAKE"

This is not as serious a problem as it appears at first. Domains that clearly are a verbal phonological word can be "interrupted" by focus particles. Verbs with so-called complex tense–aspect suffixes can exhibit the question particle within them:

(34) Hasan iş -e git-me -miş -*mi*-y -di?
Hasan work-DAT go-NEG-PERF-*Q* -COP-PAST
"Hadn't Hasan gone to work?"

Here, the focusing question particle is between the perfective aspect and the copular past. The copular past is part of the word, as its vowel undergoes vowel harmony (as does the vowel of the question particle). The whole verbal domain clearly forms one word; yet, the question particle can show up between the tense–aspect morphemes.

Similar facts can be observed with *-DA* "also, too":

(35) Hasan iş -e git-me -ye -*de* -bil -ir -di
Hasan work-DAT go-NEG-ABIL1-*too*-ABIL2-AOR-PAST
"Hasan might also NOT have gone to work"

Here, the particle *-DA* is placed between the two parts of the abilitative morpheme *-(y)Abil*.

Given that these particles can show up within domains that are clearly verbal phonological words, it is not disturbing that they should also show up within the unit formed by the incorporated head of the "bare" DP and the verb.

While the independent morpheme *bile* "even" cannot show up within clear-cut phonological words, it does show up within arguably single verbal domains. For example, verbs that include loanwords typically add a Turkish auxiliary, which then carries all relevant verbal morphemes. Focus particles, including *bile* "even," show up between the loanword and the auxiliary:

(36)a. Hasan *dua bile et* -ti
Hasan prayer *even* do-PAST
"Hasan even prayed"

b. Hasan *müteşekkir bile ol* -du
Hasan grateful *even* be-PAST
"Hasan was/became even grateful"

Verbs like *dua et* "pray" and verbs consisting of predicate nouns or adjectives and an auxiliary, like *müteşekkir ol* "be grateful," are clearly units in some important sense, although they are not phonological units (i.e. phonological words, although they are arguably compounds). I take the result of the incorporation I proposed for "bare" DPs to be a unit of the sort just seen. The fact that a particle like *bile* "even" can show up within the verbs of the sort illustrated in (36) backs up this view. We see that the facts of (33) do not argue against incorporation, but rather line up the result of incorporation with other verbal units of a much less controversial sort.[25]

A second problem for incorporation is posed by causative constructions. To show this, let me briefly review the main facts of causatives in Turkish as relevant to our concerns, namely the Cases in these constructions.

The main generalization is that the causee of an intransitive verb shows up in the Accusative, while the causee of a transitive verb shows up in the Dative:

(37)a. Hasan Ali-*yi* koş-tur -du
Hasan Ali-ACC run-CAUS-PAST
"Hasan made Ali run"

b. Hasan Ali-*ye* kutu-yu aç -tır -dı
Hasan Ali-DAT box -ACC open-CAUS-PAST
"Hasan made Ali open the box"

These facts are quite familiar and have been described in traditional grammars. What has not been discussed, as far as I know, is the behavior of transitive verbs with "bare" structural objects in causative constructions.

In such constructions, the verb still behaves like a transitive, and the causee shows up in the Dative rather than the Accusative:

(38)a. Hasan Ali-*ye* kutu aç -tır -dı
Hasan Ali-DAT box open-CAUS-PAST
"Hasan made Ali open boxes [–specific]"

b. Hasan Ali-*ye* pasta ye -dir -di
Hasan Ali-DAT cake eat-CAUS-PAST
"Hasan made Ali eat cakes [–specific]"

(39)a. *Hasan Ali-*yi* kutu aç -tır -dı
Hasan Ali-ACC box open-CAUS-PAST
Intended meaning: "Hasan made Ali open boxes [–specific]"

b. *Hasan Ali-*yi* pasta ye -dir -di
Hasan Ali-ACC cake eat-CAUS-PAST
Intended meaning: "Hasan made Ali eat cakes [–specific]"

The Case array of causative constructions in general is usually explained by stating that causative verbs are transitive, and that their causee is their direct complement, unless they have another complement already (i.e. unless the basic verb is transitive). Therefore, the causee will be assigned Accusative whenever possible; however, where there already is a direct complement with Accusative marking, this marking is no longer available for the causee, and this is why the Dative is assigned.

The Case array of causative constructions involving non-specific direct objects does pose a problem for the proposal that such objects are incorporated into the verb. If incorporation creates a new word (as it certainly does in polysynthetic languages), or if it creates at least a new lexical item, the direct object should lose its independent status, and one would assume that it would not require Case after incorporation and thus not get any Case. Thus, the Accusative Case should remain unassigned and therefore available for assignment to the causee. The fact that it apparently is not available seems to show that the Accusative is (still) being assigned to the (non-specific) direct object, which forces the Dative to be assigned to the causee instead; under causativization, the transitive construction with a non-specific direct object behaves just like its counterpart with a specific direct object, and one might conclude that no incorporation has taken place. This was the reasoning in Kornfilt (1984), where I therefore decided against incorporation in the instances such as the ones discussed.

Further consideration makes this conclusion much more tenuous, however. First of all, even lexical units involving predicate nouns and auxiliaries are treated like transitives in causative constructions:

(40)a. Hasan Ali-*ye* dua et -tir -di
Hasan Ali-DAT prayer do-CAUS-PAST
"Hasan made Ali pray"

b. *Hasan Ali-*yi* dua et -tir -di
Hasan Ali-ACC prayer do-CAUS-PAST
Intended meaning: "Hasan made Ali pray"

We saw earlier that the sequence *dua et* "pray" (Lit.: "do prayer") is a lexical unit, albeit not a phonological one. It would be wrong to analyze this sequence as consisting of a complement and a Case-assigning main verb; nor is this a construction consisting of a main verb with a cognate object. Rather, this is a predicate, consisting of a predicate noun and an auxiliary. This claim is backed up by the observation that there is no corresponding sequence with a specific complement that surfaces with overt Accusative:

(41) *Hasan bu dua -*yı* et -ti
Hasan this prayer-ACC do-PAST
Intended meaning: "Hasan prayed this prayer"

In order to express the reading intended in (41), a main verb must be used; this is usually *oku* "read":

(42) Hasan bu dua -*yı* oku -du
Hasan this prayer-ACC read-PAST
"Hasan read/prayed this prayer"

These facts are as expected: if the verb *et* "do" is indeed an auxiliary rather than a main verb, it would not have Case-marking properties; this would explain why (41) is bad. The sequence *dua et* "pray" is grammatical, without leading to a Case Filter violation, because here, *dua* is not a full DP which needs Case, but rather a predicate noun. As I just claimed, the sequence *dua et* "pray" is a single, albeit complex, lexical item.

Yet, as we saw in (40), causativization treats this lexical item as a transitive rather than an intransitive verb. What we need, then, is a different characterization of the Case array of causative constructions – one where any noun, even a predicate noun, is treated as a blocker of Accusative, when the noun is not overtly Case-marked.[26]

Whatever the correct characterization of the Case array in causatives, what is important for our purposes is the fact that even lexical units like *dua et* "pray" are treated in causatives as though they were transitives. Therefore, the fact that sequences consisting of "bare" objects and main verbs are also treated like transitives in causatives is not problematic for my analysis of those sequences as incorporation structures.

At any rate, the Case distribution in causative constructions can be accounted for in a variety of ways, and the similarity of causees in causative transitives with specific versus non-specific direct objects poses less of a challenge to the incorporation proposal in some conceivable analyses of causatives.

For example, one could order causativization and incorporation, such that the former precedes the latter. This can be done either by positing the status of a lexical process for causativization (as has been claimed in a number of studies, both for Turkish and for other languages) and that of a syntactic process for incorporation (as is claimed in M.C. Baker 1988), or by having both processes in the same component of the grammar and by ordering the two in the way just stated. Since this issue is tangential (while related) to our concerns, I shall not take a stand on this here.

What is important, however, is to show that the facts just discussed pose a challenge, but not an insurmountable problem, for incorporation of DPs into verbs. I have shown that, empirically, this is not a real problem, since lexical units consisting of predicate nouns and auxiliaries are also treated in the same way.

Furthermore, from a general, conceptual point of view, these causative facts are not problematic for incorporation, as long as we characterize incorporation as a phenomenon whose specific nature is parameterized among languages. While incorporation can have morpho-phonological as well as thematic correlates in some languages (given that words are formed and the argument structure of a verb can be changed), as is the case in the languages and phenomena studied in M.C. Baker (1988), it does not have to have these properties in some others.

6.8.4 Some additional arguments in favor of incorporation

Another argument in favor of incorporation derives from the fact that it is not possible to incorporate more than one element at a time. Either a non-specific direct object or a non-specific subject incorporates, but not both:

(43)a. *Bir çocuk arı sok -tu
a child bee sting-PAST
Intended meaning: "Bees [–specific] stung a child [–specific]"

b. Arı bir çocuk sok -tu
bee a child sting-PAST
Ungrammatical under the intended meaning: "Bees stung a child"
Grammatical under the reading: "*The* bee stung a child"

If what we had here were not incorporation, but some other phenomenon, for example "Pseudo Noun Incorporation" of the sort claimed by Massam (2001) for Niuean, with simple, sequential lining up of NP (or DP) and the verb, such examples should be well-formed. If, however, incorporation proceeds in the way I described, only one DP/NP would be truly adjacent to the verb so as to serve as the host of local incorporation of its N-head; the other DP/NP, even if "bare," would be too far from the V to serve as such a host (and yet, due to its "bareness," it would not be able to survive without incorporation; either, thus leading to ungrammaticality under the relevant readings).

It is interesting to contrast these examples with corresponding ones, where one non-specific argument incorporates, while the second argument is an oblique and, thus, would not be expected to incorporate, even if it is non-specific:

(44) Sinema-ya çocuk-lar gid-er
cinema-DAT child -PL go -AOR
Crucial reading: "Children [–specific] (habitually) go to the movies"

(45) Haydut-lar-dan korkak-lar kaç -ar
robber -PL-ABL coward-PL run away-AOR
Crucial reading: "Cowards [–specific] (habitually) run away from robbers [–specific]"

While these sentences have additional readings (which do not concern us here), it is important to note that both arguments can be non-specific, as long as the "structural" argument is incorporated, while the oblique argument of course is not, despite its lack of specificity, due to its overt Case.[27]

As a last type of argument, we note that incorporated arguments cannot bind anaphors:[28]

(46)a. Bir çocuk$_i$ kendin-i$_i$ yarala -mış
a child self -ACC wound-REP.PAST
"A child [+specific] is said to have wounded himself"

b. ??/*Kendin-i_i bir çocuk$_i$ yarala -mış
self -ACC a child wound-REP.PAST
Intended meaning: "A child [–specific] is said to have wounded himself"

Example (46b) is grammatical under the reading that the subject is specific, and the anaphor is topicalized, while the subject is focused. However, under the relevant reading where the subject is non-specific, anaphoric binding is ill-formed. These facts follow straightforwardly under the analysis proposed here, where the non-specific subject would undergo (head) incorporation with the verb.[29]

6.9 Conclusions

My proposal, then, is what I just brought up in the previous section: incorporation can have different dimensions in different languages, but in ways that should be limited. The languages studied in M.C. Baker (1988) had a number of properties resulting from incorporation; however, I would like to claim here that not all languages whose grammars have the phenomenon of incorporation must share all of those properties. Turkish, then, has incorporation in the constructions which were the focal point of this paper. Certain properties of these constructions are just as expected under M.C. Baker's theory: (a) the fact that incorporation is restricted to DP/NPs with structural Case, and to instances where such Case is not overtly realized; (b) the fact that such DP/NPs cannot be separated from the verb they have incorporated into; (c) the fact that subscrambling can proceed only out of such incorporated DP/NPs.

Certain other properties of incorporation are not found, including: (a) changes in thematic structure of the verb, due to incorporation; (b) complete morphophonological merging of the incorporated element into its host. I discussed these points earlier, and I suggest here that these properties do not have to accompany incorporation in all languages and in all instances. This might be somewhat similar to another typological property which has been shown to be sensitive to parametric variation: so-called "pro-drop." Not all languages have it. But, more importantly in this context, not all languages that do have this phenomenon have identical clusters of properties that accompany it, while they typically share *some* of those properties.[30]

What about the Specificity Constraint across languages, then? Clearly, an analysis based on incorporation cannot be maintained for all languages that do exhibit Specificity Constraints, probably best formalized as CED-effects. As a matter of fact, Turkish itself exhibits such effects that cannot be captured by incorporation: we saw that non-specific oblique DPs tend to be close to the verb (although not obligatorily so), and that subscrambling out of non-specific oblique objects that are VP-internal is, while quite bad, nevertheless somewhat better than out of VP-external counterparts. I therefore suggest that Specificity Constraints, resulting from the CED, are found in many (albeit probably not all) languages, and lead to (often weak) contrasts[31] between well- and ill-formed results with respect to subscrambling, while in a subset of languages, incorporation of certain

VP-internal DPs (or, rather, of their N-heads) into the verb applies, leading to more robust contrasts with respect to grammaticality.

If this idea is on the right track, we would expect languages like Turkish that have noun incorporation to exhibit both strong and weak contrasts in subscrambling, while languages like English and German, which appear to have weaker contrasts, would not necessarily exhibit the strong contrasts we saw in Turkish. It would be interesting to see if this is indeed so.

Notes

1 In this paper, I shall use data from Modern Standard Turkish throughout and will refer to this standard dialect of the contemporary language as *Turkish*. The stylistic level is that of colloquial Turkish, used in spoken as well as in non-official written contexts. The data studied here are very robust and are agreed upon among native speakers. The data concerning non-specific DPs that bear no overt structural Case and their obligatory positioning to the immediate left of the verb have been widely reported upon. The new data on subscrambling which I focus on later in the paper (and which, to my knowledge, had not been reported upon by other scholars earlier) have been checked with a number of native speakers.

2 Movement to a postverbal position in a head-final language would necessitate the assumption of rightward movement. Rightward movement is ruled out by Kayne (1994). There are a number of ways in which to derive postverbal constituents in a head-final language without involving movement. However, since this issue is only tangential to my main concerns here, and also because of space constraints, I leave a discussion of a Kaynean account of postverbal constituents as well as of subscrambling to future work.

3 Note that, for the purposes of this paper, and due to space limitations, I treat non-specific, "bare" DPs (or, possibly, NPs – I shall refer to them as DP/NPs) as alike, irrespective of whether they have a determiner or not, although there might be some differences between them, as mentioned by Erguvanlı-Taylan (1984). But with respect to structural "Case-Drop" and limitations of scrambling options, they are alike – and those are the properties of interest here. These remarks carry over to non-specific DP/NPs with other structural Cases.

4 Based on anecdotal evidence, I should mention here that, especially in colloquial style, this strict positional requirement is getting more lax. Such "bare" direct objects can, for some speakers, and in informal stylistic levels, be topicalized, albeit set apart with heavy pauses from the rest of the clause (which suggests base-generation in a left-dislocated position rather than topicalization by movement).

5 Overtly Case-marked specific direct objects and subjects can also show up to the immediate left of the verb. We saw this for direct objects, whose unmarked position this is. Subjects can also occur there and are focused in such instances.

6 Without the indefinite article, the subject is interpreted as definite, as Turkish does not have a definite article.

7 (8) is ambiguous between the non-specific reading stated in the text and an expected, but irrelevant reading, where the subject is definite and focused. In this respect, Nominative subjects pattern with Genitive subjects; cf. note 5.

8 This example, just as the previous one, also allows a reading where the subject is specific and focused; cf. previous note.

9 In this study, I limit attention to subscrambling to postverbal positions, i.e. positions where presuppositional backgrounded information is found. (See Erguvanlı-Taylan 1984 for discussion and a wealth of examples illustrating postverbal constructions in Turkish.) Subscrambling leftwards, to topic positions, is much worse in terms of acceptability, and I therefore do not consider it here. The reasons for the difference between these two types of subscrambling will not be dealt with in this paper.

10 As a matter of fact, Kornfilt (1998) shows that adjunction to arguments is indeed not possible, while adjunction to non-arguments is better. In any event, there are reasons to assume that scrambling by adjunction cannot proceed in a successive cyclic fashion. Note that, for totally independent reasons, Grewendorf and Sabel (1994) arrive at the same conclusion, i.e. that scrambling by adjunction is not successively cyclic.

11 Due to severe space limitations, I cannot provide arguments in favor of analyzing the empty category in possessor position as *pro*. However, I refer the reader to Kornfilt (1996b, 2000), where I advance precisely such arguments. Suffice it to say that Turkish is, in general, a Null Subject Language and has a morphologically rich agreement system. The empty category identified licensed by rich agreement exhibits syntactic (e.g. binding) properties typical of pronouns. Furthermore, possessive phrases exhibit overt, rich agreement on their heads with the possessor, in parallel with clauses that exhibit agreement with the subject.

12 While some of the earlier works among these refer to the contrast in question in terms of definiteness, it is clear that the crucial notion must instead be linked to specificity, as non-specific DPs are obviously not affected by this constraint, while indefinite, but specific DPs are. Diesing (1992) illustrates this last point, whereby her understanding of specificity is one of presuppositionality. She shows that indefinite DPs for which a presuppositional interpretation is available permit extraction as little as clearly definite DPs:

(i)a. *Who did Mary say you saw a certain picture of?
b. *Who did Mary say you saw the picture of?
c. Who did Mary say you saw a picture of? (Diesing 1992: 98)

The crucial example here is (ia), where the host of extraction is indefinite, but presuppositional, i.e. specific. Note that extraction here is as bad as in (ib), where the host is definite. In contrast to both examples, extraction in (ic) is fine, where the host is not only indefinite, but also non-specific, because non-presuppositional.

13 (17b) is ungrammatical only under the crucial reading where the scrambled PP originates within the DP object. The example is grammatical under the irrelevant reading: "I cannot find a tailor like you did (i.e. in the manner in which you found a tailor)," where the PP modifies the verb rather than the DP.

14 I have been rather general and vague in how I have referred to the notion of specificity, as this notion per se is not what I am concerned about in this paper. As mentioned earlier in the text, I shall content myself with a pragmatic notion of presupposition which has obvious semantic extensions. Obviously, it would be useful to also have a formal notion of specificity. Enç (1991) proposes to derive specificity from partitivity or inclusion, basing her approach partly on some Turkish facts. Kornfilt (2001), based on prior work in Kornfilt (1996a), shows that additional Turkish facts make Enç's conclusions unwarranted: non-specific partitives do exist. Thus, given the problematic status of partitivity as the basic notion behind specificity, I continue using a pragmatic notion of presupposition insofar as I need to base specificity on a more general notion.

15 For a discussion on how the CED can be reformulated as a subjacency violation, see Chomsky (1986a) and Diesing (1992). A very brief discussion follows later in this chapter, too.

16 I owe these examples to Ralf Vogel (personal communication), who attributes the first observation of this type of example, but not these examples themselves, to Gisbert Fanselow.

17 In idioms, this preference of oblique objects to be close to the verb does become a requirement, perhaps not too surprisingly so:

(i) Hasan sevgili-sin -i dağ -a kaldır -mış
Hasan lover -3sg-ACC mountain-DAT take up-REP.PAST
"They say that Hasan eloped with his lover"
Literal translation: "They say that Hasan took his lover up to the mountains"
(Kornfilt 1997: 401, (1386))

dağa kaldır: "kidnap, elope with, run away with" is an idiom chunk; if the Dative DP is scrambled, the idiomatic reading is lost, and only the literal reading is available.

18 I am thus assuming that the moving N, which might have undergone movement to a filled K, cannot move onwards to V, taking the K along. This is presumably due to a restriction against (certain) nominal functional categories incorporating into V. Neither can such an N excorporate from a filled K.

19 If such categories were to incorporate, two problems would arise: where an overt functional head incorporates, it would not be obvious how to then raise the N so as to form the overtly Case marked or overtly agreeing word; where the empty K incorporates, the stranded NP without overt Case would be predicted to be able to scramble freely, and this is obviously impossible, as we saw earlier in this paper.

20 The trace in the K-position would be properly governed by the V, or, actually, by the incorporated antecedent in the verbal complex; the trace in the N-position would be governed by the intermediate trace in K.

21 Specifiers are not included in these trees. Note also that, as far as indefinite DPs are concerned, I assume that the indefinite determiner is the specifier of the DP, not its head. Thus, the head position of non-specific DPs with covert structural Case is an empty D, making it possible for the N-head to move through it.

22 Actually, I have not addressed the question of *why* lack of overt structural Case is restricted to – and, indeed, is obligatory in – non-specific DP/NPs – in other words, why "weak Case" is phonologically null. This is a very wide-ranging topic and this paper cannot do justice to it because it addresses a different point. However, I would like to mention an idea which I have sketched out elsewhere (cf. Kornfilt 1996a), which posits overt structural Case realization as a PR phenomenon. The phonological feature matrices in K need the presence of the feature [+specific] in N, as an assimilatory requirement of sorts. Where the feature [specific] has a negative value, it will be treated as absent altogether, and the phonological features will not be filled in.

23 In official Turkish orthography, the focusing Yes/No question particle *-mI* is written separately from its phonological host. However, it clearly does need a phonological host and forms a phonological word with it, which can be seen by the fact that its vowel undergoes vowel harmony. I, therefore, have treated it as part of the word in my morphological segmentation. Note also that, in using citation forms of morphemes, I follow here the Turkological tradition of referring to morphemes by using underspecified vowels whose predictable features would be filled in by vowel harmony.

24 In addition to underspecified vowels (cf. previous note), it is customary to represent consonants that alternate for voicing in predictable ways by using capital letters. Just like the question particle, this particle is written separately in official orthography. I treat it similarly to the question particle as part of the word, for the same reasons. Segments that alternate with null, i.e. are deleted in certain phonological contexts, are placed within parentheses.

25 It should also be pointed out that the "cohesion" of words in agglutinative languages might be less strong in general than usually assumed; cf. Kornfilt (1996c) for such a view. Thus, incorporation in such languages might have a "looser" result than in polysynthetic languages.

26 This raises the issue of incorporated "bare" subjects. Those do not qualify as causees; therefore, there are no interactions between subject incorporation and causatives, the way there are between object incorporation and causatives.

27 To be fair, it must be pointed out that this argument is not, by itself, very strong, as the same facts can also be explained without incorporation. I have assumed that "bare" arguments, whose N-heads I claimed incorporate into V, have weak structural Case. Under the plausible assumption that this Case can be assigned only once, we would predict the array of facts just illustrated in the text.

28 I am indebted to Simin Karimi for asking me a question that led me to this observation.

29 This point might not be completely clear, as incorporated arguments in polysynthetic languages appear to be able to function as antecedents for binding purposes. It is possible that this is a parameter that distinguishes incorporation in polysynthetic languages from its counterpart in agglutinative languages like Turkish, or more generally, in non-polysynthetic languages.

30 It has been shown in the literature previously that there has to be some variation across languages in the way incorporation takes place. For example, Grewendorf and Sabel (1994) argue that incorporation of a verb into a verb has to apply at LF, at least in German, because the verbs in question do not form a "concrete" unit. For Turkish, this idea would not carry over straightforwardly for noun incorporation into a verb; as we saw, although the incorporated DP and the verb do not form a word, they do form a "concrete unit" in the syntax to an extent which contrasts with sequences of non-incorporated DPs and the verb. Thus, the component of the grammar in which incorporation applies might well be yet another dimension of parametric variation.

31 The contrasts reported in the literature as Specificity Effects for languages like English and German do appear, at least to me, to be weaker than the Turkish contrasts that I have attributed here as due to noun incorporation. Furthermore, as we saw in the text, there are some German examples which would be predicted by Diesing to be ungrammatical, while being perfectly well-formed (cf. examples (28) and (29)). This is not the place for developing an account for the well-formedness of these examples; however, I would argue that their well-formedness highlights the fact that in German, subextraction leads to weaker ill-formedness when the host is VP-external, as compared with Turkish.

7

Does Russian Scrambling Exist?

John Frederick Bailyn

7.1 Introduction

The purpose of this chapter is to argue *against* the necessity of positing a process of *scrambling* in accounting for Russian "free" word order. Instead, I argue that there is an unmarked order (SVO) and two distinct kinds of reordering processes, both familiar from other languages, and that current advances in linguistic theory allow us to tease the two apart, to see them as derived in a particular way, and thus to account for the complexity of available patterns in Russian without recourse to an all-encompassing, optional scrambling rule. If such a view can be maintained, its advantages should be obvious: the analysis of Russian and other "free" word order languages is simplified and the similarities between reordering processes in Russian and processes well studied and understood from other languages are brought to the forefront. Furthermore, the results move us one step closer to an understanding of how Information Focus (É. Kiss 1998b) is integrated into a Minimalist framework.

7.2 Russian Word Order

It is well known that Russian allows any ordering of major constituents (under the right circumstances). For this reason, Russian is known as a "free word order" language. Examples of the six possible orders of a sentence with a Subject, Verb, and Direct Object are given in (1):

Many thanks to the organizers and participants of the International Conference on Word Order and Scrambling held in Tucson, Arizona, in April 2000, as well as to Leonard Babby, Marcel den Dikken, James Lavine, Shigeru Miyagawa, John Whitman, and audiences at CUNY, Cornell and Potsdam Universities. All mistakes remain my own. Thanks also to consultants Ora Matushansky, Igor Pustovoit, Tanya Scott, and Masha Vassilieva.

(1)a.	Mal'čiki čitajut knigi boys-NOM read books-ACC	SVO
b.	Mal'čiki knigi čitajut	SOV
c.	Knigi mal'čiki čitajut	OSV
d.	Knigi čitajut mal'čiki	OVS
e.	Čitajut mal'čiki knigi	VSO
f.	Čitajut knigi mal'čiki	VOS

Two quite distinct linguistic traditions exist with respect to this phenomenon. On the one hand, traditional Russian linguists, Prague School theorists, and functional linguists of various kinds have primarily analyzed the *context* in which the varying orders are felicitous. Not all orders are acceptable in all contexts (Adamec 1966; Kovtunova 1976; Švedova 1980) and rules of linear ordering with respect to contextual "givenness" and "newness" (Yokoyama 1986) or "communicative dynamism" (Firbas 1992) have been developed to describe this contextual relativity. Quite a different approach to free word order exists within the generative tradition, where description and explanation of internalized speaker knowledge is the primary goal. There, the variants in (1) have not received as significant attention as within functionalist traditions, if only because the different orders are considered stylistic variants of a core sentence. Because the sentences in question share truth conditions and morphological form, the surface variation has not been considered within the realm of pure syntax. Indeed, Ross (1967), who first proposed a rule of scrambling to derive alternative word orders in Latin and other languages, attributed the process to the stylistic component, an approach that has continued through the work of Saito on Japanese (1992) and remains for many generativists the assumed nature of word order variation, namely that some stylistically-driven process (scrambling) derives the alternative orders. Most discussion of this process has concerned the *mechanical nature* of the movement involved, in particular, whether it is A′-movement or A-movement. The literature is somewhat undecided, but the general consensus is that both kinds of scrambling exist, but that Long-Distance scrambling is generally A′-movement, and local scrambling is A-movement. For discussion, see Mahajan (1990), Webelhuth (1989), G. Müller and Sternefeld (1993), Bailyn (1995), Miyagawa (1997), and other chapters in this volume.

In this chapter I take a strong stand against the notion that there exists a uniform process of scrambling in Russian, and, by extension, in any language. Rather, I argue that a subset of the relevant phenomena are related to a purely syntactic processes of "Inversion," a kind of Raising to Subject, and the rest related to "Focus," which is represented in a unique sub-component of the interpretive interface.

I begin with the assumption that Russian is underlyingly SVO, as argued in Isačenko (1966), Bivon (1971), Švedova (1980), Restan (1981), Bailyn (1995), and elsewhere. Various factors indicate that SVO is the unmarked order. First, as we will see in section 7.3, it is the only felicitous order in a neutral, "null-Theme" context, and the only order that allows functional ambiguity. It is also the only order that allows neutral, falling intonation on the final constituent. Statistically, it is by far the most frequent (Bivon 1971). There are syntactic tests as well.

Subjects consistently c-command objects. Finally, gerundive VPs and participial APs have fixed VO order. We can thus be confident that SVO is the unmarked order. Assuming some version of the VP-internal subject hypothesis and abstracting away from externalization of any arguments outside the VP, unmarked order can be represented as in (2):

(2) Structure of unmarked Russian SVO sentence:
$[_{vP}$ subject$_i$ $[_{v'}$ verb$_k$ $[_{VP}$ t_i $[_{V'}$ t_k object]]]]

We now turn to the first non-SVO orders for which scrambling has been proposed, and show that there is an analysis for them that obviates the need for a scrambling rule at all.

7.3 Inversion

In this section, I propose that a significant subset of non-SVO orders in Russian are produced by a syntactic process I call *Generalized Inversion* which shares properties with English Locative and Quotative Inversion. This construction is discussed in detail in Bailyn (2002). For our purposes, it is enough to present its basic characteristics and show that it is syntactically-driven, resulting from a certain parameterization of the Extended Projection Principle (EPP).

7.3.1 Inversion constructions in Russian

The constructions below all have a non-Nominative argument in first position, followed by the finite verb, and then the Nominative subject (and/or other constituents). I have given the constructions names in order to classify them, while maintaining the view that they are products of the same essential process, namely non-canonical fulfilling of the EPP. (They are all O–V–S sentences, and thus include (1d) above, but none of the other five non-SVO orders.)

(3) Object Inversion (OI):
Ètu knigu čitaet Ivan — O–V–S
[this book]-ACC reads Ivan
"This book is being read by Ivan"[1]

(4) Locative Inversion (LI): (Babyonyshev 1996)
V klasse pojavilsja noven'kij — PP–V–S
in class appeared new
"A new boy entered the class"

(5) Quotative Inversion (QI): (Collins 1997)
"*Ničego sebe!*" skazal Petja — Quot–V–S
-exclamation- said Petja-NOM
"'Wow!' said Petya"

(6) Adversity Impersonals: (Lavine 1998a)
Uši založilo O–V
ears-ACC clogged-up
"(My) ears got clogged up"

(7) Possessive PP constructions:
a. *U menja* est' vopros PP–V–S
at me is question-NOM
"I have a question"

b. *U nas* rodilas' dočka PP–V–S
at us was born daughter-NOM
"To us was born a daughter"

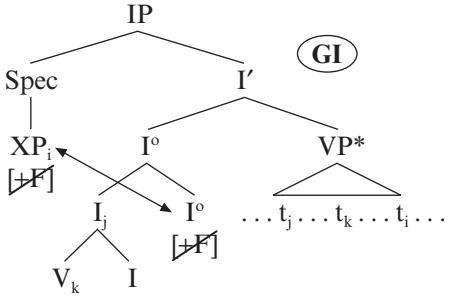
(8) Dative experiencers:
a. *Saše* nravjatsja deti DATExp–V–S
Sasha-DAT likes-pl children-NOM
"Sasha likes children"

b. *Soldatam* vidna doroga DATExp–A–S
soldiers-DAT visible-fem-sg road-NOM-fem-sg
"The soldiers can see the road"

7.3.2 Generalized inversion as raising to subject

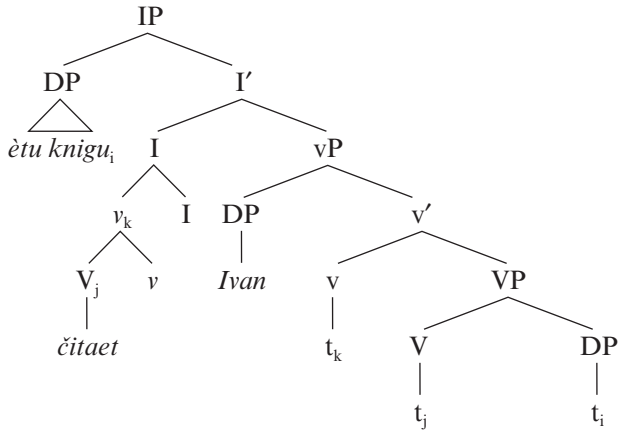
In Bailyn (2002), I provide substantial evidence for the analysis in (9) of (all) these constructions. On this view, the fronted element moves directly into canonical surface subject position [SPEC, IP], and there is verb-raising to I over the subject (hence the comparison to English Quotative Inversion). This analysis is schematized in (9):

(9) Generalized Inversion (GI): (Bailyn 2002)



In (9), we see that the internal argument XP has moved into [SPEC, IP], triggered by the strong feature-checking requirement of a feature [+F]. Second, we see that the finite verb raises to I by head movement. Thus the structure of (3) is given in (10):

(10) Structure of (3):



Similar analyses are proposed for Adversity Impersonals (Lavine 1998a), Locative Inversion (Babyonyshev 1996), and Bantu Subject/Object Reversal (Collins 1997).

The analysis provided in (10) raises the following questions:

(11) Questions about Generalized Inversion (GI):
- i. What is the evidence that the XP is in fact in [SPEC, IP] position in GI?
- ii. What is the feature [+F] that forces XP raising in GI?
- iii. How is GI parameterized?
- iv. What are the implications for Economy?
- v. Is all leftward fronting of non-Nominative XPs covered by GI?

In section 7.3.3, we address question (i), in 7.3.4 questions (ii)–(iv), and return in sections 7.3 and 7.4 to question (v).[2]

7.3.3 Evidence of subject properties of the inverted constituent in GI

Let us first address question (i): what is the evidence that the XP is in fact in [SPEC, IP] position in GI? In Bailyn (2002), I show that a wide range of subject properties (A-properties) hold for the initial constituent in Generalized Inversion. The tests show that all the constructions that comprise Generalized Inversion regularly display A-properties for the inverted argument. In the examples below, I list the construction type and indicate the inverted constituent in italic face. (Notice that these constructions are characterized by V raising, and therefore the verb *always* precedes the Nominative subject, the XP–V–Subject order being a salient characteristic of GI.)

The first piece of evidence that the inverted constituent is in syntactic subject position is its ability to bind anaphors in GI, which it otherwise can not. This is shown in (12)–(13):

(12)a. ???Svoj$_i$ dom byl u Petrovyx$_i$ *Possessive-PP*
[self's house]-NOM was at the Petrovs
"The Petrovs had their own house"

b. *U Petrovyx* byl svoj$_i$ dom
at the Petrovs was [self's house]-NOM
"The Petrovs had their own house"

(13)a. ???Svoja$_i$ rabota nravitsja Maše$_i$ *Dative experiencer*
[self's work]-NOM pleases Masha-DAT
"Masha likes her work"

b. *Maše$_i$* nravitsja svoja$_i$ rabota
Masha-DAT pleases [self's work]-NOM
"Masha likes her work"

In each example, the (a) sentence represents the underlying order, where binding possibilities are unacceptable for most speakers. However, in the (b) sentences, which represent the inverted order, binding is fully acceptable. This is strong evidence for A-movement since Russian anaphor binding has a surface subject condition, which is usually restricted to Nominative subject binders (Rappaport 1986). Clearly, the PP and Dative arguments here are able to fulfill the subject requirement in the Inversion construction despite not being Nominative – exactly the kind of evidence we would expect to show that the movement involved is A-movement and the target of that movement, [SPEC, IP].

The next piece of evidence comes from Reconstruction (or lack thereof). It is generally known that for purposes of Binding Principles B and C, A′-movement reconstructs, so that binding relations are read off the highest A-position occupied by the constituent in question, regardless of surface (A′) location. A-movement, on the other hand, does not reconstruct, and so reconstruction effects make a good testing ground for the kind of movement involved. Since the proposal of Generalized Inversion rests on the notion that the movement involved is A-movement, we predict binding relations to change under GI, and this is exactly what we find. Thus if we begin with a Principle B violation and subject it to Generalized Inversion, the violation is bled: the possibility of coreference improves significantly. This holds for all the (a, b) pairs given below:

(14)a. *Staršij brat$_i$ pojavilsja v ego$_i$ dome *Locative Inversion*
[older brother]-NOM appeared in his house
Intended meaning: "The older brother appeared in his house"

b. ?*V ego$_i$ dome* pojavilsja staršij brat$_i$
in his house appeared [older brother]-NOM
"In his house appeared the older brother"

(15)a. *Tol'ko Maša$_i$ est' u nee$_i$ *Possessive-PP Inversion*
only Masha-NOM is at her
Intended meaning: "Masha is all she has"

b. ?*U nee$_i$* est' tol'ko Maša$_i$
at her is only Masha-NOM
"All she has is Masha"

(16)a. *Deti$_i$ nravjatsja ix$_i$ roditeljam *Dative experiencers*
children-NOM like their parents-DAT
Intended meaning: "Their parents like children"

b. ?*Ix$_i$ roditeljam* nravjatsja deti$_i$
their parents-DAT like children-NOM
"Children please their parents"

Finally there is evidence from Principle C effects, which can be triggered by Generalized Inversion (again evidence of lack of Reconstruction), whereas Long-Distance (A′-)movement does not feed such effects. An example of A-movement, but not A′-movement, triggering a Principle C violation is given by the English paradigm in (17):

(17)a. Friends of John$_i$ introduced him$_i$ to Mary
b. *He$_i$ was introduced to Mary by friends of John$_i$
c. Him$_i$, friends of John$_i$ introduced *t* to Mary

Passivization in (17b) triggers a Principle C violation whereas Topicalization in (17c) does not.

The same effect holds for all of the GI constructions presented above. Thus in (18b), the GI construction, Principle C is violated as expected after A-movement into [SPEC, IP]. However, in the minimally different (18c), which is not a GI construction (since it lacks V-movement and is therefore not GI, by hypothesis), we have A′-movement. Thus the pronoun reconstructs as expected, leaving Principle C unviolated:

Object Inversion:
(18)a. [Znakomye Ivana$_i$] predstavili ego$_i$ predsedatelju S–V–O
[friends-NOM of Ivan] introduced him-ACC chairman-DAT
"Ivan's friends introduced him to the Chairman"

b. **Ego$_i$* predstavili [znakomye Ivana$_i$] predsedatelju O–V–S–O$_{dat}$
him introduced [friends-NOM of Ivan] chairman-DAT
Intended meaning: "He was introduced to the chairman by Ivan's friends"

c. Ego$_i$, [znakomye Ivana$_i$] predstavili t$_i$ predsedatelju O–S–V–O$_{dat}$
him [friends-NOM of Ivan] introduced chairman-DAT
"Him, Ivan's friends introduced to the chairman"

Similarly, in (19)–(21), Generalized Inversion triggers a Principle C violation:

Adversity Impersonals:
(19) **Ego$_i$* uneslo v storonu doma morjaka$_i$ O–V–PP
him-ACC swept away in direction of house sailor-GEN
Intended meaning: "He was swept away in the direction of the sailor's house"

Locative Inversion:

(20)a. [Znakomye Ivana$_i$] byli [u nego$_i$ doma] S–V–PP
[friends of Ivan] were at him at home
"Friends of Ivan's were at his house"

b. *[*U nego$_i$ doma*] byli [znakomye Ivana$_i$] O–V–PP
at him at home were [friends-NOM of Ivan's]
Intended meaning: "At his house were friends of Ivan's"

Dative Experiencers:

(21)a. [Znakomye Ivana$_i$] nravjatsja emu$_i$ S–V–O$_{dat}$
[friends-NOM of Ivana] like him-DAT
"Friends of Ivan please him" (cf. *"He likes friends of Ivan")

b. **Emu$_i$* nravjatsja [znakomye Ivana$_i$] O$_{dat}$–V–S
he-DAT like-pl [friends-NOM of Ivan]
Intended meaning: "He is liked by friends of Ivan"

Thus we have various kinds of evidence all pointing to the same conclusion – that when there is Generalized Inversion, an XP moves into [SPEC, IP] by A-movement, where it acquires anaphor binding ability and does not reconstruct for binding purposes. All of this confirms the proposal for Generalized Inversion in (9), and allows us to successfully eliminate scrambling from the description of GI constructions. We now turn to the remaining questions about GI.

7.3.4 The syntactic nature of Generalized Inversion

We have seen that the GI constructions move an XP into [SPEC, IP]. What forces this movement? It is my claim that this movement satisfies the Extended Projection Principle and is driven by the same checking requirements on I that are checked by locative PPs in English Locative Inversion constructions, as analyzed in Collins (1997). Russian differs from English and other languages in its ability to check the EPP by any argument and not just a Nominative subject or Locative PP predicated of the Nominative subject. Such parameterization is not unexpected, however, considering recent findings with respect to the EPP. In particular, Alexiadou and Anagnostopoulou (1998) claim that *either* an XP *or* a raised V can check the EPP, the former variant producing English and Icelandic, and the latter version existing for pro-drop and VSO languages, where the EPP is checked by the raised V. Alexiadou and Anagnostopoulou's proposed typology is reproduced in (22), where their proposed parameterization of the EPP is represented in the first column, and Bobaljik and Jonas's "SpecT parameter" (indicating the presence or absence of a *second* high functional position for subjects (lower than AGRs)) is indicated in the second column. This predicts four language types:

(22)
Table 7.1 Language types by two parameters

EPP (by Spec/Head)	*[SPEC, TP]*	*Language*
+	–	English
+	+	Icelandic
–	–	Greek, Romance
–	+	Celtic, Arabic

Source: Alexiadou and Anagnostopoulou 1998; Bobaljik and Jonas 1996.

Where does Russian fit into this typology? Clearly, it has a [+] value for the EPP parameter, since some XP must always be in [SPEC, IP] and since SVO sentences show no verb raising. It must also have a [+] value for the SpecT parameter, in that Nominative Case is checked in a position lower than the EPP position in all the GI cases we have seen. Thus Russian appears to be like Icelandic. If so, we would expect Icelandic to demonstrate non-Nominative EPP constructions, and it does (Quirky subjects can bind anaphors, etc.), although it is unclear whether they are as widespread as in Russian.[3]

This leads to the next question, namely what implications this account has for Economy of derivation. The Inversion construction would appear to be less economical because it involves *both* XP raising to [SPEC, IP] *and* verb raising to INFL, whereas a canonical SVO sentence has only one step (subject raising to [SPEC, IP]). Thus, if the Numerations are identical, the canonical SVO derivation should always block the GI derivation, which it clearly does not. There are two possible solutions to this problem, which I will not try to choose between in this article. First, it is possible, as argued in Collins (1997) in addressing a similar issue with English Locative Inversion, that Economy is calculated locally, not globally, and thus the two derivations are not, in fact, in competition. This is a large claim about the form of the grammar, which may or may not prove to be correct. If it does, the smaller issue of Economy presented here goes away. The other possibility is that the two constructions do *not* share the same Numeration – that is that attaching the EPP feature to a particular XP is, in a sense, a lexical process, and that the relevant constituent *enters* the Numeration with the EPP feature attached. In this case, of course, the two derivations do not begin from the same Numeration, and, again, Economy issues are irrelevant. I tentatively adopt this latter approach, while deferring precise explanation to further research.

We are now left with one question about GI, namely whether it covers *all* leftward displacement processes, and of course we have already seen enough non-GI constructions to know that it does not. However, the point of this section has been to tease apart two kinds of leftward movement, and to show that each has a distinct derivation and motivation. Thus we leave this section having seen that GI constructions are simply a kind of Raising to Subject, EPP-driven (with accompanying verb movement), and as such do not constitute scrambling in any coherent sense. The strongest claim of this section, which is echoed in Miyagawa (this volume) and elsewhere, is that *all A-scrambling is EPP-driven*, and should be seen

as such, and does not have anything in common with those cases of leftward displacement that are A′-movement, Long-Distance, and, in Russian, do not involve V-movement. This explains why local scrambling has always appeared to have distinct properties, and why it has more in common with object shift and Raising: it involves no A′-movement.

We next turn to the other subset of cases usually handled by scrambling, namely the A′-scrambling cases, and propose that these are Focus-related, or discourse-driven, in a broad sense.

7.4 Relating A′-Scrambling to Focus

We have seen in section 7.2 that a class of reorderings in Russian, usually referred to as A-scrambling, is in fact a syntactic process – Generalized Inversion. This simplifies the task of eliminating scrambling as a descriptive device considerably, and focuses our attention on the remaining cases of non-SVO order, which involve leftward A′-movement of a constituent, either locally or long distance (Saito's 1992 "semantically vacuous A′-movement"). In this section I argue that such movement is always associated with particular requirements of the informational component of the grammar, and in a sense to be made precise, is neither "optional" nor "vacuous." Rather, such movement presents one (parameterized) way of representing Information Focus (É. Kiss 1998b) by surface word order, an option that characterizes "free" word order languages. The analysis claims that Information Structure includes Topic/Focus structure, as argued in Partee (1991), and Zubizarreta (1998), and as such constitutes a significant part of the interpretive interface of the grammar, whose surface representation may vary. This section is structured as follows: first, in 7.4.1, I present evidence that such movement is subject to movement constraints familiar from WH-movement, and that it is indeed A′-movement, thus countering recent arguments to the contrary in Bošković and D. Takahashi (1998). In 7.4.2 I discuss the discourse effect of such movement, and briefly touch on the vital area of interaction with intonation. In 7.4.3 I present a recent view of the architecture that provides for unique representation of Topic/Focus relations as a linguistic interface, and allows us to see A′-scrambling as a process feeding surface representation of this unique interface. As such, scrambling can be replaced, in these cases, by "Discourse-Driven" movement, or "Prosodically-Driven" movement, in a manner similar to that proposed in Zubizarreta (1998).

7.4.1 "Dislocation"

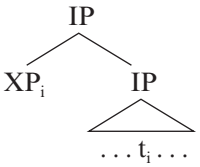
In Russian there are clearly cases of leftward A′-movement that *do* reconstruct for the purposes of Binding. Thus (18c), repeated as (23a), shows a case in which the fronted pronoun does *not* feed a Principle C violation, as opposed to the GI construction (18b), repeated as (23b).

(23)a. Ego_i, [znakomye Ivana_i] predstavili t_i predsedatelju — Dislocation (O–S–V)
him [friends-NOM of Ivan] introduced chairman-DAT
"Him, Ivan's friends introduced to the chairman"

b. *Ego_i predstavili [znakomye Ivana$_i$] predsedatelju GI
him introduced [friends-NOM of Ivan] chairman-DAT (O–V–S)
Intended meaning: "He was introduced to the chairman by Ivan's friends"

This startling contrast supports the analyses given in this chapter. In (23a) we have a case of A′-movement. (Note there is also no verb movement over the subject.) This subclass of leftward movement cases (usually referred to as A′-scrambling), I will call Dislocation, as shown in (24):

(24) Dislocation: (G. Müller and Sternefeld 1993; Bailyn 2001)



- Dislocation is A′-movement
- Dislocation fixes Scope
- Dislocation does not affect binding (reconstructs)
- Dislocation involves no verb-movement

In the next section, I provide evidence that Dislocation of the kind shown in (25) is indeed A′-movement, subject to the same constraints as WH-movement.

7.4.2 Dislocation and WH-movement parallels

First, let us examine the evidence that Dislocation is subject to the same constraints as WH-movement. This parallel argues against several ideas current in the literature: one, found in Bošković and D. Takahashi (1998), is that scrambling is Logical Form (LF) Lowering, and as such is immune from normal movement constraints (arguments against Bošković and D. Takahashi 1998 are found in Bailyn 2001). The Dislocation approach also argues against one claim in G. Müller and Sternefeld (1993), namely that scrambling and WH-movement are essentially different in nature. In fact, the minor differences discussed by G. Müller and Sternefeld mask a greater pattern of similarity, which points to the movement being A′-movement constrained by identical constraints, as we will see.[4]

First, it is well known that Russian disallows extraction from embedded indicative clauses, as shown for WH-movement in (25a). The same holds for Dislocation, as in (25b):[5]

(25)a. *$Kogo$ Marina znaet [čto [Ivan ljubit t_i?]]
who-ACC Marina-NOM knows that Ivan loves
Intended meaning: "Who does Marina know that Ivan loves?"

b. *$Borisa_i$ Marina znaet [čto [Ivan ljubit t_i]]
Boris-ACC Marina thinks that Ivan likes
Intended meaning: "Marina thinks that Ivan likes Boris"

Subjacency holds for Russian as well. This is shown in (26) for both WH-movement and Dislocation:

(26)a. *$Kogo_i$ ty pozvonil [agentu [kotoryj ljubit t_i?]]
whom-ACC you-NOM phone spy-DAT who loves
Intended meaning: "Whom did you phone a spy who loves?"

b. *$Borisa_i$ ty pozvonil [agentu [kotoryj ljubit t_i!]]
Boris-ACC you-NOM phone spy-DAT who loves
Intended meaning: "It's BORIS you phoned a spy who loves!"

The parallelism between WH-movement and Dislocation holds for other movement constraints. Thus many speakers allow WH-movement of objects out of embedded subjunctive clauses but not subjects (a *that*-trace effect). This is shown in the contrast between (27a, b):

(27)a. *Komu* ty xočeš', [čtoby Ira pozvonila t_i?]
who-DAT you want that Ira phoned
"Who do you want Ira to call?"

b. *Kto* ty xočeš', [čtoby t_i vljubilsja v Iru?]
who-NOM you want that fall in love (to) Ira
Intended meaning: "Who do you want to fall in love with Ira?"

The same holds for Dislocation, as shown in the (same) comparison between (28a, b):

(28)a. Ja *$Borisu_i$* xotel, [čtoby Ira pozvonila t_i]
I Boris-DAT wanted that Ira phone
"I wanted Ira to phone Boris"

b. *Ja *$Boris_i$* xotel, [čtoby t_i vljubilsja v Iru]
I Boris-NOM wanted that fall in love (to) Ira
Intended meaning: "I wanted Boris to fall in love with Ira"

Russian strongly adheres to the Coordinate Structure Constraint, as shown in (29), both for WH-movement and for Dislocation:

(29)a. *Kogo* Ivan videl i Mašu?
whom$_i$-ACC Ivan saw [t_i and Masha-ACC]
Intended meaning: "Whom did Ivan see and Masha?"

b. *Borisa* Ivan videl i Mašu
Boris$_i$-ACC Ivan saw [t_i and Masha]
Intended meaning: "Ivan saw Boris and Masha"

Many more examples of the parallel restrictions on Dislocation in Russian and its parallel behavior to WH-movement are given in Bailyn (1995, 2001). The general

conclusion that must be drawn is that Dislocation is syntactic movement, and as such is subject to the same movement constraints restricting WH-movement and movement processes in general.

7.4.2 Dislocation is A′-movement

In addition to the arguments given above, we can see using tests parallel to those used in section 7.3 that Dislocation is A′-movement. We have already seen in (21) above that a dislocated pronoun does not feed a Principle C violation (as expected, since A′-movement reconstructs for Binding purposes). The same holds for the other A- versus A′-movement tests we saw in section 7.3. Recall, for example, that Generalized Inversion improves the ability of the inverted constituent to bind anaphors. Thus the GI construction in (30b) allows at least marginal anaphor binding, whereas the Dislocation construction in (30c) is as bad as the canonical order (30a) in allowing the object to bind an anaphor embedded in the Nominative subject:

(30)a. *Svoi direktora rekomendujut ètu firmu *SVO
[self's directors]-NOM recommend [this firm]-ACC
Intended meaning: "Self's directors recommend this firm"

b. ??Ètu firmu rekomendujut svoi direktora ??GI
[this firm]-ACC recommend [self's directors]-NOM
"This firm is recommended by self's directors"

c. *Ètu firmu svoi direktora rekomendujut *Dislocation
[this firm]-ACC [self's directors]-NOM recommend
Intended meaning: "This firm, self's directors recommend"

Finally, we saw in section 7.3 that Generalized Inversion bleeds Principle B effects. Dislocation, as A′-movement, would be expected to reconstruct and therefore to demonstrate the same Principle B violations as underlying structures. The paradigm in (31) shows this to be exactly the case. The underlying order (31a) and the Dislocation construction (31c) show the same binding violation, whereas the GI construction (31b) does not:[6]

(31)a. *Ivan ljubit ego druzej
Ivan-NOM loves [his friends]-ACC
Intended meaning: "Ivan loves his friends"

b. [Ego$_i$ druzej] ljubit Ivan$_i$ t
[his friends]-ACC loves Ivan-NOM
"His friends are loved by Ivan"

c. ??[Ego$_i$ druzej], Ivan$_i$ ljubit t
[his friends]-ACC Ivan-NOM loves
"His friends, Ivan loves"

Thus we have seen that Russian has a process of A′-Dislocation, systematically showing A′-properties, in addition to Generalized Inversion. Having determined the mechanical nature of this Dislocation process, we are now in a position to examine its *motivation* as the final step in the process of eliminating purely optional scrambling from the description of word order rearrangement processes in Russian. We next turn to the motivation for Dislocation.

7.4.3 Information focus and surface word order

The central claims of this section are simple, although the consequences for linguistic analysis are significant, and many details are far from clear. I argue that Dislocation is driven by considerations of Information Focus (in interaction with intonation), and that the surface representations created by Dislocation display overtly the Information Focus split that is present on some level in every sentence. That is, Russian is a language that uses A′-movement as a way of *overtly* establishing representations required by the Information component of the grammar. This claim is not new. Rather, it is a strong version of an idea about unique representation of discourse relations that has been around in generative grammar at least since Jackendoff (1972), and is argued for in various forms in Culicover and Rochemont (1983), Rochemont (1986), Vallduví (1992), Lambrecht (1994), Bailyn (1995), Junghanns and Zybatow (1997), Miyagawa (1997), Erteschik-Shir (1997), Zubizarreta (1998), and is assumed in many of the articles in this volume. Here I can only hope to point out the possibilities of analyzing Dislocation as related to representation of Information Structure, and will have to leave many questions open. But I believe the time has come to take a strong stand against analyzing A′-scrambling as "optional" or "vacuous," since its direct relation to discourse structure is clear. Formalizing this relation and replacing scrambling with that formalization can be taken as a goal for further research. The overall goal is to incorporate discourse/information factors into the generative model as the *motivation* of Dislocation. First, a little background in information structure and its relation to surface word order in Russian.

Jackendoff (1972) argues for a level of Functional Structure where Focus and Presupposition are represented systematically. Rochemont (1986) calls this level Functional Structure, Vallduví (1992) calls it Information Structure, Lambrecht (1994) calls it the Information Component, Erteschik-Shir (1997) calls it F-Structure, and Zubizarreta (1998) calls it Assertion Structure. Zubizarreta (1998), for example, argues explicitly that the level of Assertion Structure imposes well-formedness conditions on derivations, and analyzes Extraposition of Subjects in Romance as *prosodically driven movement*, satisfying Last Resort by avoiding a mismatch between Phonological Form (PF) requirements and Assertion Structure. Similarly, in Bailyn (1995), I argued that there is a unique level of representation known as Functional Form, where the basic discourse division between Given and New information is represented, and that a free word language like Russian uses non-canonical word orders to represent this information in the surface structure. Descriptively, such views are in keeping with traditional approaches in Russian linguistics that the surface word order directly reflects discourse relations. This view dates back at least to Mathesius (1939) and was given the name

"Functional Sentence Perspective" by the Prague School. Basic definitions are given in (32):

(32)a. *Functional Sentence Perspective* (Mathesius 1939; Adamec 1966)
= the essentially bipartite division of every sentence into Theme before Rheme
b. Theme: (or Topic or Departure Point)
"what is known in the given situation . . . and from which the speaker departs"
c. Rheme: (or Comment or Core)
"what the speaker expresses about the departure point or with attention to it"

In Russian, "word order can vary, but at the same time *it is not free*: the meaning of a sentence, its communicative goal, differs with different word orders" (Kovtunova 1976: 191). We can use the "question test" to determine the presupposition, and hence the discourse context in which an utterance is appropriate or felicitous. Information contained in the question itself represents the theme (presupposition) and that which is new in the answer the rheme (Focus). Thus (33) can answer all of the questions in (34), and as such has *ambiguous* Theme/Rheme (Presupposition/Focus) representation, as shown in (35):[7]

(33) Mary watched Kojak

(34)a. What did Mary watch?
b. What did Mary do?
c. What happened?

(35) Possible discourse/informational representations for (32):
a. [Mary watched x] [x = Kojak]
b. [Mary did x] [x = watch Kojak]
c. [x happened] [x = Mary watched Kojak]

The relations represented in (35) directly correspond to É. Kiss's (1998b) notion of "Information Focus" (as opposed to her "Identificational Focus" which is also known as "Contrastive Focus"). É. Kiss's concern in her 1998 article is with movement accounts of "Identificational Focus," which we leave aside here, although they should be fully compatible. Rather, we take her notion of "Information Focus" to be the current version of the Theme/Rheme structure as given in (36):

(36) *Information Focus*: (from É. Kiss 1998b)
a. conveys non-presupposed info
b. marked by one or more pitch accents, without expressing exhaustive identification
c. present in every sentence
d. no movement involved

I assume (36a–c) but argue against (36d), claiming instead that what differentiates languages like Russian from English (and probably Hungarian), is exactly that Information Focus (Theme/Rheme structure) can be and often is represented in the surface by using A′-movement of the kind discussed in the previous section. This amounts to the following generalization (also discussed in Bailyn 2001):

(37) *The A′-Dislocation Generalization*:
- a. Languages encode Information Focus uniquely at some level of representation (cf. 35)
- b. A language may or may not express Information Focus by S-structure configurations
- c. Languages that express Information Focus "early" use A′-movement to do so
- d. i. *A′-scrambled orders are always associated with different discourse/informational interpretations from non-scrambled orders*
  ii. *The movement deriving scrambled orders is motivated by discourse/informational considerations* (= Discourse Earliness)

Thus we can relate Dislocation *directly* to Information Focus. To see this, we need to point out that Russian SVO canonical word orders are functionally ambiguous in the same way as their English equivalents. This is shown in that (38) can answer any of the questions in (39), the answer being the Rheme (Information Focus), and thus can have any of the Theme/Rheme structures in (40):

(38) Deti pojut pesni
children sing songs
"Children sing songs"

(39)a. Čto prosixodit?
what happens
"What's happening?" (A: The children are singing songs)

b. Čto delajut deti?
what do children
"What are the children doing?" (A: Singing songs)

c. Čto pojut deti / deti pojut?
what sing children / children sing
"What are the children singing?" (A: Songs)

(40) Possible discourse/informational representations for (38):
- a. [*x* happens] [*x* = children sing songs]
- b. [Children do *x*] [*x* = sing songs]
- c. [Children sing *x*] [*x* = songs]

(40a) is known as a θ-Theme reading, that is one in which nothing is presupposed by the speaker/hearer in the given situation (except obvious real world knowledge

– irrelevant here). What is interesting with regard to Russian word order, is that in transitive sentences, SVO (underived) order is possible in this context, but OSV order (derived by A′-Dislocation) *is not*. This is shown in (41). (The # symbol indicates infelicitous word order in the given context.)[8]

(41) *Question*:
Čto novogo?
what new
"What's new?"

(42) *Answer*: (with neutral intonation)
a. Narod vybral novogo prezidenta SVO
people elected [new president]
"The people elected a new president"

b. #Novogo prezidenta narod vybral OSV (Dislocation)
[new president] people elected

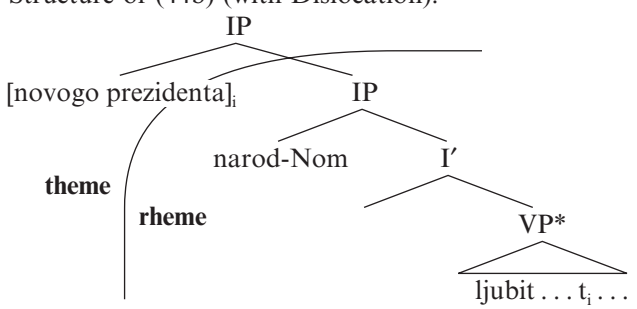
Conversely, in a context where *new president* (the direct object) is presupposed, as in the dialogue in (43)–(44), the opposite effect obtains (again, assuming neutral falling sentence intonation):[9,10]

(43) *Question*:
Kakoe mnenie o novom prezidente?
what opinion about new president
"What is the opinion about the new president?"

(44) *Answer*:
a. #Narod ljubit novogo prezidenta SVO
people love [new president]
"The people love the new president"

b. Novogo prezidenta narod ljubit OSV (Dislocation)
[new president] people love
"The new president, the people love"

(45) Structure of (44b) (with Dislocation):



Thus we find, generally, that although SVO order can be functionally ambiguous, Dislocation "fixes" Theme/Rheme structure in Russian, in that the dislocated constituent represents the Presupposed/given information, and the remainder of the sentence the Information Focus or Rheme. As a description, this dovetails nicely with scope-fixing accounts of surface A′-movement for quantifiers (É. Kiss 1986 and elsewhere) as well as with American functional accounts of leftward movement or "Topicalization" (for example, E. Prince 1984). Thus Russian (non-canonical) overt word order is simply a surface representation of relations that are always represented at the interpretive interface *in every language*. In this sense, Russian surface word order is to Information Structure what overt WH-movement is to LF-representations of WH-phrases; the overt representation of something that at the interface is uniformly high in the structure. What Russian demonstrates when A′-Dislocation occurs is a kind of "Discourse Earliness." We next turn to the crucial issue of how we can analyze Dislocation as "forced" by the Information considerations it represents while maintaining Minimalist assumptions.

7.4.4 Generating information focus

There are several possible approaches to formalization of the descriptive generalizations reached in this section. First, it is possible that Topic or Theme "features" exist, in the Minimalist sense, and are distributed to lexical items in the Numeration, thus "forcing" syntactically driven movement (depending on parameterization of these features' strength) in the syntax. I find this possibility unlikely, however, in that it predicts first of all that Russian would *always* set up its Theme/Rheme relations overtly, which we have seen it does not. Furthermore, it is unclear, on such a view, how the interaction with intonation takes place. The feature-checking approach would moreover require the presence of unique Functional Categories (TopicP and FocusP) to house the checking relation, which is difficult to reconcile with the many possible positions that the Focus constituent can take in Russian (see T.H. King 1995). This is, however, the view that I generally assumed in Bailyn (1995). I would like to suggest a different approach here, however, following Zubizarreta (1998), who allows for the possibility of "prosodically-driven" movement as satisfying Last Resort. In her system, Assertion Structure (my Functional Form) is a unique interface in the grammar, and must, as such, be uniformly represented at a late level of representation. Further, certain intonational patterns correspond only to certain Assertion Structures. In cases of potential mismatch, "P-Movement" occurs. "Not all movements are motivated by feature-checking considerations . . . there exists a *p(rosodically motivated) movement*, the object of which is not to check features but to resolve a prosodically contradictory situation; this operation also obeys Last Resort" (Zubizarreta 1998: 29). This fits perfectly with the possibility that some aspects of this representation are overtly represented as we have seen for Russian. In cases where the Assertion Structure (context) requires a certain word order (and neutral intonation is used), only P-movement will save the overall representation. The fact that violations are not a feature-checking type crash is underscored by the fact that inappropriate word orders are *infelicitous* but not in fact *ungrammatical*. Thus Dislocation is

used when the PF component is being sent a derivation with neutral intonation and the Theme/Rheme structure requires a particular representation to be available under SVO. In these cases, in languages like Russian, because of the general availability of Dislocation, A′-movement is used to "save" the derivation.[11] English, of course, also has this option, although it is limited to local clauses, and the intonation strategy for marking Theme/Rheme structure is much more prevalent. However, the necessity of surface marking of Theme/Rheme relations is in fact universal: what differs among languages is simply the mechanism available for doing it.

7.5 Conclusion

We have seen that A-scrambling is in fact Generalized Inversion and A′-scrambling is in fact Dislocation, a P-movement related to Information Focus. Clearly more research is needed to determine whether scrambling always reduces to one of these two processes (see Miyagawa, this volume, for relevant discussion). If, however, something like this turns out to be true, we have good cause to believe that scrambling as a descriptive device can be entirely eliminated from grammatical description, leaving us with a far more refined understanding of word order variation.

There remain various central theoretical questions. First, what is the status of Functional Form? In particular, where is it represented? In this chapter I remain agnostic on this issue, but follow Zubizarreta (1998) and Culicover and Rochemont (1983) in assuming some kind of post-LF interface for Information Structure, but

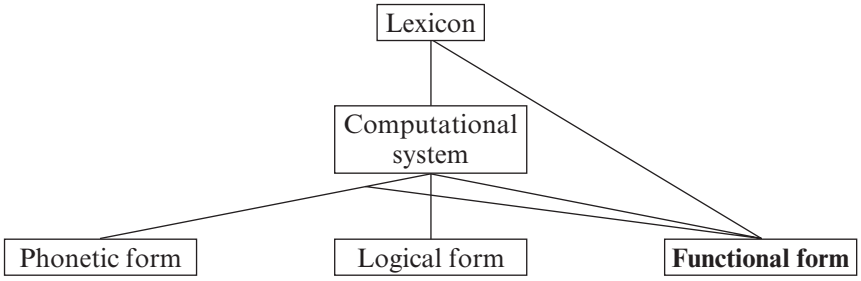
> leave open the question of whether F-structure is to be identified with LF, since some of the F-structures . . . violate the ECP . . . One way to overcome this difficulty would be to allow FA [Focus Assignment] to apply on LFs, yielding a level of representation distinct from LF and not subject to the ECP, taken as a condition on LFs. (Culicover and Rochemont 1983: 148, fn 28)

The strongest stand to take would be that these effects constitute a wholly independent interface, as Chomsky implies:

> We take L [a particular language] to be a generative procedure that constructs pairs (π, £) that are interpreted at the articulatory–perceptual (A–P) [PF] and conceptual–intentional (C–I) [LF] interfaces, respectively . . . Notice that we are sweeping under the rug questions of considerable significance, notably, questions about what in the earlier EST framework were called "surface effects" on interpretation. These are manifold, involving *topic–focus and theme–rheme structures*, . . . and many others. Prima facie, they seem to involve *some additional level or levels* internal to the phonological component, post-morphology but pre-phonetic, *accessed at the interface along with PF and LF.* (Chomsky 1995: 219–20; emphasis mine)

My own take on this issue from Bailyn (1995) is shown in (46):

(46) Model of the grammar with three points of interface:



Whatever the status of Information Structure in the grammar turns out to be, it will be exactly that aspect of grammar that is involved in deriving "free" word order variation in languages like Russian, and scrambling as a descriptive device can be dispensed with.

Notes

1 I have translated the inversion constructions with Passives wherever possible for reasons that will become clear below, related to the subject properties of the inverted constituent.

2 Notice that I have not included in this list of questions something quite central to the precise analysis of GI, but a bit tangential to our concerns in this article, namely the question of what forces the V-movement in GI (but not in canonical SVO sentences). Discussion of this issue would take us too far afield and is not directly relevant to the arguments against scrambling. However, it is discussed in Bailyn (2002).

3 Thus the [+] value of the EPP means that the EPP feature, whatever it turns out to be, can appear on *any* argument XP, in the unmarked case, and that the English restriction to Nominative subjects (and some locatives) reduces to the [–] value for the SpecT parameter or some other restriction, and is not part of the EPP per se.

4 Slight differences that do obtain may be related to the nature of the landing site (an adjunction position as in (24) for Dislocation as opposed to the [SPEC, CP] position for WH-movement). Thus the findings of G. Müller and Sternefeld can generally be maintained, although possibly without recourse to the Principle of Unambiguous Binding proposed by them. For more discussion, see Bailyn (1995).

5 G. Müller and Sternefeld (1993) present examples that seem to contradict this finding in that they allow an embedded Nominative subject to appear to the left periphery of the matrix clause. However, as shown in Bailyn (1995), these examples are misleading because they may in fact represent true base-generated Left Dislocations with a Topic-bound null subject in embedded position, rather than a movement derived construction. I argue that because Russian (otherwise) has a *that*-trace effect, the movement analysis of such constructions is dubious. Further, when the Nominative subjects are replaced with oblique arguments, the constructions are markedly degraded. All of this points to the fact that constituents in fact can *not* be extracted out of embedded clauses and the WH-movement/scrambling parallels remain.

6 The paradigm in (31) shows a contrast for some speakers only. Others find all sentences with backwards pronominal coreference unacceptable in general and therefore reject (31b) for independent reasons. I limit the discussion here to those speakers who

do not have a restriction on backwards pronominalization, and allow (31b). The exact nature of the backwards pronominalization restrictions are left for future research.

7 Such effects have not been lost on generative descriptions in the literature. Thus Partee (1991) and many others have pointed out that the Prague School's Theme essentially indicates the sentence's presupposition and the Rheme its Assertion or Focus. The main idea there, whose spirit I assume, is that Presupposition/Focus relations are Theme/Rheme relations, and are derived from the sentence's surface structure by a post-syntactic partitioning process similar to Tree Splitting in Diesing (1992). This post-syntactic semantic partitioning of the sentence into quantification relations is extended to Information Focus.

8 The fate of the other four possible word orders (OVS, VSO, VOS, SOV) in this context is of course important as well, but outside the scope of this article. Notice, however, that it is not surprising that many speakers accept OVS order (GI) in this context, which again shows that Generalized Inversion is *not* directly discourse-related in the way Dislocation is, but rather represents a syntactically driven variant amenable to the same functional ambiguity as SVO sentences. VSO sentences exist only as a narrative device in story telling (see Bailyn 2002 for an analysis of VSO as a sub-type of Generalized Inversion). VOS results from Extraposition of the subject, another kind of Dislocation, and as such is completely infelicitous in the θ-Theme context as expected. This leaves only SOV, which some speakers find acceptable in θ-Theme contexts. I assume SOV has two possible derivations, both expected by the direction taken here: (i) *both* GI (of the Object) and Dislocation (of the subject) have taken place, (ii) Object Shift (similar to that found in Germanic) has taken place. I leave the exact analysis of Object Shift in Russian for further research.

9 In this dialogue, I do not use the verb *elect* because of its essentially presupposed character in an utterance including a political post such as *President*. In order to tease apart the newness of the subject *and* VP therefore, I use a more unexpected verb such as "love." Thus, the essential contrast between (42a, b) remains, supporting the Dislocation Generalization in (37).

10 I leave aside here the fact that *any* constituent, regardless of its surface position, can serve as the Focus if it is marked with non-neutral "heavy" stress (IK-3 in the Russian traditional analysis, see Bryzgunova 1981). However, it appears that such intonation marks the "Identificational Focus" (contrastive focus) and as such represents a different kind of phenomenon (as É. Kiss 1998b shows, only the latter triggers overt movement in Hungarian). I assume here that all word order variants are used with neutral intonation, except as indicated.

11 This raises the question of parameterization of the availability of Dislocation which I assume to be related to rich Case morphology.

8

A-Movement Scrambling and Options without Optionality

Shigeru Miyagawa

8.1 Introduction

In many languages, word order appears to be free. For example, in Japanese, the subject may occur before the object, or vice versa.

(1) Japanese

a. **S** **O** **V**
Taroo–ga piza–o tabeta
Taro–NOM pizza–ACC ate

b. **O** **S** **V**
Piza–o Taroo–ga tabeta
pizza–ACC Taro–NOM ate
"Taro ate pizza"

This type of free word order is also found within the VP, as exemplified by the following Dutch example. The object occurs adjacent to the verb, or it can occur instead in front of an adverb and away from the verb.

(2) Dutch

a. **S** **ADV** **O** **V**
dat Jan langzaam het boek las
that Jan slowly the book read

I am grateful to Noam Chomsky, Ken Hale, and David Pesetsky for comments at various stages in the writing of this article. I also benefited a great deal from having presented an earlier version at the International Conference on Word Order and Scrambling in Tucson, Arizona, as well as at Nanzan University and Osaka University. I thank the audiences at those talks, particularly Simin Karimi, Mamoru Saito, and Yoichi Miyamoto. An anonymous reviewer also provided helpful comments for the final version.

b. **S O ADV V**
dat Jan het boek langzaam las
that Jan the book slowly read
"that John slowly read the book"

It was Ross (1967) who gave the apt name "scrambling" to these types of free word order permutation. Unlike Japanese and Dutch, English does not allow scrambling. Thus, for example, permuting the subject and the object in English would fundamentally alter the meaning of the sentence (*John saw Mary*; *Mary saw John*). Within the VP, English does not allow the type of word-order choices we saw above for Dutch; in normal circumstances the object is required to be adjacent to the verb (Stowell 1981).

(3)a. John read a book slowly
b. *John read slowly a book

In this chapter, I will look at scrambling in the light of recent work on movement. In particular, I wish to pose the following question.

(4) Does scrambling indicate that there is optional rule application in Universal Grammar?

To understand this question in the proper context, let us again consider the Japanese examples in (1). It is generally assumed that the basic word order of Japanese is SOV. The alternative word order of OSV shown in the second example in (1) is, according to Saito and Hoji (1983), the result of a movement rule that transports the object to the head of the sentence.[1]

(5) O_i S t_i V

This account is predicated on the assumption that the application of this scrambling rule is strictly optional, because it need not apply; if it does not, we maintain the basic SOV word order. On this analysis, the answer to the question in (4) is affirmative. This view that scrambling is an optional rule is widely accepted in the field (e.g. Kuroda 1988; Saito 1985; Fukui 1993; Saito and Fukui 1998; Takano 1998). I will, however, question it, by introducing analysis and data from Miyagawa (2001) which is a refinement of the analysis in Miyagawa (1995, 1997), where I first challenged the notion that scrambling is an instance of an optional operation. In this chapter, I will give further data to confirm the analysis in Miyagawa (2001).

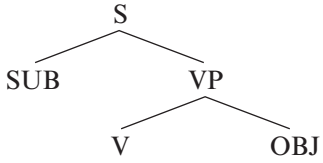
The issue I will take up – that of optionality – is of central concern to recent developments in linguistic theory. In the so-called Government and Binding (GB) Theory (e.g. Chomsky 1981), it is assumed that all movement is strictly optional. There is only one movement rule, Move α, and it moves anything anywhere, anytime, without any restriction. Independent principles such as subjacency, θ-Theory, and the Empty Category Principle exclude all but those that conform to

these principles. In recent years, however, there has been a rethinking on the nature of operations in Universal Grammar (UG). In the so-called Minimalist program (Chomsky 1993, 1995, 2000), movement is not optional and free, but rather, it must be triggered by a specific morphological feature on a head. This feature, together with some general considerations such as cyclicity, dictates when and to where an element may move. A WH-phrase in English, for example, is attracted by the WH-feature on C that carries the question force. The WH-phrase therefore moves to the [SPEC, CP] headed by this C, and nowhere else. On this view, movement is invariably obligatory. This shift in thinking from GB theory to the Minimalist program results in a fundamentally different notion about the nature of operations in UG. Unlike the GB view, in which an operation, by theory, massively over-generates, the Minimalist view is that an operation in UG is computationally optimally efficient. Something moves only if it has to move. In this regard, scrambling has always been considered as an exception to the otherwise computationally efficient system, because it is difficult to see what the triggering mechanism for it is. In this article, I will demonstrate that it, in fact, has the property of obligatoriness despite its seemingly optional nature.

8.2 Options without Optionality

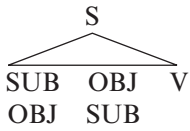
On an intuitive level, it is natural to consider scrambling to be an optional operation. If we again look at the Japanese pair in (1), the SOV and OSV word orders are semantically essentially the same; there is nothing apparent in the sentence itself that, for example, would force the OSV order over the SOV order.[2] But there is another way to look at this word-order freedom. Suppose that a scrambling language allows the word-order variation because of some independent property found in the language. In particular, this property of the scrambling language allows an obligatory requirement, whatever that may be, to be met by one of two (or more) options. Let us call this alternative view "options without optionality." A good way to illustrate this approach is to look at the first attempt at capturing freedom of word order within generative grammar. Hale (1980, 1983) proposed that languages separate into two groups, those that are configurational and those that are non-configurational. A configurational language has the familiar hierarchical structure, with the object within the VP and the subject outside of the VP.

(6) Configurational language



On the other hand, in a non-configurational language the VP node is missing, so that the entire phrase structure is flat, and the subject and the object, and everything else, are at the same level.[3] The following instantiates a non-configurational language that has the verb – a transitive verb in this case – at the end.

(7)



Given this flat structure, the subject and the object are in a symmetrical relationship with the verb. This contrasts with the configurational language, in which the subject and the object are asymmetrically related to the verb. According to Hale, as a result of this symmetry found in a non-configurational language, the lexical item corresponding to the subject may be inserted as the left-most phrase, or as the second phrase, the former giving the SOV order, the latter, the OSV order. What is important to note about Hale's system is that there is nothing optional about the operations involved. Lexical insertion is obligatory. If there is a transitive verb, as in the above structure, the subject and the object must obligatorily be inserted into the structure. His point is that due to the independent property of non-configurationality, there is an option to insert them in different orders. The options that arise are not due to optionality of rule application.[4]

In response to Hale's work, Saito and Hoji (1983) showed that a language such as Japanese, which belongs to the non-configurational group under Hale's conception, is just as configurational as languages such as English. Thus, even in a language like Japanese, the subject and the object are in an asymmetrical relationship to the verb. Their analysis, which has been highly influential, has the desirable result that every language is the same structurally: every language has the VP node, in other words. However, their analysis came at a price. In order to account for the word-order variability, they had to introduce the rule of scrambling into the system, which had been proposed earlier by Ross (1967) and Harada (1977). Although it was not apparent until later, this rule of scrambling, which was further developed by Saito (1985, 1992) and others, is an *optional operation*, a notion that Hale's original theory did not require.

What I will propose is that it is possible to maintain Saito and Hoji's important point that every language is structurally the same in having a VP node, but it is also possible to return to Hale's original conception of word-order freedom as evidencing options without optionality, thus excluding optional operations.[5] I will do so by first introducing the analysis in Miyagawa (2001). There are two main points to this analysis.

(8) **Point One**: both the SOV and the OSV word orders result from a single obligatory movement. This movement is triggered by the Extended Projection Principle (EPP).[6]
Point Two: the option to move the object into [SPEC, TP] (OSV) to meet the EPP requirement is made possible by V raising to T.

The first point adopts the idea in Saito and Hoji (1983), and other works by Saito (1985, 1992) and others, that there is movement involved in the word-order variation. What is unique about my analysis is that the same movement gives rise to both the SOV and the OSV word orders. In both cases, the EPP requirement on T attracts a phrase: the subject in the SOV order and the object in the OSV order. Thus,

SOV and OSV are equivalent. This notion of equivalency across word-order variations reflects, in spirit, Hale's original intuition about non-configurational languages. Like Hale's approach, my approach to scrambling states that options are available without an optional operation: the EPP-driven movement is not optional, but, rather, it is invariably obligatory. The second point above is what captures the parametric variation between scrambling and non-scrambling languages. V-raising to T makes it possible for a language to have the SOV/OSV variation.[7]

Along with these two points, which are from Miyagawa (2001), I will introduce a third point. In the analysis in Miyagawa (2001), there is one point that is left unresolved having to do with V-raising to T. If V-raising to T is what allows the option of the EPP-driven movement of the object to [SPEC, TP], why does the same EPP-driven movement of the object not occur in, for example, Romance, where V-to-T is well attested (e.g. Emonds 1976; Pollock 1989)? An observation often made about languages that allow free word order is that the DPs in these languages carry morphological Case marking. A natural temptation is to adopt a "functional" approach to free word order: because the DPs are clearly marked for function, word order itself is not crucial for interpretation, hence word order is free. It is true that Romance languages do not exhibit morphological Case marking of the type found in scrambling languages such as Japanese, Korean, and Russian. But is there more to this correlation between morphological Case marking and free word order? I will give evidence that suggests that morphological Case marking, may it be Nominative on the subject or Accusative on the object, or even the Dative on the indirect object, is licensed by Tense (T). That is, each of the morphological Case markings agrees with T. This, in turn, makes it possible for the EPP feature on T to attract either the subject (Nominative) or the object (Accusative) to [SPEC, TP]. The latter is made possible structurally by V-raising to T, which makes the object equally local to T as the subject. This view that all morphological Case markings are licensed by Tense resurrects in a very direct way Hale's notion of non-configurationality.[8] While the subject and the object are in a hierarchical relationship, their morphological Case markings – Nominative and Accusative – are licensed non-configurationally by the head of the clause, T. This agreement gives the EPP feature on T the potential to attract the object as well as the subject.

I will begin by discussing the analysis in Miyagawa (2001).

8.3 Scrambling as Options without Optionality (Miyagawa 2001)

In Miyagawa (1995, 1997), I argued against the widely held notion that scrambling is an optional operation. In Miyagawa (2001) I refine the analysis in Miyagawa (1997) by introducing new data involving the quantifier *zen'in* "all" in the context of negation. Negation in Japanese is most commonly expressed by a suffix on the verb (or some other predicate). When a sentence is negated, the verb stem occurs with the negative morpheme *-na*, followed by the tense morpheme. In the non-past tense, the negative form of a verb such as *tabe* "eat" is *tabe-na-i*. In past tense, the negative morpheme takes on a slightly longer form to accommodate the past-tense morpheme: *tabe-nakat-ta*.

The quantifier *zen'in* "all" can occur by itself in an argument position. If it occurs in the object position in a negative sentence, we get the following interpretation.

(9) (Kinoo) Taroo-ga *zen'in-o* home -nakat-ta (yo/to omou)[9]
(Yesterday) Taro -NOM *all* -ACC praise-Neg -PAST (Expl/Comp think)
"(I think that) Taro didn't praise all (yesterday)(!)"
not >> all, (*)all >> not

The most salient interpretation of this sentence is that Taro only praised some people, but not all. This is indicated by "not >> all."[10] The negation in this interpretation only partially negates the referent of "all", that is, "not all." I will call this interpretation "partial negation." In contrast, if *zen'in* "all" occurs in the subject position, we get a very different interpretation relative to negation. As noted by Kato (1988), the universal quantifier in the subject position is interpreted outside the scope of negation.

(10) *Zen'in-ga* sono tesuto-o uke -nakat-ta (yo/to omou)
all -NOM that test -ACC take-NEG-PAST
"All did not take that test"
*not >> all, all >> not

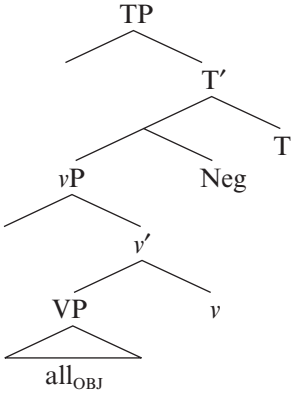
As shown, the most natural way to interpret this sentence with *zen'in* in the subject position is that none of the people referred to by "all" took the test. This sentence is very difficult to interpret as partial negation, in which some, but not all, took the test. I will refer to the interpretation of this example as "total negation."

Let us again consider partial negation, which is the salient interpretation if *zen'in* occurs in the object position. In this interpretation, negation takes scope over "all," because the interpretation is such that the negation is the first expression in the meaning of the pair "not-all." How does negation take scope over "all" to achieve the partial negation interpretation? Following a long tradition, starting with Klima (1964), I assume the following.

(11) For negation to take scope over α, negation c-commands α (cf. Klima 1964).

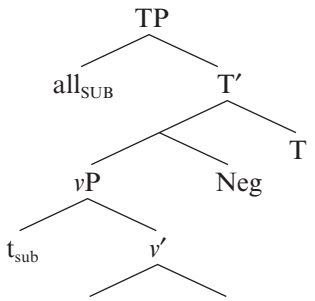
The following provides the relevant structure of the partial-negation example in (9) above.

(12) = (9)



The first thing to note is that the negative morpheme occurs between the *v*P and T (cf. Laka 1990; Pollock 1989). The second thing to note is that this negation, so situated, c-commands "all" in the object position within the VP, which is why we get the partial-negation interpretation. What about the total-negation interpretation in (10), in which "all" occurs in the subject position? By assumption, "all" in this example cannot be in a position c-commanded by negation. Let us assume, following a widely accepted view, that the subject is merged as [SPEC, *v*P]. But this position is c-commanded by negation. In order to correctly exclude the partial-negation interpretation, we must assume that this subject, which begins in [SPEC, *v*P], moves to a position outside the c-command domain of negation. Let us suppose that it moves to [SPEC, TP], a position that is "vacant" and can therefore host a displaced phrase, most commonly the subject.

(13) = (10)



This structure correctly makes total-negation the only possible interpretation for the subject "all" in (10). This account, if true, confirms two points already suggested in the literature. First, the subject in Japanese moves to [SPEC, TP] in the SOV order (cf. Nemoto 1993; Miyagawa 1995, 1997). Second, the trace left by this type of movement (A-movement) is inaccessible to interpretation (see Chomsky 2000; Lasnik, to appear, and references therein). This second point is crucial because otherwise, this trace, which is c-commanded by negation, would be visible, and should allow the partial negation interpretation, contrary to fact.

We now turn to the crucial minimal pair that gives evidence that scrambling of the sort under consideration is not optional. We saw already that if "all" occurs in the subject position, only the total-negation interpretation is possible. This is again illustrated in the first example below. However, with "all" still in the subject position, if we scramble the object to the head of the sentence, resulting in the OSV order, we get a very different interpretation.

(14) Crucial minimal pair

	S	**O**	**V**	
a.	*Zen'in-ga*	sono tesuto-o	uke -nakat-ta	(yo/to omou)
	all -NOM	that test -ACC	take-NEG-PAST	

"All did not take that test"

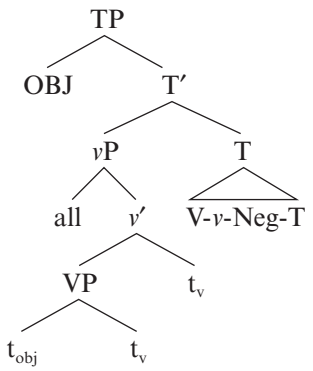
*not >> all, all >> not

	O	**S**	**V**	
b.	Sono tesuto-o_i	*zen'in-ga*	t_i uke -nakat-ta	(yo/to omou)
	that test -ACC_i	*all* -NOM	t_i take-NEG-PAST	

"That test, all didn't take"
not >> all, (all >> not)

As shown, unlike the SOV order in (a), in the scrambled OSV order in (b), it is possible for the subject "all" to be partially negated.[11] Why should scrambling have any effect on the interpretation of "all"? On the assumption that partial negation is possible if negation c-commands "all," we are led to the conclusion that the subject "all" stays in situ, in [SPEC, *v*P], if the object scrambles to the head of the sentence. How is this possible? Let us suppose that the scrambled object moves to [SPEC, TP], and this is the reason why the subject can stay in-situ in [SPEC, *v*P].

(15)



If we compare the structure for the SOV order in (13) with the structure in (15), there is a simple generalization to be made: something (subject, object) must move to [SPEC, TP]. If the subject moves to [SPEC, TP], the object stays in situ, as in (13). But if the object moves to [SPEC, TP], this allows the subject to stay in situ, as in (15). What we must now ask is, what is the nature of this requirement that something must move to [SPEC, TP]? This requirement that something must occur as the specifier of TP is a familiar one – it is the Extended Projection Principle (Chomsky 1981). We can thus make the following simple statement about scrambling.

(16) The EPP and Scrambling
Scrambling (of the sort we have observed) is triggered by the EPP feature on T.

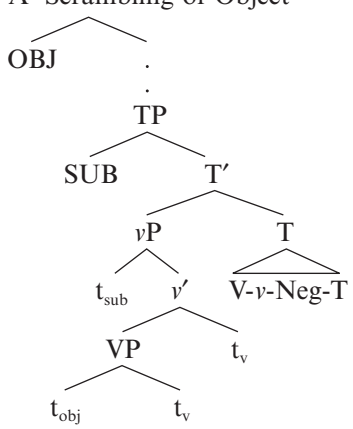
This is a desirable result. First and foremost, we have reduced the phenomenon of scrambling (of the sort we are looking at) to a familiar and independent feature, the EPP. As far as movement is concerned, there is no need to postulate anything special for scrambling.[12] Also, scrambling as a phenomenon need not be considered as evidence for the existence of optional operation in UG. The EPP is obligatory, hence scrambling is an instance of obligatory movement. What remains to be seen is why, in Japanese, either the subject or the object can be attracted by the EPP feature on T. In languages such as English, only the subject may be so

attracted. One critical factor, as we will see later, is V-raising to T, as indicated in (15). Another factor is the occurrence of morphological Case marking. I will not discuss these factors until later in the chapter.

8.4 A-Movement and A′-Movement Scrambling

Let us return to the OSV example in (14b). Along with the partial-negation interpretation, we see that the total-negation interpretation is equally possible. If the only derivation associated with this example is one in which the subject "all" stays in situ in [SPEC, *v*P], we would not expect the total-negation interpretation to be so salient. This fact suggests that there are two different derivations for this example. The first one is the one we have already outlined using the structure in (15) above. The subject does not move, and the object moves to [SPEC, TP] to satisfy the EPP. In the other derivation, which is the one that gives rise to the total-negation interpretation, it must be the case that the subject "all" moves to [SPEC, TP], which places it outside the c-command domain of negation. The object, then, moves to a position higher than [SPEC, TP]. These two options are, in fact, what we predict from Mahajan's (1990) analysis of scrambling in Hindi. Mahajan argued convincingly that there are two types of scrambling, one that is A-movement and the other that is A′-movement (see also Webelhuth 1989). A-scrambling moves a phrase to an argument (A) position, while A′-scrambling moves a phrase to an A′-position. The former (A) is likened to the movement in passive, which moves the initial object to the [SPEC, TP], which is an argument position, and also to raising, which moves a lower subject to the [SPEC, TP] of raising verbs (Mahajan 1990). The latter (A′) scrambling parallels WH-movement, which moves a WH-phrase to [SPEC, CP], which is not an argument position.[13] In Miyagawa (1997), I suggest that A′-scrambling is driven by Focus, and the phrase moves to a position above TP, possibly adjoining to it. If we consider the two possible interpretations for (14b), we can see that the object has undergone A-movement if it is EPP-driven, because it moves to [SPEC, TP]. However, under the total-negation interpretation, the subject "all" first moves to [SPEC, TP] to meet the EPP requirement. The object moves above it, to an A′-position, hence this is an instance of A′-scrambling, as shown below.[14]

(17) A′-Scrambling of Object



8.4.1 Disambiguating (14b)

We saw that the OSV example in (14b) has two distinct derivations, one involving the EPP-driven movement of the object, the other in which the object moves by A′-scrambling. It is possible to disambiguate the example. For instance, if we place a high adverb such as "fortunately" between the subject "all" and the verb, only the total-negation interpretation is possible despite the fact that the object has undergone movement to the head of the sentence.

(18) "High" adverb "fortunately"
Sono tesuto-o_i *zen'in-ga* **saiwaini** t_i uke -nakat-ta (yo/to omou)
that test -ACC_i *all* -NOM **fortunately** t_i take-NEG-PAST
"That test, all didn't take fortunately"
*not >> all, all >> not

The adverb "fortunately" is a type of adverb that occurs very high in the structure (Cinque 1999). In this example, the fact that it occurs after the subject means that the subject "all" cannot be in its original position of [SPEC, *v*P], but somewhere higher – a natural position would be [SPEC, TP]. Thus, in this example, the subject "all" has met the EPP requirement, placing it outside the c-command domain of negation. In contrast, if we place a low adverb, such as the manner adverb "quickly," ambiguity obtains as expected.

(19) VP manner adverb "quickly"
Sono tesuto-o_i *zen'in-ga* **isoide** t_i uke -nakat-ta (yo/to omou)
that test -ACC_i *all* -NOM **quickly** t_i take-NEG-PAST
"That test, all didn't take quickly"
not >> all, all >> not

The manner adverb by assumption occurs in the projection of V; hence the subject "all" to its left need not have vacated its initial position of [SPEC, *v*P]. As a result, this example is associated with the partial/total negation interpretations we saw with the example without any adverb in (14b).

A second way to disambiguate (14b) (the OSV order with subject "all") is to use an idiom chunk. As noted in Miyagawa (1995, 1997), it is possible to scramble an idiom chunk, but it must only be by A-scrambling. If the idiom chunk is the object, and it is scrambled, it must necessarily be the EPP-triggered A-scrambling. This is shown below with the idiom "lower hip," which has the meaning "sit down."

(20) Idiom chunk forces A-scrambling (Miyagawa 1997)
idiom: kosi-o orosu
hip -ACC lower
"sit down"
Kosi-o_i zen'in-ga t_i orosa-nakat-ta (yo/to omou)
hip -ACC_i all -NOM t_i lower-NEG-PAST
Lit.: "Hip, everyone didn't lower = Everyone didn't sit down"
not >> all, (*)all >> not

As shown, if we scramble the object, "hip," which is part of the idiom, the subject "all" can most easily be given the partial-negation interpretation, indicating that this subject stays in situ in [SPEC, *v*P]. This is precisely what we expect since the movement of the idiom-chunk object can only be A-movement, hence EPP-driven. We can therefore make the following refinement.

(21) A-scrambling is EPP-driven.

8.4.2 Long-distance scrambling: not EPP-driven

We saw that scrambling of an argument to the head of the sentence may be either A- or A′-movement. There is another type of scrambling, long-distance scrambling, which moves a phrase from an embedded clause to a higher clause. Mahajan (1990) provides evidence that long-distance scrambling can only be A′-scrambling. From my perspective, this means that long-distance scrambling cannot be EPP-driven. Evidence for this is given below.

(22) Syukudai -o_i *zen'in-ga* [$_{CP}$ sensei -ga t_i dasu to]
homework-ACC$_i$ *all* -NOM [$_{CP}$ teacher-ga t_i assign Comp]
omowa-nakat-ta (yo)
think -NEG-PAST
"Homework, all did not think that the teacher will assign"
*not >> all, all >> not

The embedded object, "homework," has been scrambled to the matrix clause, whose subject is "all." As shown, this "all" can only have the total-negation interpretation. This is an indication that "all" has met the EPP requirement of the matrix T, and the long-distance scrambling of "homework" can only be A′-scrambling. This is consistent with Mahajan's analysis of long-distance scrambling.

8.4.3 A- and A′-scrambling and quantifier scope

As the last point about A/A′-scrambling, I will look at quantifier scope in order to demonstrate that my analysis is consistent with what has already been discovered about quantifier scope and scrambling. In many languages, including Japanese, quantifier scope directly reflects the surface order of the quantifiers (Kuroda 1971; Huang 1982).

(23) Dareka -ga hotondo-no uta -o utatta
someone-NOM most -GEN song-ACC sang
"Someone sang most of the songs"
some >> most, *most >> some

This sentence can only be interpreted as some unique person having sung most of the songs. However, as originally noted by Kuroda (1971), if the object quantifier scrambles to the sentence-initial position, scope ambiguity obtains.

(24) Hotondo-no uta -o_i dareka -ga t_i utatta
most -GEN song-ACC$_i$ someone-NOM t_i sang
"Most of the songs, someone sang"
some >> most, most >> some

In this example, "most of the songs," which is the first quantifier, may take scope over "someone." On this interpretation, each of the "most songs" was sung by a different individual. But there is a second interpretation that is the same as the earlier example: there is a unique individual who sang most of the songs. This second interpretation is the inverse of the surface order of the quantifiers, because the second quantifier, "someone," takes scope over the first quantifier, "most of the songs."[15] This inverse-scope interpretation in languages such as Japanese is usually not possible except in scrambled constructions. Let us suppose that the first interpretation, in which the scrambled object, "most of the songs," takes scope over the subject quantifier, is possible because this scrambling of the object is EPP-driven, hence A-movement. As such, the trace of the movement is invisible to interpretation. The inverse-scope interpretation is, then, due to the object having undergone A′-movement, to a position above [SPEC, TP]. This A′-movement allows reconstruction of the moved quantifier to its original position, in effect allowing the scrambled object to be interpreted in its original position. A question that immediately arises is, if a quantifier undergoes A′-movement, does it necessarily get interpreted in its original position, or can it also be interpreted in the moved position, just like A-movement? Tada (1993) offers evidence that an A′-moved quantifier necessarily reconstructs, so that it cannot be interpreted in the moved position. Tada's examples all involved long-distance scrambling, since there is no way to distinguish A′- from A-scrambling if the scrambling is local. Given my analysis, it is in fact possible to test Tada's proposal even if the scrambling is local. Recall that an adverb such as "fortunately" occurs high in the structure. Thus, if a subject occurs to its left, the subject is in [SPEC, TP] even if the object has scrambled to the sentence-initial position. The example is repeated below.

(25) Sono tesuto-o_i *zen'in-ga* **saiwaini** t_i uke -nakat-ta (yo/ to omou)
that test -ACC$_i$ *all* -NOM **fortunately** t_i take-NEG-PAST
"That test, all didn't take fortunately"
*not >> all, all >> not

The only interpretation is for "all" to be totally negated, because it is in [SPEC, TP] to meet the EPP; the object, "that test," has therefore undergone A′-scrambling. Now note the following example, which is identical to (24) above, with the exception that "fortunately" has been inserted.

(26) Hotondo-no uta -o_i dareka -ga **saiwaini** t_i utatta
most -GEN song-ACC$_i$ someone-NOM **fortunately** t_i sang
"Most of the songs, someone fortunately sang"
some >> most, *most >> some

As shown, under A′-scrambling, the object, "most of the songs," necessarily undergoes reconstruction, so that it can only be interpreted in its original position. Under A′-scrambling, then, inverse scope is forced.[16] On the other hand, if the adverb is one of manner, we obtain ambiguity because such an adverb occurs in the projection of V (although "most >> some" is somewhat weaker).

(27) Hotondo-no uta -o_i dareka -ga **zyoozuni** t_i utatta (yo/to omou)
most -GEN song-ACC$_i$ someone-NOM **well** t_i sang
"Most of the songs, someone sang well"
some >> most, ?most >> some

The surface-order scope is due to the object "most songs" having moved by A-scrambling to [SPEC, TP], while the inverse scope is due to this object having moved by A′-scrambling. This is consistent with what has been observed about these two types of movements.[17]

8.5 V-Raising and EPP-Driven Scrambling

When does a language allow the EPP-triggered scrambling we have observed? Let us begin by looking at another type of scrambling, the so-called Object Shift in Germanic languages. This is a phenomenon similar to what we have observed in Japanese scrambling, except that the object moves only partially up the structure, and not all the way above the subject. The following is such an example from Swedish.

(28) Johan känner henne inte
Johan knows her not

The object, the pronoun "her," has moved from its original position inside the VP to a position above the negative head, which is assumed to be outside the VP. Holmberg (1986) made an important observation about the condition under which Object Shift is possible (see also Holmberg and Platzack 1995). If there is V-raising to T ("I" is what was used by Holmberg), Object Shift takes place. In the Swedish example above, the main verb "know" has moved to T, which makes the Object Shift of "her" possible. Unlike the root clause, Swedish does not have V-raising to T in embedded clauses. Consequently Object Shift is not possible in an embedded clause.

(29)a. Der är troligt att han inte känner henne
it is probably that he not know her

b. *Der är troligt att han henne inte känner
it is probably that he her not know

Can this observation about V-raising to T as a necessary condition for Object Shift be extended to the EPP-driven scrambling in Japanese? In Miyagawa (2001)

an argument is given that V-raising is what makes the EPP-driven scrambling of the object possible.[18] I will first summarize it below, and then give further evidence from Korean. Finally, I will reflect on why V-raising is necessary, and why in Japanese it is possible for the object to raise all the way to [SPEC, TP].[19]

8.5.1 Emphatic construction in Japanese (Miyagawa 2001)

There is a construction in Japanese in which an emphatic particle such as *-sae* "even," *-mo* "even," or *-wa* "EMPHATIC" attaches to the verb stem (cf. Kuroda 1965). The tense appears separately, supported by the "do" verb *suru*.

(30) Taroo-ga sensei -o seme *-mo* sita
Taro -NOM teacher-ACC blame-even did
"Taro even blamed the teacher"

This separation of the verb stem from the tense suggests that in this construction, the verb does not raise to T. If what we have observed about Germanic Object Shift extends to Japanese, this construction should not allow the EPP-driven scrambling of the object to [SPEC, TP]. We can see this below. In the first example below, the object has been scrambled to the head of the sentence in an emphatic construction. The second example is a "normal" counterpart.

(31)a. Emphatic construction (Miyagawa 2001)
Sensei $-o_i$ zen'in-ga t_i seme *-mo* si -nakat-ta (yo/to omou)
teacher-ACC_i all -NOM t_i blame-*even* do-NEG-PAST
"The teacher, all did not even blame"
*not >> all, all >> not

b. "Normal" construction
Sensei $-o_i$ zen'in-ga t_i seme -nakat-ta (yo/to omou)
teacher-ACC_i all -NOM t_i blame-NEG-PAST
"The teacher, all didn't blame"
not >> all, all >> not

As shown, in the emphatic example, it is not possible to have a partial-negation interpretation for the subject "all" despite the object scrambling. This indicates that the subject "all" has moved to [SPEC, TP] to meet the EPP requirement of T, and not the object. The object has undergone A′-scrambling to a position above this [SPEC, TP]. In the second example, partial negation is possible, as expected, because, by hypothesis, the verb has raised to T.

8.5.2 V-raising and scrambling in Korean

Based on the work of Sohn (1995), J.-E. Lee (2000) provides confirmation of the assumption in Miyagawa (2001) that V-raising is necessary for the EPP-driven scrambling of the object. Sohn (1995) notes that in Korean, as in Japanese, quantifier scope directly reflects the surface order.

(32) Nwukwunka-ka manhun saram -ul pipanhayssta
someone -NOM many people-ACC criticized
"Someone criticized many people"
some >> many, *many >> some

As in Japanese, scrambling the object quantifier leads to ambiguity.

(33) Manhun saram -ul$_i$ nwukwunka-ka t_i pipanhayssta
many people-ACC$_i$ someone -NOM t_i criticized
"Many people, someone criticized"
some >> many, many >> some

As Sohn (1995) further notes, the same ambiguity obtains under scrambling in the so-called short-form negation construction. In the following pair, the second one is the example involving scrambling.

(34) Short-form negation in Korean
a. Nwukwunka-ka manhun paywu-lul ani cohahayassta
someone -NOM many actors -ACC NEG like-PAST-DECL
"Someone did not like many actors"
some >> many, *many >> some

b. Manhun paywu-lul$_i$ nwukwunka-ka t_i ani cohahayassta
many actors -ACC$_i$ someone -NOM t_i Neg like-PAST-DECL
some >> many, many >> some

In the second example, inverse scope is possible due to the scrambling of the object across the subject. An important observation Sohn makes is that, unlike short-form negation, in the long-form negation counterpart, ambiguity fails to obtain even under object scrambling.

(35) Long-form negation in Korean
a. Nwukwunka-ka manhun paywu-lul cohahayci ani
someone -NOM many actors -ACC like NEG
hayassta
do-PAST-DECL
"Someone did not like many actors"
some >> many, *many >> some

b. Manhun paywu-lul$_i$ nwukwunka-ka t_i cohahayci ani
many actors -ACC$_i$ someone -NOM t_i like NEG
hayassta
do-PAST-DECL
some >> many, *many >> some

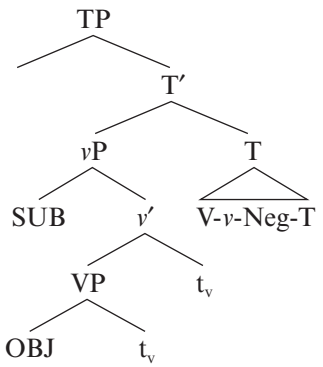
In the second example, which involves scrambling, the only possible interpretation is the reconstructed one. This suggests that the movement here is strictly

A′-scrambling. J.-E. Lee (2000) points out that this fact about long-form negation is not at all mysterious under the analysis in Miyagawa (2001) if we assume that there is no V-raising in this construction. The lack of V-raising is plausible because in the long-form negation, the negative morpheme *ani* occurs between the verb stem and the tense, the latter supported by "do." This is similar to the emphatic construction we looked at in Japanese. Without V-raising, the object cannot undergo EPP-driven movement, hence it can only undergo A′-scrambling, leading to obligatory reconstruction.

8.5.3 V-raising and expanding the domain

Why is V-raising crucial for the EPP-driven scrambling of the object to be possible? One possibility, which is an extension of Chomsky (1993) adopted in Miyagawa (2001), is that V-raising "expands the domain." Let us look at the structure for a Japanese sentence before the EPP movement takes place.

(36)



In this structure V has raised to T, picking up *v* and Neg (if there is negation) along the way. At this point, [SPEC, TP] and [SPEC, *v*P] (where SUB resides) are equidistant from the object (cf. Chomsky 1993). The EPP feature on T therefore can attract the object across the subject without violating locality. This leads to the OSV word order. The T can instead attract the subject, of course, and that would result in the SOV order. Without V-raising to T, the object would be too distant from [SPEC, TP], thus only the subject can be attracted by the EPP feature. This is what we saw with the emphatic construction in Japanese and the long-form negation construction in Korean. It is, presumably, the situation in English as well.

8.6 Morphological Case Marking and Tense

We saw above that V-raising to T is crucial for allowing the EPP-driven scrambling of the object to [SPEC, TP]. This is a point noted in Miyagawa (2001). A question that was left unresolved in Miyagawa (2001) is, what about those languages that have V-raising, but do not exhibit this EPP-driven scrambling of the

object? Romance languages, for example, are well-known to have V-raising to T (e.g. Emonds 1976; Pollock 1989), yet they do not have the kind of EPP-driven scrambling we have observed in Japanese and other languages such as Korean. In this section, I will explore this issue.

An obvious difference between the Romance languages and the scrambling languages such as Japanese and Korean is that the scrambling languages have morphological Case markers. Nominative and Accusative Case markers identify the subject and the object respectively, as shown below for Japanese.

(37) Taroo-*ga* piza -*o* tabeta
Taro -Nom pizza-ACC ate
"Taro ate pizza"

It is often pointed out that languages that allow free word order permutations are those that mark their arguments in this way. In the absence of rigorous linguistic analysis, one might simply conclude that the phrases are free to occur in just about any order as long as their functions are clearly marked morphologically. It is only in those languages that lack morphological Case marking that word order becomes crucial for identifying the grammatical functions of the various phrases in a sentence. However, we can immediately reject this type of "functional" approach to word order from what we have seen. Take, for example, the Scandinavian Object Shift, which I discussed in the previous section. What we saw was that Object Shift, which moves the object to a position outside the VP, is only possible if V raises to T (Holmberg 1986). In Swedish, which is the language we looked at, V-raising occurs in root clauses, but not in embedded clauses. As a result, Object Shift is found in root clauses but not in embedded clauses. In both, the DPs are marked exactly the same. V-raising has nothing to do with marking the function of DPs. Hence, morphological markings on DPs per se do not license this word-order variation. We also saw that in Japanese and Korean, V-raising makes it possible for the object to undergo EPP-driven scrambling to [SPEC, TP]. Without V-raising, movement of the object can only be A′-scrambling, to a position higher than [SPEC, TP]. What we have, then, is the following:

(38) Languages that have V-to-T raising and morphological Case marking allow EPP-driven scrambling of the object.[20]

I have already given the reason for the need for V-to-T. It makes the object equidistant from [SPEC, TP] and [SPEC, *v*P], allowing the EPP feature on T to attract it, or the subject. Let us now explore the role of morphological Case marking.

Consider again my EPP approach to A-scrambling. The EPP feature on T may attract either the subject (Nominative) or the object (Accusative). Let us suppose, following Chomsky (2000), that in order for a feature on a head to attract a phrase, there must be an *agreement relationship* between the head and the attracted phrase. This means that the Nominative Case marker *and* the Accusative Case marker agree with T. Another way to state this is that the occurrence of Tense – or some appropriate form of Tense – licenses these morphological Case

markers. Without the appropriate Tense, neither the Nominative nor the Accusative Case marker can occur. We thus hypothesize the following.

(39) Morphological Case markers agree with Tense.[21]

Can we find evidence for this? There are at least two points we must demonstrate. First, we must show that the occurrence of the Accusative Case marking correlates with the occurrence of the morphological Nominative Case marking, thus providing evidence that the same head, T, licenses both. Second, we must show that this correlation need not obtain in the case of abstract Case. We can demonstrate both of these points using the so-called Nominative–Genitive Conversion Construction, which I turn to below.

8.6.1 Nominative–Genitive Conversion Construction (NGCC)

While the subject in Japanese is marked with the Nominative Case marker in normal sentences, the subject of a relative clause or a nominal complement may alternatively be marked with the Genitive Case marker (e.g. Harada 1971; Hiraiwa 2001; Miyagawa 1993; Ochi, to appear; Watanabe 1996).

(40) [Taroo-*no*/ -*ga* kuru] riyuu
[Taro -GEN/-NOM come] reason
"The reason why Taro will come"

Harada (1971) points out that for many speakers, the sentence becomes ungrammatical if an object occurs in the same clause with the Genitive subject.[22]

(41) *[Taroo-*no* Hanako-*o* sikatta] riyuu
[Taro -GEN Hanako-ACC scolded] reason
Intended meaning: "The reason why Taro scolded Hanako"

This complex NP is fine if the subject is marked with the Nominative -*ga*.

(42) [Taroo-*ga* Hanako-*o* sikatta] riyuu
[Taro -NOM Hanako-ACC scolded] reason
"The reason why Taro scolded Hanako"

A plausible way to look at this array of data is that the same head (Tense) licenses both the Nominative and the Accusative Case markers. If the subject is marked instead by the Genitive, as in (41), the Accusative, too, fails to occur. There are a number of ways to implement this idea. For example, it may be that there are two types of T, one that licenses Nominative (and Accusative), the other that does not; see note 23 for elaboration. Whatever the analysis, it is a demonstration of the first point noted above: there is a correlation between the occurrence of the Accusative Case marker and the Nominative Case marker. If the Nominative Case marker does not occur, neither does the Accusative Case marker. Consequently, the same head that licenses the Nominative Case marker also licenses the

Accusative Case marker. It is important to point out that this correlation is between the Accusative and the Nominative Case markers. If, in a Genitive-subject clause, a phrase marked by something other than a morphological Case marker occurs, the clause is grammatical. This is demonstrated below with an instrumental PP (cf. Harada 1976).

(43) [Taroo-*no* sihatu-no densya-de kuru] riyuu
[Taro -GEN first -GEN train -by come] reason
"The reason why Taro will come by the first train (of the day)"

We now turn to the second point, that this correlation between the Accusative and the Nominative Case markers obtains only for morphological Case marking. Harada (1971) noted that, although an overt object cannot occur with the Genitive subject, it is fine for an empty-category object to occur.

(44) [Taroo-*no* e_i sikatta] gakusei
[Taro -GEN e_i scolded] student
"The student who Taro scolded"

This example, which is perfectly grammatical, contrasts sharply with the ungrammatical (41), which has overt object NP with the Accusative -*o*. In this example, the (empty) object presumably has Case, but it is only abstract Case.[23]

Based on this much data, the following is a plausible statement.

(45) All morphological Case marking is licensed by Tense;
Abstract Case on the object is licensed solely by the small *v*.

For the abstract Case on the object, I follow the widely-accepted view that this Case is licensed by the small *v* (Chomsky 1995). This structural Case need not be licensed by sentential Tense. In contrast, a morphological Case marker (Nominative, Accusative) must be licensed by Tense. This, then, gives the reason why EPP-driven scrambling of the object to [SPEC, TP] is possible for a language if it has morphological Case marking (and V-raising). It has nothing to do with the fact that the grammatical functions are overtly marked. The reason is that morphological Case markings all enter into an agreement relation with T. As a result, the EPP feature on T may attract the subject (Nominative) or the object (Accusative).[24]

8.6.2 Dative Case marker

As the final point in this chapter, I will note a point by Watanabe (1996) that gives further credence to the idea that morphological Case marking is licensed by Tense. Unlike the Accusative object, which cannot occur with the Genitive subject, it is possible for a Dative goal phrase to occur in the NGCC with the Genitive subject.

(46) [Mary-ni_i John-no t_i kasita] hon[25]
[Mary-DAT_i John-GEN t_i lent] book
"the book that John lent to Mary"

As shown, the goal Dative phrase "Mary" is perfectly grammatical despite the occurrence of the Genitive subject. Why is the Dative phrase fine, but not the Accusative phrase? There are two types of "Dative," Case marking and postposition (Miyagawa 1995, 1997; Watanabe 1996). If my notion that Tense licenses morphological Case marking is correct, and this licensing is suppressed if the Genitive Case marking occurs, we predict that the Dative in (46) is a postposition, not Case marking. Miyagawa (1989) gives a test for Case markinghood: if a floated numeral quantifier is possible, the phrase has Case marking; otherwise it is a postposition. That the Dative in (46) is a postposition, and not Case marking, is shown by the fact that if the Dative phrase is accompanied by a floated numeral quantifier, the relative clause is ungrammatical.

(47) *[gakusei -ni san-nin$_i$ John-no t_i kasita] hon
[students-DAT 3 -cl$_i$ John-GEN t_i lent] book
Intended meaning: "the book that John lent to three students"

The occurrence of the floated numeral quantifier forces the Dative to be a morphological Case marker, which must be licensed by Tense. But the Tense fails to license a Nominative Case marker on the subject; the subject is Genitive. This relative clause is fine if the subject "John" has Nominative Case marking.

(48) [gakusei -ni san-nin$_i$ John-ga t_i kasita] hon
[students-DAT 3 -cl$_i$ John-NOM t_i lent] book
"the book that John lent to three students"

8.7 Concluding Remarks

In this chapter, I have offered arguments from Miyagawa (2001) that A-scrambling of the object is EPP-driven. It therefore need not be considered as an instance of an optional application of an operation. This is consistent with the notion that there are no optional operations in UG. What appears to be an optional rule is simply a situation in which a language has an independent property or properties that allow more than one option to meet an obligatory requirement. I showed that the independent properties essential for the EPP-scrambling are V-raising (Miyagawa, 2001) and the occurrence of morphological Case marking. My analysis of V-raising and morphological Case marking brings us full circle back to Hale's original analysis of free word order. Hale suggested that a free word order language is associated with a non-configurational structure, whereby the arguments (and all other phrases) in a sentence are in asymmetrical relationship to the verb. Saito and Hoji (1983) and subsequent work have shown that the non-configurational structure is untenable even for a language such as Japanese; all languages are configurational. What we have shown is that, while Saito and Hoji's original insight is correct, Hale was also correct. V-raising has an effect of making the structure "flat," in that the subject and the object are in the same local domain of the head of the sentence, T. In addition, morphological Case marking is non-configurational, in that all instances of morphological Case marking are licensed by T.

Notes

1 Harada (1977) was the first to suggest that the various word-order possibilities in Japanese are due to syntactic movement which we are calling scrambling.

2 Not all cases of scrambling are semantically neutral. See, for example, Ishihara (2001) and the chapter by De Hoop in this volume and references therein. In this chapter, I will set aside discourse factors, which are also important, and focus on the strictly syntactic nature of scrambling.

3 Hinds (1973) proposed earlier that Japanese lacks the VP node in response to Nakau's (1973) characterization of Japanese as having the VP node.

4 See also Farmer (1980) for an elaboration of this theory for Japanese.

5 Neeleman and Reinhart (1998), in looking at the VP-internal word-order freedom in Dutch, also propose what I would categorize as options without optionality. They argue that in Dutch, the Accusative Case on the object may be checked in a larger domain than in English – essentially anywhere within the VP. Thus, the object may occur anywhere in the VP, even away from the verb, as in the second example in (2) above. In contrast, the Case-checking domain in English is limited to the position adjacent to the verb for Accusative Case, thus no freedom of word order like in Dutch is tolerated. See their work for details.

In a study of a very different domain of the grammar, Pesetsky and Torrego (2001) also introduce an analysis that has the "options without optionality" property. They look at what appears to be a strictly optional phenomenon, the occurrence/non-occurrence of the complementizer *that*: *John thinks (that) Mary is a genius*. Pesetsky and Torrego propose an analysis in which *that* is a tense morpheme that begins in T of the complement clause. The Nominative Case on *Mary* is, for them, an instantiation of Tense as well. The complement head C has a Tense feature that must be erased by moving something to this C or to its Spec. They argue that this Tense feature on C may be erased by either moving *that* to this C, or *Mary* into [SPEC, CP]. This option is made possible by the fact that *Mary* and *that* are equally local relative to C. This notion of "equal distance" also plays a crucial role in our analysis of scrambling (Miyagawa 2001).

6 The Extended Projection Principle was introduced by Chomsky (1981), which requires that T has a specifier. The EPP is often informally referred to as the requirement that a clause must have a subject.

7 Bošković and D. Takahashi (1998) and Kitagawa (1990) both attempt to analyze free word order using Hale's non-configurational approach, but within a configurational structure. In spirit, our analysis is of the same type as their approaches, although, unlike them, I do not introduce any additional assumptions to the theory, such as strong/weak θ-role features (Bošković and D. Takahashi 1998). Such an addition to the theory takes away considerably from any claim of a "Last Resort" approach to scrambling.

8 The notion that morphological Case marking is non-configurational is suggested by Kuroda (1986), based on the analysis of Case marking in Kuroda (1965).

9 I have put at the end of the example sentence two possible ways to end the sentence. One is *yo*, which functions as an exclamation. The other is *to omou* "(I) think that . . . ," which has the function of making the example into a subordinate clause. I intentionally avoid using *koto* "fact," which is commonly employed for Japanese data. As noted in Miyagawa (2001), the problem with using *koto* is that it apparently turns the preceding verb into a "subjunctive" (Watanabe 1996) which, according to Hiraiwa (2001), must raise all the way to C. Using *yo*/*to omou* avoids this problem. See Miyagawa (2001) for further discussion. In the remainder of this chapter, I will not gloss *yo*/*to omou*. Also, different quantifiers give different results. For example, another word

meaning "all," *subete*, as in *subete-no gakusei* "all students," does not appear to give as clear a distinction as the one we can observe with *zen'in*. This is why I use *zen'in* for all examples. Finally, I avoid the use of verbs formed from Sino-Japanese nominals (e.g. *benkyoo-suru* "study-do"), which appear to have a more complex structure than the "native" verbs, thus all examples use only native verbs. See Miyagawa (2001) for further comments on data.

10 The asterisk in parentheses for the "all >> not" reading is intended to indicate that, for many speakers, this reading is possible. These speakers can get the interpretation that *Taro* did not praise anyone. I assume that this reading is due to interpreting "all" collectively (group reading).

11 For some native speakers, this distinction is clearer with non-perfect tense.

(i)a. *Zen'in-ga* sono tesuto-o uke -na -i (yo/to omou)
all -NOM that test -ACC take-NEG-NONPAST
"Students all will not take that test"
*not >> all, all >> not

b. Sono tesuto-o_i *zen'in-ga* t_i uke -na -i (yo/to omou)
that test -ACC_i *all* -NOM t_i take-NEG-NONPAST
"That test, students all won't take"
not >> all, (all >> not)

12 McGinnis (1998) also argues that the kind of scrambling we are looking at is feature driven. She postulates a "scrambling" feature that attracts a DP.

13 Following Mahajan, Saito (1992) as well as Tada (1993) and Yoshimura (1992) provide evidence from Japanese for the A/A′ distinction in scrambling.

14 I am ignoring some important technical issues such as cyclicity. It is possible, for example, that the object that undergoes A′-scrambling first moves and adjoins to *v*P.

15 An example that forces the inverse scope is the following.

(i) Dareka -o_i hotondo-no kaisya -ga t_i kubi-ni-sita
someone-ACC_i most -GEN companies-NOM t_i fired
"Someone, most companies fired"

The most natural interpretation is that a different person in each of the "most companies" was fired. This is the inverse of the surface order.

16 See Saito (1989) and Tada (1993) for the original discussion of A′-scrambling and reconstruction. Saito (1989) first showed that A′-scrambling may undergo what he calls "radical reconstruction," while Tada (1993) showed that A′-scrambling undergoes obligatory reconstruction.

17 I note here an issue that may be a departure from Miyagawa (2001). In Miyagawa (2001), it is argued that only arguments can meet the EPP. I gave as evidence the following, in which an adjunct cannot meet the EPP.

(i) Hanako-to_i zen'in-ga t_i odora-nakat-ta (yo/to omou)
Hanako-with$_i$ all -NOM t_i dance-NEG -PAST
"With Hanako, all didn't dance"
*not >> all, all >> not

The commutative phrase, "with Hanako," has been fronted, yet only the total negation interpretation is possible. This indicates that the subject "all" has moved to the

[SPEC, TP] to meet the EPP, and that the adjunct phrase does not meet the EPP. However, a number of people have pointed out that with the right intonation, the partial-negation interpretation is possible even with this "adjunct" example. If this is true, the EPP phenomenon in Japanese looks quite similar to stylistic fronting in Icelandic (Holmberg 2000b). Holmberg argues that anything can be fronted to meet the EPP in this construction. There are a number of empirical and theoretical issues to be determined, and I will leave this issue for further research.

18 See Koizumi (1995, 2000) and Whitman (1991) for arguments that V-raising takes place. Both suggest that V may raise all the way to C. If what we have observed is correct, V-raising is only to T in the constructions we have looked at. If it moved all the way to C, it would take the negative morpheme with it to C, and negation would c-command everything in TP regardless of whether the order is SOV or OSV. We, therefore, would not expect to find the distinction we have observed between partial and total negation. Partial negation should always be possible, contrary to the data. One exception to this is if the sentence ends in a nominal, such as *koto* "fact/matter." According to Hiraiwa (2001), the verb that precedes a nominal head is in the subjunctive form (Watanabe 1996), and it necessarily moves all the way to C. See also Miyagawa (2001) for discussion of this "subjunctive" phenomenon.

19 Fukui and Takano (1998) argue for precisely the opposite position: scrambling in Japanese is possible because there is no V-raising.

20 With this statement, I am referring primarily to the Japanese-type languages in which the EPP-driven scrambling takes the object to [SPEC, TP]. I am not specifically referring to Object Shift, although Chomsky (2000) suggests that it, too, is EPP-driven. I will limit my analysis to the EPP-driven scrambling in Japanese-type languages.

21 In earlier works, I put forward arguments for this notion that T licenses some agreement feature on both the subject and the object. In Miyagawa (1995), which is an elaboration of Miyagawa (1990), I argued that both the subject and the object Case-agreement features are licensed by T. In Miyagawa (1997), I offered evidence that in order for the Accusative Case marker to be licensed under scrambling (OSV), it must amalgamate with subject agreement. While the ideas in these works are consistent with the analysis to be presented below, I did not make a distinction between structural Case and morphological Case marking. This distinction is crucial, as we will see.

22 There are speakers, including myself, who find this example only slightly marginal. I will base the analysis on the judgment of what appears to be the majority of speakers, who find it outright ungrammatical.

23 See Watanabe (1996) for a very different interpretation of the NGCC data we have seen. He observes that the NGCC parallels French Stylistic Inversion; in both, object is not allowed (for Genitive subject in Japanese; stylistically inverted construction in French). See also Hiraiwa (2001) for an extensive cross-linguistic look at NGCC.

24 One question that remains is, what is the nature of the agreement between T and the argument phrases? In particular, why does T allow the Genitive Case marker on the subject instead of the Nominative in the NGCC? A possible approach is one presented by Hiraiwa (2001), which is based on an insight in Kinsui (1995). Hiraiwa argues that the Genitive Case marking on the subject is allowed if the entire V-*v*-T complex raises to C. This "C–T–V amalgam" may enter into an agreement relation with the otherwise Nominative phrase, in turn allowing the Genitive Case marker. If the verbal complex fails to raise to C, only the Nominative Case marker is allowed on the subject. As Hiraiwa notes, in this approach, the Case on the object is licensed by T only if the T fails to license Genitive. An important point about this licensing scheme is that it is "one way." That is, if T licenses Accusative, this T must be of the type that also licenses Nominative. But this does not mean that if T licenses the Nominative, the

same T cannot license the Genitive. The reason for this is that, as pointed out in Miyagawa (1993), in constructions that allow the Nominative on the object as well as the subject, one finds a four-way possibility.

(i) Taroo-*ga* eigo -*ga* hanas-e -ru riyuu (NOM–NOM)
Taro -NOM English-NOM speak-can-Pres reason
"The reason why Taro can speak English"

(ii) Taroo-*no* eigo -*no* hanas-e -ru riyuu (GEN–GEN)
Taro -GEN English-GEN speak-can-Pres reason

(iii) Taroo-*no* eigo -*ga* hanas-e -ru riyuu (GEN–NOM)
Taro -GEN English-NOM speak-can-Pres reason

(iv) Taroo-*ga* eigo -*no* hanas-e -ru riyuu (NOM–GEN)
Taro -NOM English-GEN speak-can-Pres reason

As shown in (iii) and (iv), even if the Nominative Case marker is licensed on the subject or the object, it is possible to find the Genitive marking on the other. This freedom to mix Genitive with the morphological Case markers breaks down only when the Accusative is mixed with the Genitive, as we saw earlier. This observation that the Accusative Case marker can only occur if the Nominative Case marker occurs recalls the "dependent Case" notion of the Accusative by Marantz (1991), who suggests that the Accusative is dependent on another position, though not necessarily Nominative.

25 Watanabe gives the example with the Dative phrase scrambled to the head of the relative clause. It degrades somewhat if it is in its original position, according to him. As Watanabe notes, with the Accusative object, it is ungrammatical whether it is in its original position or scrambled to the head of the relative clause.

9

Scrambling in Dutch: Optionality and Optimality

Helen de Hoop

9.1 Introduction

Objects in Dutch occur either to the right or to the left of a sentential adverb. This phenomenon is called scrambling. Dependent on the type of clause, the type of noun phrase and the range of possible interpretations, scrambling in Dutch may be optional. The following pair of sentences in (1) illustrates this kind of optional scrambling. The sentences are equally well-formed and share one and the same meaning:

(1)a. *Maar we moeten eerst de vogels waarschuwen*[1]
but we must first the birds warn

b. Maar we moeten de vogels eerst waarschuwen
but we must the birds first warn
"But first we have to warn the birds"

In the literature on scrambling in Dutch, the object position to the right of the adverb is called the unscrambled position, the one to the left of the adverb the scrambled position. Hence, (1b) is called the scrambled counterpart of the unscrambled or canonical word order in (1a). In this chapter I will focus on optional scrambling of definite noun phrases, such as in (1) above, and I will argue that this type of word order variation can be adequately modeled using the notion of optimality.

In De Hoop (1992) I proposed that only noun phrases of a certain semantic type (the generalized quantifier type) may scramble. Note that I *never* proposed

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nor suggested that scrambling is actually "triggered" by anything, contra what has been claimed about my work in the literature at various places. That is, I do not claim anywhere that scrambling is "case-driven" or "interpretation-driven," because I do not think scrambling is "driven" at all. Scrambling is an instance of word order *variation*. Thus, neither strong noun phrases such as *all birds* or *the birds* nor weak noun phrases such as *some birds* nor noun phrases with certain discourse properties such as anaphors or topics scramble obligatorily. What I *did* claim in De Hoop (1992) is that when noun phrases scramble, they must be of a certain type (the generalized quantifier type). That idea is still maintained and elaborated upon in Van der Does and De Hoop (1998). In Van der Does and De Hoop (1998) we account for the fact that certain indefinites such as the one in (2), for example, are not allowed to scramble (note that (2b) is ungrammatical).

(2)a. We kunnen nog niet weg omdat iedereen nog een plas moet doen
we can yet not away since everyone still a piss must do

b. *We kunnen nog niet weg omdat iedereen een plas nog moet doen
we can yet not away since everyone a piss still must do
"We cannot leave yet since everyone still has to take a piss"

Without going into the details of the analysis proposed by Van der Does and De Hoop (1998), the basic idea is to adapt the strategy of Partee and Rooth (1983) and assign constituents a preferred semantic type (often the simplest type possible). Indefinites such as *een plas* "a piss" in (2) preferably denote in a predicative type, type $<e,t>$. They can be lifted to a generalized quantifier type (type $<<e,t>,t>$) with a concomitant shift in meaning, in accordance with De Hoop (1992). "Light" (non-contrastive) verbs such as *doen* "do" also have a preferred type, namely the type of an incorporating verb (type $<<e,t>,<e,t>>$; Van Greenhoven 1996). This type can be shifted to an ordinary transitive verb type ($<e,<e,t>>$) when combined with a non-predicative object noun phrase. However, the co-occurrence of two semantic shifts (one for the indefinite, one for the light verb) induces two violations of the preferred type strategy (Van der Does and De Hoop 1998) and leads to ungrammaticality (cf. (2b)).

Crucially, the combination of a *definite* noun phrase with a light verb yields only one type-shift (either for the verb or for the definite noun phrase). The difference between an indefinite and a definite is that a definite preferably denotes in type *e* the referential type. In the type-logical derivation, the combination of a definite object and a light verb always implies one violation of the preferred type strategy, whether scrambling occurs or not. Either the verb or the definite denotes in its preferred type. Hence, scrambling becomes optional:

(3)a. We kunnen nog niet weg omdat iedereen nog de was moet doen
we can yet not away since everyone still the laundry must do

b. We kunnen nog niet weg omdat iedereen de was nog moet doen
we can yet not away since everyone the laundry still must do
"We cannot leave yet since everyone still has to do the laundry"

So, the combination of a definite object and a light verb always involves one violation of the preferred type strategy, whether scrambling has taken place or not. We saw above that indefinite objects of light verbs may not scramble, as this would lead to two violations of the preferred type strategy (versus zero in the case of non-scrambling). Indefinite objects of non-incorporating (non-light) verbs may scramble again, as well as other types of objects (strong or definite ones) of light verbs (in both situations we get one violation of the preferred type strategy whether scrambling has taken place or not). In this chapter I will not be concerned with the particular conditions under which indefinites may not scramble (cf. De Hoop 1992; Van der Does and De Hoop 1998). Neither will I be concerned with the particular conditions under which certain noun phrases have to scramble. I assume that obligatory scrambling of clitics and weak pronouns, for example, may be explained by an independent (presumably syntactic) principle.

In this chapter, however, I focus on the paradigm of true optional scrambling, that is when two-word order variants are both fully grammatical and equally well-formed. The prototypical example of optional scrambling in Dutch is when the object is a simple definite noun phrase. Therefore, I will concentrate on the scrambling behavior of definite objects. The main issue I will examine is one that has received a lot of attention in recent analyses of scrambling, and that is whether noun phrases that do scramble (such as the ones in (1b) and (3b)) share a certain feature. In particular, I will concentrate on the hypothesis that has been put forward in the literature, *viz.* that scrambling is related to the structure of the surrounding discourse, such that anaphoric noun phrases scramble, while non-anaphoric noun phrases do not. Definite noun phrases are the best case to verify or falsify the hypothesis as definites are neither inherently anaphoric nor inherently non-anaphoric. They are generally used both ways.

9.2 Scrambled Definites

The paradigm in (1) is an illustration of the fact that definite object noun phrases in Dutch scramble freely. In this respect, definites behave differently from both indefinites and pronouns. Whereas scrambling of an indefinite is often not allowed, scrambling of a pronoun is almost obligatory. Two examples illustrate these claims concerning indefinites and pronouns. On the one hand, in (4a) the indefinite *een brief* "a letter" must remain in situ since scrambling gives rise to an ill-formed sentence (4b). On the other hand, leaving a pronoun in situ results in an ill-formed sentence (5a). The pronoun *het* "it" has to scramble, witness (5b).

(4) *Af en toe bleef hij stilstaan en keek peinzend naar de tafel.*

a. *Ik heb hier vannacht toch een brief zitten schrijven, dacht hij.*
I have here last night AFF a letter sit write thought he

b. ?*Ik heb een brief hier vannacht toch zitten schrijven, dacht hij.
I have a letter here last night AFF sit write thought he
Een brief aan Riekje. En nou ligt die brief er niet meer. Of heb ik soms gedroomd dat ik die brief schreef?

"Now and again he stopped and looked pensively at the table. **I was sitting here writing a letter last night, he thought.** A letter to Riekje. And now the letter isn't there anymore. Or perhaps I dreamed that I wrote the letter?"

(5) *De schrijver Marius Mengel zat moedeloos op zijn hotelkamer. Hij zocht niet langer naar zijn verloren papieren. "Dat hoofdstuk is weg," zei hij somber.*

a. ?*"Ik moet helemaal overnieuw het schrijven."
I must all over-again it write

b. "*Ik moet het helemaal overnieuw schrijven.*"
I must it all over-again write
"The writer Marius Mengel sat dejectedly in his hotel room. He no longer looked for his lost papers. 'That chapter is gone,' he said somberly. **'I have to write it all over again.'**"

Examination of the examples (1)–(5) reveals that definites behave as if they are in the middle of a scrambling scale, with indefinites at one end and pronouns at the other. In fact, this observation is reminiscent of Givón's (1983) scale of the structural encoding of topicality, starting with the highest degree of topicality and going down the scale:

(6) Zero anaphora > weak pronouns > strong pronouns > right-detachment > neutral order + definite NPs > left-detachment > clefts > indefinite NPs

The correspondence with scrambling is striking. Therefore, it is tempting to try to account for the scrambling data in (1)–(5) in terms of topicality, too. That is, we know that pronouns are more topical than definites while definites in turn are more topical than indefinites. We might attempt to analyze scrambling phenomena in terms of discourse status (topic, focus) or discourse referentiality (anaphor, non-anaphor) instead of in terms of syntactic form (definite, indefinite). One possible condition that springs to mind is a condition dubbed "*New*" by Choi (1999). Choi's condition *New* states that a [–new] (i.e. old) element must precede a [+new] (i.e. new) element. Choi investigates scrambling among arguments in German (i.e. the precedence relations among subjects, direct objects, and indirect objects), while I am concerned with the scrambling between direct objects and adverbs. Therefore, I reformulate Choi's condition as follows:

(7) *Constraint. New*: Anaphors scramble.[2]

The condition in (7) adequately describes the scrambling data in (4)–(5). The indefinite *een brief* "a letter" in (4) is not an anaphor. There is no antecedent in the preceding discourse. Instead, the letter is introduced as a novel referent in the discourse. The prediction is that the indefinite in (4) does not scramble. In fact, *New* is a condition that only affects anaphors and not non-anaphors. For the moment, I will take it for granted, however, that scrambling only occurs when there is a good reason for it. Satisfying the condition in (7) is one such good

reason. When *New* does not apply, there is no reason for an indefinite to scramble. Hence, it should stay in situ. In the next section, this idea will be formalized in a condition that disfavors scrambling.

I will use the following definition of an anaphoric noun phrase:

(8) *Definition*. An NP is anaphoric if and only if it refers to an object that has previously been mentioned in the discourse.

The condition in (7) predicts that an NP has to scramble whenever it is interpreted as an anaphor. Thus, the apparent optionality in (1) cannot be true optionality if we take *New* seriously. That is, the context in which the grammatical options are used will pose restrictions on which option is allowed and which one is not. Such a claim is made by Choi (1999) and Neeleman and Reinhart (1998). These authors recognize that scrambling is optional in many cases, but they argue that the use of one-word order variant will be obligatory in certain contexts, while impossible in others. With respect to the example (1) above, when *de vogels* "the birds" would be an anaphor in a particular context, we would have to use (1b) and the use of (1a) would become impossible, in accordance with *New*. It will turn out in the remainder of this section that this prediction is too strong. I will not deny that *New* is an important condition in Dutch, but I will deny that it is a hard condition. There are anaphors that do not scramble. Additionally, there are non-anaphors that do scramble. Therefore, *New* must be a soft condition, i.e. one that may be violated.

Before I go back to examples with (un)scrambled definites, I will elaborate a bit on the scrambling behavior of what one might call inherent anaphors. Reconsider example (5). In this example, the pronoun *het* "it" is obviously anaphoric. It refers to the same entity as *dat hoofdstuk* "that chapter" in the preceding sentence. Thus, we expect *New* to be activated and this explains the fact that the pronoun must scramble in (5). The unscrambled (5a) is ill-formed. In the literature, pronouns are often considered to be intrinsically anaphoric, apart from their deictic uses. The next example, however, shows a pronoun that is not an anaphor. It refers to an object that has not been mentioned in the previous discourse.

(9) *Een poosje zaten ze zwijgend naast elkaar te kijken naar de regen. Toen zei Otje:*
   a. ?*"Pappa, we moeten maar het doen."
      dad we must just it do

   b. "*Pappa, we moeten het maar doen.*"
      dad we must it just do
      "Wat moeten we doen, m'n kind?" "Jij moet mee op het schip en ik moet bij de tantes in huis." "Nèé!" riep Tos.
      "They sat together a while looking at the rain. Then Otje said, **'Dad, we just have to do it.'** 'What do we have to do, my child?' 'You have to go with the ship and I have to go live with the aunts.' 'No!' Tos cried."

In (9) the pronoun *het* "it" is introduced out of the blue in the discourse. Yet, just like the anaphoric pronoun in (5), it has to scramble. Obviously, then, the

(almost) obligatory scrambling of pronouns is not only a consequence of their anaphoricity. The pronoun itself (its syntactic properties) forces scrambling rather than its discourse referentiality (being an anaphor or not). Accordingly, when an indefinite is used in the context of (9), scrambling is not allowed, as illustrated in (10) below. Furthermore, when a definite is used, scrambling is optional, again independent of anaphoricity (see (11) below and (3) above).

(10)a. Pappa, we moeten maar een voorstel doen
dad we must just a proposal do

b. ?*Pappa, we moeten een voorstel maar doen
dad we must a proposal just do
"Dad, we just have to make a proposal"

(11)a. Pappa, we moeten maar de was doen
dad we must just the laundry do

b. Pappa, we moeten de was maar doen
dad we must the laundry just do
"Dad, we just have to do the laundry"

The non-anaphoric indefinite object in (10) is not allowed to scramble, but an equally non-anaphoric definite object in (11) is free to scramble.[3] That is, the scrambled definite in (11b) does not necessarily get an anaphoric interpretation. The non-anaphoric reading for *de was* "the laundry" in "do the laundry" is the unmarked reading, in (11a) as well as in (11b).

Apparently, there is no strict one-to-one mapping between anaphoricity and scrambling in Dutch.[4]

Let us now return to our examination of definite NPs. As I pointed out before, definites are in the middle of a scale in this respect: they are interpreted as anaphors more often than indefinites but less often than pronouns. Consider two anaphorically interpreted definites in (12):

(12) *De avond tevoren was hij naar een feestje geweest. En na het feestje had hij thuis een brief geschreven aan een meisje dat hij had ontmoet. De brief lag op tafel.*
"The evening before he had been to a party. And after the party, he had written a letter to a girl he had met. The letter lay on the table."

The interpretation of *het feestje* "the party" is anaphorically linked to the antecedent *een feestje* "a party" and the same holds for the sequence *een brief – de brief* "a letter – the letter."

In (13) the first NP *de muis* "the mouse" is an example of a non-anaphoric definite.

(13) *Ineens herinnerde Otje zich dat er een stapel oude* Margrieten *in de hoek lag, achter een spiegel. Toen ze zich bukte om er eentje te grijpen, zag ze de muis. De muis zag haar ook en wou weglopen.*

"All of a sudden Otje remembered that there was a stack of old issues of *Margrieten* in the corner, behind a mirror. When she bent over to get one, she saw the mouse. The mouse saw her, too, and wanted to run away."

Definite NPs can occur in both scrambled and unscrambled positions in Dutch, usually without any effect on the grammaticality or well-formedness of the sentence. The condition *New* in (7) predicts that this optionality is more apparent than real and that the context determines whether a definite should be in scrambled or unscrambled position (in accordance with the claims made by Choi 1999 and Neeleman and Reinhart 1998). The examples in (14a) and (15b) conform to this claim. In (14a) the non-anaphoric definite *de politie* "the police" has not scrambled, in (15b) the anaphoric object *de arme man* "the poor man" has.

(14) *"Vannacht mag u hier nog blijven," zei de man. "Maar morgen kom ik terug. Als blijkt dat u geen gevolg heeft gegeven aan mijn verzoek,*

a. *dan zal ik helaas de politie moeten waarschuwen.*"
then shall I unfortunately the police must notify

b. dan zal ik de politie helaas moeten waarschuwen."
then shall I the police unfortunately must notify
"'Tonight you can still stay here,' the man said. 'But I'm coming back tomorrow. If it turns out that you haven't complied with my request, **then I shall unfortunately be obliged to notify the police**.'"

(15) *Otje schrok. Er was daarbinnen een ontzettend geschreeuw. Ze zag tot haar ontsteltenis dat Tos de man achter het loket had vastgegrepen in zijn drift. De mensen in de rij achter hem probeerden hem van de ambtenaar los te rukken. Maar Tos bleef koppig vasthouden en de arme loketbediende werd langzaam door het loket naar buiten getrokken. Otje reed pijlsnel over de gladde vloer tot vlak bij het loket. "Pappa!" riep ze. "Laat los!" Dat hielp.*

a. Tos liet onmiddellijk de arme man los.
Tos let immediately the poor man go

b. *Tos liet de arme man onmiddellijk los.*
Tos let the poor man immediately go
"Otje started. Inside there was an awful clamour. To her dismay she saw that in his rage, Tos held the man behind the counter fast. The people in the line behind him were trying to pull the official loose from him. But Tos stubbornly held on and the poor counter worker was slowly being pulled out through the window. Otje rode like a shot over the smooth floor until she was right next to the counter. 'Dad!' she cried. 'Let go!' That helped. **Tos let the poor man go immediately**."

Although the text examples in (14a) and (15b) appear to confirm the condition *New*, it should be noted that Dutch native speakers in general agree that the

(un)scrambled counterparts of (14b) and (15a) could have been used as well, without any changes in the contexts. In the children's book *Otje* I found many examples that actually confirm *New*, but I also found examples that falsify *New*. Two such examples of anaphoric definites in unscrambled positions are in (16a) and (17a):

(16) *"En wordt de poes uit de brand gered?" vroeg Otje. "Dat weet ik nog niet," zei de schrijver. . . . "Ik mag alles verzinnen wat ik wil.*

a. *Ik wou eigenlijk de kat laten omkomen bij de brand."*
I would actually the cat let die in the fire

b. Ik wou de kat eigenlijk laten omkomen bij de brand."
I would the cat actually let die in the fire
"'And is the cat saved from the fire?' asked Otje. 'I don't know that yet,' said the writer. (. . .) 'I can make up anything I want. **I would actually let the cat die in the fire**.'"

(17) *"Mag ik het woord papieren niet zeggen?" vroeg de dokter. Hoewel Tos verdoofd was door de Falderal,*

a. *ving hij toch netnog het woord papieren op.*
caught he still just the word papers (up)

b. ving hij het woord papieren toch netnog op.
caught he the word papers still just (up)
"'Can't I say the word papers?' asked the doctor. Even though Tos was numbed by the Falderal, **he still just caught the word papers**."

Additionally, I found some examples of non-anaphoric definites in scrambled position. I provide one such example in (18b), taken from an out-of-the-blue context:

(18)a. "Denk erom dat je nooit de muizen los laat lopen," zeiden
think about-it that you never the mice freely let run said
de tantes telkens weer
the aunts again-and-again

b. "*Denk erom dat je de muizen nooit los laat lopen*," *zeiden*
think about-it that you the mice never freely let run said
de tantes telkens weer
the aunts again-and-again
"'Make sure that you never let the mice run freely,' said the aunts again and again"

It is not always easy to determine whether a definite is anaphoric or not, for example because the potential antecedent is at a long distance from the anaphor, or it may be "given" in the context, but not quite explicitly. In all these cases, however, scrambling appears to be optional again. That is, we find instantiations of

both scrambled and unscrambled word order. Moreover, Dutch native speakers agree that replacement of one-word order variant by the other is allowed in all these cases. Two examples of dubious anaphoric definites are given in (19) and (20). In these cases, the definites do not refer to an object that is mentioned in the previous discourse, but they are linked otherwise to an object mentioned in the previous discourse. The definite *het nummer* "the number" is interpreted with respect to the NP *de auto* "the car" in (19). Similarly, the definite *de uitslagen* "the results" is anaphorically dependent on the NP *een medisch onderzoek* "a medical investigation" in (20). In (19) the accommodated definite has scrambled, whereas the one in (20) has not. This could just as easily have been the other way around.

(19) *Vijf minuten later kwamen Herman en z'n baas druipnat aan op de plaats waar de auto had gestaan. "Wel verdraaid," zei de agent.*

a. "Had ik nou maar meteen het nummer opgenoteerd."
had I now only right-away the number written-down

b. "*Had ik nou het nummer maar meteen opgenoteerd.*"
had I now the number only right-away written-down
"Five minutes later, Herman and his master came, dripping wet, to the place where the car had been. 'Well, I'll be darned,' said the officer. '**If only I had written down the number right away**.'"

(20) *"Goedendag zuster Snijbiet," zei hij. "Ik kom naar aanleiding van het geval Tos. Er is een medisch onderzoek geweest;*

a. *mag ik even de uitslagen bekijken?"*
may I just the results see

b. mag ik de uitslagen even bekijken?"
may I the results just see
"'Good day, nurse Snijbiet,' he said. 'I have come because of the Tos case. There has been a medical investigation; **may I see the results**?'"

To sum up, anaphoric definites as well as non-anaphoric definites as well as dubious anaphoric definites freely alternate between the scrambled and the unscrambled position in Dutch. As a consequence, *New* does not adequately describe scrambling in Dutch. In the next section, a better analysis will be given that deals with the inconsistent scrambling behavior of definites in Dutch.

9.3 The Analysis

The data discussed in the previous section intuitively lead to the conclusion that the condition *New*, repeated below for convenience, can at best be a soft condition in Dutch, i.e. a condition that is violable.

(7) *New*: Anaphors scramble.

A theory of language and grammar in which a grammar consists of a set of soft, violable constraints is Optimality Theory (henceforth OT) (cf. A. Prince and Smolensky 1997; Archangeli and Langendoen 1997; Gilbers and De Hoop 1998). These soft constraints apply simultaneously and they are potentially conflicting. At least an important subset of these constraints is taken to be shared by all languages, forming part of Universal Grammar. Individual languages rank these universal constraints differently in their language-specific hierarchies in such a way that higher ranked constraints have total dominance over lower ranked constraints. Possible output candidates for each underlying input are evaluated by means of these constraint rankings. The output that best satisfies the constraints is the optimal candidate and will be the realized form. The most revolutionary innovation in OT is the fact that the constraints are soft, which means that an output can still be grammatical if constraints are violated. The violations have to be minimal, however, such that a constraint may be violated, but only in order to satisfy a higher ranked constraint. So-called markedness constraints in OT prefer unmarked structures. If we assume that the unscrambled word order is the unmarked or canonical word order in Dutch, then this is captured by a constraint *Stay* (cf. Grimshaw 1997; Choi 1999):

(21) *Stay*: No scrambling.

Note that there is a conflict between the conditions *New* and *Stay*. Dependent on which one is stronger in a certain language, anaphors will either scramble (*New* >> *Stay*) or stay in situ (*Stay* >> *New*). *New* and *Stay* cannot account for the fact that sometimes, non-anaphoric NPs scramble as well. If *New* and *Stay* were the only active constraints with respect to scrambling in Dutch, non-anaphoric NPs would never scramble. This is not the case, however, as we have seen. Hence, a third constraint has to be involved. *Stay* is a constraint that disfavors scrambled structures in general. However, we noticed that frequency and well-formedness of scrambling is partly a matter of the syntactic shape or semantic type of the NP irrespective of its discourse status (being an anaphor or not). That is, pronouns almost obligatorily scramble, indefinites prefer to stay in situ, and definites freely scramble, although they do scramble more often than not. Therefore, I assume the following constraint that obviously conflicts with *Stay*:

(22) *Surface Correspondence 1* (SC1): Definite NPs scramble.[5]

In an OT-syntactic analysis the input is a semantic representation, while the candidate outputs are a set of syntactic structures. The optimal syntactic structure (the winner) is the structure that best satisfies the different constraints. In OT-syntax only optimal structures are grammatical. This means that when the input contains an anaphoric definite in Dutch, both the scrambled and the unscrambled output structure have to be optimal, since they are both well-formed. This can be represented in an OT-syntax table:

(23)
Table 9.1 From anaphoric definite to optional scrambling

Input	*Output*	*SC1*	New	Stay
Anaphoric	+ scrambling			*
Definite	– scrambling	*	*	

Recall that (15b) was an example of a scrambled anaphoric definite, while (16a) was an example of an unscrambled anaphoric definite. They are repeated below.

(15)b. *Otje schrok. Er was daarbinnen een ontzettend geschreeuw. Ze zag tot haar ontsteltenis dat Tos de man achter het loket had vastgegrepen in zijn drift. De mensen in de rij achter hem probeerden hem van de ambtenaar los te rukken. Maar Tos bleef koppig vasthouden en de arme loketbediende werd langzaam door het loket naar buiten getrokken. Otje reed pijlsnel over de gladde vloer tot vlak bij het loket. "Pappa!" riep ze. "Laat los!" Dat hielp.* ***Tos liet de arme man onmiddellijk los****.*
"Otje started. Inside there was an awful clamour. To her dismay she saw that in his rage, Tos held the man behind the counter fast. The people in the line behind him were trying to pull the official loose from him. But Tos stubbornly held on and the poor counter worker was slowly being pulled out through the window. Otje rode like a shot over the smooth floor until she was right next to the counter. 'Dad!' she cried. 'Let go!' That helped. **Tos let the poor man go immediately**."

(16)a. *"En wordt de poes uit de brand gered?" vroeg Otje. "Dat weet ik nog niet," zei de schrijver.* (. . .) *"Ik mag alles verzinnen wat ik wil.* ***Ik wou eigenlijk de kat laten omkomen bij de brand.****"*
"'And is the cat saved from the fire?' asked Otje. 'I don't know that yet,' said the writer. (. . .) 'I can make up anything I want. **I would actually let the cat die in the fire**.'"

The scrambled anaphoric definite in (15b) only violates *Stay*, while the unscrambled definite in (16a) violates both SC1 and *New*. Nevertheless, both variants are well-formed. As a consequence, they are both optimal. The input in table 9.1 gives rise to two optimal output structures, a scrambled and an unscrambled structure. To account for this pattern, we have to assume that the three constraints are not ranked with respect to each other in Dutch, they are tied constraints. In OT it is not important how many constraints an output violates, only the strengths of the violated constraints matter.

Although we are now able to explain why there are two optimal output structures for an input containing an anaphoric definite, this is not yet totally satisfactory. In fact, it would be more satisfactory if we could also account for the fact that

there is a tendency to satisfy *New*, i.e. anaphoric definites tend to scramble: they do scramble more often than not. The analysis represented in table 9.1 does not explain this tendency. It only accounts for the observation that both output structures are well-formed in the case of an anaphoric definite. I will adopt the model of Anttila and Cho (1998) to deal with the tendency. Under the assumption that constraints are partially ordered instead of totally ordered in natural languages, Anttila and Cho (1998) account for patterns of optionality. They derive statistical predictions and generalizations with respect to both grammaticality judgments and preferences. When three constraints are not ranked with respect to each other as in our example, this partial hierarchy captures a set of six possible rankings, i.e. six total hierarchies. Subsequently, Anttila and Cho use the following formula:

(24)a. An output candidate is predicted by the grammar iff it wins in some tableau.
b. If a candidate wins in n tableaux and t is the total number of tableaux, then the candidate's probability of occurrence is n/t.

By (24a), both scrambled and unscrambled anaphoric definites are predicted by the grammar. Furthermore, by (24b) we predict that two-thirds of the anaphoric definites scramble. This is illustrated in table 9.2 in (25):

(25)
Table 9.2 Results of possible total rankings for table 9.1 in (21)

Total orders {*SC1,* New, Stay}	*Optimal output in tableau 1 (23)*	*Result*
SC1 >> *New* >> *Stay*	+ scrambling	anaphoric definites scramble in
SC1 >> *Stay* >> *New*	+ scrambling	two-thirds of the cases
New >> SC1 >> *Stay*	+ scrambling	
New >> *Stay* >> SC1	+ scrambling	
Stay >> SC1 >> *New*	– scrambling	anaphoric definites do not scramble
Stay >> *New* >> SC1	– scrambling	in one-third of the cases

The analysis proposed here accounts for the fact that even if scrambling is, in principle, free for anaphoric definites, we do scramble them more often than we leave them in situ. Let us now consider non-anaphoric definites. In general, it seems easier to scramble non-anaphoric definites than to leave anaphoric ones in situ. This is explained by the fact that *New*, a condition that plays an important part in the scrambling behavior of anaphoric definites, is not activated in the case of non-anaphoric definites. Hence, it is vacuously satisfied when the input contains a non-anaphoric definite. This leaves only the conflicting constraints *Stay* and SC1 to affect the scrambling behavior of non-anaphoric definites, as illustrated in table 9.3.

(26)
Table 9.3 From non-anaphoric definite to optional scrambling

Input	*Output*	*SC1*	New	Stay
Non-anaphoric Definite	+ scrambling			*
	– scrambling	*		

Both output candidates are winners, since the constraints SC1 and *Stay* are tied constraints. In (18b) an example was presented of a scrambled non-anaphoric definite, in (14a) a non-anaphoric definite stayed in situ. Both examples are repeated below.

(18)b. *"Denk erom **dat je de muizen nooit los laat lopen**," zeiden de tantes telkens weer* [out-of-the-blue context]
"'Make sure that you never let the mice run freely,' said the aunts again and again"

(14)a. *"Vannacht mag u hier nog blijven," zei de man. "Maar morgen kom ik terug. Als blijkt dat u geen gevolg heeft gegeven aan mijn verzoek **dan zal ik helaas de politie moeten waarschuwen**."*
"'Tonight you can still stay here,' the man said. 'But I'm coming back tomorrow. If it turns out that you haven't complied with my request, **then I shall unfortunately be obliged to notify the police**.'"

The formula of Anttila and Cho (1998) predicts scrambling of a non-anaphoric definite in 50 percent of the cases, as can be seen from table 9.4 in (27).

(27)
Table 9.4 Results of possible total rankings for table 9.3 in (26)

Total orders {*SC1,* New, Stay}	*Optimal output in (26)*	*Result*
SC1 >> *New* >> *Stay*	+ scrambling	non-anaphoric definites scramble in 50% of the cases
SC1 >> *Stay* >> *New*	+ scrambling	
New >> SC1 >> *Stay*	+ scrambling	
New >> *Stay* >> SC1	– scrambling	non-anaphoric definites do not scramble in 50% of the cases
Stay >> SC1 >> *New*	– scrambling	
Stay >> *New* >> SC1	– scrambling	

If definite NPs freely scramble, partly independent of their anaphoricity, then why is it that hearers/readers in Dutch never interpret these definites incorrectly? That is, hearers interpret anaphoric definites as anaphors in both scrambled and unscrambled positions. Similarly, non-anaphoric definites get non-anaphoric

interpretations, again irrespective of scrambling (see also De Hoop 2000). This phenomenon can be explained in OT-semantics. OT-syntax involves taking the speaker's perspective: a semantic input (a "thought') is mapped onto a syntactic structure (the optimal expression of the input). OT-semantics, on the other hand, takes the hearer's perspective: a syntactic input (an utterance) is mapped onto a semantic output (the optimal interpretation of the input utterance) (cf. P. Hendriks and De Hoop 2001). Word order conditions such as SC1 and *Stay* are not relevant conditions in OT-semantics, since they are violated or satisfied already at the input level, hence they cannot affect the candidate outputs for a certain input (scrambled or non-scrambled). *New* is important, because in OT-semantics it is violated whenever an unscrambled definite gets an anaphoric interpretation. However, there is another constraint involved here which obviously outranks *New*. This stronger constraint favors anaphoric interpretations and it is called DOAP by Williams (1997):

(28) DOAP: Don't Overlook Anaphoric Possibilities. Opportunities to anaphorize text must be seized.

DOAP is a general pragmatic constraint that is satisfied whenever a noun phrase is interpreted anaphorically. In other words, when there is a potentially anaphoric noun phrase and a potential linguistic antecedent, then DOAP requires a referential link between the antecedent and the anaphor. As with all constraints, DOAP is violable. In P. Hendriks and De Hoop (2001) and De Hoop and De Swart (2000), examples are given where DOAP is actually violated to save stronger constraints, both in the nominal and the temporal domains. DOAP, being an interpretive constraint, applies to noun phrases independently of their syntactic positions (scrambled or unscrambled). Thus, we obtain the anaphoric interpretation as the optimal (i.e. only) interpretation for the definite in (29), whether it has scrambled or not.

(29)a. Hij(. . .) greep de agent bij z'n das en zou stellig de arme
he (. . .) grabbed the officer by his tie and would certainly the poor
man gewurgd hebben als niet . . .
man strangled have if not

b. Hij(. . .) greep de agent bij z'n das en zou de arme man
he (. . .) grabbed the officer by his tie and would the poor man
stellig gewurgd hebben if not
certainly strangled have als niet . . .
"He (. . .) grabbed the officer by his tie and would have certainly strangled the poor man, if not for . . ."

It is impossible to interpret *de arme man* "the poor man" as referring to an individual other than the individual referred to by the potential antecedent *de agent* "the officer." This optimal interpretation holds for the scrambled object in (29b) as well as the unscrambled one in (29a), which means that DOAP must be stronger than *New*. The optimal anaphoric interpretation of (29a) violates *New*,

but this is not a fatal violation: *New* must be violated in (29a) in order to satisfy DOAP. The other (non-anaphoric) interpretation would violate DOAP. Because there is a better candidate interpretation available, the interpretation that violates DOAP is not available for (29a) (hence, "the officer" and "the poor man" have to be one and the same individual). This is illustrated in table 9.5 in (30).

(30)

Table 9.5 From optional scrambling to anaphoric interpretation

Input	*Output*	*DOAP >>*	New
linguistic antecedent + scrambled definite (29a)	anaphoric interpretation		
	non-anaphoric interpretation	*!	
linguistic antecedent + unscrambled definite (29b)	anaphoric interpretation		*
	non-anaphoric interpretation	*!	

9.4 Conclusion

In this paper I have presented an OT-analysis for the truly optional scrambling of definite objects in Dutch. The analysis captures the general tendency of anaphoric definites to scramble, and it explains why optional scrambling does not affect the interpretation of anaphoric definites.

Notes

1 Examples in italics are taken from a Dutch children's book, *Otje*, by Annie M.G. Schmidt (Amsterdam: Querido, 1999).

2 Note that I use the term *anaphor* rather than *topic*. Both anaphors and topics are often defined in terms of deaccentuation. Yet, not all anaphors are sentence or discourse topics. It is well known that objects are less often topics than subjects. Still, anaphoric object NPs in Dutch tend to scramble, even when they are not topics. Besides, in semantic literature, topics have been defined as anaphors (cf. H. Hendriks and Dekker 1996). In other words, not all anaphors are topics, but almost all topics are anaphors. Anyway, the notion *anaphor* appears to better capture the Dutch scrambling data than the notion *topic*.

3 As pointed out in the introduction, in Van der Does and De Hoop (1998) an explanation is offered for the striking linguistic puzzle concerning the scrambling behavior of definites and indefinites in the context of so-called "light" verbs, such as *do* above, *take*, *have*, etc. Definite objects of light verbs freely scramble, whereas indefinite objects must stay in situ. This is illustrated once more in (i)–(ii):

(i)a. Pappa, we moeten maar de bus nemen
dad we must just the bus take

b. Pappa, we moeten de bus maar nemen
dad we must the bus just take
"Dad, we just have to take the bus"

(ii)a. Pappa, we moeten maar een taxi nemen
dad we must just a taxi take

b. ?*Pappa, we moeten een taxi maar nemen
dad we must a taxi just take
"Dad, we just have to take a taxi"

4 As pointed out in Van der Does and De Hoop (1998) and De Hoop (2000) there seems to be a correlation between (decrease of) ambiguity and (increase of) optionality in scrambling, such that when there is no ambiguity (no possible shift in meaning), scrambling becomes truly optional. One striking example concerns reflexives, which are always (unambiguously) anaphoric. In accordance with the generalization just mentioned, scrambling *zichzelf* "herself" is truly optional, witness (i) and (ii), taken from Van der Does and De Hoop (1998):

(i) dat de president gisteren zichzelf op TV zag
that the president yesterday herself on TV saw

(ii) dat de president zichzelf gisteren op TV zag
that the president herself yesterday on TV saw
"that the president saw herself on TV yesterday"

5 This constraint is one of a family of constraints introduced in De Hoop (2000) dealing with "output–output" correspondence in the case of scrambling. That is, it appears that the well-formedness or markedness of (un)scrambled structures partly depends on their degree of faithfulness to the output structures they correspond to. Indeed, what counts as canonical word order heavily depends on the type of noun phrase involved. Therefore, in De Hoop (2000) I propose to use three "surface correspondence" (SC) constraints, to wit:

(i) SC1: Definites scramble;
(ii) SC2: Indefinites don't scramble;
(iii) SC3: Pronouns scramble.

10

Word Order and (Remnant) VP Movement

Anoop Mahajan

10.1 Introduction

The derivation of basic and derived word orders found in natural languages has been an area of active research within generative syntax for many years. The early generative grammar tradition following the Aspects model (Chomsky 1965) located the variation in basic word order in the phrase structure rules. To take a simple example, the SOV versus SVO difference in such frameworks could be simply handled by positing two different phrase structure (PS) rules:

(1) SVO languages: VP → V NP
SOV languages: VP → NP V

This way of handling language variation continued even within the X′-based generative grammars. Thus, within the Principles and Parameters approaches to word order (cf. Chomsky 1981; Stowell 1981), one finds a directionality parameter conditioning the relative order of a head and its complement. In this respect, the Lectures on Government and Binding (LGB) based approaches did not change the fundamental assumption about the treatment of word order of early generative grammars in any significant way.

It has also been an implicit assumption within most generative approaches to word order that word order variation internal to a language (the free word order phenomenon or scrambling) is to be handled using movement rules. Thus, while

Various parts of this chapter have been presented at the International Conference on Word Order and Scrambling in Tucson, Arizona (April 2000), GLOW 2000 at Vittoria-Gasteiz (April 2000), University of Delhi (January 2000), University of Potsdam (November 1999), and at the University of California at Irvine (June 2000). I am thankful for the input that I received at these venues concerning various issues covered here. I also thank an anonymous reviewer for this volume for her comments.

cross-linguistic variation in word order was explained using PS rules, language-internal word order variation was located in the transformational components. This view of word order variation was implicit in many studies on word order in the 1980s and early 1990s (some representative examples would be work by Hoji 1985; Saito and Hoji 1983; Mahajan 1990).

An approach that handled cross-linguistic word order variation and language-internal word order variation within the same component was suggested in Hale (1983). Hale suggested that language-internal word order variation can also be located within the PS component. This was accomplished by underspecifying the word order variation in PS rules in some languages (in particular, in free-word-order languages). Hale's proposal implemented this idea within a model within which free-word-order languages lacked a VP node, though this particular assumption was not necessary to implement the basic idea itself. Without going into the details of this proposal, let me just mention that studies like Saito and Hoji (1983) and Hoji (1985) provided fairly compelling arguments for the existence of a VP node in a free-word-order language like Japanese. The idea that language-internal word order variation could be handled by underspecifying directionality within the PS component was not pursued in much of the subsequent work on word order within the generative tradition. Most studies on word order variation in the late 1980s and early 1990s reverted to the dichotomy assumed in the earlier generative studies: a PS rule (X′-)parameter handles cross-linguistic word order variation while movement rules handle language-internal word order variation.[1]

A second major attempt to put cross-linguistic language variation and language-internal variation within the same component of grammar came in Kayne's (1994) Antisymmetry framework. The basic idea of this proposal is that all languages have an underlying SVO order (that is, the specifier and the complement of a head must be on the opposite sides of a head and that the specifier precedes the head while the complement follows).[2] This essentially forces cross-linguistic variation in word order into the transformational component and Kayne suggested that SOV order is derived from a basic SVO order by a movement rule that moves the object to the left of the verb in SOV languages (Kayne 1994: 48). In a sense, this reductionist view of word order variation is rather appealing since it employs a singular mechanism of movement rules to deal with cross-linguistic as well as language-internal word order variation. Given the common assumption that natural languages do have displacement (movement) operations, one can eliminate the parameterization of the PS (X′-)rules in favor of a view that SOV languages differ from SVO languages in that they have a movement rule that places the object to the left of the verb. Whether or not this difference is an independent parameter or it is tied to some other parameter remains a matter of discussion. Given the fact that under this view the object in SOV languages moves to the left, one could think of various SOV languages being different in how far to the left (or higher in the structure) the object can move. In some SOV languages, the direct object may be able to move over other objects and in other languages it could move even over the subject. If one could determine the possible landing sites for the direct object (and possibly for the other objects as well) and find the motivation for such movement (in such languages), this could give us a reasonable theory of cross-linguistic as well as language-internal word order variation.

In this chapter, I assume that Kayne's antisymmetry approach to word order variation is essentially on the right track in handling the cross-linguistic word order variation within the transformational component. However, I will suggest a somewhat different way of implementing the SOV versus SVO difference. I will suggest that both SVO and SOV languages are similar in that both involve a rule of leftward object movement rule to some SPEC position within the VP (this could presumably be the object Case position in all languages). Further, I will suggest that both types of languages move the VP to the left of its original position (this is my suggested counterpart to V-to-I movement rule). What distinguishes SOV languages from SVO languages in my view is that in SVO languages, prior to the leftward VP-movement rule, the object moves to the left of the VP yielding a VP with an object trace. It is this VP that moves to the left (of I) in SVO languages. The object is therefore stranded to the right of the VP (that contains a trace of this object).[3] In SOV languages, the object does not move out of the VP prior to the leftward VP-movement. Therefore, what moves to the left of I is a complete (rather than a remnant) VP. This essentially gives us the OV versus VO distinction. My proposal is embedded within a more general proposal that operations like V-to-I are generally unavailable in grammar and that the effect of V-to-I is derived by leftward VP-movement. In the next section, I present the rationale behind this proposal and then come back to the details of the cross-linguistic as well as language-internal word order variation in the subsequent sections.

10.2 Eliminating Head Movement

The general proposal that I wish to make is that the syntactic computation does not involve a rule of head movement. If one accepts this view, which I will try to justify, then the phenomena that have been previously analyzed using head movement should be reanalyzed as involving complete or remnant phrasal movement. The appealing part of this proposal is that it eliminates a category of movement operations. Since the beginning of generative grammar it has been assumed that there are at least two kinds of movement operations, the ones that move heads and the ones that move phrases. I suggest that this assumption should be abandoned and the rule of head movement should be eliminated as a mechanism available in syntax.

10.2.1 Against head movement

(i) Extension Problem: Typical head movement (like V-to-I) involves adjunction to an already merged head and, unlike phrasal movement, does not extend a projection. If one wishes to retain the extension condition in grammar, then head movement cannot be accommodated in grammar in any reasonable way.

(ii) It is a counter-cyclic operation. This is related to the point above. Head movement is a counter-cyclic operation in that it is an operation that takes place internal to a previously formed structure.

(iii) A raised (adjoined) head does not c-command its trace in a straightforward manner. Thus, if one assumes the simplest definition of c-command (X c-commands Y iff the first branching node dominating X dominates Y), then head movement does not yield a structure in which a moved head c-commands its trace. The usual solution to this problem has been to complicate the definition of c-command in order to satisfy the binding requirement on traces (as for instance in Baker 1988).

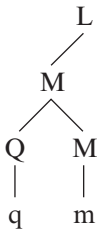
(iv) Head movement (usually) does not affect meaning as opposed to XP-movement (cf. Chomsky 1999: 30–1). This is trivially true for cases like V-to-I movement which seem to be triggered for morphological reasons.

Given these problems with head movement, a simple option would be to get rid of the head movement operation. However, adoption of this option will force us to look for alternative treatments for those phenomena that have previously been analyzed using head movement. In this chapter, I will pick this option and try to outline in a very limited domain how this option can be implemented to develop an account of V-to-I.

10.2.2 Head movement and antisymmetry

In this subsection, I review how head movement is handled within the Antisymmetry framework and point out an alternative in which head movement can be eliminated within that framework. Kayne (1994) accommodates head movement by basically defining a system in which Q below can asymmetrically c-command M (and *q* and *m* can therefore be linearized). (It should be added that Kayne also needs this system in order to accommodate specifiers as adjuncts in his system).

(2)



In order to get the desired result, Kayne uses the following definition of c-command (based on Kayne 1994: 16):

(3) *c-command*: X c-commands Y iff (a) X and Y are categories, (b) X excludes Y (X excludes Y if no segment of X dominates Y), and (c) every category that dominates X dominates Y.

A consequence of Kayne's approach is that a category X dominated by a segment of another category Y can asymmetrically c-command that category Y. That is, in this system, a partially dominated category can c-command a partially dominating category. This allows Q in (2) to asymmetrically c-command M, even though

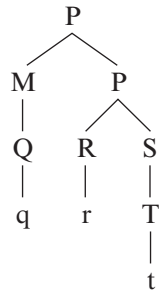
a segment of M dominates Q. It is possible to formally eliminate adjunction of a head to another head by modifying the exclusion part of the c-command definition. This change would have the consequence that Q will not asymmetrically c-command M. I take it to be a desirable move since it disallows a dominating node to be c-commanded by a dominated node though it is a technical move and may not have an independent justification at this point. The definition that implements my suggestion is given below:

(4) *c-command*: X c-commands Y iff (a) X and Y are categories, (b) X excludes Y and Y excludes X (X excludes Y if no segment of X dominates Y), and (c) every category that dominates X dominates Y.

In (2) now, Q no longer c-commands M (while Q excludes M, M does not exclude Q). This would mean that in (2), *q* and *m* cannot be linearized. This would eliminate adjunction of a head to another head.

I should note that specifiers still get accommodated in this system even with this change in the definition of c-command. Consider (5).

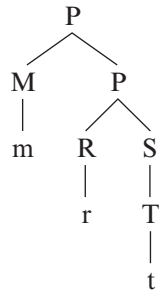
(5)



The asymmetric c-command set for (5) is <M,R>, <M,S>, <R,T>. Not included are <P,Q> (Q is not excluded by P) and <R,Q> (the category P dominates R but not Q). So, specifiers, for which Kayne needed a category/segment distinction, are not affected by my revised definition.

My revision of Kayne's definition of c-command is still compatible with two kinds of head movement possibilities. The first possibility is that a head can move and adjoin to a maximal projection whereby the extension requirement on merge is met. This is shown in (6).

(6)



To eliminate this possibility, I adopt Kayne's solution. Kayne suggests: "Assume, however, that the highest element of a chain must have a specifier, in the sense of having a phrase that asymmetrically c-commands it within its maximal projection (or within the maximal projection of the head it is adjoined to)" (Kayne 1994: 32). This essentially disallows adjunction of a head to a maximal projection. The second possibility that may allow for a certain kind of head movement in my system is as follows. In (2), if M is an empty head and therefore exempt from ordering, then Q could adjoin to it. That is, adjunction of a head to a silent head would still be permissible in this system under the view that empty heads themselves are exempt from the ordering requirements of the Linear Correspondence Axiom (LCA). Koopman (1994), and also Koopman and Szabolcsi (to appear), accept this restriction on head movement (within a somewhat different modification of LCA) while allowing for restricted head movement in syntax. I do not have a reasonable way to handle this problem without eliminating the existence of empty heads in syntax. If a restrictive theory of syntax can eliminate the use of empty head nodes, then M would not exist to start with. However, I leave this as an unresolved issue here, assuming that this problem can be resolved in favor of my proposal.

I conclude then that syntactic head movement is problematic and a couple of adjustments in Kayne's system would yield a ban on head movement within an LCA-based theory of syntax.

10.2.3 Minimalism and head movement

In recent work, Chomsky points out some problems with head movement (two of the problems he mentions are noted in my problem list in section 10.2.1). He then remarks that "a substantial core of head-raising processes, excluding incorporation in the sense of Baker (1988), may fall within the phonological component" (Chomsky 1999: 30). Thus, for Chomsky, head movement is permitted in some cases (like Baker's noun incorporation cases) but in other cases, like standard V-to-I and the V2 phenomena, it would be treated as a phonological process (cf. Chomsky 1999: 30–1). A consequence of this proposal would be that certain instances of head movement are moved to Phonological Form (PF) while others are kept in syntax. As it stands, this proposal still leaves head movement as an available syntactic mechanism and therefore the problems pointed out for head movement still apply. Besides, it is not quite clear how this proposal would deal with the locality effects on head movement. Also, it is unclear what the nature of PF head movement would be. In view of all this, I will continue making the assumption that the apparent head movement operations like V-to-I (and possibly much of V2) are indeed syntactic mechanisms except for the fact that they are not accomplished by moving heads but are done using XP-movement in syntax.

10.3 Head Movement without Head Movement

I proceed on the assumption that since we know of many syntactic (locality) constraints on head movement, it is desirable to keep whatever operations yield

apparent surface effects of head movement in syntax proper. My strategy here would be to reinterpret head movement as syntactic phrasal movement and derive the known constraints on head movement from known constraints on phrasal movement. By reinterpreting head movement in terms of phrasal movement, my approach makes two (reductionist) proposals. First, in my approach, syntactic computation can only move phrases. All other nodes are invisible to the syntactic computation. Second, in my approach, only phrases can check features when they are in the SPEC position of the checking head. In particular, the D features of I can only be checked by a DP in [SPEC, IP] and the V features of I can be checked in [SPEC, IP] by a VP.

Before we go any further, we may ask why we need head movement in the theory of syntax? One of the earliest uses for head movement was to bring together inflectional morphology and the verb. Assume that syntax does need to provide morphologically transparent representations to the morphological component.[4] However, while syntax may present a correct linear order of syntactic elements (including affixes), it does not have to present affixed words as X^os to morphology. Thus, one way to get tense morphology onto the verb would be achieved even if we have VP-movement. That is, a verb and I can end up next to each other in a representation in (7) by moving the VP to the left of I and by ensuring that the VP has V as its right peripheral (overt) element.

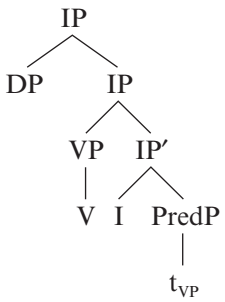
(7) $\ldots V_{VP}]\ T\ t_{VP}$

For morphological purposes, this yields the same effect as what we would achieve by V-to-I movement. The idea that certain kinds of morphological complexes can be formed by XP-movement, and that morphological words can include maximal projection boundaries, has been actively pursued by a number of linguists in recent years. A detailed example of this kind of enterprise can be found in Koopman and Szabolcsi (to appear), an approach that partly inspired my own proposal here. Such ideas can also be seen in the proposals made by Hinterhölzl (1997), Hallman (1998), Pearson (1997), F. Lee (1999), and others. Most of these approaches do however retain various degrees of head movement as well and in that respect they are rather different from my overall proposal.

A minimalist implementation of my proposal for V-to-I would be as follows. First I adopt the standard assumption that I has a V feature. In the standard approaches, this is the feature that triggers V-to-I. If the option of checking this feature by head movement is not available to us, then an alternative would be to check this feature by moving the VP to [SPEC, IP]. Let us adopt the assumption that feature checking takes place in a SPEC-Head configuration (Sportiche 1993) and generalize it to all such feature checking. The V feature of I will now be checked the same way as the D feature of I. The D feature of I is checked by moving a DP to [SPEC, IP]. The V feature of I will now be checked by moving VP to [SPEC, IP]. This essentially means that we have to adopt some version of multiple SPEC theory. The relevant feature-checking configuration is given below.

(It may be noted that a multiple SPEC structure of the sort given below is not directly compatible with the LCA; I ignore this complication for now.)

(8)



One may ask what ensures that we do not get a verb–subject–inflection order under this proposal about multiple feature checking. That is, it is not clear so far how one can impose an ordering restriction with respect to what features get checked first. A possible answer could be that one could check various features of a head in any order but if we checked the D feature of I first, morphology will not be able to deal with a dangling affix and the resulting derivation will crash.

The next question concerns the internal arguments of V in representations like (8). I will suggest that they may or may not get out of the VP before VP moves. This, I suggest, yields the basic VO versus OV cross-linguistic word order variation.

10.4 On Canonical Word Orders

As suggested in the introduction to this chapter, my basic proposal concerning the derivation of the cross-linguistic OV versus VO distinction differs somewhat from that proposed by Kayne (1994). I am assuming that the leftward movement of the object over the verb within the VP is universal and perhaps driven for Case reasons.[5] Given this scenario as a starting point, if the arguments from within the VP move to a position just above the VP prior to short VP-movement (in conjunction with leftward subject movement), we get an SVO order.

(9) SUB $[_{VP}\ t'_{OBJ}\ V\ t_{OBJ}]$ OBJ $[_{PredP}\ t_{SUB}\ t_{VP}]$

In suggesting this derivation for the basic SVO order, I have essentially generalized Kayne's (1998) proposal for *Mary likes no one* to all transitive sentences in English (and to all SVO languages).[6] If the object(s) do not move out of the VP prior to leftward VP-movement (and the subject does), we get a basic SOV order.

(10) SUB $[_{VP}$ OBJ V $t_{OBJ}]$ $[_{PredP}\ t_{SUB}\ t_{VP}]$

It should be obvious that what is common in the derivation of the SOV as well as SVO basic word orders in this scheme is that (a) both of these orders are, in fact,

derived (from an underlying SVO order), (b) the derivation of both of these orders involves leftward object movement over the verb within the VP, and (c) both of these derivations involve a leftward VP-movement operation. Recall that the leftward VP-movement operation is required since this is our way of doing V-to-I and that is required in all languages to check the V feature of I.[7]

The crucial difference between SOV and SVO basic word orders hinges on whether or not the object vacates the VP prior to VP-movement. If it does vacate the VP prior to VP-movement, then what moves is a remnant VP containing the verb and a trace of the object and this gives us an SVO order. If the object does not vacate the VP, then the whole VP moves to [SPEC, IP] and this gives us an SOV order. Thus, what is crucial is whether a remnant VP is formed prior to VP-movement (from the base-position of the VP).[8] This is how our analysis is different from Kayne's (1994) proposal about the SOV and SVO difference.

10.5 On Remnant VO Formation

It would be natural to ask at this point whether the necessary VP remnant formation created by moving the object out of the VP (prior to VP movement) in SVO languages could be tied to some independent factor visible in SVO languages. That is, can we find some trigger for the necessary formation of a VP remnant in SVO languages? Note that for the basic purposes of our argument, it is not absolutely essential to find a trigger for the VP remnant formation. One could simply posit this difference (remnant VP formation versus no remnant VP formation) between OV and VO languages as a parameter. In some sense then this would be recasting the PS (X′) word order parameter in terms of a movement parameter. I would, however, like to make a somewhat tentative suggestion that may provide us with the necessary trigger that forces remnant VP formation in SVO languages.

In making my proposal, I want to use here certain ideas contained in Kayne (1998), and combine them with a proposal made in Sportiche (1997). Kayne (1998) presents an analysis of *Mary likes no one* that requires movement of *no one* to the left of a NEG head followed by remnant movement of the VP to the left of negation. The proposed derivation is given below (ignoring the position of the subject and simplifying many other aspects of the derivation that are not directly relevant at this point):

(11) Mary [$_{VP}$ likes $t_{no\ one}$] no one t_{VP}

Sportiche (1997), building on this idea of Kayne, suggests that determiners are base-generated outside the VP and objects move to these determiners much like *no one* moves next to a NEG head in *Mary likes no one* (but presumably to a position lower than NEG). Following this proposal, a derivation for *Mary likes the book* would be as in (12).[9]

(12) Mary the [$_{VP}$ likes book] → Mary the book [$_{VP}$ likes t_{book}] → Mary [$_{VP}$ likes t_{book}] the book t_{VP}

Under Sportiche's proposal, the verb and the bare noun (*sans* DET) are generated as a constituent and then the noun moves to the right of the determiner *the*. This is followed by the movement of the remnant VP to the left of the determiner.[10] As can be seen in the derivation outlined in (12), this yields the desired SVO order (for English). What is crucial here is that the movement of the object is triggered by the presence of DET in such an analysis.

My suggestion is that it is the presence versus the absence of such a DET head that plays a crucial role in distinguishing SOV and SVO languages. In particular, if one assumes that such DETs are universally present in SVO languages (even if they are not phonetically visible) and if they are universally absent in SOV languages, one can then relate basic word order to the presence versus absence of attracting determiners. This idea receives some support from the observation that many SOV languages like Hindi do not possess determiners like *the*/*a* (or *no*). It is quite common for SOV languages to lack a definite determiner. The role of an indefinite determiner is often played by the numeral *one* and many other determiner-like elements look like adjectives. My suggestion is that the category DET which is responsible for object attraction in SVO languages is lacking in SOV languages. The lack of remnant VP formation then is a consequence of the lack of the category DET in these languages. This ties the SVO/SOV basic word order distinction to the lack/presence of attracting determiners.[11]

10.6 Some Aspects of Word Orders in an SOV Language

In this section, I will discuss how a system proposed so far can be implemented in an SOV language. The relevant data come from Hindi. I will also give some evidence indicating that the leftward VP-movement analysis proposed here is plausible.

Hindi is a verb-final language with a substantial amount of scrambling. The normal word order in a transitive sentence with an overt inflectional (*be*) element is: subject–object–verb-*be*.

This is illustrated in (13) below, which will have a derivation as in (14) in our analysis.[12]

(13) raam -ne saare phal khaaye the
Ram -ERG all fruits(masc) eat-PERF-masc-pl be-masc-pl-PAST
"Ram had eaten all the fruits"

(14) [raam -ne [$_{IP}$ [$_{VP}$ saare phal khaaye t_{obj}] the [$_{PredP}$ t_{VP}]]]
Ram -ERG all fruits(masc) eat-PERF-masc-pl be-masc-pl-PAST
"Ram had eaten all the fruits" (= 13)

This account of the derivation of the SOV AUX order in Hindi differs from the one proposed in Mahajan (1990) in two ways. First, in Mahajan (1990), the object originated in a pre-verbal position. This assumption is revised here following the antisymmetry proposal about the universal base order being OV. Second, in Mahajan (1990) it was suggested that the object moves to a [SPEC, AGRo] position to the left of the VP and the verb moves to the right to the AGR head.

The analysis proposed here is different since it involves moving the entire VP to the left to [SPEC, IP] position. Under the current proposal, the participial verb in (13) agrees with the object since the object has moved into its SPEC position (one could alternatively implement this move using AGRPs or *v*Ps, that issue is not so crucial here). I also assume that the agreement between the object and the finite AUX can be accounted for by assuming that a head can agree with the specifier of its specifier. That is, an XP in a specifier position of a specifier of a head is accessible to that head. This proposal builds on Kayne's proposal that an XP in [SPEC, YP] can c-command out of the YP (Kayne 1994: 25–6).[13] The movement of the VP into [SPEC, IP] checks the V feature of I.[14]

There is some suggestive evidence that the canonical word order in Hindi (an SOV language) is derived by VP-fronting as proposed here. Consider (15) and (16) below. The Condition C effect in (15) seems stronger than it is in (16).

(15) ???siitaa -ne use$_i$ vah kitaab nahii dikhaayii thii is liye /
Sita -ERG him that book not showed be-PAST therefore /
to mohan$_i$ naaraaz ho gayaa
then Mohan angry be gone
= "Sita had not shown him the book therefore/then Mohan angry became"

(16) ?siitaa-ne vah kitaab use$_i$ nahii dikhaayii thii is liye /
Sita -ERG that book him not showed be-PAST therefore /
to mohan$_i$ naaraaz ho gayaa
then Mohan angry be gone
= "Sita had not shown him the book therefore/then Mohan angry became"

In the traditional analyses of IO–DO scrambling in languages like Hindi (including the one in Mahajan 1990), it is assumed that the DO and the IO move independently to the left and it is the optionality of movement of DPs that yields alternative DO–IO and IO–DO orders. Now assume that the adjunct clause is subordinate to the main clause in (15) and (16). This has to be the case since we get a Condition C effect in (15) indicating that *Mohan* is c-commanded by *use*. Whether or not the adjunct clause is later extraposed to the right is irrelevant to our discussion. If the IO as well as the DO have moved out of the VP in (16), then IO would c-command the adjunct clause and its subject *Mohan*. This should yield a Condition C effect that appears to be missing here. On the other hand, if one follows the analysis presented in this paper, then what has moved to the left in (16) is the VP with the DO in its SPEC and the IO lower down within this VP, as indicated by its position to the right of the DO. One therefore expects the IO not to be able to c-command out of this VP and this can explain the missing Condition C effect in (16).[15] Example (17) below adds the relevant brackets following the proposed analysis for (16) illustrating how the IO cannot c-command out of the fronted VP.[16]

(17) ?siitaa-ne [$_{VP}$ vah kitaab [use$_i$ nahii dikhaayii]] thii t$_{VP}$ is liye /
Sita -ERG that book him not showed be-PAST therefore /
to mohan$_i$ naaraz ho gayaa
then Mohan angry be gone

Example (15), on the other hand, has the IO preceding the DO. Under our analysis, this implies that the IO has moved to the left of the DO. Given the fact that in (15) the AUX agrees with the DO, the direct object must be in [SPEC, VP] and must c-command the AUX.[17] The IO therefore must be outside the VP. From this position outside the VP, the IO would c-command into the adjunct clause. This would lead to the IO *use* c-commanding *Mohan* in (15) which yields a Condition C violation. The relevant structure of (15) illustrating this is given below:

(18) ???siitaa -ne [use$_i$ [$_{VP}$ vah kitaab t_{IO} nahii dikhaayii] thii] t_{VP}
Sita -ERG him that book not showed be-PAST
is liye / to mohan$_i$ naaraaz ho gayaa
therefore / then Mohan angry be gone

As pointed out earlier, this way of accounting for the relevant contrast between (15) and (16) is unavailable in earlier accounts of scrambling where the DO–IO scrambling involves independent manipulation of DO and IO from the very start of the derivation.

A contrast similar to the one observed in (15) and (16) can also be detected for variable binding by a quantifier in a configuration that is otherwise identical to the one in (15) and (16):

(19) ???siitaa-ne vah kahaanii har ek bacce -ko$_i$ sunaayii is liye
Sita -ERG that story every one child -to told therefore
vo$_i$ khush ho gayaa
he happy be gone
"Sita told that story to every child therefore he became happy"

(20) ?siitaa-ne har ek bacce -ko$_i$ vah kahaanii sunaayii is liye
Sita -ERG every one child -to that story told therefore
vo$_i$ khush ho gayaa
he happy be gone
"Sita told that story to every child therefore he became happy"

Thus in (19), the bound variable reading of the pronoun is not available while this reading is available in (20). The explanation for this contrast would be similar to the one provided above. If variable binding requires c-command by a quantifier, then the quantifier in (19) does not c-command the pronoun in (19) while it does so in (20).

10.7 On Locality of Head Movement and Apparent Cases of Long Head Movement

Our reanalysis of V-to-I in terms of VP-movement raises an issue concerning the locality of V-to-I. Given that phrasal movement can in principle be long, what can derive the Head Movement Constraint (HMC) effects for V-to-I? Thus, we

have to face a question like: why can a V not skip an immediately higher I and inflect to a higher I? A possible answer to this could be that feature checking is subject to certain locality constraints, and phrasal locality constraints themselves yield HMC effects. In particular, consider:

(21) $[\ldots I_1\ [_{VP1}\ V_1\ I_2\ [_{VP2}\ V_2]]]$

We would expect the V features of I_2 to be checked by VP_2-movement and therefore VP_2 is, in principle, unavailable to check the V features of I_1 when I_1 is merged later on. I suggest that this would, in general, block long head movement involving V and I. On the other hand, given the VP-movement analysis of V-to-I suggested here, one does expect to observe certain types of long V-movement. Usually long XP-movement is triggered by A′-feature checking (WH-movement, topicalization, etc.). One would therefore expect that in some cases one could move (remnant) VPs long-distance, yielding apparent long head movement. Long remnant movement (for the verb movement cases) would arise if the VP-movement is further extended by the need to check some other feature, like a Focus feature. This is indeed possible in languages like Hindi (this looks somewhat like the standard Germanic remnant movement of Den Besten and Webelhuth 1989):

(22) khaaye to us-ne socaa ki raam-ne saare
eat-PERF-masc-pl to-FOC he-ERG thought that Ram -ERG all
phal the
fruits be-masc-pl-PAST
"He thought that Ram had EATEN all the fruits"

In (22), we do need to form a VP remnant by moving the object out of the VP prior to VP-fronting. Given that the object is in pre-I position in (22), I conclude that this movement takes place after the first instance of VP-movement. That is, the object moves out of the fronted VP in the same way as the indirect object moved out of the fronted VP in (15) and (19). The remnant VP thus created moves to a higher SPEC position, presumably a [SPEC, FOC] position, which would be consistent with the interpretation of (22) in which the fronted verb is focused.

It is perhaps obvious by now that I am assuming that it is possible to extract an argument from within a VP that has itself been moved into [SPEC, IP] position. That is, the analysis that I have built up so far must allow for extractions from within displaced constituents. However, this idea faces some problems when we consider a sentence such as (23) below. Example (23) contrasts with (22) and the difference between the two is that the DO in (23) is stranded in a post-I position (as opposed to the DO being in a pre-I position in (22)).

(23) ???khaaye to us-ne socaa ki raam-ne
eat-PERF-masc-pl to-FOC he-ERG thought that Ram -ERG
the saare phal
be-masc-pl-PAST all fruits
"He thought that Ram had EATEN all the fruits"

One could take the ill-formedness of (23) to be due to the fact that SOV languages do not allow for the VP remnant to be formed by extracting the object from within the VP that is sitting in its base-position. Recall that the inability of this sort of remnant formation distinguishes OV languages from VO languages in our framework. However, this cannot be the whole story behind the ill-formedness of (23) since Hindi does allow for postverbal/post-I objects in certain other contexts. This is shown in (24) below.

(24) raam-ne khaaye the saare phal
Ram-ERG eat-PERF-masc-pl be-masc-pl-PAST all fruits(masc)
"Ram had eaten all the fruits"

Example (24) has an SVO order, which is obviously possible in Hindi in some contexts. However the SVO order of (24) differs from the SVO of languages like English or French. First of all, in Hindi the AUX in (24) follows the main verb rather than preceding it, as would be the case in a normal SVO order in English or French. Secondly, the verb in (24) appears to be focused.[18] That is, (24) is semantically different from its normal SUB–DO–V–AUX counterpart. I suggest that this semantic difference between the normal SUB–OBJ–V–AUX order and the SUB–V–AUX–OBJ order of (24) should be related to a difference in their structures. In particular, I suggest that the order in (24) is derived by fronting a remnant IP (containing the verb) to a focus position at the left periphery of the sentence. A possible derivation for (24) would then be as given below (ignoring the subject):

First step, complete VP-preposing, as is required for normal SOV languages:

(25) $[_{IP}\ [_{VP}$ saare phal khaaye] the $t_{VP}]$
all fruits(masc) eat-PERF-masc-pl be-masc-pl-PAST

Second step, object extraction and formation of a remnant VP high in the structure, as was allowed for IO earlier:

(26) saare phal $[_{IP}\ [_{VP\ t\ saare\ phal}$ khaaye] the $t_{VP}]$
all fruits(masc) eat-PERF-masc-pl be-masc-pl-PAST

Third step, IP-fronting to a sentence-initial focus position:

(27) $[_{IP}\ [_{VP\ t\ saare\ phal}$ khaaye] the $t_{VP}]$ saare phal t_{IP}
eat-PERF-masc-pl be-masc-pl-PAST all fruits(masc)

This somewhat complicated derivation outlines how one may treat (at least some cases of) the so-called "rightward scrambling" in SOV languages. Let us return to the ill-formedness of (23) now. (23) is repeated below.

(23) ???khaaye to us-ne socaa ki raam-ne
eat-PERF-masc-pl to-FOC he-ERG thought that Ram-ERG
the saare phal
be-masc-pl-PAST all fruits
"He thought that Ram had EATEN all the fruits"

Example (23) essentially embeds the structure in (27) with one further step. In (23) the verb phrase is further extracted out of the focused IP (as shown in (27)) to the matrix clause. I suggest that the ill-formedness of (23) is due to this last step, whereby a VP is being extracted from a constituent in a Focus position. If we take the focused IP in (27) to be in an A′-position and if extraction out of constituents in A′-positions is not allowed (a somewhat common assumption, see the relevant discussion in the next section), then we get the desired results.

We do need to ensure that our original case illustrating an apparent instance of long head movement is not excluded by the analysis that we have built up so far. Example (22) is repeated below:

(22) khaaye to us-ne socaa ki raam-ne saare
eat-PERF-masc-pl to-FOC he-ERG thought that Ram-ERG all
phal the
fruits be-masc-pl-PAST
"He thought that Ram had EATEN all the fruits"

The well-formed (22) would be derived under our analysis if we take it to embed a structure such as (26). That is, it is derived from the following structure:

(28) to us -ne socaa ki saare phal [$_{IP}$ [$_{VP\ t\ saare\ phal}$ khaaye]
FOC he -ERG thought that all fruits(masc) eat-PERF-masc-pl
the t_{VP}]
be-masc-pl-PAST

In order to derive (22) from (28), we need to front the VP to the sentence-initial Focus position (SPEC of the Focus *to* head).[19] This is possible since this movement involves VP-movement to a Focus position and not VP-extraction out of a focused IP.

The picture that emerges from the discussion so far is that we need a theory of extraction that disallows extractions out of certain kinds of moved constituents (for example, from focused phrases) while extractions out of VPs in [SPEC, IP] position must be allowed. This leads us to a discussion of freezing effects in the next section.

10.8 Freezing Effects and a Typology of (Remnant) VP Movement

As is well known, movement out of moved constituents is sometimes not allowed. For example, topicalization out of topics is not allowed in English. Thus, consider the contrast between (29) and (30) below:

(29) ???This person$_i$, Mary knows that, [rumors about t_i], one should not believe

(30) Mary knows that, rumors about this person, one should not believe

On the other hand, if one assumes that objects in languages such as French and English do move to a Case position, then one has to have a theory that allows for

extraction out of such moved objects. Thus (31) below (and its counterparts in many other languages) is clearly good.

(31) Who do you like a picture of?

Under the analysis that we have been building in this chapter, the normal SOV order in Hindi is derived by VP-movement. If movement out of moved constituents is not possible then we will not be able to move the object out of this moved VP. This is clearly undesirable as shown by (32), derived from (33).

(32) [raam -ne [$_{IP}$ [$_{VP}$ saare phal khaaye] the]]
Ram -ERG all fruits(masc) eat-PERF-masc-pl be-masc-pl-PAST
"Ram had eaten all the fruits"

(33) saare phal raam-ne khaaye the
all fruits(masc) Ram-ERG eat-PERF-masc-pl be-masc-pl-PAST
"Ram had eaten all the fruits"

In Hindi, there appears to exist an asymmetry in extraction out of DPs in A- and A′-positions. It is not possible to extract out of postverbal subjects. Examples (34) and (35) show that postverbal subjects are possible in root as well as embedded contexts and (36) shows that extraction out of postverbal subjects is not allowed.

(34) vah phal khaaege mohan ke saare bacce
that fruit eat-FUT-pl Mohan's all children
"All of Mohan's children will eat that fruit"

(35) siitaa -ne socaa [ki vah phal khaaege mohan ke saare bacce]
Sita -ERG thought that that fruit eat-FUT-pl Mohan's all children
"Sita thought that all of Mohan's children will eat that fruit"

(36) */???mohan ke siitaa -ne socaa [ki vah phal khaaege
Mohan's Sita -ERG thought that that fruit eat-FUT-pl
saare bacce]
all children
Intended meaning: "Sita thought that all Mohan's children will eat that fruit"

I should first note that postverbal subjects as in (34) are contrastively focused.[20] One may take this to indicate that such subjects are displaced to an A′ (Focus) position to the left followed by leftward VP movement. Extraction out of preverbal subject position is possible:

(37) siitaa -ne socaa [ki mohan ke saare bacce kal vah
Sita -ERG thought that Mohan's all children tomorrow that
phal khaaege]
fruit eat-FUT-pl
"Sita thought that all Mohan's children will eat that fruit tomorrow"

(38) mohan ke siitaa -ne socaa [ki saare bacce kal vah
Mohan's sita -ERG thought that all children tomorrow that
phal khaaege]
fruit eat-FUT-pl
"Sita thought that all Mohan's children will eat that fruit"

The preverbal subject in (37) precedes a sentential adverb and is therefore not contained within the PredP. However, extraction out of this subject is possible. This seems to indicate that the (normal) preverbal subject position in Hindi is not an island for extractions. The situation here is highly suggestive of the following proposal: extraction out of displaced constituents in A′-positions is not possible but extraction out of displaced constituents in A-positions is possible.[21]

The (36)–(38) asymmetry is reminiscent of the discussion in Deprez (1989) with respect to Quantifier (Q-)float out of scrambled constituents. In particular, the Hindi data that she discussed seemed to indicate that Hindi allows for extraction out of phrases in clause-internal scrambled positions but not from clause-external scrambled positions (long-distance scrambled positions). Generalizing Deprez's facts about Q-float in Hindi and the facts that I have just presented, one may conclude that (in Hindi) only certain moved constituents get frozen for further extraction and these include long-distance scrambled constituents and short-distance focused constituents. If short scrambling in Hindi does not check an A′-feature, but checks some sort of categorical feature (as in Mahajan 1990) and short Focus does check an A′-feature, then the relevant constraint on extractions relates to the nature of the position from which the extraction is attempted.

Hindi also allows for VP-fronting to a clause-initial pre-subject position as in (39).

(39) ravi -ne socaa ki saare phal khaaye siitaa -ne
Ravi -ERG thought that all fruits eat-PERF-pl Sita -ERG
the
be-PAST-pl
= "Ravi thought that Sita ate all Mohan's fruits"

Consider now (40) and (41). In (40), the object has been extracted out of the pre-subject VP, while in (41), the object is extracted out of the post-subject VP.

(40) ??saare phal ravi -ne socaa ki khaaye siitaa -ne
all fruits Ravi -ERG thought that eat-PERF-pl Sita -erg
the
be-PAST-pl (= 39)

(41) saare phal ravi -ne socaa ki siitaa -ne khaaye
all fruits Ravi -ERG thought that Sita -ERG eat-PERF-pl
the
be-PAST-pl (= 39)

Given that the pre-subject VP in (39), under our assumptions, would be attached above IP (perhaps to a sentence-initial Focus position which is indicated by the interpretation/pronunciation of the sentence), the (relative) ill-formedness of (40)

follows if the VP in the pre-subject position does not check a categorial feature and (40) thus involves an extraction out of a VP in a Focus position. Example (41) is perfect and that is consistent with the fact that extraction here takes place from a VP in [SPEC, IP] position (i.e. an A-position). The same phenomenon is illustrated by the sentences below (though embedded VP-fronting is less acceptable to start with):

(42) ?mohan jaantaa hai ki [saare phal khaaye] siitaa soctii
Mohan knows be-PRES that all fruits eat-PERF-pl Sita thinks
hE ki ravii-ne the
be-PRES that Ravi-ERG be-PAST
"Mohan knows that Sita thinks that Ravi ate all the fruits"

(43) *saare phal mohan jaantaa hai ki [t khaaye] siitaa soctii
all fruits Mohan knows be-PRES that eat-PERF-pl Sita thinks
hE ki ravii-ne the
be-PRES that Ravi-ERG be-PAST
"Mohan knows that Sita thinks that Ravi ate all the fruits"

The foregoing discussion suggests that VP-movement (as well as VP remnant movement if one places the subject trace within the fronted VPs/PredPs) in Hindi may itself fall into two classes roughly along the lines of an A-/A′-distinction for DP positions. I suggest that this distinction may be equated with a V-feature checking versus a FOC-feature checking, whereby the V-feature checking takes place by fronting a VP into the IP specifier position and FOC-feature checking would presumably take place in the SPEC position of a FOC head (or other such semantic heads). The fact that one can extract out of a VP in [SPEC, IP] but not out of a [SPEC, FocP] can then be correlated to the extraction out of non-focused versus focused or topicalized versus non-topicalized nominals. Given this idea, one can now account for the freezing effects, and the lack thereof, in a relatively uniform manner.[22] The general point that I wish to make is that categorial feature versus semantic feature distinction appears to play a role in a theory of sub-extractions. I should note that it is generally assumed that categorial feature checking has no semantic effects. Thus the Extended Projection Principle (EPP-) feature-driven movement is considered semantically neutral. Under my proposal, the movement of VP to [SPEC, IP] that yields V-to-I effects is driven by the need to check the V feature of I. Given this categorial feature checking nature of VP to [SPEC, IP] movement, one expects this movement to be semantically neutral. Putting it somewhat differently, this VP-movement is an instance of verbal EPP-feature checking. This addresses the point that Chomsky (1999) makes about the semantically neutral nature of V-to-I movement without the need to place the operation itself in the PF component.

10.9 Conclusions

I have suggested that V-to-I movement should be eliminated from the syntactic component.[23] However, instead of adopting Chomsky's suggestion that such

operations should be placed in the PF component, I have outlined an alternative that keeps the operation that yields the effect of verb movement in syntax. I have outlined how a theory that lacks V-movement can be linked to a theory that makes a VO versus OV distinction in a somewhat novel way. I have also suggested that the OV versus VO distinction may be triggered by the presence of a DET feature (for objects) that forces the formation of a VP remnant in OV languages leading to stranding of the object prior to VP-movement to [SPEC, IP]. I have pointed out some of the empirical consequences of my approach. Lastly, I have proposed that (remnant) VP-movement may be either categorial feature-driven or semantic feature-driven and, in this sense, it follows a pattern that has long been known for nominal landing sites.

Notes

1 The exact location and nature of the movement rules responsible for language-internal word order variation has attracted much attention in recent years. Chomsky and Lasnik (1977) located rules responsible for language-internal word order variation in the stylistic component which was distinct from the transformational component. However, much of the later work, following Saito and Hoji (1983) and Hoji (1985), placed such rules within the transformational component.

2 See Kayne (1994) for the details of the proposal that leads to this consequence.

3 I will not address the issue/status of unbound traces in remnant movement constructions in any detail here (in the case under discussion, the problem arises since the fronted VP contains an unbound trace of the object). The problem is somewhat general and arises in all cases of remnant movement. One simple way to get around the problem is to treat the Proper Binding Condition (PBC) as a derivational condition. That is, a trace must be properly bound at the time of its creation (this ensures movement to a c-commanding position). A move of this sort will have implications the discussion of which is beyond the scope of this chapter.

4 That is, syntax is responsible not only for generating the correct word order of words, it is also responsible for generating the correct order of affixes. In some sense then syntax is responsible for providing transparent representations to its interfaces. On the Logical Form (LF) side, it resolves scope (which is an ordering relationship) and on the morphology side, it resolves the morphological ordering.

5 Whether this node should be called VP or something else is not so important. I am using labels such as VP and PredP to designate various verbal projections. One could relabel these nodes as AGRPs or as *v*Ps.

6 The proposal is not that all objects end up in the same position. Thus, *no one* for Kayne moves to [SPEC, NegP] higher in the structure. In *Mary likes the book*, *book* would presumably be lower in the structure (*no one* would simply pass through this lower position). What I am suggesting is that an object leaves VP in SVO languages necessarily.

7 Throughout this chapter, I will make a simplifying assumption that all languages have our counterpart of the V-to-I operation (leftward VP-movement). Whether this operation is covert (as has been suggested for English) or overt (as for languages like Italian and French) is a matter that needs further discussion. My assumption about English-type languages will be that they do involve a leftward VP-movement rule that gives the basic SVO order but in such languages the VO does not get to [SPEC, IP] in the overt component. This replicates the proposals such as Johnson (1991) where a short leftward V-movement is posited even for a language such as English.

8 This is not to say that remnant VP-movement never happens in SOV languages. I am suggesting that it does not happen when the VP moves leftward from its base position. A remnant VP may be formed later in the derivation in head-final languages (by moving the object out to some higher position) and this remnant may move as in the case of apparent long head movement in Hindi, discussed later.

9 Many details, including the precise landing sites for the object, are ignored here. See Sportiche (1997) for details.

10 A reviewer notes that the derivation suggested in the text above is counter-cyclic. It is possible to modify this derivation slightly in the following way to avoid the cyclicity problem: the object moves to [SPEC, DET] (i.e. to the left of the DET) and then DET moves to some higher head position. It is, however, unclear what this empty head position would be and, given my earlier remarks about the role of empty head, a straightforward adoption of this proposed modification would be problematic for me.

11 This would imply that the apparent determiners in head-final languages (demonstratives, for instance) belong to a different category than the determiners and do not count as attracting determiners for the purpose of remnant VP formation (low in the structure). Within Indo-European, the relevant clue may come from the presence versus absence of the definite article.

12 Throughout this chapter, I ignore the position (base as well as derived) of subjects.

13 My proposal about the agreement between the object and the AUX is similar to Kayne's (1994: 24–5) proposal about the relationship between a WH-phrase and a WH-head. I take the relationship between a WH-phrase and a [+WH] head in an interrogative to be similar to an agreement relationship between the object and the AUX in (14).

14 This movement can, in principle, satisfy both the V and the D feature of I since the VP checks the V feature of I and the DP object in [SPEC, VP] can check the D feature of I. If one makes this assumption, then the subject in (14) does not check the D feature of I. Given that this is an ergative construction and the subject is a PP-like element, subject movement to a pre-DO position in (14) then may be driven for reasons other than D feature checking (the subject movement to a pre-DO position is optional in Hindi; see Mahajan 1990 for some relevant details).

15 The fact that (16) is somewhat odd to start with remains unexplained. The oddness of (16) could perhaps be attributed to the general oddness of backward pronominalization (pronouns preceding a coreferring NP) structure in Hindi. However, what is relevant here is the contrast between (15) and (16), which is not explained by the oddness produced due to backward pronominalization.

16 I do not show postverbal DO/IO traces here in order to simplify the structure.

17 It may be noted that it is not the blocking of the object-AUX agreement that leads to the relevant violation. (15) is a Condition C violation. If there is no coindexation between the pronoun *use* and *Mohan*, the sentence is fine.

18 The precise semantic interpretation of (24) is not quite clear to me. It is perhaps sufficient to note here that (24) allows for a contrastive reading of the verb (an interpretation not readily available for the normal OV order).

19 The precise characterization of the head spelled out as *to* is not so important here. I will simply label it as a FOC head.

20 The precise semantic effects associated with postverbal arguments in Hindi remain somewhat obscure. See Gambhir (1981) for some relevant discussion.

21 As should be obvious, this proposal cannot be directly derived from Condition on Extraction Domains (CED) (or a theory that derives CED effects). Furthermore, I do not have anything to say about why extractions out of subjects are not possible in

English-type languages. It is not my purpose here to present a comprehensive theory of subextractions. I will just present a few generalizations about subextractions.

22 G. Müller (2000) discusses two types of remnant movements and his general idea (though not the approach) appears to be compatible with what I am suggesting here if one makes certain adjustments with respect to what I take to be categorial feature-driven versus semantic (Focus) feature-driven movement.

23 It should be obvious that the overall spirit of the argument is to try to eliminate all head movement from syntax. I have, however, not discussed here complex issues such as how to handle noun incorporation in a framework that lacks head movement. I leave that for future research.

11

Non-Canonical Word Order: Topic and Focus in Adult and Child Tamil

Vaijayanthi Sarma

11.1 Introduction

Tamil[1] exhibits the phenomenon of "free word order" (or scrambling) where sentential constituents such as NPs, postpositional phrases, and CPs may appear in non-canonical sentential positions. The dominant word order is S(IO)OV. Thus, if there are four phrasal constituents in the sentence, then all 24 combinations are *grammatical* (in that native speakers judge these sentences as being well-formed). As has been pointed out in Hale (1992), issues pertaining to aspects of language "use" and textual frequency of these word order permuted sentences have been set aside. Further, Tamil is a *pro*-drop language where arguments can be elided and sentences where all arguments are present are rare. Nonetheless, any account of Tamil grammar has to accommodate these permissible alternants and give an account of their structure and meaning and it is this which forms the basic goal of this chapter. A few possible variations of the sentences in (1a) are given in (1b–f).

(1)a. shakuni dharmaa-kku daayatt-ai koDut-tt-aan[2]
Shakuni-NOM Dharma-DAT dice-ACC give-PAST-3sm
"Shakuni gave the dice to Dharma"

b. **dharmaa-kku** shakuni $\mathbf{t_{IO}}$ daayatt-ai koDut-tt-aan

c. **daayatt-ai** shakuni dharmaa-kku $\mathbf{t_{O}}$ koDut-tt-aan

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d. shakuni dharmaa-kku **t_O** koDut-tt-aan **daayatt-ai**
e. **daayatt-ai** shakuni **t_{IO}** **t_O** koDut-tt-aan **dharmaa-kku**
f. **daayatt-ai** **t_S** dharmaa-kku **t_O** koDut-tt-aan **shakuni**

Several accounts have been offered for this phenomenon in the literature. It has been suggested that languages with such "flexible" word order arrangements have a flat or non-configurational structure (Hale 1983), and phrasal constituents are hierarchically undifferentiated (at some syntactically relevant level), or that the altered word orders are base-generated (É. Kiss 1994; Bayer and Kornfilt 1994; Bošković and D. Takahashi 1998). Other studies (G. Müller and Sternefeld 1994; Mahajan 1990, 1995; Saito 1989, 1992; Webelhuth 1990) analyze scrambling as a set of well-defined syntactic movements and point to differences between the different operations using diagnostic tests such as the ones given in (2).

(2)	Diagnostic tests for syntactic movements	*A-movement*	*A′-movement*
a.	Suppression of weak crossover (WCO) Effects	Yes	No
b.	Reconstruction/Condition C	No	Yes
c.	Quantifier scope ambiguities	Yes	No
d.	Parasitic gap licensing	No	Yes
e.	Binding – creating new binders	Yes	No

These studies postulate two kinds of movement – movement to argument (A) positions clause-internally and to non-argument positions (A′) clause-externally.[3] In the languages discussed (German, Hindi, and Japanese) we find both kinds of operations depending on the *distance* of extraction. This, however, does not tell us *why* a language exhibits such word order properties. It is unclear if there are strong semantic/interpretive differences between the base-ordered and the order-shifted sentences. In this chapter we show that "scrambling" in Tamil involves only A′-movement in all cases and, further, that there are specific semantic/interpretive consequences to such movements depending on the *landing site* that is targeted. We also show that these operations are similar to independent *Topic* and *Cleft* constructions in Tamil. We begin by arguing that Tamil is a configurational language and that scrambling is a syntactic rather than a stylistic or phonological operation(s) and give the rationale for adopting a basic SOV word order in describing Tamil. In section 11.3 we identify the syntactic properties of both long-distance (LD) and local (LO) extraction of phrasal constituents using diagnostic tests such as those in (2). In section 11.4 we show the semantic properties of such extraction/movement. In section 11.5 we offer evidence from acquisition data that these operations are available to children in the early stages of language development and we also discuss the associated phenomenon of Case-drop and its interaction with scrambling. In section 11.6 we summarize the results of this paper.

11.2 Base Word Order and Configurationality

Tamil can be shown to be sensitive to hierarchical structure and there are several reasons why it makes sense to talk about a basic word order versus derived word

orders. First, the basic word order (SOV) has no special semantic properties associated with it. In the default case, a sentence with this word order counts as a simple statement. However, a sentence order-shifted to the left (for example, OSV or IOSOV order) signals that the NP (in the preceding, O and IO respectively) is a *topic* in each case. When the sentence is order-shifted to the right (for example, SVO or SOVIO), the NP is considered to be *focused*. Examples are given below.

(3) shakuni dharmaa-kku daayatt-ai koDut-tt-aan
Shakuni-NOM Dharma-DAT dice-ACC give-PAST-3sm
S **IO** **O** **V**
"Shakuni gave the dice to Dharma"

(4) daayatt-ai shakuni dharmaa-kku t koDu-tt-aan
dice-ACC Shakuni-NOM Dharma-DAT give-PAST-3sm
O **S** **IO** **V**
"The dice, Shakuni gave to Dharma"

(5) shakuni dharmaa-kku t koDu-tt-aan daayatt-ai
Shakuni-NOM Dharma-DAT give-PAST-3sm dice-ACC
S **IO** **V** **O**
"Shakuni gave THE DICE to Dharma"

Second, there is a process of gemination of the initial stop consonant of a word within the VP.[4] The rule applies between a preceding, vowel-final word and a following, plosive-initial word when they are direct constituents of the VP.

(6) shakuni [$_{VP}$ dharmaa-kku-t daayatt-ai-k koDu-tt-aan]
Shakuni-NOM Dharma-DAT dice-ACC give-PAST-3sm
"Shakuni gave the dice to Dharma"

The environment for the application of this rule includes O–V, IO–V, O–IO, and Adv–V but not S–O, S–V, Adv–V (TP–linked adverb), V–O, V–IO, O–S–V, etc. Consonant gemination is a VP-internal process and is sensitive to the hierarchical position of the verb. Thus, NPs scrambled across to the right have "escaped" from the domain of the verb and are not subject to the rule anymore. Likewise, objects scrambled over the subject to the topic position are also outside the VP. Compare the sentences in (7) with (6). If Tamil has a flat structure, it would be hard to explain why these restrictions exist.

(7)a. *shakuni [$_{VP}$ dharmaa-kku-k t koDu-tt-aan] daayatt-ai
b. ***daayatt-ai** shakuni [$_{VP}$ dharmaa-kku**k** t koDu-tt-aan]
c. ***daayatt-ai-t dharmaa-kku** shakuni [$_{VP}$ t t koDu-tt-aan]

Third, the antecedent-pronoun relations show that the syntactic structure of Tamil must be hierarchy-sensitive. Tamil anaphoric-pronouns are subject-oriented and are never bound by other (object) NPs. For this preferential antecedent

selection, the subject must be in a privileged (or structurally high) position for the asymmetry to obtain.

(8) shakuni$_i$ dharmaa-kku$_j$ tan$_{i/*j}$ daayatt-ai koDu-tt-aan
Shakuni-NOM Dharma-DAT self-GEN dice-ACC give-PAST-3sm
"Shakuni$_i$ gave Dharma$_j$ his$_i$/$_{*j}$ dice"

Conversely, referential NPs cannot be bound by antecedent pronouns.

(9) *avan-ukku$_{i/j}$ shakuni-ai$_i$ piDikk-aa-du
he-DAT Shakuni-ACC like-NEG-3sn
Intended meaning: "He$_i$ does not like Shakuni$_i$"

Similarly, control of null subjects of infinitivals is by either the matrix subject (10) or the matrix object (11) (depending on the lexical properties of the predicate).

(10) shakuni$_i$ [PRO$_i$ dharmaav-ai jeikk-a] muyarci sei-d-aan
Shakuni-NOM Dharma-ACC to win try do-PAST-3sm
"Shakuni tried to beat Dharma"

(11) duryodhanan shakuni-ai$_i$ [PRO$_i$ dharmaav-uDan daayam
Duryodhana-NOM Shakuni-ACC Dharmaa-with dice
viLayaaD-a] anumadi-tt-aan
to play permit-PAST-3sm
"Duryodhana permitted Shakuni to play dice with Dharma"

Thus, the binding properties of subject-oriented anaphoric-pronouns, Condition C effects and (subject and object) control of (null) infinitival subjects also show that Tamil does not have a flat sentential structure.

Fourth, unlike other free-word-order languages (for example, Warlpiri) there are no discontinuous constituents. In Tamil, the constituents of a phrase cannot be separated and occur in different parts of the sentence.

Finally, and perhaps most persuasively, extractions that permute word order strictly observe island conditions (first identified by Ross 1967). In (12) and (13), attempts to extract out of a Complex NP and a Sentential Subject lead to ungrammaticality.

(12)a. arjuna [$_{NP}$ [$_{TP}$ shakuni-kku raajyatt-ai koDu-tt-a]
Arjuna-NOM Shakuni-DAT kingdom-ACC give-PAST-adj
dharmaav-ai] tiTT-in-aan
Dharma-ACC scold-PAST-3sm
"Arjuna scolded Dharma who gave his kingdom to Shakuni"

b. *arjuna [$_{NP}$ [$_{TP}$ **t** raajyatt-ai koDu-tt-a] dharmaav-ai] tiTT-in-aan **shakuni-kku**

c. ***shakuni-kku** arjuna [$_{NP}$ [$_{TP}$ **t** raajyatt-ai koDu-tt-a] dharmaav-ai] tiTT-in-aan

(13)a. [$_{NP}$ [$_{TP}$ dharmaa shakuni-kku raajyatt-ai toT-r-adu]]
Dharma-NOM Shakuni-DAT kingdom-ACC lose-PAST-NOM
avamaanam aa-cc-u
shameful be-PAST-3sn
"That Dharma lost the kingdom to Shakuni was shameful"

b. *[$_{NP}$ [$_{TP}$ dharmaa shakuni-kku **t** toT-r-adu]] avamaanam aa-cc-u
raajyatt-ai

In the context of much recent discussion about a single universal word order we must question this tacit acceptance of SOV as the base word order from which other orders are derived, especially since every combination of phrasal constituents is possible. It has been argued by Haider (1993), Kayne (1994), and Zwart (1993) that SOV orders are derived from basic (universal) SVO orders. Mahajan (1995) also offers evidence from the asymmetric behavior between left-moved and postverbal phrases that Hindi does not have overt rightward movement. He argues that the postverbal phrases are stranded in their base-positions as a result of the (successive, leftward) raising of the rest of the TP. We offer some evidence here why this analysis is not desirable for Tamil.

(i) Tamil is strictly head-final at all levels of phrasal structure except at the level of phrasal constituents. It is unclear why it must not be head-final at that level alone.

(ii) There are no asymmetries in the behavior of right- and left-extracted elements that might indicate underlying, structural differences. Their syntactic properties are identical, as we shall see in the next section.

(iii) The phrasal reordering yields interpretive differences while the basic order does not. More specifically, V–NP (S, O, etc.) orders are semantically marked (with focus properties) but the SOV order is not.

(iv) NPs can be right- or left-extracted long-distance across many clauses and it is unclear why such large remnant structures should raise successively to the left to enable stranding of the right-appearing NPs. Tamil does not have any independent overt or covert process of verb raising. A simple NP-movement analysis captures all the relevant syntactic facts.

(v) The process of VP-internal plosive-gemination that we saw earlier does not obtain between sister NPs that (we assume) have been extracted out of the VP. If a stranding analysis were correct, we would expect gemination (for example between IO and O) since those stranded NPs are still sisters at the relevant syntactic level. Compare (14b) and (14c) which are variations of the sentence in (6), repeated here as (14a).

(14)a. shakuni [$_{VP}$ dharmaa-kku-t daayatt-ai-k koDu-tt-aan]
Shakuni-NOM Dharma-DAT dice-ACC give-PAST-3sm
"Shakuni gave the dice to Dharma"

b. *shakuni [koDu-tt-aan [$_{VP}$ dharmaa-kku-**t** daayatt-ai-**k** t_V]]

c. shakuni [koDu-tt-aan [$_{VP}$ dharmaa-kku daayatt-ai t_V]]

(vi) The acquisition data from Tamil provide robust evidence of SOV orders and head-final phrase structure at all levels. Order-shifted sentences are

similarly semantically marked. This has also been observed to be a discourse strategy in Tamil texts (Fabb 1997).

(vii) There are independent cleft constructions in Tamil with the focused nominal to the right of the verb.

(viii) In certain constructions, such as the relative participle, a rightward position for movement is not available. The structural differences between these and other sentences where rightward movement is possible also argue for overt extraction and consequently, a base SOV order.

11.3 Properties of Local (LO) and Long-Distance (LD) Scrambling

In this section we identify the syntactic properties of the scrambling operations in Tamil. We treat both LO- and LD-scrambling simultaneously, applying the syntactic tests listed in (2).[5] These diagnostic tests indicate that the extraction operations are of the kind generally called "A′-movement," i.e. movement to non-thematic positions such as [SPEC, CP] or movement by adjunction. Before we proceed we have a few comments about LD-extraction in Tamil. Just as in Japanese and Hindi, we also find LD-extraction of NPs in Tamil.

(15) draupadi -ai vyaasar [$_{CP}$ dharmaa t_O toT-r-aan-nnu]
Draupadi-ACC Vyaasa-NOM Dharma-NOM lose-PAST-3sm-that
ezhud-in-aar
write-PAST-3shon
"Draupadi, Vyaasa wrote that Dharma lost"

The preferred position of CP-complements is either the right or the left periphery of the matrix sentence rather than their base-generated position, wedged between matrix subject and verb. This is especially true of multiple embeddings where the stacked subjects make processing difficult and movement to the periphery (like Heavy NP-shift and *pro*-drop) eases the processing difficulty.

(16)a. ganapati [$_{CP}$ shakuni dharmaa-kku daayatt-ai
Ganapati Shakuni-NOM Dharma-DAT dice-ACC
koDu-tt-aan-nnu] ezhud-in-aan
give-PAST-3sm-that write-PAST-3sm
"Ganapati wrote that Shakuni gave the dice to Dharma"

b. ganapati **t_{CP}** ezhud-in-aan **[$_{CP}$ shakuni dharmaa-kku daayatt-ai koDu-tt-aan-nnu]**

c. **[$_{CP}$ shakuni dharmaa-kku daayatt-ai koDu-tt-aan-nnu]** ganapati **t_{CP}** ezhud-in-aan

(17) ##[$_{CP1}$ ganapati [$_{CP2}$ vyaasar [$_{CP3}$ shakuni dharmaa-kku
Ganapati-NOM Vyaasa-NOM Shakuni-NOM Dharma-DAT
daayatt-ai koDu-tt-aan-nnu] son-n-aar-nu] ezhud-in-aan]
dice-ACC give-PAST-3sm-that say-PAST-3shon-that write-PAST-3sm
"Ganapati wrote that Vyaasa said that Shakuni gave the dice to Dharma"

In discussing the syntactic properties of these movements, we will retain the base word order as far as possible in order to isolate the extraction in which we are interested.

11.3.1 Weak crossover effects

It has been shown that coreference between a pronoun and the trace of a WH-word or quantifier where the pronoun c-commands the trace of the WH-word or quantifier creates strong ungrammaticality. This phenomenon has been called *strong crossover*.

(18) *Who$_i$ does he$_i$ think t$_i$ played dice?

Weaker ungrammaticalities, called *weak crossover* (WCO) (Higginbotham 1983; Reinhart 1983), are caused when the pronoun is contained within the subject NP.

(19) Who$_i$ did his$_i$ brother stake t$_i$?

Creation and suppression of weak crossover effects have been used to identify the type of movement involved in scrambling (Gurtu 1986; Saito and Hoji 1983). In Hindi and Japanese, for example, sentences with quantifier (Q-) and WH-phrases in situ show WCO effects as in English. When the NP containing the pronoun is fronted (for example, object over subject or direct object over indirect object), then these effects are suppressed (Gurtu 1986; Mahajan 1990). It is therefore argued that (a) LO-scrambled objects move to argument (A-)positions (for example, [SPEC, TP]) from which they can bind, and (b) the moved NPs do not *reconstruct* at Logical Form (LF) (the interpretive interface). In Tamil, we find that the base word order WCO effects cannot be suppressed by word order permutations. The examples include Q- and WH-phrases.[6]

(20)a. *avan-uDaia$_i$ aNNaa yaar-ai$_i$ daayatt-il toT-r-aan
he-GEN brother-NOM who-ACC dice-LOC lose-PAST-3sm
Intended meaning: "Who$_i$ did his$_i$ brother lose in the game of dice"
b. ***yaar-ai$_i$*** [avan-uDaia$_i$ aNNaa **t$_{wh}$** daayatt-il toT-r-aan][7]
c. *[**t$_{wh}$** yaar-ai$_i$ daayatt-il toT-r-aan] **avan-uDaia$_i$ aNNaa**

(21)a. *avan-uDaia$_i$ aNNaa ellaar-ai-um$_i$ daayatt-il toT-r-aan
he-GEN brother-NOM everyone-ACC dice-LOC lose-PAST-3sm
Intended meaning: "His$_i$ brother lost everyone$_i$ in the game of dice"
b. ***ellaar-ai-um$_i$*** [avan-uDaia$_i$ aNNaa **t$_{QP}$** daayatt-il toT-r-aan]
c. *[avan-uDaia$_i$ aNNaa **t$_{QP}$** daayatt-il toT-r-aan] **ellaar-ai-um$_i$**

Similarly, NP-fronting does not suppress WCO effects in LD-scrambling. This is also true of Hindi and Japanese when the matrix subject contains the pronoun.[8] Examples include Q- and WH-phrases where the matrix subject contains the relevant pronoun and the embedded object the relevant Q- or WH-phrase. The same results would obtain if the Q-/WH-phrase were in any other position of the embedded clause and if the pronoun were contained in any other matrix NP.

(22)a. *avan-uDaia$_i$ manaivi [$_{CP}$ dharma yaar-ai$_i$
he-GEN wife-NOM Dharma-NOM who-ACC
toT-r-aan-nnu] ninai-tt-aaL
lose-PAST-3sm-that think-PAST-3sf
Intended meaning: "Who$_i$ does his$_i$ wife think Dharma lost?"

b. ***yaar-ai$_i$** avan-uDaia$_i$ manaivi [dharma **t$_{wh}$** toT-r-aan-nnu] ninai-tt-aaL

c. ***yaar-ai$_i$ t$_S$** [dharma **t$_{wh}$** toT-r-aan-nnu] ninai-tt-aaL **avan-uDaia$_i$ manaivi**

(23)a. *avan-uDaia$_i$ manaivi [$_{CP}$ dharma ellaar-ai-um$_i$
he-GEN wife-NOM Dharma-NOM everyone-ACC-Q
toT-r-aan-nnu] ninai-tt-aaL
lose-PAST-3sm-that think-PAST-3sf
Intended meaning: "His$_i$ wife thinks that Dharma lost everyone$_i$"

b. ***ellaar-ai-um$_i$** avan-uDaia$_i$ manaivi [dharma **t$_{QP}$** toT-r-aan-nnu] ninai-tt-aaL

c. *avan-uDaia$_i$ manaivi [dharma **t$_{QP}$** toT-r-aan-nnu] ninai-tt-aaL **ellaar-ai-um$_i$**

11.3.2 Reflexive binding

A corollary to the discussion on WCO is reflexive binding. If fronted NPs can bind pronouns can they also serve as binders of reflexives from their new (A-) positions? It has been argued that this is indeed the case in Hindi and Japanese. The NP is assumed to move locally to a thematic position from which it does not reconstruct and from which it can bind reflexives that it could not c-command from its base-position. Conversely, NP-fronting can also destroy extant binding relations if an NP containing a reflexive is moved out of the c-command domain of its antecedent. In Tamil, an anaphoric-pronominal element such as *taan* is not permitted in the subject position of a matrix clause since there is no suitable syntactic antecedent that can bind it.

(24) *tann-uDaia$_i$ aNNaa bhimaav-ai$_i$ daayatt-il toT-r-aan
self-GEN brother-NOM Bhima-ACC dice-LOC lose-PAST-3sn
Intended meaning: "Self$_i$'s brother lost Bhima$_i$ in the game of dice"

However, the non-anaphoric pronoun *avan* contained within the subject NP can be optionally coreferential with the object, as shown below. This reading is further facilitated if the object is scrambled over the subject to a sentence-initial position or if the subject is scrambled to a post-verbal position. Linear precedence of the antecedent seems to enable the (already available) coreferential reading with the object.[9]

(25)a. ?avan-uDaia$_i$ aNNaa bhimaav-ai$_i$ daayatt-il toT-r-aan
he-GEN brother-NOM Bhima-ACC dice-LOC lose-PAST-3sm
"His$_i$ brother lost Bhima$_i$ in the game of dice"

b. **bhimaav-ai$_i$** [avan-uDaia$_i$ aNNaa **t$_O$** daayatt-il toT-r-aan]

c. [**t$_S$** bhimaav-ai$_i$ daayatt-il toT-r-aan] **avan-uDaia$_i$ aNNaa**

LO-movement does not enable new binding relations in Tamil.

(26)a. *bhimaav-ai$_i$ [tann-uDaia$_i$ aNNaa t_O daayatt-il toT-r-aan]
Bhima-ACC self-GEN brother-NOM dice-LOC lose-PAST-3sn
Intended meaning: "Self$_i$'s brother lost Bhima$_i$ in the game of dice"

b. *[**t$_S$** bhimaav-ai$_i$ daayatt-il toT-r-aan] **tann-uDaia$_i$ aNNaa**

Conversely, word order changes do not *undo* binding relations. The following set of data includes instances of both leftward and rightward LO-movements. It is always and only the subject that binds the anaphor irrespective of the surface positions of the antecedent and the anaphor.

(27)a. dharma$_i$ shakuni-kiTTe$_j$ tann-uDaia$_{i/*j}$ sagodar-ar-ai
Dharma-NOM Shakuni-NEAR self-GEN brothers-ACC
toT-r-aan
lose-PAST-3sm
"Dharma$_i$ lost his$_{i/*j}$ brothers to Shakuni$_j$"

b. [dharma$_i$ **tann-uDaia$_{i/*j}$ sagodar-ar-ai** shakuni-kiTTe$_j$ **t$_O$** toT-r-aan]

c. **tann-uDaia$_{i/*j}$ sagodar-ar-ai** [dharma$_i$ shakuni-kiTTe$_j$ **t$_O$** toT-r-aan]

d. [**t$_S$** shakuni-kiTTe$_j$ tann-uDaia$_{i/*j}$ sagodar-ar-ai toT-r-aan] **dharma$_i$**

e. **tann-uDaia$_{i/*j}$ sagodar-ar-ai** [**t$_S$** shakuni-kiTTe$_j$ **t$_O$** toT-r-aan] **dharma$_i$**

We find that the same obtains in LD-movement. The anaphor is contained within the matrix subject and the potential antecedent is within the embedded clause. The moved NP fails to bind the anaphor in all cases.

(28)a. tann-uDaia$_{*i/*j}$ manaivi [$_{CP}$ dharma$_i$ bhimaav-ai$_j$
self-GEN wife Dharma-NOM Bhima-ACC
toT-r-aan-nnu] ninai-tt-aaL
lose-PAST-3sm-that think-PAST-3sf
"Self's$_{*i/*j}$ wife thought that Dharma$_i$ lost Bhima$_j$"

b. **bhimaav-ai$_j$** [tann-uDaia$_{*i/*j}$ manaivi [dharma$_i$ **t$_O$** toT-r-aan-nnu] ninai-tt-aaL]

c. **dharma$_i$** [tann-uDaia$_{*i/*j}$ manaivi [**t$_S$** bhimaav-ai$_j$ toT-r-aan-nnu] ninai-tt-aaL]

d. [**t$_S$** [dharma$_i$ bhimaav-ai$_j$ toT-r-aan-nnu] ninai-tt-aaL] **tann-uDaia$_{*i/*j}$ manaivi**

As a consequence of LD-extraction, in Tamil as in Hindi, NPs cannot bind pronouns from their new surface positions and neither are the base relations undone. We can conclude from the above that the moved phrases in Tamil always reconstruct and that the base SOV word order determines the binding relations. Clearly the landing site of LO-movement is not a thematic or argument position.

11.3.3 Reconstruction and condition C effects

If a referential NP corefers with a c-commanding pronoun, we get Condition C violations.[10]

(29) *He$_i$ loves John$_i$

(30) *She$_i$ wants to see Mary$_i$

As with WCO effects, NP-fronting can undo Condition C effects in languages like Hindi. In Tamil, word order changes do not undo Condition C effects with an anaphor. This is seen most clearly in LD-movement.[11]

(31)a. *[$_{CP}$ tann-uDaia$_i$ manaivi [$_{CP}$ dharma$_i$ shakuni-yin daayatt-ai
self-GEN wife Dharma-NOM Shakuni-GEN dice-ACC
poT-T-aan-nnu] ninai-tt-aaL]
put-PAST-3sm-that think-PAST-3sf
Intended meaning: "Self's$_i$ wife thought that Dharma$_i$ threw Shakuni's dice"

b. ***dharma**$_i$ [$_{CP}$ tann-uDaia$_{*i}$ manaivi [$_{CP}$ **t$_S$** shakuni-yin daayatt-ai poT-T-aan-nnu] ninai-tt-aaL]

c. *[$_{CP}$ **t$_S$** [$_{CP}$ dharma$_i$ shakuni-yin daayatt-ai poT-T-aan-nnu] ninai-tt-aaL]
tann-uDaia$_{*i}$ manaivi

11.3.4 Quantifier scope and reconstruction

There has been much recent discussion on quantifier scope with respect to extraction. There is a difference between the narrow-scope and wide-scope interpretation possibilities of an object quantifier given its surface position.[12] The following sentence is ambiguous between two interpretations.

(32) Every policeman beat someone
a. There is some person such that every policeman beat that person (wide-scope object)
b. For every policeman there is some person such that the policeman beat him (narrow-scope object)

But in the extracted version, the only interpretation possible is the one in (a).

(33) There is someone$_i$ that every policeman beat t$_i$

This fact has been used to argue that the quantifier has been raised to an argument position from which it does not reconstruct. Quantifier-Raising (QR) from this new position will not yield the scope ambiguities obtained from the base position.

In Tamil, in sentences such as the following, the most salient reading is the one where the subject has scope over the object, i.e. Tamil appears to be a rigid scope language. We use an NP with a numerical quantifier in the subject position in place of the universal quantifier *ellaarum* because the latter yields a group reading rather than an individual reading (unlike the universal quantifier "everyone" in English). When the order of the elements is permuted, there is no change in the scope relations.

(34)a. muuNu peer ellaa poliskaaran-ai-um paar-tt-aa
three people-NOM all policeman-ACC-Q[13] see-PAST-3p
"Three people saw all the policemen"
b. **ellaa poliskaaran-ai-um** [muuNu peer $\mathbf{t_{QP}}$ paar-tt-aa]
c. [muuNu peer $\mathbf{t_{QP}}$ paar-tt-aa] **ellaa poliskaaran-ai-um**
Scope: <For three x, x a person and for all y, y a policeman, x saw y>

However, the most salient reading in the following Tamil example is a narrow-scope reading. In the extracted cases also the same reading obtains. There is no other restriction of interpretation.

(35)a. muuNu peer yaar-ai-o paar-tt-aa
three people-NOM him-ACC-Q see-PAST-3p
"Three people saw someone"
b. **yaar-ai-o** [muuNu peer $\mathbf{t_{QP}}$ paar-tt-aa]
c. [muuNu peer $\mathbf{t_{QP}}$ paar-tt-aa] **yaar-ai-o**
Scope: <There is some y such that for each of three x, x a person, x saw y>

The semantics of the object quantifier are such that there is only "one" someone that the three people saw.[14] The important fact to note is that the LO-movement of phrases does not undo or modify the scope relations.

There is also a well-used system of reduplication[15] that facilitates a distributive or pair-list reading.

(36) muuNu peer yaar-yaar-ai-o paar-tt-aa
three people-NOM some-someone-ACC-Q see-PAST-3pm
"Three people saw someone"
Scope: <For each of three x, x a person, there is some y such that x saw y>

In fact it is also possible to reduplicate the subject quantifier. The reduplication of "three" in "three people" yields the reading that there are groups of three. The distributive reading "each" is obtained by reduplicating the numerical quantifier *oruttar* "one person." Examples are given below.

(37) mum-muuNu peer yaar-ai-o paar-tt-aa
three-three people-NOM someone-ACC-Q see-PAST-3pm
"Three people saw someone"
Scope: <There is some y such that for each of three x, x saw y>

(38) ov-oruttar-um yaar-ai-o paar-tt-aa
each-each.one-NOM-Q someone-ACC-Q see-PAST-3pm
"Each person saw someone"
Scope: <For each x, there is a y, such that x saw y>

LO-extraction does not alter the scope relations. The distributive reading is the only available reading after extraction. Interactions between quantifier scope and WH-scope are similarly determined. We get either a "distributive" reading or a

"single x" reading and this is contingent on the reduplication of the WH- or Q-phrase (or both) and LO-movement does not alter the scope interpretations.

(39)a. ellaa poliskaaran-um yaar-ai paar-tt-aa
all policemen-NOM-Q who-ACC see-PAST-3p
"Who did all the policemen see?"
b. **yaar-ai** [ellaa poliskaaran-um $\mathbf{t_{wh}}$ paar-tt-aa]
c. [ellaa poliskaaran-um $\mathbf{t_{wh}}$ paar-tt-aa] **yaar-ai**
Scope: <What is the y, that for all x, x a policeman, x saw y>

(40)a. ellaa poliskaaran-um yaar-yaar-ai paar-tt-aa
all policemen-NOM-Q who-who-ACC see-PAST-3p
"Who did all the policemen see?"
b. **yaar-yaar-ai** [ellaar poliskaaran-um $\mathbf{t_{wh}}$ paar-tt-aa]
c. [ellaar poliskaaran-um $\mathbf{t_{wh}}$ paar-tt-aa] **yaar-yaar-ai**
Scope: <For all x, x a policeman, what is the y such that x saw y>

LD-extraction of the embedded object Q-phrase over either the matrix or the embedded subject, yields no changes in scope. There is also no interaction between an embedded quantifier and a matrix quantifier.

(41)a. muuNu peer [$_{CP}$ draupadi yaar-ai-o
three people-NOM Draupadi-NOM someone-ACC-Q
anupp-in-aa-nnu] ninai-tt-aa
send-PAST-3sf-that think-PAST-3p
"Three people thought that Draupadi sent someone"
b. **yaar-ai-o** [muuNu peer [$_{CP}$ draupadi $\mathbf{t_{QP}}$ anupp-in-aa-nnu] ninai-tt-aa]
c. [muuNu peer [$_{CP}$ draupadi $\mathbf{t_{QP}}$ anupp-in-aa-nnu] ninai-tt-aa] **yaar-ai-o**
Scope: <For three x, x thinks that there is some y and Draupadi sent y>

(42)a. draupadi [$_{CP}$ muuNu peer yaar-ai-o
Draupadi-NOM three people-NOM someone-ACC-Q
paar-tt-aa-nnu] ninai-tt-aaL]
see-PAST-3p think-PAST-3sf
"Draupadi thought that three people saw someone"
b. yaar-ai-o [draupadi [$_{CP}$ muuNu peer $\mathbf{t_{QP}}$ paar-tt-aa-nnu] ninai-tt-aaL]
c. [draupadi [$_{CP}$ muuNu peer $\mathbf{t_{QP}}$ paar-tt-aa-nnu] ninai-tt-aaL] **yaar-ai-o**
Scope: <There is some y such that (Draupadi thought that) for each of three x, x saw y>

Similarly, a reduplicated object Q-phrase retains its distributive reading when LD-extracted.

(43)a. [draupadi [$_{CP}$ muuNu peer yaar-yaar-ai-o
Draupadi-NOM three people-NOM some-someone-ACC-Q
paar-tt-aa-nnu] ninai-tt-aaL]
see-PAST-3p-that think-PAST-3sf
"Draupadi thought that three people saw someone"

b. **yaar-yaar-ai-o** [draupadi [$_{CP}$ muuNu peer **t$_{QP}$** paar-tt-aa-nnu] ninai-tt-aaL]
c. [draupadi [$_{CP}$ muuNu peer **t$_{QP}$** paar-tt-aa-nnu] ninai-tt-aaL] **yaar-yaar-ai-o**

Scope: <Draupadi thought that for each of three x, there is some y such that x saw y>

Interactions between quantifier scope and WH-scope are similar to the examples of LO-extraction. We get either a distributive or a "single x" reading and this is dependent on the reduplication of the WH- or Q-phrase.

(44) yaar-ai [$_{CP}$ draupadi [$_{CP}$ ellaar-um t$_{wh}$ paar-tt-aa-nnu]
who-ACC Draupadi-NOM everyone-NOM-Q see-PAST-3p-that
ninai-tt-aaL]
think-PAST-3sf
"Who did Draupadi think that everyone saw?"
Scope: <What is the y that Draupadi thought that for all x, x saw y>

(45) yaar-yaar-ai [$_{CP}$ draupadi [$_{CP}$ ellaar-um
who-who-ACC Draupadi-NOM everyone-NOM-Q
t$_{wh}$ paar-tt-aa-nnu] ninai-tt-aaL]
see-PAST-3p-that think-PAST-3sf
"Who did Draupadi think that everyone saw?"
Scope: <For all x, what is the y such that Draupadi thought that x saw y>

11.3.5 Parasitic gaps

It has been observed that parasitic gaps are licensed by operations like WH-movement where one gap is parasitic on the true gap, which is the position of the "trace" (Chomsky 1982, 1986a). These gaps cannot be licensed within islands, suggesting that there is some overt empty operator movement that acts in tandem with the WH-movement. Typical A-movements do not license parasitic gaps and this difference enables us to test the "kind" of movement scrambling is by using the parasitic gap construction.

(46) Which article did you file t without reading e?

(47) *The book was lost t without reading e

In Tamil, rightward and leftward extractions in both LO- and LD-cases can license parasitic gaps. An A-movement rule such as passivization cannot, however, license such a gap as can be seen from the following.

(48) enda puttagatt-ai [dharma t$_{wh}$ [e paDikk-aama] tolai-tt-aan]
which book-ACC Dharma-NOM reading-NEG lose-PAST-3sm
"Which book did he lose without reading?"

(49)a. [dharma tan puttagatt-ai paDikk-aama (ad-ai)
Dharma-NOM self book-ACC reading-NEG (that-ACC)
tolai-tt-aan][16]
lose-PAST-3sm
"He lost his book without reading (it)"
b. **tan$_i$ puttagatt-ai** dharma **t$_i$** [**e$_i$** paDikk-aama] tolai-tt-aan
c. dharma **t$_i$** [**e$_i$** paDikk-aama] tolai-tt-aan **tan$_i$ puttagatt-ai**

(50) *puttagam t [e paDikk-aama] tolaikk-a-paT-T-adu
book-NOM reading-NEG lose-INF-pass-PAST-3sn
Intended meaning: "The book was lost without reading"

LD-extraction also shows the same properties.

(51)a. dharma$_i$ [bhimaa$_j$ tan$_{i/j}$ puttagatt-ai paDikk-aama (ad-ai)
Dharma-NOM Bhima-NOM self book-ACC reading-NEG (it-ACC)
tolai-tt-aan] enru son-n-aan
lose-PAST-3sm that say-PAST-3sm
"Dharma$_i$ said that Bhima$_j$ lost self's$_{i/j}$ book without reading (it)"
b. **[tan$_{i/j}$ puttagatt-ai]$_k$** dharma$_i$ [bhimaa$_j$ **t$_k$** [**e$_k$** paDikk-aama] tolai-tt-aan] enru son-n-aan
c. dharma$_i$ [bhimaa$_j$ **t$_k$** **[e$_k$** paDikk-aama] tolai-tt-aan] enru son-n-aan **[tan$_{i/j}$ puttagatt-ai]$_k$**

From the above we see that the syntactic properties of both LO- and LD-scrambling (or extraction) are identical. Unlike Hindi and Japanese, the properties of binding, WCO, scope and Condition C effects are construed from the base position of the NP. Extraction does not modify these properties in any way. We can now identify the extraction in all cases as movement to a non-argument (A′-)position from which the extracted NP must reconstruct to its base position. Unlike other languages in which scrambling has been discussed at length (Japanese, Hindi, Turkish), Tamil appears to have no local A-position to which NPs can raise. We have already established that this movement is indeed "syntactic" movement and not stylistic/phonological movement. What purpose, then, does word order permutation serve if most of its syntactic properties are fixed prior to permutation and why is it such a pervasive property of the language? We turn to this question next.

11.4 Interpretation and Scrambling

In this section we argue that Tamil exhibits adjunction movement to the right and to the left. When the movement is to the *left*, the extracted NP receives a *topic* interpretation and when the extraction is to the *right*, the extracted NP receives a *Focus* interpretation. This is startling first of all from the point of view of much work on focus that has isolated Focus positions to the left of the verb (É. Kiss 1994). It is equally startling from the standpoint of studies on extraposition that treat the postposed phrases as being "outside" the clause (Herring 1994). We

argue that positional Focus in Tamil appears to be located at the right edge, and that scrambling both to the left and right mimic and closely interact with independent topic and cleft operations, respectively, in the language. We begin by discussing the individual properties of these operations and then look at the interactions between them.

11.4.1 Focus strategies in Tamil

There are three ways of assigning focus to a constituent in Tamil. First, a simple Focus particle may be added to the phrase in situ and it receives Contrastive Focus.

(52) dharma daayatt-il shakuni-kku draupadi-ai-taan
Dharma-NOM dice-LOC Shakuni-DAT Draupadi-ACC-FOC
toT-r-aan
lose-PAST-3sm
"Dharma lost only DRAUPADI to Shakuni in (the game of) dice"

Second, the phrase that is to be focused may simply be contrastively stressed.

(53) dharma daayatt-il shakuni-kku DRAUPADI-AI
Dharma-NOM dice-LOC Shakuni-DAT Draupadi-ACC-FOC
toT-r-aan
lose-PAST-3sm
"Dharma lost DRAUPADI to Shakuni in (the game of) dice"

Third, the constituent that is to be focused may be clefted. Any constituent (NP, CP, AdvP) may be clefted, with the optional addition of a Focus particle to the clefted element. The verb is nominalized (indicated by -NOM in the gloss) and carries tense information but not agreement.[17] The following examples show a clefted direct object and subject, respectively. Accusative Case can be dropped but all other Cases must be retained.

(54) [dharma daayatt-il shakuni-kku t toT-r-adu]
Dharma-NOM dice-LOC Shakuni-DAT lose-PAST-NOM
draupadi-ai(-taan)/draupadi-(taan)
Draupadi-ACC(-FOC)/Draupadi-NOM(-FOC)
"It was Draupadi that Dharma lost to Shakuni in (the game of) dice"

(55) [t daayatt-il shakuni-kku draupadi-ai toT-r-adu]
dice-LOC Shakuni-DAT Draupadi-ACC lose-PAST-3sm
dharma(-taan)
Dharma-NOM(-FOC)
"It was Dharma who lost Draupadi to Shakuni in (the game of) dice"

11.4.2 Properties of cleft constructions

In this section we shall identify the five major syntactic characteristics of cleft constructions. First, both finite and infinitival complement CPs can be clefted in their entirety.

(56) shakuni t ninai-tt-adu [$_{CP}$ dharmaa draupadi-ai
Shakuni-NOM think-PAST-nom Dharma-NOM Draupadi-ACC
toT-r-aan enru]
lose-PAST-3sm that
"It was that Dharma lost Draupadi that Shakuni thought"

(57) dharmaa t virumb-in-adu [$_{CP}$ PRO daayatt-ai viLayaaD-a]
Dharma-NOM want-PAST-NOM dice-ACC play-INF
"It was to play dice that Dharma wanted"

It is also permissible to either LO- or LD-cleft from within an embedded finite CP. All NPs of the lower, finite CP can be clefted across the lower verb, as in simple sentences, and the matrix verb remains finite. It is not possible, however, to cleft out of infinitival complements locally. Long-distance clefting is acceptable. The following examples illustrate these properties.

(58)a. shakuni [$_{CP}$ dharmaa t toT-r-adu draupadi-ai enru]
Shakuni-NOM Dharma-NOM lose-PAST-NOM Draupadi-ACC that
ninai-tt-aan
think-PAST-3sm
"Shakuni thought that it was Draupadi that Dharma lost"

b. shakuni [$_{CP}$ dharmaa **t** toT-r-aan enru] ninai-tt-adu
Shakuni-NOM Dharma-NOM lose-PAST-3sm that think-PAST-nom
draupadi-ai
Draupadi-ACC
"It was Draupadi that Shakuni thought that Dharma lost"

(59)a. *dharmaa [$_{CP}$ PRO t viLayaaD-a daayatt-ai] virumb-in-aan
Dharma-NOM play-INF dice-ACC want-PAST-3sm
Intended meaning: "Dharma wanted to play dice"

b. dharmaa [$_{CP}$ PRO **t** viLayaaD-a] virumb-in-adu **daayatt-ai**
Dharma-NOM play-INF want-PAST-NOM dice-ACC
"It was dice that Dharma wanted to play"

Clefting a single argument across two verbs sequentially is disallowed. This is because, once clefted, the nominalized structure forms a complex NP with a "nom" head. Subsequent extraction out of this clause will be illicit because of subjacency violations. However, it is possible to cleft within different CPs.

(60) *shakuni [[$_{CP}$ dharmaa t toT-r-adu t enru]
Shakuni-NOM Dharma-NOM lose-PAST-NOM that
ninai-tt-adu] draupadi-ai
think-PAST-NOM Draupadi-ACC
Intended meaning: "It was Draupadi that Shakuni thought Dharma had lost"

(61) shakuni t_{CP} ninai-tt-adu [$_{CP}$ dharmaa t_O toT-r-adu
Shakuni-NOM think-PAST-NOM Dharma-NOM lose-PAST-NOM
draupadi-ai enru]
Draupadi-ACC that
"That it was Draupadi whom Dharma lost was what Shakuni thought"

More than one NP may be clefted with a pair-list reading if they are arguments of the same verb. Arguments from different clauses cannot be clefted, again because of cyclicity (or subjacency) violations. The first clefting procedure will result in a nominal (island), from which further extraction will not be possible.

(62) [$_{TP}$ shakuni [$_{CP}$ dharma t_L t_O toT-r-aan enru]
Shakuni-NOM Dharma-NOM lose-PAST-3sm that]
ninai-tt-adu] bhimaav-ai daayatt-il
think-PAST-NOM Bhima-ACC dice-LOC
"It was Bhima in (the game of) dice that Shakuni thought that Dharma lost"

Second, Clefting, as other syntactic movements, observes island conditions.

(63)a. draupadi [$_{NP}$ [$_{TP}$ shakuni-kku daayatt-il toT-r-a] dharmaav-ai]
Draupadi-NOM Shakuni-DAT dice-LOC lose-PAST-pp Dharma-ACC
paar-tt-aaL
see-PAST-3sf
"Draupadi saw Dharma who lost to Shakuni in (the game of) dice"

b. *draupadi [$_{NP}$ [$_{NP}$ **t_{IO}** daayatt-il toTr-a] dharmaav-ai]
Draupadi-NOM dice-LOC lose-PAST-pp Dharma-NOM
paar-tt-adu shakuni-kku
see-PAST-NOM Shakuni-DAT
Intended meaning: "It was to Shakuni that Draupadi saw Dharma who lost in (the game of) dice"

Third, nuclear stress falls on the clefted element, which is pronounced with a rising pitch.

Fourth, the clefted element is related to its origin clause in several ways. Its θ-role and Case properties are determined by the verb of the clause it belongs to and, further, the binding relations remain unaltered.

(64) $dharma_i$ daayatt-il t toTr-adu tan_i manaivi-ai
Dharma-NOM dice-LOC lose-PAST-NOM self wife-ACC
"It was his_i wife that $Dharma_i$ lost in (the game of) dice"

Fifth, WH-questions can be clefted, but no Focus particle is appended to the clefted WH-phrase. Accusative Case may be optionally dropped. It is possible to cleft more than one WH-phrase with a pair-list reading. In unclefted sentences, the WH-phrase is preferably left in situ.

(65) [dharma daayatt-il shakuni-kku t_{wh} toT-r-adu] yaar-ai
Dharma-NOM dice-LOC Shakuni-DAT lose-PAST-NOM who-ACC
"Who was it that Dharma lost to Shakuni in (the game of) dice?"

(66) [dharma daayatt-il t_{wh} t_{wh} toT-r-adu] yaar-ai yaar-ukku
Dharma-NOM dice-LOC lose-PAST-NOM who-ACC who-DAT
"Who and to whom was it that Dharma lost in (the game of) dice?"

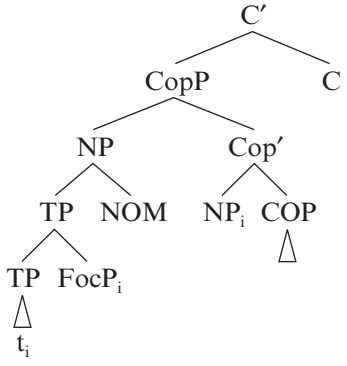
In cleft sentences a WH-phrase, if present, must be obligatorily clefted and it is not possible to cleft a non-WH-phrase instead. Neither is it possible to cleft one non-WH- and one WH-phrase together in one sentence.

(67) *[dharma daayatt-il t_{IO} yaar-ai toT-r-adu] shakuni-kku
Dharma-NOM dice-LOC who-ACC lose-PAST-NOM Shakuni-DAT
Intended meaning: "It was to Shakuni that Dharma lost whom in (the game of) dice?"

(68) *[dharma daayatt-il t_{wh} toT-r-adu] shakuni-kku
Dharma-NOM dice-LOC lose-PAST-NOM Shakuni-DAT
yaar-ai/yaaru
who-ACC/who-NOM
Intended meaning: "Who and to Shakuni did Dharma lose in (the game of) dice?"

Clefting appears to be strictly a syntactic process where the binding, Case, theta, and other syntactic properties are determined by the base word order. Clefts have been analyzed as involving operator movement with the clefted argument being base-generated in the predicate position (Chomsky 1977).[18] We have seen several properties of clefts which show us that it is movement to a non-argument position. Though there is no overt operator in the cleft constructions, it appears that the movement of the NP is the relevant movement. We assume that the NP raises to a focus position, FocP, to the right of TP. The operator adjunction is constrained by limitations on the distance it can travel in one hop, as are all such syntactic movements. The structure of these clefts is copular and the copula head is null in Tamil. The structure that is assigned to clefts is given below.

(69)



11.4.3 Properties of R(ightward)-extraction

In section 11.3 we discussed several properties of extraction and offered evidence from the non-suppression of WCO effects, binding, Condition C, and scope facts that these were instances of A′-movement (or operator movements with a variable in the base-position). In the previous section we showed that clefting also involved the movement to a Focus position and shared the same syntactic properties as other A′-movements. The entire discussion in the preceding section is to enable us to establish a number of parallels between rightward (R-)extraction and clefting.

First, the right-moved NP bears focus and, just as with the clefted phrase, the postposed NP attracts the nuclear stress or the intonational peak (which usually falls on the verb).

(70) dharmaa t toT-r-aan bhiimaav-ai
Dharma-NOM lose-PAST-3sm Bhima-ACC
"Dharma lost BHIMA"

Second, the relationship between the scrambled NP and its origin clause is unaltered. The Case and θ-role of the moved NP are assigned by the verb of the origin clause and binding relations, if any, remain unaltered. Next, rightward movement, like all other syntactic processes (including clefts), observes island conditions strictly. We have already seen examples of this in section 11.2. The fourth parallel is that entire CPs (and NPs) may be either LO- or LD-R-extracted, but not to the R-edge of infinitival complements. However, R-extraction is possible to the R-edge of finite complements. This behavior is similar to that of clefts.

(71) *dushaasana [$_{CP}^{INF}$ PRO t_O paar-kka draupadi-ai] po-n-aan
Dushaasana-NOM see-INF Draupadi-ACC go-PAST-3sm
Intended meaning: "Dushaasana went to see DRAUPADI"

(72) dushaasana [$_{CP}^{INF}$ PRO t_O paar-kka] po-n-aan draupadi-ai
Dushaasana-NOM see-INF go-PAST-3sm Draupadi-ACC
"Dushaasana went to see DRAUPADI"

Fifth, it is not permissible to R-extract phrases from different clauses to the same location. R-extraction, like clefting, observes strict cyclicity.

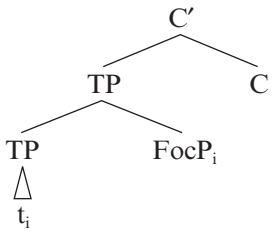
(73) *[dushaasan t_{IO} [$_{CP}$ dharma t_O toT-r-aan enru] son-n-aan]
Dushasan-NOM Dharma-NOM lose-PAST-3sm that say-PAST-3sm
bhimaav-ai draupadi-kku
Bhima-ACC Draupadi-DAT
Intended meaning: "Dushasan told DRAUPADI that Dharma lost BHIMA"

Finally, however, it is possible to R-extract two or more arguments of the same verb to the same location with a pair-list reading.

(74) [$_{TP}$ shakuni [$_{CP}$ dharma t_L t_O toT-r-aan enru] ninai-tt-aan]
Shakuni-NOM Dharma-NOM lose-PAST-3sm that] think-PAST-3sm
bhimaav-ai daayatt-il
Bhima-ACC dice-LOC
"Shakuni thought that Dharma lost BHIMA (and) IN THE GAME OF DICE"

It appears that in R-extraction, as in clefts, there is movement and adjunction of the extracted phrase to the FocP locus, adjoined to TP. The adjoined phrase is below COMP, the head of CP. What set a clefted construction apart from the R-extracted construction are the lack of nominalization and the absence of a nominative-predicative relation between the CP and the clefted element. The interpretive similarities are the result of movement to this locus of adjunction, FocP. The structure of R-extraction is given below.

(75)



This similarity leads us to make an interesting prediction. If both these operations target the same site we should expect interference between two instances of these operations in the same syntactic domain.

11.4.4 Interaction between R-extraction and clefting

An interesting consequence of the analysis of R-extraction and clefts is the above prediction of interference either between the two processes or between two applications of the same process. We have already seen that two cleft operations interfere with each other. In the following we show that multiple R-extractions are impossible exactly as with two clefts and, further, that a mix of clefting and R-extraction is also impossible. Consider the following sentence where two NPs appear to be R-extracted.

(76) [dharma t_{IO} t_O toT-r-aan] shakuni-kku bhiimaav-ai
Dharma-NOM lose-PAST-3sm Shakuni-DAT Bhima-ACC
"Dharma lost Bhima to Shakuni"

This sentence lends itself to a conjoined Focus reading (as with conjoined, clefted NPs). This means that *Dharma* lost *Bhima* to *Shakuni* and not any one else, and if he has lost others then it is not to *Shakuni* that he lost them. The other possible interpretation is that *Dharma* lost to *Shakuni* and the NP *Bhima* is uttered as an afterthought, a clarification of what was lost. In the first case, both NPs have adjoined to the same locus on TP. In the latter case, only the Dative argument is

adjoined to TP and the direct object is not a constituent of the TP. If R-extraction has applied once, it is not possible to R-extract again from within the same CP. The same is true for a mix of R-extraction and clefting. If an argument of an embedded clause is R-extracted, another argument from the same clause cannot be clefted, either locally or long-distance (and conversely). In (77b) the embedded *subject* has been R-extracted long-distance and the *object* has been clefted. In (77c), the embedded *object* has been locally R-extracted and the *subject* has been clefted to the matrix. Neither sentence is grammatical.

(77)a. dharma [$_{CP}$ draupadi bhishmaav-ai tiTT-in-aa-nnu]
Dharma-NOM Draupadi-NOM Bhishma-ACC scold-PAST-3sf-that
namb-in-aan
believe-PAST-3sm
"Dharma believed that Draupadi scolded Bhishma"

b. *[$_{NP}$ [$_{CP}$ dharma [$_{CP}$ **t$_S$ t$_O$** tiTT-in-aa-nnu] namb-in]-adu]
Dharma-NOM scold-PAST-3sf-that believe-PAST-NOM
draupadi bhishmaav-ai
Draupadi-NOM Bhishma-ACC
Intended meaning: "It was Bhishma that Dharma believed that DRAUPADI scolded"

c. *[$_{NP}$ [$_{CP}$ dharma [$_{CP}$ **t$_S$ t$_O$** tiTT-in-aa-nnu **bhishmaav-ai**]
Dharma-NOM scold-PAST-3sf-that Bhishma-ACC
namb-in]-adu] **draupadi**
believe-PAST-nom Draupadi-NOM
Intended meaning: "It was Draupadi that Dharma believed scolded BHISHMA"

If one operation targets a landing site then another similar operation targeting the same landing site cannot be performed. Thus, if R-extraction adjoins an NP to FocP, clefting cannot apply to an argument in the same domain because there is no available landing site; either FocP contains the previously moved NP or a trace of it.[19] As might be expected, the following is grammatical and it is easy to see why. Within the embedded clause the direct object has been R-extracted, and within the matrix the matrix subject has been clefted. Each of these operations is carried out in a different domain and the one does not interfere with the other.

(78) [$_{NP}$ [$_{CP}$ t$_{SUB}$ [$_{CP}$ draupadi t$_O$ tiTT-in-aa bhishmaav-ai-nnu]
Draupadi-NOM scold-PAST-3sf Bhishma-ACC-that
namb-in]-adu] dharma
believe-PAST-NOM Dharma-NOM
"It was Dharma who believed that Draupadi scolded BHISHMA"

At the start of our discussion on clefts we mentioned that there were three focusing strategies in Tamil. Given this analysis, there are four including R-extraction.[20]

11.4.5 Topicalization

In the above we argued that R-extraction is, in effect, movement to Focus which closely mimics clefting. But R-movement only covers a subset of the word orders that are possible in Tamil. We now turn our attention to Topicalization and leftward (L-)extractions. We begin by describing topicalization in Tamil and then compare it with L-extraction. As with clefts and rightward-extraction, we discuss the interaction between these two operations as well.

In Tamil, the topic position is left-peripheral to the sentence and is marked by a topic-marker *enraal* "if you say," usually shortened to *-naa*. The sentence is usually "about" the topicalized phrase.

(79)a. draupadi-kku krishnav-ai romba piDikk-um
Draupadi-DAT Krishna-ACC very like-3sn
"Draupadi likes Krishna very much"

b. [$_{CP}$ **draupadi-kku-naa** [$_{TP}$ **t$_T$** krishnav-ai romba piDikk-um]]
Draupadi-DAT-TOP Krishna-ACC very like-3sn
"Draupadi likes Krishna very much"

c. [$_{CP}$ **krishnav-ai-naa** [$_{TP}$ draupadi-kku **t$_O$** romba piDikk-um]]
Krishna-ACC-TOP Draupadi-DAT very like-3sn
"Krishna, Draupadi likes very much"

Any phrasal constituent can be topicalized. However, this operation is subject to the same sort of constraints as clefting and other syntactic operations.

First, it is not possible to topicalize out of islands. In the following examples, we show extraction out of both a relative clause construction (Complex NP Constraint (CNPC)) and a sentential subject.

(80)a. draupadi [$_{NP}$ [$_{CP}$ e$_{SUB}$ dharmaav-ai daayatt-il ven-Dr-a]
Draupadi-NOM Dharma-ACC dice-LOC win-PAST-ADJ
shakuni-ai] veru-tt-aaL
Shakuni-ACC hate-PAST-3sf
"Draupadi hated Shakuni who beat Dharma in (the game of) dice"

b. ***dharmaav-ai-naa** draupadi [$_{NP}$ [$_{CP}$ **e$_{SUB}$** **t$_T$** daayatt-il ven-Dr-a]
shakuni-ai] veru-tt-aaL

(81)a. [$_{NP}$ [$_{CP}$ shakuni dharmaav-ai daayatt-il ven-Dr-]-adu]
Shakuni-NOM Dharma-ACC dice-LOC win-PAST-NOM
avamaanam
shame
"That Shakuni beat Dharma in dice is a shame"

b. ***dharmaav-ai-naa** [$_{NP}$ [$_{CP}$ shakuni **t$_T$** daayatt-il ven-Dr]-adu] avamaanam

Next, it can be said that topicalization is possible both locally and long-distance.

(82)a. draupadi [$_{CP}$ dharmaa raajyatt-ai jei-pp-aan-nnu]
Draupadi-NOM Dharma-NOM kingdom-ACC win-FUT-3sm-that
namb-in-aaL
believe-PAST-3sf
"Draupadi believed that Dharma will win the kingdom"
b. draupadi [$_{CP}$ **raajyatt-ai-naa** dharmaa $\mathbf{t_T}$ jei-pp-aan] enru namb-in-aaL
c. **raajyatt-ai-naa** [$_{CP}$ draupadi [$_{CP}$ dharmaa $\mathbf{t_T}$ jei-pp-aan] enru namb-in-aaL]

Third, topicalization also observes strict cyclicity and it is neither possible to topicalize NPs from different CPs to the same landing site nor NPs from a single CP to different sites. However, as we might expect, it is possible to conjointly topicalize two phrases from the same clause to the same locus, and to topicalize independently within each of the matrix and embedded clauses.

(83)a. draupadi bhimaa-kku [$_{CP}$ dharmaa raajyatt-ai
Draupadi-NOM Bhima-DAT Dharma-NOM kingdom-ACC
jei-pp-aan enru] son-n-aaL
win-FUT-3sm that say-PAST-3sf
"Draupadi said to Bhima that Dharma would win the kingdom"
b. *[**bhimaa-kku-naa raajyatt-ai-naa** draupadi $\mathbf{t_T}$ [$_{CP}$ dharmaa $\mathbf{t_T}$ jei-pp-aan enru] son-n-aaL]
c. *[$_{CP}$ **raajyatt-ai-naa** draupadi bhimaa-kku [$_{CP}$ **dharmaa-naa** $\mathbf{t_T}$ $\mathbf{t_T}$ jei-pp-aan enru] son-n-aaL]

A further constraint is that, like clefting, topicalization can apply to entire clauses, both finite and infinitival.

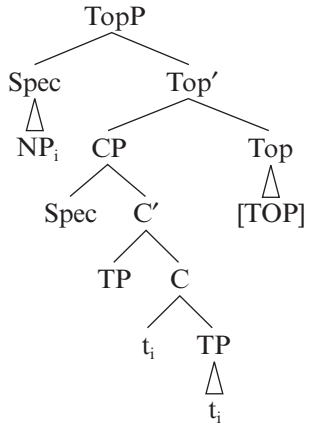
(84) [$_{TopP}$ [$_{CP}$ shakuni daayatt-il jei-tt-aan enru]-naa]
Shakuni-DAT dice-LOC win-PAST-3sm that-TOP
dharma t_T son-n-aan
Dharma-NOM say-PAST-3sm
"That Shakuni won (in the game of) dice, Dharma said"

(85) [$_{TopP}$ [$_{TP}$ shakuni-ai daayatt-il jeikk-a]-naa] dharma
Shakuni-ACC dice-LOC win-INF-TOP Dharma-NOM
t_T uttaravu iT-T-aan
order place-PAST-3sm
"Shakuni to win in the game of dice, Dharma ordered"[21]

A fifth constraint is that the Case and θ-role of the topicalized argument are assigned by the thematically related verb.

We assume that a TopP, situated above CP, is the targeted landing site. The topicalized NP adjoins to TP en route to TopP. The phrase structure tree is given below. The [TOP] feature causes the relevant raising of the NP but morphologically, the topic marker is affixed to the NP and not generated in Top.

(86)



We now turn our attention to L-extraction and compare it with topicalization.

11.4.6 Properties of (L)eftward-extraction

We have already discussed the syntactic properties of topicalizations. They were shown to be instances of A′-movement as well. Interpretively, L-extraction is also a topic movement that mimics the topicalization operation and targets the same landing site. The properties of L-extraction are listed below.

First, the L-extracted NP is considered to have the same interpretive properties as topicalized NPs.

(87) daayam dharmaa-kku t romba ishTam
dice-NOM Dharma-DAT very like
"Dice, Dharma likes very much"

Second, L-extraction, like topicalization and clefting, observes island conditions. Examples were given in section 11.2 and we do not repeat them here.

Third, L-extraction observes strict cyclicity and it is neither possible to L-extract NPs from different CPs to the same landing site nor NPs from a single CP to different sites.

(88)a. draupadi bhimaa-kku [$_{CP}$ dharmaa raajyatt-ai
Draupadi-NOM Bhima-DAT Dharma-NOM kingdom-ACC
jei-pp-aan enru] son-n-aaL
win-FUT-3sm that say-PAST-3sf
"Draupadi said to Bhima that Dharma will win the kingdom"

b. *[$_{CP}$ **bhimaa-kku raajyatt-ai** draupadi **t$_{IO}$** [$_{CP}$ dharmaa **t$_{O}$** jei-pp-aan enru] son-n-aaL]

c. *[$_{CP}$ **raajyatt-ai** draupadi bhimaa-kku [$_{CP}$ **dharmaa t$_{S}$ t$_{O}$** jei-pp-aan enru] son-n-aaL]

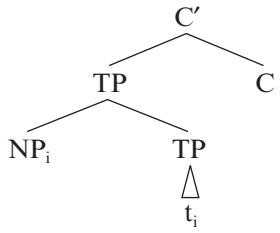
Next, L-extraction is possible locally and long-distance, as with all the other operations we have seen so far.

Finally, in the R-extraction cases we saw that the first NP in a sequence of postposed NPs is focused (unless there is conjoint Focus), but the others have an afterthought/clarification role. In the multiple, L-extracted orders (such as IO–O–S–V) either both NPs conjointly bear the interpretive role of topic or only the one immediately left-peripheral to the sentence does. In the example below, the indirect object may be extraneous to the sentence. This extraneousness is indicated in the phonology by a pause after the indirect object. There is no such break in the intonation contour between the topic or the L-extracted constituent and the rest of the sentence.

(89) krishnaa-kku saadatt-ai [draupadi t_{IO} t_{O} poT-T-aaL]
Krishna-DAT rice-ACC Draupadi-NOM put-PAST-3sf
a. "Speaking of Krishna and the rice, Draupadi gave (it) (to him)"
b. "To Krishna, (speaking of) the rice, Draupadi gave"

The difference between topicalization and L-extraction lies in the morphology alone, i.e. the topicalized phrase is overtly marked with a topic marker. The landing site for L-extraction is also an adjunction site to the left of TP.

(90)



As with the R-extraction and clefting, we predict that both L-extraction and topicalization will interfere with each other, since both operations target the same TP-adjunction site.

11.4.7 Interaction between L-extraction and topicalization

The interaction between L-extraction and topicalization is as expected. Each of these operations can be applied independently to a domain but not both in a single syntactic domain. We have already seen that topicalization cannot apply twice and, likewise, multiple L-extractions are also ungrammatical.[22] Example (91b) shows the application of both these operations to NPs from the same CP. The result is ungrammatical. If these operations are applied to different NPs in different CPs, as in (91c), then there is no ungrammaticality.[23]

(91)a. [vyaasa gaNapati-kku [draupadi krishnaa-kku
Vyaasa-NOM Ganapati-DAT Draupadi-NOM Krishna-DAT
saadatt-ai poT-T-aaL-nnu] son-n-aar]
rice-ACC put-PAST-3sf-that say-PAST-3shon
"Vyaasa told Ganapati that Draupadi served rice to Krishna"

b. *[$_{CP}$ **saadatt-ai-naa** vyaasa gaNapati-kku [$_{CP}$ **krishnaa-kku** draupadi $\mathbf{t_T}$ $\mathbf{t_{IO}}$ poT-T-aaL enru] son-n-aar]
c. #[$_{CP}$ **gaNapati-kku-naa** vyaasa [$_{CP}$ **krishnaa-kku** draupadi $\mathbf{t_{IO}}$ saadatt-ai poT-T-aaL enru] $\mathbf{t_T}$ son-n-aar]

We may conclude that L-extraction has a "topicalization" role just as R-extraction has a "focusing" role. The interference that we have shown above between both sets of operations is the failure of multiple application of the same or similar operation. Since the topic marker is attached only to topicalized constituents and not L-extracted ones, we assume that there is operator movement to [SPEC, TopP] (drawing from Rizzi 1997) in the case of topicalized constructions, which is absent in the L-extracted sentences. In both there is leftward adjunction of the operator to TP. The [SPEC, TopP] position is indicated by the topic marker.

11.4.8 Topic and Focus in parallel

In the preceding sections, one goal was to establish that clefting and R-extraction, on the one hand, and topicalization and L-extraction, on the other, could be grouped together as being similar kinds of operations. Let us call them TOP and FOC, respectively. This similarity within each pair was attributed to the following properties: (a) both operations target the same TP-adjunction site (issue of interference); (b) both exhibit the same syntactic properties, i.e. A′-properties; (c) both operations are interpretively equivalent. It would be interesting to determine the nature of the interaction between these two pairs of operations. Given what we have already said, if the landing sites are as we have shown them to be, we should not expect any interaction between the two sets of operations. Consider the following example with an embedded CP.

(92) [$_{CP}$ shakuni kauravar-ukku [$_{CP}$ [dharma daayatt-il
Shakuni-NOM Kauravas-DAT Dharma-NOM dice-LOC
raajyatt-ai to-pp-aan]-nnu] son-n-an]
kingdom-a lose-FUT-3sm-that say-PAST-3sm
"Shakuni told the Kauravas that Dharma will lose his kingdom in (the game of) dice"

In the following we give examples where the FOC operations are mixed with the TOP operations within the same CP. It should be obvious that these operations can be performed independently in different CPs without any interference. We only show interactions when both operations are applied in the same domain.

(93) Clefting and topicalization within the embedded CP
[$_{CP}$ shakuni kauravar-ukku [$_{TopP}$ **daayatt-ila-naa** [$_{CP}$ dharma $\mathbf{t_T}$ $\mathbf{t_{FOC}}$
Shakuni-NOM Kauravas-DAT dice-LOC-TOP Dharma-NOM
tokk-a poo-v-adu] **raajyatt-ai** enru] son-n-aan]
lose-INF go-FUT-NOM kingdom-ACC that say-PAST-3sm
"Shakuni told the Kauravas that in dice, it would be the kingdom that Dharma will lose"

(94) Topicalization and R-extraction within the embedded CP
[$_{CP}$ shakuni kauravar-ukku [$_{TopP}$ **daayatt-ila-naa** [$_{TP}$ [dharma $\mathbf{t_L}$ $\mathbf{t_O}$
Shakuni-NOM Kauravas-DAT dice-LOC-TOP Dharma-NOM
top-p-aan] **raajyatt-ai**] enru] son-n-aan]
lose-FUT-3sm kingdom-ACC that say-PAST-3sm
"Shakuni told the Kauravas that in dice, that Dharma would lose the KINGDOM"

(95) Clefting and L-extraction within the embedded CP
[$_{CP}$ shakuni kauravar-ukku [**daayatt-ila** [$_{TP}$ dharma $\mathbf{t_L}$ $\mathbf{t_O}$
Shakuni-NOM Kauravas-DAT dice-LOC-TOP Dharma-NOM
tokk-a poo-v-adu] **raajyatt-ai** enru] son-n-aan]
lose-INF go-FUT-NOM kingdom-ACC that say-PAST-3sm
"Shakuni told the Kauravas that in dice, it would be the kingdom that Dharma will lose"

(96) Topicalization and clefting long-distance out of the embedded CP
[$_{TopP}$ **daayatt-ila-naa** [[shakuni [$_{CP}$ [dharma $\mathbf{t_T}$ $\mathbf{t_O}$ to-pp-aan]-nnu]
dice-LOC-TOP Shakuni-NOM Dharma-NOM lose-will-3sm-that
namb-in-adu] **raajyatt-ai**]]
believe-PAST-NOM kingdom-ACC
"In dice, it is the kingdom that Shakuni told the Kauravas that Dharma would lose"

FOC and TOP do not interfere with each other, as these examples show. Though we do not give the examples here, it is easy to see that within the matrix CP also, a mix of these operations can be performed. Our prediction, then, is correct. Our proposal that there are separate TOP and FOC operators holds true. We now need to fix the relative positions between topicalization and clefting. We have seen that extraction out of moved constituents is illicit. If FOC is located below TOP and is performed first then the TP that contains the FOC material will be nominalized. Subsequent extraction out of this nominalized (island) clause will not be permitted. However, if TOP is performed first then FOC can still apply. We suggest that the TopP is located below the CopP, the assumption being that the topic phrase does not form a barrier to movement.

In this section we showed that "scrambling" in Tamil may be separated into two operations, leftward and rightward extraction, that are syntactically similar in that they are both A′-movements, but different in that they (a) target different landing sites and (b) have different interpretive properties. In fact the positional difference ties up with the interpretive difference when we compare them to similar operations, i.e. topicalization and clefting. In the next section we focus on acquisition data to determine children's competence in using these extraction operations.

11.5 Acquisition and Non-Canonical Word Orders

The data that will be discussed in this section are drawn from two sources: (a) the longitudinal, natural speech recordings of Vanitha (V) from 9 to 33 months

Table 11.1 Tamil-speaking children studied in fieldwork

Name	*Ref*	*Sex*	*Age at recording (years, months, days)*
Niveda	N	F	1,5,12; 1,5,28; 1,6,7; and 1,6,22
Kannan	K	M	1,7,17; 1,7,29; 1,8,3; and 1,8,12
Priya	P	F	1,9,2; 1,9,16; 1,10,4; and 1,10,23
Satish	S	M	2,0,9; 2,0,21; 2,1,11; and 2,1,19
Srija	J	F	2,3,3; 2,3,15; 2,4,5; and 2,4,29
Veena	V	F	2,6,10; 2,6,20; 2,7,6; and 2,7,17
Vidya	D	F	2,8,23; 2,9,13; 2,9,27; and 2,10,15
Karthik	R	M	2,11,3; 2,11,24; 3,0,16; and 3,1,2
Lavanya	L	F	3,2,21; 3,3,11; and 3,4,1
Pradeep	T	M	3,6,6; 3,6,22; 3,7,14; and 3,8,2

(CHILDES database, MacWhinney and Snow 1985; Narasimhan 1981), and (b) the cross-sectional recordings of a group of ten Tamil-speaking children between the ages of 17 and 42 months, recorded in four sessions each over a period of one year (Sarma 1999).[24] The names and ages of the children at the time of recording are given in table 11.1.

At these early ages the children make morphologically correct and appropriate use of nominal and verbal inflection, which presupposes knowledge of the lexical and syntactic properties of predicates. The syntax begins to show complexity at around the age of 20 months, when they get past one- and two-word utterances and make productive use of finite forms. As we saw in the previous section, word order permutations are used in Tamil to signal the topic or the focus of a sentence. In this section we shall see what the acquisition data tell us about the use of these interpretive properties and what the relation is between scrambling and Case assignment.

11.5.1 Case-drop and scrambling

In certain dialects of Tamil, there is a phenomenon of Accusative Case drop that is permitted under two conditions: (a) the object noun must be non-rational ([-rat]) and (b) the NP must remain adjacent to the verb, i.e. scrambling is not an option.[25] The two conditions interact to give us four logical possibilities of Case-to-position relations. The numbers of Case-marked and Case-dropped forms occurring preverbally and postverbally in the corpus are given in table 11.2. Numbers preceded by an asterisk indicate instances of violations of these conditions. The table includes data for all finite forms, including imperatives. There are no instances of LD-extraction in the data and all the examples here involve movement either to the right or to the left of a local TP. We expect that if the children know the Case conditions on scrambling (only Case-marked NPs can be scrambled) we ought not to find any postverbal, Case-dropped NPs.

In the above, the one error in the first condition [NP_{+Acc}, Verb] consists of assigning Accusative Case to an NP that should have taken the Dative. In the second condition [NP_{-Acc}, Verb] there are six errors where the Case marker has

Table 11.2 Accusative Case-drop and scrambling

	S *2,0*	*S* *2,1*	*V* *2,1*	*V* *2,2*	*J* *2,3*	*J* *2,4*	*V* *2,4*	*V* *2,6*	*N* *2,6*	*N* *2,7*	*D* *2,8*	*D* *2,9*	*V* *2,9*	*D* *2,10*	*R* *2,11*	*R* *3,0*	*R* *3,1*	*L* *3,2*	*L* *3,3*	*L* *3,4*	*T* *3,6*	*T* *3,7*	*T* *3,8*
NP$_{+Acc}$ V	11	5	5 *1	4	5	7	15	8	2	7	0	4	4	4	30	17	20	27	31	29	17	24	23
NP$_{-Acc}$ V	15	12	42 *1	26 *2	9	19	20 *1	23 *1	7	12	5	11	20	6	0	0	0	0	0	0	13	9	14 *1
V NP$_{+Acc}$	7	4	5	1	4	9	0	3	2	5	0	3	0	2	11	5	7	9	11	6	4	2	3
V NP$_{-Acc}$	0	0	*1	*1	*1	0	*2	*1	0	*1	0	0	*1	0	*2	0	0	*1	0	*1	0	0	0

Table 11.3 Case-drop and position of NP[26]

Case	*Preverbal*	*Postverbal*
–ACC	259 (51%)	12 (18%) (Expect: 0%)
+ACC	246 (49%)	54 (82%) (Expect: 100%)

been dropped incorrectly on [+rat] nouns. In two of these, the noun *boochaanDi* "bogeyman" has been designated [–rat] incorrectly. Thus, while the Case-drop itself is appropriate to the noun's [rat] feature, the [rat] feature does not match the adults'. Finally, in the fourth condition [V, NP_{-Acc}], Case-dropped NPs have been scrambled. There are six such errors in the V corpus and the recordings for T, J, and N contain one each. R and L speak a variety that does not permit Case-drop. They retain the Case both preverbally and postverbally. The four errors in their data appear to be instances of Case-drop on the Accusative NP but the phonological cues indicate otherwise. The postposed material in all four cases were afterthoughts or clarifications, pronounced after a significant pause.

(97) naan (pro) paar-t-een # puunai
I-NOM see-PAST-1s cat
"I saw (it). (The) cat"

Summarizing the data in table 11.2,[27] we find that, preverbally, Case-drop occurs 51 percent of the time and the Case marker is retained 49 percent of the time. In postposed orders, however, the Case marker is retained 82 percent of the time and dropped 12 percent of the time.

The retention of Case marking on the displaced NP has increased significantly, up from 49 to 82 percent. Nonetheless, the correlation is as yet imperfect and the adjacency requirement on Case-dropped NPs is not uniformly implemented. R and L, who speak a variety without Case-drop, have no problem with retaining Case uniformly on the displaced NP. They never drop Case preverbally and they retain it postverbally too. Some relevant examples of the displaced Accusative NPs with and without Case are given below.

(98) [kaDai-kku PRO pooy-i] ena-kku jem vaang-i-ND-u (V:2,1,18)
store-DAT go-vbp me-DAT Gem-θ buy-vbp-have-vpb
vara-N-um
come-must-3sn
"I want to go to the store and buy Gems"[28]

(99) (pro) kaDkk-a poo-r-een jemm-a (V:2,1,18)
bite-INF go-PRES-1s Gem-ACC
"(I) am going to bite the Gem(s)"

(100) *naa (pro) kuDu-tt-een muttaa (V:2,1,18)
I-NOM give-PAST-2s kiss(-ACC)
Intended meaning: "I gave (someone) a kiss"

The Case condition on scrambling must hold for other NPs as well, and it does. The Case marker is never dropped on non-Accusative NPs even in those dialects where Accusative Case-drop is possible. However, all Case-marked NPs can be scrambled and we find a wide variety of such sentences in the corpus.

(101) amma dressu poT-Tu-viT-T-aa **paapaa-kku** (N:2,7,17)
mother-NOM dress-θ put-vbp-leave-PAST-3sf baby-DAT
"Mother put the dress on the baby"

(102) amma marundu pooDu-v-aa **kaal-la** taan (T:3,6,6)
mom medicine-θ put-FUT-3sf leg-LOC only
"Mother will put medicine on the leg only"

(103) nagpur-la kongu i-kk-aa (V:2,6,7)
Nagpur-LOC monkey-NOM be-PRES-3sn-Q
"In Nagpur, are there monkeys?"

Since children seem to permit LO-shifts in word order, the next question is whether they also exploit the change in interpretive properties.

11.5.2 Interpretive properties of scrambled phrases

There are a total of 146 instances of scrambling of single and multiple NPs in the corpus. The scrambled NP surfaces to the right or the left of the verb. We have shown that such moved NPs occupy A′-positions in the adult language. In the previous section we saw the relation between Case marking and scrambling in child language. It is not possible to apply our standard diagnostic tests to figure out the actual position occupied by the moved NPs, but the contextual interpretation of the scrambled NPs suggests that word order shifts are motivated by topic and focus considerations even in child Tamil. Consider the following.

(104) **nagpur-la** **pandu pandu** butterfai (V:2,6,7)
Nagpur-LOC fly- fly- butterfly-NOM
$\mathbf{t}_{\mathbf{LOC}}$ $\mathbf{t}_{\mathbf{VBP}}$ pee-D-t-Tu
go-vbp-leave-PAST-3sn
"In Nagpur, the butterfly flew away"
(Lit.: "In Nagpur flying, flying, the butterfly went away")

(105) **nagpur-la** kongu $\mathbf{t}_{\mathbf{LOC}}$ i-kk-aa (V:2,6,7)
Nagpur-LOC monkey-NOM be-PRES-3sn-Q
"In Nagpur, are there monkeys?"

(106) **en caakleeT-a** eli vandu $\mathbf{t}_{\mathbf{O}}$ tinn-u-T-T-u (V:2,6,7)
my chocolate-ACC mouse-NOM came-vbp eat-vbp-leave-vbp
pe-e-T-T-u
go-vbp-leave-PAST-3sn
"My chocolate, the mouse came, ate and went"

The NP has been moved to the left periphery in these three examples and the interpretation of these moved NPs is that of a *topic*. For the first two utterances, Nagpur (a city in India) has been the topic of conversation for a while and the child asks various questions about the city and also recounts other properties of the city. Thus, "speaking of Nagpur" she wants to know if there are monkeys there and she talks about a butterfly that flew away there. The third sentence is uttered in the context of an ongoing discussion about chocolate given to V. Her father asks her where it is and since she has already eaten it she blames the mouse. Thus the "topic" is signaled quite clearly by positional differences. In addition there are two instances of topicalization.

(107) **unkala-na** (pro) nettu TV-la $\mathbf{t_T}$ paat-t-een (K:3,1,2)
uncle-TOP yesterday TV-LOC see-PAST-1s
"Uncle, I saw yesterday on TV"

(108) **dosa-na** ekk-u $\mathbf{t_T}$ pikk-um (D:2,10,15)
pancake-TOP I-DAT like-3sn
"Pancakes, I like"

In the three examples below, the NP appears postverbally. Again, we can see from the context that the order shift is used to signal a "focus" on the postposed NP.

(109) naa $\mathbf{t_{IO}}$ (pro) vaar-i-aac-c-u **ona-kku** (V:2,4,22)
I-NOM comb-vbp-finish-PAST-3sn you-DAT
"It is for you that I have combed (your) hair"

(110) amma $\mathbf{t_{IO}}$ dressu poT-Tu-viT-T-aa **paapaa-kku** (N:2,7,17)
mother-NOM dress-θ put-vbp-leave-PAST-3sf baby-DAT
"It is on the baby that Mother put the dress"

(111) amma $\mathbf{t_{LOC}}$ marundu pooDu-v-aa **kaal-la taan** (T:3,6,6)
mom medicine-θ put-FUT-3sf leg-LOC only
"It is on the leg only that Mother will put medicine"

In the first case, the child has just been discussing combing her doll's hair. When her father requests that she comb his hair, she tells him that she is done combing *his* hair but not the doll's. In the second case, there is a discussion on dressing up the child and her doll. The former manages to get her shirt on herself and then, in speaking of the doll, says that her mother dressed the *doll* and not her. In the third case, the child has an old wound on his leg that he is looking at. The caretaker asks what should be done to heal it. Should he take tablets or go to the doctor for an injection? The response is that his mother will put medicine on his *leg*, rather than taking the medicine internally. There is, in addition, the focus particle that morphologically identifies focus. However, there are no instances of clefts in the corpus.

The data suggest that the children are aware of the semantic differences that underlie such order changes. Interpretive properties are quite clearly indicated

given the context. Although there is no real way of measuring, in spontaneous speech, the properties of A′-movement, the use of scrambling (albeit limited) is adult-like.

11.6 Conclusions

In this chapter we have tried to argue that free or flexible word ordering in Tamil is a well-defined syntactic process with robust semantic/interpretive consequences. We identified two extraction procedures, leftward and rightward, based on direction of adjunction. As a syntactic process, these L- and R-extraction procedures were shown to have the properties of movements to non-argument or non-lexical positions, i.e. the antecedent and the trace are in an operator–variable relation. We discussed certain parallel constructions, topicalization, clefting in Tamil and tried to show that "scrambling" or "extraction" mimics these operations. We also discussed the interaction between all these procedures in parallel and demonstrated that the focusing (FOC) strategies were independent of the topicalization (TOP) strategies. We assigned a composite structure to these multiple-extracted sentences. However, one, perhaps difficult, question remains. Why should a language have multiple operations with similar interpretive consequences? It is not clear what the answer should be but, at the very least, such multiplicities are not uncommon. Languages are known to have multiple focus strategies (contrastive stress, morphological focus, clefts, and pseudo-clefts), multiple relative clause constructions (participial relatives and correlatives, for example), and multiple verb-nominalizing strategies. So perhaps it is not surprising that Tamil uses word order permutations to signal interpretive differences. We also discussed the issue of what children do with such syntactic processes. We found that children were "aware" of the Case restrictions on scrambling, though their performance was not uniform. We also found that the children use order shifts to signal interpretive changes like adults. These children are in the very early stages of linguistic development and it would be of great interest to determine experimentally the syntactic properties of such extractions in the future.

Notes

1 Tamil is one of the four major Dravidian languages and is spoken in the state of Tamil Nadu, India and also in Sri Lanka, Singapore, Malaysia, and other parts of South East Asia. There are about 57 million speakers across the world.

2 The sample sentences in this chapter are based on the story of the *Mahābhārata*, one of two great Indian epics, that recounts the conflict between the *Pāndava* brothers and their *Kauravā* cousins. The sentences deal with a crucial incident in the plot when the oldest *Pāndava* brother (*Dharma*) agrees to play a game of dice against his cousin *Duryodhana* for the throne and proceeds to stake and lose, not just his possessions, but his four brothers, himself, and finally his wife, *Draupadī*.

3 See Webelhuth (1990) for arguments on movements to mixed positions – with both A- and A′-properties. See also Browning and E. Karimi (1994) for similar arguments for Persian.

4 This was first pointed out by Christdas (1988). Tamil has a three-way contrast in the stop consonants, /p, t, k/. The voiced stops are allophonic variations. For this reason, the geminate of [d] is shown as [t]. Phonetically, the [d] is not robustly voiced and neither is the geminate completely voiceless. The geminate usually closes a syllable in Tamil and is shown attached to the end of the preceding form. Note also that this is not just a trace-effect. Gemination is possible between VP-constituents only when they are a part of the VP and not otherwise (cf. (7c) and (14)). In subsequent examples we ignore the geminate.

5 The properties of Hindi are discussed in Mahajan (1990) and we do not repeat them here for lack of space.

6 The reduplicated form of the pronoun permits coreference with the QP and there are no WCO effects.

(i) ?[avaa-avaaL-uDaiai aNNaa ellaar-ai-umi toT-r-aan]
they-they-GEN brother-NOM everyone-ACC lose-PAST-3sm
"Their$_i$ brother lost everyone$_i$"
(ii) **ellaar-ai-umi** [avaa-avaaL-uDaiai aNNaa **ti** toT-r-aan]

7 The referential indices are separate from the index on the trace, which indicates the category moved. Traces have the same referential properties as their antecedents.

8 In Hindi, if the pronoun is contained within the embedded subject WCO effects can be suppressed by NP-fronting.

9 This is also true of LD-movement, where the pronominal in the matrix subject can optionally be coreferential with the embedded subject or object NP in all orders, with a preference for linear precedence.

(i) avan-uDaia$_{i/j}$ manaivi dharma$_i$ bhimaav-ai$_j$ toT-r-aan-nnu
his-GEN wife Dharma-NOM Bhima-ACC lose-PAST-3sm-that
ninai-tt-aaL
think-PAST-3sf
"His$_{?i/?j}$/Self's$_{*i/*j}$ wife thought that Dharma$_i$ lost Bhima$_j$"
(ii) **bhimaav-ai$_j$** [avan-uDaia$_{?i/j}$ manaivi [dharma$_i$ **t$_o$** toT-r-aan-nnu]] ninai-tt-aaL

10 The referential NP in these cases and the WH-trace in the WCO are both subject to Condition C of the Binding theory.

11 In LO-movement, the anaphor's property of subject-orientation conflicts with the Condition C effects.

12 In Japanese, it has been noted that the base order of elements provides an unambiguous reading of the quantifiers and Japanese is known as a rigid scope language (Saito 1992).

(i) dareka -ga daremo -o aisiteiru
someone-NOM everyone-ACC love
"There is a person who loves everyone"

However, when the object quantifier is extracted, the scope ambiguity emerges.

(ii) daremo -o dareka -ga aisiteiru
everyone-ACC someone-NOM love
"Everyone loves someone" or "Someone loves everyone"

The scope of the scrambled NP is construed either from its new position or by the optional Quantifier-Raising (QR) of the nominative quantifier, which lends it a wide-scope reading.

13 *-um* and *-o* are clitics that are added to a quantified phrase. In the absence of a noun (such as "policeman" in this case) the clitic will attach itself directly to the quantifier. *-um* has the meaning of inclusion, i.e. all the members of the set in question are equally affected and *-o* has the meaning of "some," i.e. an indefinite, unspecified entity. When *-um* is added to WH-words, it has the meaning of "any" and must be licensed by a negative auxiliary. These clitics follow the Case affixes.

14 This probably has something to do with the specificity effects of the Accusative Case marking. See the section on acquisition for some discussion of these facts.

15 In fact, reciprocals in Tamil are such reduplicated structures built on the numeral "one."

16 In (49a) a pronoun is required in the place of either the true or the parasitic gap, otherwise it is assumed that there is an elided object. In (49b, c) the overt pronoun is not permitted, since that position is the site of the parasitic gap.

17 The verb is invariant irrespective of the clefted argument's number and gender features.

18 Heggie (1988) also assumes operator movement and argues for a copular construction for clefts and pseudo-clefts.

19 In (77c), even if the final landing site is the matrix clause, the cleft operator-movement must apply cyclically. The FocP above the embedded TP is occupied and, consequently, clefting cannot also move a phrase to the same FocP. A direct hop to the matrix will lead to subjacency or minimal link violations.

20 There is one difference between R-extraction and clefting: WH-phrases can be clefted but not R-extracted. In Tamil, WH-phrases prefer to remain in situ. The NP_2 position in a cleft [NP_1 COP NP_2] may well be a base-generated/merge position that is linked to the FocP position within NP_1. But the raised NP in FocP of R-extraction has been displaced and, consequently, cannot host a WH-phrase.

21 *Shakuni* is the embedded subject that gets its Case from the matrix Exceptional Case Marking (ECM) verb, "to order." Thus it is present overtly in the infinitival TP.

22 Under the interpretation that both extracted NPs have been individually topicalized.

23 It is to be noted that this second sentence becomes quite difficult to process since it involves quick topic switches.

24 This fieldwork was made possible in part by a predoctoral fellowship grant (1996) from the Wenner-Gren Foundation for Anthropological Research, Inc.

25 There are certain specificity effects that accompany Case-drop, as is shown below.

(i) siitaa tuNiy-ai / tuNi-gaL-ai toi-tt-aaL
Sita-NOM cloth-ACC / cloth-pl-ACC wash-PAST-3f
"Sita washed the clothes"

(ii) siitaa tuNi toi-tt-aaL
Sita-NOM cloth-θ wash-PAST-3f
"Sita washed clothes" (Lit.: "Sita clothes-washing did")

But these effects are not uniform. The Case marker can be dropped *without* a generic reading of the NP.

26 Although there are no relevant data in these transcripts, it would be interesting to verify whether children acquiring Tamil perceive the difference between Nominative objects and Case-dropped objects. They should be able to freely scramble the former but not the latter.

27 We exclude R and L from the summary, since their dialect does not have Case-drop.

28 Indian sweets.

12

L2 Acquisition of Japanese: Knowledge and Use of Case Particles in SOV and OSV Sentences

Noriko Iwasaki

12.1 Introduction

This chapter investigates the second language (L2) acquisition of Japanese Case particles in canonical and non-canonical word order sentences among Japanese learners whose first language (L1) is English. In particular, I attempt to reveal both the processing strategies that L2 speakers of Japanese employ when producing Japanese sentences and the grammatical knowledge that underlies their performance, emphasizing that performance data are necessarily the product of both speakers' underlying knowledge and their capacity to process language. This emphasis assumes that L2 acquisition is composed of at least two components: linguistic knowledge and the skills for the real-time processing of that knowledge (e.g. Bialystok 1994; Bialystok and Sharwood Smith 1985). Both components should be taken into account when examining L2 acquisition.

Japanese has a relatively flexible word order. The sentence in (1a) exemplifies the canonical word order Subject–Object–Verb (SOV), and (1b) exemplifies the non-canonical word order Object–Subject–Verb (OSV).

(1)a. Canonical word order (SOV)
Maya-ga banana-o tabe-ta
NOM ACC eat-PAST
"Maya ate a banana"

This study is based on a part of my dissertation, which was supported by an NSF dissertation award (BCS-9908397). I am very grateful to Cecile McKee for her feedback on this paper.

b. Non-canonical word order (OSV: i.e. scrambled sentence)
Banana-o Maya-ga tabe-ta
ACC NOM eat-PAST
"Maya ate a banana"

The OSV sentence in (1b) is the consequence of what is sometimes referred to as clause-internal scrambling. Although there are other scrambling operations such as long-distance scrambling and VP-internal scrambling (see Nemoto 1999 for a review), the present study only concerns clause-internal scrambling.

12.1.1 Previous studies of L1 Japanese

Many of the experiments employed to study Japanese children's acquisition of Case particles have tested for comprehension of Case particles in sentences with varied word orders. In a pioneering study, Hayashibe (1975) conducted two act-out experiments to test 3,0 to 5,11 (year,month) old children's comprehension of SOV and OSV sentences. He found a stage at which children heavily relied on word order before they reliably used Case particle information. His subjects who were younger than five interpreted the first N of Noun–Noun sequences as an agent regardless of whether the Nominative *-ga* or the Accusative *-o* were present.

Likewise, Sano (1977) found that 80 children aged 3,3 to 6,8 could act out and imitate SOV sentences, but not OSV sentences. In her imitation task, children tended to change particles when responding to OSV sentences so that the resultant sentences were SOV. Sano also noted children's strong tendency to insert the Accusative *-o* into the position following the second NP when imitating sentences with a particle missing in that position, such as N–Ø N–Ø V, S-*ga* O–Ø V, and O-*o* S–Ø V.

Hakuta (1982) also found a bias towards matching the NP position with a Case particle. He conducted four experiments, including both comprehension and production tasks. He first gave an act-out task to 48 children ages 2,3 to 6,2, presenting the stimuli types shown in (2). The results indicated that the children did not rely on word order alone; instead, they were biased to a match between the first NP position and the Nominative *-ga*. Only the first NPs marked with *-ga* were reliably interpreted as agents.

(2) Types of stimuli used in Experiment 1 in Hakuta (1982).
a. Active SOV AGENT-*ga* PATIENT-*o* VERB-active
b. Active OSV PATIENT-*o* AGENT-*ga* VERB-active
c. Passive SOV PATIENT-*ga* AGENT-*ni* VERB-passive
d. Passive OSV AGENT-*ni* PATIENT-*ga* VERB-passive

The children's comprehension of active SOV sentences as in (2a) was considerably more accurate than for all the other sentence types. But in his second experiment, in which NPs were unmarked in sequences NNV, NVN, and VNN, children no longer showed a strong bias toward interpreting NNV sequences as agent–patient–action.

Hakuta also found that children preferred an SOV word order during production. He conducted a picture description task and an imitation task. Out of 576 opportunities (12 transitive verb pictures × 48 children) of picture description, there were only 13 instances of OSV active, 14 instances of SOV passive, and no instances of OSV passive sentences. The results of the imitation task also showed a preference for SOV sentences and a strong bias for the matching of first NP and *-ga* markings. While the children imitated SOV active sentences with 100 percent accuracy, they were only 63.4 percent accurate with OSV sentences. This pattern was observed among older children as well. The most frequent error was switching *-o* and *-ga* in an O-*o* S-*ga* V sequence while retaining the order of nouns, which resulted in O-***ga*** S-***o*** V. The other common error was changing the particle following the first NP to *-ga.*

Lakshmanan and Ozeki (1996) found similar errors in one two-year old child's performance in an imitation task. They had not found any OSV sentences in a corpus of 353 spontaneous utterances collected over a five-month period; thus, they gave the child an imitation task. The child tended to alter the stimuli (e.g. O-*o* S-*ga* V) either by switching the NPs (in the case of non-reversible sentences[1]) or by omitting the Case particles (in the case of reversible sentences). She never produced the Accusative *-o* overtly. Lakshmanan and Ozeki related the absence of *-o* to the lack of a scrambling operation, and suggested that scrambling is probably not available prior to age three. Miyahara (1974) also suggested that the overt use of *-o* is related to the ability to manipulate free word order. In her longitudinal study, she observed the increased flexibility of word order only after her subject started producing *-o*.

Lakshmanan and Ozeki (1996) and Hakuta (1982) reported that children rarely produce OSV sentences. Iwatate (1981) and Goto's (1989) findings also support this contention. Iwatate found 79 SOV and ten OSV word order sentences in 42 hours of tape-recorded spontaneous utterances among five children ages 2,5 to 3,9. Goto (1989) found that 103 children ages 2,6 to 5,5 used SOV sentences to describe non-reversible pictures 99 percent of the time. Table 12.1 summarizes the frequency of SOV and OSV sentences observed in these studies. The actual particles that the children used were not always reported, though they have some bearing on determining whether the children produced scrambled sentences or topicalized sentences (i.e. O-*wa* S-*ga* V).

Table 12.1 Frequency of SOV versus OSV sentences in children's utterances

Study	*Age*	*N*	*Task*	*SOV*	*OSV*
Iwatate (1981)	2,5–3,9	5	spontaneous (42 hours)	79	10
Hakuta (1982)	2,3–6,2	48	picture description	most of 576 opportunities	13/576 opportunities
Goto (1989)	2,6–5,5	80	picture description	99% of three word non-reversible picture description	1% of three word non-reversible picture description
Lakshmanan and Ozeki (1996)	2,2–2,6	1	353 spontaneous utterances	not reported	none

Otsu's (1993, 1994a, b) studies stand out because he argued that children's poor performance in comprehending OSV sentences in previous studies was an experimental artifact. He noted that scrambling requires the object NP to be a discourse topic, and that the referent needs to be mentioned earlier in the discourse. On this assumption, in an act-out comprehension experiment he provided another sentence before the OSV stimuli, in order to establish the referent as the discourse topic, as shown in (3). He found that three–four-year olds comprehended the scrambled sentences with 90 percent accuracy.

(3) Kooen-ni ahiru-san-ga imasita. Sono ahiru-san-o kame-san-ga osimasita
park duck-NOM was. that duck-ACC turtle-NOM pushed
"There was a duck in a park. A turtle pushed that duck"

Otsu (1993, 1994a) also showed that three–four-year olds could produce grammatical OSV sentences in a picture description task. He instructed his subjects, "Can you tell me about this picture? First, can you begin with X?" When X was the patient NP, children used one of the three types of grammatical sequences in (4), and none of the ungrammatical sentences in (5). Out of 20 children, 11 used (4a), which accounted for 42 percent of all their utterances.

(4)a. O-*o* S-*ga* V
b. O-*o* V
c. O-Ø V

(5)a. O-*o* S-Ø V
b. O-Ø S-*ga* V
c. O-Ø S-Ø V

In summary, most L1 studies have shown that children learning Japanese as their L1 were less accurate in comprehending OSV sentences, and rarely produced them, while also indicating that children were sensitive to the interaction between word order and Case particles. Nonetheless, Otsu showed that it would be premature to conclude that children's grammar lacks scrambling from these findings, and demonstrated that three–four-year olds could both comprehend and produce scrambled sentences.

12.1.2 Previous studies of L2 Japanese

Some researchers have adopted the Competition Model (e.g. Kilborn and Ito 1989) to study L1 and L2 Japanese comprehension. The Competition Model assumes that the form–function mapping that is based on the most reliable cues in a given language takes place in real time. Such cues include word order, inflection (e.g. Case marking) and lexical semantics (e.g. animacy of NPs). Ito, Tahara, and Park (1993), for example, found that native Japanese speakers depend more on Case marking than word order. Sasaki (1994), as well as Kilborn and Ito (1989) found that some L2 Japanese learners resorted to the Japanese canonical SOV order. They attributed this tendency to the meta-transfer of an English word-order-based strategy. In other words, English speakers learning Japanese

may employ a word-order-based strategy because they rely on that strategy in the comprehension of their L1, although the specific word order which they adopt as canonical, SOV order, is not based on the English canonical order.

Koda (1993) studied L2 Japanese learners of three different L1s, and found that English-speaking and Chinese-speaking L2 Japanese learners comprehended canonical word order sentences much better than non-canonical sentences, whereas Korean-speaking L2 learners of Japanese comprehended SOV and OSV sentences equally well. Both in English and Chinese, word order is the primary indicator of syntactic relations such as subject and object, while in Korean Case particles provide reliable cues for syntactic relations. Therefore, Koda attributed this difference to transfer of the learners' L1 processing strategies.

The aforementioned studies concluded that L1 Japanese speakers and proficient L2 Japanese speakers depended on Case markers to interpret sentences. But Sasaki (1998) suggested that this dependency may be restricted to contexts in which Case particles consistently provide reliable cues. He used stimuli in which the mapping between the Case particles and semantic roles was not consistent. For example, *-ga* did not consistently mark the agent, as shown in (6); *-ga* marks the agent of the action "writing a letter" in (6a), but does not mark the agent of "making a call" in (6b). He found that both L1 and L2 Japanese speakers tended to depend on word order.

(6)a. gorira-ga raion-ni tegami-o kak-u
gorilla-NOM lion-DAT letter-ACC write-NONPAST
"A gorilla writes a letter to a lion"

b. inu-ni pengin-ga denwa-o sas-eru
dog-DAT penguin-NOM phone-ACC do-CAUSATIVE-NON-PAST
"A dog lets a penguin make a call"

Word order dependency was also found to be robust among children learning Japanese as L2. Rounds and Kanagy (1998) found that English-speaking children in grades K-7 learning Japanese as L2 depended on word order in sentence comprehension and identified the first NP in non-Case marked strings as the agents of actions. These children also interpreted the first NP in Case marked O-*o* S-*ga* V sentences as the agent, ignoring the Case particles.

Many comprehension studies found that L2 Japanese learners tend to rely on word order. But, it may be too simplistic to attribute this word order dependency among English speakers to transfer of their L1 processing strategies, for two reasons. First, considering that L1 Japanese children (and adults in certain contexts) show word order dependency, dependency on canonical word order is more universal than dependency on grammatical markers. Thus, for example, the results of Koda's (1993) study are better characterized as the (positive) transfer of the use of Case particles among Korean speakers, than as the (negative) transfer of word order dependency among Chinese and English speakers. Second, it is not clear whether L2 learners' lower accuracy in comprehending or producing OSV sentences reflected their *processing* strategy or their *knowledge*, because L2 Japanese learners in these studies may or may not have possessed knowledge of scrambling.

While there have been many comprehension studies, few production studies of L2 Japanese have examined OSV sentences. For example, Yoshioka (1991) found that L2 Japanese learners' accuracy in producing Case particles in an imitation task depended on each particle's canonical position. In terms of when scrambling should become operative, Doi and Yoshioka (1987) suggested that L2 Japanese learners productively use free word order as soon as they acquire *-ga* and *-o*; however, they did not directly test this prediction.

In summary, L2 Japanese studies on Case particles and word order have emphasized L2 learners' processing during comprehension, and very few have investigated production. Moreover, it is not clear whether subjects in previous studies had knowledge of scrambling. Thus, the present study investigates both the knowledge and production of SOV and OSV sentences among L2 Japanese learners.

12.2 Current Study

12.2.1 Participants and their Japanese proficiency

Thirty-one native English speakers who had studied Japanese for at least one year participated in this research (9 females, 22 males; mean age 25.5 years). I administered oral proficiency interviews (OPI) as an official tester of the American Council on Teaching of Foreign Languages (ACTFL) as well as the Simple Performance Oriented Test (SPOT) developed at the Tsukuba University (see Ford-Niwa and Kobayashi 1999). Based on their ACTFL ratings, the participants were grouped into three proficiency levels: "low," "mid," and "high."[2] There were 15 participants whose proficiency was rated as "low," 10 rated as "mid," and 6 rated as "high." When these ratings were converted to 1, 2, and 3, they were highly correlated with SPOT Version B (Version 3) scores. A Spearman rank-order correlation indicated a statistically significant relationship between the participants' rating of low, mid, high, and their SPOT scores, $r\text{h}\ (29) = 0.87$, $p < 0.0001$, suggesting that the two measures consistently assessed proficiency.

12.2.2 Tasks

In addition to proficiency assessment, there were four tasks: a picture description task, a fill-in-the-blank task, a grammaticality judgment task, and an interview conducted in English. The picture description task was designed to elicit production of Japanese sentences in different word orders; the other three tasks were designed to assess L2 knowledge of Japanese Case particles in sentences of different word orders.

The picture description task allowed the participants to describe pictures with minimal preparation, because each picture was presented on the computer in a pseudo-random order. The participants did not have any time constraint when completing the fill-in-the-blank task, and they could freely go back to items on previous pages, unlike the picture description task. Thus, I assumed that the participants were able to fully access their (meta-)linguistic knowledge during this task. The grammaticality judgment task did not require the participants to produce

Case particles; instead, they simply made judgments about the grammaticality of sentences presented to them on the computer. This task provided participants with an opportunity to use their knowledge to a greater degree than in the picture description task. For yet further assessment of the participants' explicit knowledge of Case particles and OSV word order, they were asked in English about their basic understanding of Japanese particles and word order after they had completed all the other tasks.

12.3 Method

12.3.1 Picture description task

12.3.1.1 Materials and procedures

Participants verbally described a series of pictures: 16 for those with low proficiency, 29 for those with mid proficiency, and 46 for those with high proficiency.[3] Using Cedrus Corporation's SuperLab, the pictures were presented on an Apple computer. This chapter focuses on the results from the smallest set of items, which contained the pictures that were designed to elicit the verb types in (7).

(7) verb types:

(i) transitive verbs that possess prototypical transitive properties, defined as the verbs which cause changes in the affected entity (Tsunoda 1985) (e.g. *tabe-ru* "eat," *nom-u* "drink");
(ii) transitive verbs that are not prototypical (e.g. *mi-ru* "watch," *kik-u* "listen");
(iii) transitive verbs which take NPs marked with *-ni* (or *-to*) as object NPs (e.g. *a-u* "meet");
(iv) motion verbs (e.g. *ik-u* "go," *ku-ru* "come");
(v) unergative verbs (e.g. *aruk-u* "walk");
(vi) unaccusative verbs (e.g. *aru* "exist");
(vii) other verbs (*kekkon suru* "marry" which takes *-to*, and *sotugyoo suru* "graduate" which takes *-o*).

Each black and white picture was first presented on the computer for one second, without any added color. Then, one of the participants in the event (e.g. the *hamburger* in a picture in which a man is eating a hamburger) was marked with a color, as shown in figures 12.1 to 12.4.

The experiment had two blocks of items, each block containing one of each picture's two marking variations. These pictures were presented in a fixed, pseudo-random order. The two different marking variations for each picture were designed to elicit sentences of two different word orders. In one condition, the subject (i.e. the agent, except when occurring with unaccusative verbs) was highlighted. In the other condition, what was highlighted depended on the verb type. For example, when the targeted verbs were transitive, the agent was highlighted for one of the two presentations (figure 12.1), and the patient was highlighted for

Figure 12.1 Transitive: agent marked

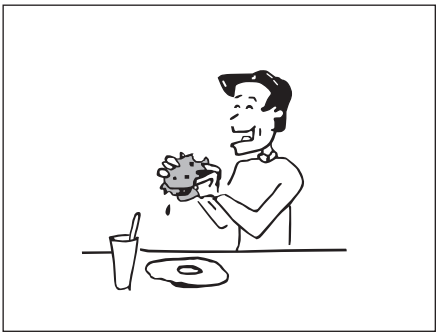


Figure 12.2 Transitive: patient marked

Figure 12.3 Intransitive: agent marked

Figure 12.4 Intransitive: location marked

the other presentation (figure 12.2). When the targeted verbs were intransitive, the agent was highlighted for one of the two presentations (figure 12.3), while the referent to be expressed as an oblique NP (e.g. location) was highlighted for the other (figure 12.4).

Participants were instructed to start their sentences by mentioning the marked item first, to explicitly describe all the pertinent items depicted in the events, and to try not to omit particles. This instruction was made clear during a practice session consisting of three pictures indicating events whose description required ditransitive verbs (e.g. giving, introducing, showing). The participants were *not* explicitly instructed to avoid the use of the topic marker *-wa.* However, an attempt was made to discourage the use of *-wa*; the characters (e.g. girls or boys) in the series of pictures were drawn so that each character looked different in order to discourage using *-wa* as a topic marker.

12.3.1.2 Scoring and analysis

The particle used for each NP in the participants' utterances was scored. Because one picture description contained two NPs, each utterance provided two responses.

Responses were scored for accuracy, and the frequency of actual particles in different conditions was counted. In terms of scoring accuracy, the responses were scored as 1 if they were correct, and 0 if they were not. When participants corrected themselves, their responses were scored as 0.5. An omission of Case particle was scored as 1 if it was a legal Case marker drop. Failure to describe pictures at all (i.e. items skipped by the participants), incomplete responses, and responses containing unintended verbs were all treated as missing data. The only exception to this was if an individual described a given picture in one of the two word order conditions (usually SOV word order) using the target verb, and then failed to describe its counterpart in another word order condition (e.g. OSV). That response was scored as 0, rather than being considered missing data. Because the picture description task was designed to elicit simple active sentences, non-intended structures such as passives, relative clauses, or other complex sentences were also eliminated from the current analysis. However, awkward passives (e.g. with inanimate NPs as the subject) for non-canonical word order conditions were scored as 0.5 if the participants were able to describe the same picture in canonical word order conditions.

Each participant's mean accuracy of responses for each condition (i.e. verb type × word order) within the smallest set of items that were given to all participants was computed. Using these means as the dependent variable, a three-way mixed design repeated measures ANOVA, proficiency (3) × word order (2) × verb types (7), was computed. Subjects in this analysis were nested in proficiency levels. The alpha level set for the tests in this study is 0.05.

In addition, the mean frequency of incorrect use of *-ga* and *-o* was computed for each condition (i.e. verb type, position) among all participants. In order to test the effect of the positions of NPs on the overuse of *-ga* and *-o,* two one-way ANOVAs were computed. The positions of the NP (two levels) was the independent variable, and all the items were considered. In one ANOVA, the dependent variable was the frequency of occurrences of incorrect *-ga*, and in the other, it was the frequency of occurrences of incorrect *-o*. Furthermore, two two-way ANOVAs, position (2) × verb types (7), were computed; only the smallest set of items were considered.

12.3.2 Fill-in-the-blank task

12.3.2.1 Materials and procedures

The sentences in the fill-in-the-blank task contained the same nouns and verbs as the pictures in the description task were designed to elicit. This test was given to each participant immediately after s/he completed the picture description task. Much like the picture description task, this test had three sets of items: 68 sentences for those with low proficiency, 111 for those with mid proficiency, and 173 for those with high proficiency. The item set given to each participant depended on which set of pictures they had described earlier. For statistical analysis, only the 68 sentences given to all participants were considered; however, all the items were considered in the examination of differences between each participant's responses on this test and their own choices of particles in the picture description task.

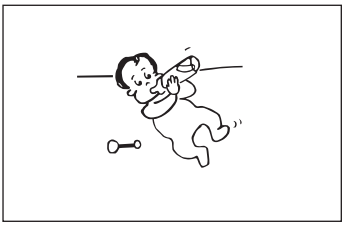


Figure 12.5 Picture for the example sentences shown in (8)

The printed set of the same pictures used in the picture description experiment was provided at the same time that the participants received the fill-in-the-blank task. Sentences with blanks were provided for each picture; these sentences were written in Japanese orthography along with Romanization. Examples of the sentences that go with figure 12.5 are shown in (8). These included both sentences with two NPs and those with only one NP.

(8) Example sentences used in the fill-in-the-blank task

a. akatyan__ miruku__ nonde imasu (SOV)
baby milk drinking-GER is
"The baby is drinking milk"

b. miruku__ akatyan__ nonde imasu (OSV)
milk baby drinking-GER is
"The baby is drinking milk"

At least two sentences were provided for each verb.[4] Each of the two sentences contained two NPs. These two sentences reflected the two word order types that the two differently marked pictures in the picture description task were designed to elicit. The subject was the first NP in one of the two sentences, and the non-subject NP (e.g. object, oblique) was the first NP in the other sentence. Since the examples in (8) above contain a transitive verb, *nom-u* "drink," the NPs used with the verb consisted of a subject NP and an object NP. These two NPs were presented in both SOV and OSV order. In the case of intransitive verbs such as *aruk-u* "walk," the subject NP and oblique NP (e.g. location) were used in the sentence; they were presented in either Subject–Oblique–Verb or Oblique–Subject–Verb order.

L2 participants were instructed to fill in each blank with a particle, not to leave any blanks empty, and not to use the topic-marker *-wa.* They were also instructed to write two particles for a blank, if they felt there were two equally good particles for the blank.

12.3.2.2 Scoring and analysis

As with the scoring of the responses in the picture description task, the participants' responses for the fill-in-the-blank task were scored for accuracy. Responses were

scored as 1 if they were correct, and 0 if they were not correct. When participants supplied two particles, the responses were rated as 1 if both were correct, 0.5 if one of the two was correct, and 0 if neither was correct. Each participant's mean for each condition (i.e. verb type × word order for each subject) was computed. Using these means as the dependent variable, a three-way mixed design ANOVA, proficiency (3) × word order (2) × verb types (7), was computed. Subjects were nested in proficiency levels in this design.

Similar to the picture description data, the frequency of *-ga* and *-o* in blanks when these particles were incorrect was counted within all the participants' responses. In order to test the effect of the positions of NPs on the overuse of *-ga* and *-o,* two one-way ANOVAs were computed. The position of the NP (two levels) was the independent variable, and all items were considered. In one ANOVA, the dependent variable was the frequency of occurrences of incorrect *-ga*, and in the other ANOVA, it was the frequency of occurrences of incorrect *-o*. Blanks A and C in (9) are examples of first NP (NP1) blanks where *-ga* is incorrect. Here, the correct particle for blank A is *-ni*, and the correct particle for blank C is *-o*. Likewise, examples of second NP (NP2) blanks where *-o* would be incorrect are B and D, where the correct particle to enter is *-ga*. Furthermore, two two-way ANOVAs, position (2) × verb types (7), were computed; the set given to all participants was considered.

(9)a. ginkoo *A* otoko-no-hito *B* ikimasu
bank man goes

b. hambaagaa *C* otoko-no-hito *D* tabete imasu
hamburger man eating is

12.3.3 Grammaticality judgment task

12.3.3.1 Materials and procedures

Sentences representing both target and non-target use of Case particles in sentences having canonical and non-canonical word orders were presented on a computer, using SuperLab. As with the other tasks, the number of items presented to the participants depended on their proficiency level; they were presented with 72, 92, or 116 sentences. The experiment had two blocks of items. Each of the sentences was presented once in each block; thus, each sentence was presented twice in the experiment. For each participant, the items were individually randomized, so that s/he received the stimuli in a unique order.

Each sentence was written both in Japanese orthography and in Romanization. A matching picture was also presented along with each sentence. Figure 12.6 shows the screen for the grammatical sentence in (10).

(10) terebi-o otoko-no-ko-ga mi-te i-masu
TV-ACC boy-NOM watch-GER is-NONPAST
"A boy is watching the TV"

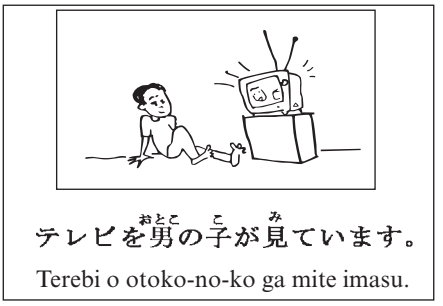


Figure 12.6 Example of sentence presented along with matching picture

Each verb was presented with several different types of inappropriate particles, in varied word order conditions (e.g. Subject-first, and Subject-later). Each verb was used in a number of stimuli; in order not to make the task too lengthy, only a small number of verbs were used. The smallest set of items addressed six verbs, representing five verb types. These six verbs are shown in (11).

(11) Verbs in the grammaticality judgment task

(i) transitive verbs that possess prototypical transitive properties: *nom-u* "drink";
(ii) transitive verbs that are not prototypical: *mi-ru* "watch";
(iv) motion verbs: *ik-u* "go";
(v) unergative verbs: *aruk-u* "walk";
(vi) unaccusative verbs: *ku-ru* "come" (inanimate subject), *ar-u* "exist, there-is".

The participants were asked to judge if a sentence was correct or not. They pressed the "y" key for "yes" to indicate a grammatical sentence, the "n" key for "no" to indicate an ungrammatical sentence, and the "x" key for "undecided" to indicate when they could not decide the grammaticality of a sentence. In order to examine whether each participant was indeterminate in their judgment, all the items were presented twice in the same experimental session. SuperLab recorded participants' response times, as well as their responses (i.e. "y," "n," or "x").

Grammaticality judgment is generally assumed to reflect learners' knowledge of the language better than the fill-in-the-blank test. In this study, however, the results should be interpreted with some caution. This task was not given to the participants during the same session as the picture description and the fill-in-the-blank test.[5] The participants might have gained some knowledge about the items (e.g. verbs, Case particles) between the two sessions.

12.3.3.2 Scoring and analysis

The correct responses for the grammaticality judgment task were coded as 1 and incorrect responses were coded as 0. For quantitative analyses, "undecided" responses were coded as 0.

12.4 Results

12.4.1 Results of picture description task

12.4.1.1 Overall

A substantial amount of the picture description data was treated as missing. There were a total of 2,084 response opportunities of picture description for the 31 participants. But there were 99 non-responses (i.e. instances in which the participants skipped the items, saying *wakarimasen* "I don't know"), 61 incomplete utterances as shown in (12), 323 uses of unintended verbs, and 221 unintended interpretations of pictures.

(12)a. tegami . . . wakarimasen
letter . . . I don't know
(A picture of a girl writing a letter)

b. dish-wa onna-no-ko . . .
dish (English)-TOP girl
(A picture of a girl washing dishes)

Table 12.2 shows the mean accuracy of Case particles for each word order type. The participants were less accurate when producing the Case particles for non-canonical word order sentences. Table 12.3 shows the accuracy of Case particles in the participants' utterances for each word order, broken down by each proficiency level. Proficiency correlated with accuracy for canonical word order sentences, but participants of all levels were similarly less accurate for non-canonical word order sentences.

Table 12.2 Word order and accuracy (all items)

Word order	*Mean correct (%)*	*Standard deviation*
Subject first (SOV)	88.0	0.32
Subject later (OSV)	64.0	0.41

Table 12.3 Accuracy rate for smallest set of items by word order and proficiency level

Proficiency	*All sentences (%)*	*Word order*	*Mean correct (%)*
Low	76.4	SOV/subject-first	85.1
		OSV/subject-later	66.9
Mid	78.7	SOV/subject-first	90.9
		OSV/subject-later	65.0
High	82.2	SOV/subject-first	93.4
		OSV/subject-later	66.3

Table 12.4 Accuracy rate for six transitive verbs by word order and proficiency level

Proficiency	*Mean response (%)*	*Word order*	*Mean response (%)*
Low	77.3	SOV	89.8
		OSV	64.6
Mid	81.2	SOV	97.4
		OSV	64.1
High	85.0	SOV	100.0
		OSV	64.0

An ANOVA, proficiency (3) × verb (7) × order (2), indicated that the effect of word order and that of verb types were significant: $F(1,27) = 13.61$, $p = 0.001$, and $F(6,135) = 4.11$, $p = 0.0008$, respectively. But the effect of proficiency was not significant, ($F(2,28) = 0.15$, $p = 0.864$) and neither were any of the interactions. The results indicated that L2 learners were less accurate for OSV sentences regardless of their proficiency levels.

When canonical word order is defined as Subject–*Object*–V order, it is only relevant to sentences containing transitive verbs that take objects as NPs. To compare canonical SOV order, as defined in this conventional sense, with a non-canonical OSV order, the Mean accuracy of responses for canonical and non-canonical word order sentences containing six transitive verbs (i.e. the Japanese equivalents of "drink," "watch," "write," listen," "eat," and "read") were also computed. This group of verbs was included in the smallest set of items, so all participants had opportunities to describe pictures targeted for these verbs. As shown in table 12.4, the patterns were similar to the ones in table 12.3.

There were approximately twice as many non-responses (62 versus 37) and incomplete utterances (40 versus 21) for the "subject-later" (OSV) pictures as there were for the "subject-first" (SOV) pictures. There were also a number of passive sentence responses provided by the participants for the OSV pictures, including many ungrammatical or anomalous passives, as shown in (13). For examples given henceforth, in the parentheses to the right of the examples is the identification of the speakers of the examples; capitalized letters represent ungrammatical parts.

(13)a. ano puuru-wa otoko-no-hito-ni oyog-are-masita (Participant 8)
that pool-TOP woman-by swim-PASSIVE-PAST

b. piano-ga onna-no-hito-DE hik-aRAre-te (Participant 12)
piano-NOM woman-INSTR play-*PASSIVE-GERUND
imasu
is-NONPAST

Not all the participants produced OSV sentences for the transitive verb pictures. Nine participants (Participants 8, 12, 13, 16, 17, 18, 21, 23, and 25) produced none of the grammatical OSV constructions shown in (14).[6]

(14)a. Object-*o* Subject-*ga* Verb
b. Object-*wa* Subject-*ga* Verb
c. Object-*o* Subject-*wa* Verb

Previous L1 studies have proposed that an OSV sentence is produced as soon as the Accusative -*o* is produced. But all the participants produced -*o* correctly for at least some transitive verbs. The participants who never produced OSV sentences also produced -*o* correctly for most transitive verbs, and rarely used it incorrectly (i.e. 82–100 percent accuracy). Non-production of OSV sentences among these participants could be attributed to either their not knowing the option of scrambled structures, or to avoidance of using scrambled sentences. The former possibility will be discussed in section 12.5. Data having some bearing on the latter possibility are reported below.

There seemed to be some hesitation in using O-*o* S-*ga* Verb sequences among some participants. Many participants, including the nine mentioned above used passive sentences as in (13), relative clauses (which often sounded quite natural) as in (15), and multiple clause descriptions, as seen by the examples in (16).

(15) Kuruma-o naosi-te i-ru otoko-no-hito, imas-u (Participant 13)
car-ACC fix-GER is man there-is
"There is a man who is fixing a car"

(16) Ano hanbaagaa-wa oisi-i kara otoko-no-hito-wa (Participant 23)
that hamburger-TOP tasty because man-TOP
tabe-te imas-u
eat-GER is-NON-PAST
"Because that hamburger is tasty, the man is eating it"

Table 12.5 shows all the grammatical and some of the ungrammatical sequences produced by the 22 participants who produced at least one grammatical OSV sentence. When producing OSV sentences, many of them used one of the three patterns in (13) exclusively; four used O-*o* S-*ga* V, five used O-*wa* S-*ga* V, and two used O-*o* S-*wa* V. It is an empirical question whether those who produced topicalized O-*wa* S-*ga* V or contrastive O-*o* S-*wa* V sequences also had knowledge of scrambled O-*o* S-*ga* V sentences.

There were a number of errors like (17): 18 instances of O-*ga* S-*o* Verb across seven participants (Participants 3, 6, 9, 10, 18, 21, 29) and 16 instances of O-*wa* S-*o* Verb across eight participants (Participants 6, 11, 16, 17, 19, 20, 23, 27). This means that 13 participants out of 31 made at least one utterance of the same type as in (17). It appears that L2 learners used an "NP1-*ga* NP2-*o*" template to produce sentences.

(17)a. Hon-GA otoko-no-hito-O yomi-masu (Participant 3)
book-NOM man-ACC read-NONPAST
Lit.: "A book reads a man"

b. Hanbaagaa-WA otoko-no-hito-O tabe-masita (Participant 6)
hamburger-TOP man-ACC eat-PAST
Lit.: "A hamburger ate a man"

Table 12.5 Actual particles used for OSV sentences produced

Participant	*Opportunities*	o–ga	wa–ga	o–wa	*Ø–ga	*Ø–wa	*o–Ø	*Ø–Ø	?wa–wa	*ga–ga
1	6	5								
2	24			12		1				
3	15		1	2			1			
4	15	9								
5	24			2						
6	15		1							
7	24	10								
9	15	1								3
10	24		5							
11	6		1							
14	15	1		1						
15	15		4						3	
19	15	5	1							
20	24	3		5						
22	24		12						1	
24	6		1	1						
26	15		4							
27	15		3							
28	6	7								
29	24	2					1			1
30	6			2			1			
31	24	1			5		3	2		1
Total	**357**	**44**	**33**	**25**	**5**	**1**	**6**	**2**	**4**	**5**

There were also the error types shown in (18) and (19), which indicate that some participants were using an "NP1-*ga*" or an "NP2-*o*" template independently of each other.

(18)a. gyuuNIKU gyuunyuu . . . GA akatyan-wa nonde imasu (Participant 24)
beef, milk . . . NOM baby-TOP drink is-NONPAST
(Picture: baby drinking milk)

b. hanbaagaa-GA otoko-no-hito-ga tabemasu (Participant 9)
hamburger-NOM man-NOM eat-NONPAST
(Picture: man eating a hamburger)

(19)a. kooen-NI onna-no-hito-O arukimasu (Participant 16)
park-*at woman-ACC walk-NONPAST
(Picture: woman walking in the park)

b. uti-ni otoko-no-hito-O kaerimasu (Participant 20)
home-to man-ACC return-NONPAST
(Picture: man going home)

Table 12.6 The positions of NPs and mean frequency of erroneous *-ga* and *-o*

	First NP	*Second NP*
incorrect *-ga*	1.0	0.28
incorrect *-o*	0.34	1.36

Table 12.6 shows the mean of the frequency for erroneous *-ga* and *-o* that occurred following the NP1 and NP2. The table indicates, for example, that for every NP used in the sentence-initial position where *-ga* was incorrect, one participant on average used *-ga*.

Participants tended towards the overuse of *-ga* for the first NP, and the overuse of *-o* for the second NP. Two one-way ANOVAs (i.e. one with the frequency of incorrect *-ga* as the dependent variable, and the other with the frequency of incorrect *-o* as the dependent variable) revealed that the effect of NP position was significant for both: $F(1,92) = 11.38$, $p = 0.0011$, and $F(1,132) = 21.43$, $p < 0.0001$, respectively. Two two-way ANOVAs, verb type (7) × position (2), were also computed. In the two-way ANOVA, the effect of position was not significant for *-ga*, $F(1,20) = 2.50$, $p = 0.13$, but it was significant for *-o*, $F(1,36) = 8.48$, $p < 0.0061$, respectively. The effect of verb type was significant for *-ga*, $F(6,20) = 4.03$, $p = 0.0083$, but not for *-o*. None of the interactions was significant.

12.4.1.2 Summary

The picture description data indicated that some L2 learners did not produce OSV sentences. The results also indicated that when they produced OSV sentences (considering all the items), L2 learners tended to overuse *-ga* for the first NP, and *-o* for the second NP.

12.4.2 Fill-in-the-blank

Table 12.7 shows the mean accuracy of Case particles for two word orders, and table 12.8 shows the mean accuracy of responses to the 68 sentences given to all participants, at each proficiency level. Participants' accuracy was higher for the SOV/subject-first sentences than for OSV/subject-later sentences. This was particularly the case with mid-proficiency participants, whose overall accuracy was lowest among the three levels, as shown in table 12.8.

Table 12.7 Word order and accuracy (all items)

Word order	*Mean correct (%)*	*Standard deviation*
Subject first (SOV)	83.3	0.37
Subject later (OSV)	75.1	0.36

Table 12.8 Mean correct of fill-in-the-blank task (smallest set)

Proficiency	*All sentences (%)*	*Word order*	*Mean correct (%)*
Low	82.8	SOV/subject-first	84.2
		OSV/subject-later	81.2
Mid	78.7	SOV/subject-first	87.7
		OSV/subject-later	69.3
High	88.8	SOV/subject-first	91.5
		OSV/subject-later	85.9

Table 12.9 Mean correct for transitive verbs in fill-in-the-blank task

Proficiency	*All sentences (%)*	*Word order*	*Mean correct (%)*
Low	94.1	SOV	96.9
		OSV	91.3
Mid	82.1	SOV	99.1
		OSV	64.5
High	92.7	SOV	100.0
		OSV	85.4

To compare canonical word order in the conventional sense with non-canonical OSV word order sentences, the mean accuracy of responses for canonical and non-canonical word order sentences containing the six transitive verbs that all participants received on their test were also computed. The results are shown in table 12.9.

The overall patterns of accuracy across the three levels remained basically the same as the results of analysis that included all the verbs (table 12.8). Mid-proficiency participants did not perform as well on the non-canonical OSV sentences as the participants with low- or high-level proficiency did.

A three-way ANOVA, proficiency (3) × verb types (7) × word order (2), was conducted, with the accuracy of particles as the dependent variable. The main effect of proficiency was not significant, $F(2,28) = 1.53$, $p = 0.234$. But the main effects of the other two variables were significant, $F(1,28) = 6.50$, $p = 0.017$ for word order and $F(6,162) = 9.76$, $p < 0.0001$ for verb type. The two-way interaction between word order and verb type was also significant, $F(6,1668) = 4.56$, $p = 0.0001$. None of the other interactions was significant. These results indicated that L2 Japanese learners' use of Case particles was less accurate for OSV sentences, regardless of their proficiency.

In terms of verb type, the participants' accuracy was the highest for the prototypical transitive verbs (92.6 percent), followed by verb types (iv), (ii), (iii), (vi), and (v), with (vii) being the lowest (63.0 percent) (see p. 279).

Table 12.10a Mean correct for SOV and OSV word order for low-proficiency participants

Participant	*1*	*4*	*6*	*9*	*11*	*14*	*15*	*17*	*18*	*9*	*23*	*24*	*28*	*30*	*31*
SOV	1	1	1	1	0.83	1	1	1	1	1	1	0.92	0.92	1	1
OSV	1	1	1	1	0.83	0.75	1	1	0.92	1	1	1	0.92	1	1

Table 12.10b Mean response for SOV and OSV word order for mid- and high-proficiency participants

	Mid										*High*					
participant	3	5	7	16	20	22	25	26	27	29	2	8	10	12	13	21
SOV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OSV	1	0.83	1	0.58	0.92	1	0.25	0.83	0	0.25	1	0.83	1	0.42	1	1

12.4.2.1 Individual differences

It is likely that the effect of proficiency was not significant because of substantial individual differences. Some participants may not have known that O-*o* S-*ga* Verb sentences are acceptable in Japanese. Indeed, there were substantial individual differences in this regard. Tables 12.10a and 12.10b show each subject's mean accuracy for the SOV and OSV sentences containing the six most basic transitive verbs (i.e. each score is a mean of six responses). At least five of the mid- and high-proficiency participants (12, 16, 25, 27, 29) may not have had any knowledge of scrambling.

In order to see if the accuracy for OSV sentences was related to the accuracy of the choice of the Accusative -*o*, the mean accuracy of responses for the blanks requiring -*o* in canonical sentences containing the six basic transitive verbs was computed for each participant. All the participants were accurate in filling in the blanks with -*o* in canonical word order sentences containing transitive verbs. Four of the five participants whose responses for OSV sentences were lower than 60 percent scored 100 percent in filling in -*o*, and one (i.e. Participant 29) scored 92 percent. Thus, their knowledge of the Accusative -*o* did not seem to be related to their knowledge of OSV sentences. A Pearson correlation addressed the relationship between the accuracy of OSV sentences and that of -*o* in SOV sentences; the correlation was not significant, $r\ (29) = 0.191$, $p = 0.303$.

12.4.2.2 Frequency of incorrect -ga *and* -o

Table 12.11 shows the mean of the frequencies of erroneous -*ga* and -*o* responses for the blanks following an NP1 or NP2, looking only at the blanks where a -*ga* or -*o* response would be incorrect.

Table 12.11 Frequency of incorrect *-ga* and *-o* in each position in the fill-in-the-blank task

	First NP	*Second NP*
incorrect *-ga*	2.9	0.9
incorrect *-o*	1.5	1.4

Two one-way ANOVAs revealed that the effect of NP position was significant only for overuse of *-ga*: $F(1,102) = 7.46$, $p = 0.0074$ for *-ga*, and $F(1,159) = 0.31$, $p = 0.58$ for *-o*. Two two-way ANOVAs, verb type (7) × position (2), were computed for the smallest set of items given to all participants. In one, the frequency of incorrect *-ga* was the dependent variable; in the other, the frequency of incorrect *-o* was the dependent variable. In the first analysis, the effect of verb and that of position were significant: $F(1,20) = 12.87$, $p = 0.0018$ for position, and $F(6,20) = 2.93$, $p = 0.032$ for verb types. The interaction between verb types and position was also significant, $F(6,20) = 5.07$, $p = 0.0026$. In the second analysis, the effects of both position and verb types were insignificant: $F(1,43) = 1.66$, $p = 0.204$ for positions and $F(6,43) = 0.04$, $p = 0.999$ for verb types. This indicates that participants erroneously put *-ga* in the blanks following the first NP, significantly more often than the blanks following the second NPs. However, there was no significant tendency for the participants to put *-o* in the blanks following the first NP or the second NP.

12.4.2.3 Summary

In the fill-in-the-blank tasks, the participants displayed a substantial knowledge of Case particles for canonical order sentences, but they were less accurate in putting particles in non-canonical word order sentences. In particular, they tended to fill in *-ga* for the blanks after sentence initial NPs.

12.4.3 Knowledge versus use: fill-in-the-blank versus picture description

In order to compare each participant's accuracy in the picture description task with her/his accuracy in the fill-in-the-blank task, the mean of each participant's responses for only a subset of items in the fill-in-the-blanks was computed. This was to exclude participants' responses to the blanks in the sentences that contained verbs that they might not have known. In the fill-in-the-blank task, even if the participants did not know the verbs or structures in the sentences, they apparently guessed and wrote particles in the blanks in these sentences regardless. If a given participant actually produced an intended verb or its equivalent (synonyms belonging to the same verb type) during the picture description task, his or her responses to the blanks in the counterpart sentences in the fill-in-the-blank task were considered for comparison. Each participant's overall mean accuracy of responses of the fill-in-the-blank task and the picture description task were

Table 12.12 Overall accuracy: the fill-in-the-blank versus the picture description task

Proficiency	*Fill-in-the-blank (%)*	*Picture description (%)*
Low	87.9	74.3
Mid	80.8	78.3
High	89.1	82.6

Table 12.13 Differences between the choice of particles in the fill-in-the-blank task and the picture description task

	Position	*Fill-in-the-blank*	*Picture description*	*Frequency*
Agent	NP1	*-ga*	omission	32
Agent	NP2	*-ga*	omission	28
Agent	NP1	*-ga*	*-o*	12
Agent	NP2	*-ga*	*-o*	37
Theme/patient	NP1	*-o*	*-ga*	27
Theme/patient	NP2	*-o*	*-ga*	9
Theme/patient	NP1	*-o*	omission	12
Theme/patient	NP2	*-o*	omission	32

computed. Table 12.12 shows the means of participants at each proficiency level; uniformly, the accuracy was higher for the fill-in-the-blank task than in the picture description task.

These differences between the response accuracy of the two tasks were tested by Multivariate ANOVA. The results indicated that the effect of task type was significant, $F(1,28) = 13.05$, and $p = 0.0012$. The interaction between proficiency level and task type was also found to be marginally significant, $F(2,28) = 3.33$, $p = 0.05$.

The tendency to overuse *-ga* in the first NP position was observed both in the fill-in-the-blank task and in the picture description task. However, the tendency to overuse *-o* in the second NP position was observed only in the picture description task. Table 12.13 shows frequently observed differences between the responses for the two tasks. The differences listed in table 12.13 involve the cases in which a given participant accurately filled in the correct particle for an NP in the fill-in-the-blank task.

Both *-o* and *-ga* were frequently omitted in the picture description task, especially in their canonical positions; *-ga* was frequently omitted in the NP1 position, and *-o* was frequently omitted in the NP2 position. The omission of *-ga* in the non-canonical NP2 position was also frequent, whereas the omission of *-o* in the non-canonical NP1 position was not as frequent. In the current data, *-o* for the patient/theme NPs was dropped much more frequently when it was in NP2 position, adjacent to the verb, whereas *-ga* was dropped regardless of its position.

Table 12.14 Mean correct of responses (items)

Word order	*Mean correct (%)*	*Standard deviation*
Subject first (SOV)	81.3	0.39
Subject later (OSV)	78.0	0.42

Table 12.15 Mean correct for the six transitive verbs in the judgment task

Proficiency	*Mean correct of all sentences (%)*	*Word order*	*Mean correct (%)*
Low	84.7	SOV	88.1
		OSV	81.3
Mid	86.7	SOV	91.7
		OSV	81.7
High	93.7	SOV	95.8
		OSV	91.7

The frequency of the use of *-o* in an NP2 position in OSV sentences ($N = 37$) where a given participant actually correctly filled in *-ga* in the fill-in-the-blank task supports the existence of a canonical order template "NP2-*o*" strategy for production. Likewise, the frequency of the use of *-ga* in the NP1 position in OSV sentences ($N = 27$) where a given participant actually correctly filled in *-o* in the fill-in-the-blank task confirms the existence of the canonical order template NP1-*ga*.

12.4.4 Grammaticality judgment task

Table 12.14 shows response accuracy for all the items of two word orders. Table 12.15 shows the accuracy rate of responses for six transitive verbs. The response accuracy for the two word orders was not as disparate across the three proficiency levels as it was for the other tasks; the difficulties that participants had encountered with OSV sentences might be attributable to processing.

The ANOVA revealed that both word order and verbs significantly influenced the accuracy rates of responses, $F(1,28) = 11.53$, $p = 0.0021$, $F(5,140) = 51.84$, $p < 0.0001$, respectively. However, there was no main effect of proficiency, $F(2,28) = 1.80$, $p = 0.1835$. None of the interactions were significant. These results indicate that the participants' knowledge of non-canonical sentences such as O-*o* S-*ga* Verb is not as established as that of SOV sentences; this was independent of their proficiency level.

The accuracy of judgment on sentences containing the verb *ik-u* "go" was the highest (92.9 percent), followed by *nom-u* "drink," *mi-ru* "watch," *kuru* "come (with inanimate subject)," *aru* "exist," and *aruk-u* "walk." The sentences with the verb *aruk-u* induced the least accurate judgment (77.9 percent), because the different choice of particles (e.g. *-de*, *-ni*, *-e*) for the location NP (i.e. *kooen* "park") may have made it difficult for the participants to make a judgment.

Table 12.16 Response time for each word order for each proficiency level

Proficiency	*Mean response for all the items (seconds)*	*Word order*	*Mean response (seconds)*
Low	5.39	SOV/subject-first	5.45
		OSV/subject-later	6.04
Mid	4.92	SOV/subject-first	4.66
		OSV/subject-later	5.03
High	5.68	SOV/subject-first	4.93
		OSV/subject-later	5.63

12.4.4.1 Response time (RT)

Table 12.16 shows the means of the response times for the smallest set of items for each level of proficiency. Participants tended to take longer to judge sentences with two NPs than those with one NP, and also took longer to judge OSV sentences than SOV sentences.

A three-way ANOVA, proficiency (3) × word order (2) × verbs (6), revealed that proficiency level had no effect, $F(2,28) = 0.08$, $p = 0.924$. Although neither word order nor verbs had a significant effect, they approached significance level: $F(1,28) = 2.72$, $p = 0.084$ and $F(5,140) = 2.14$, $p = 0.065$, respectively. None of the interactions reached nor approached significant levels. The L2 learners apparently had difficulty with OSV sentences in terms of RTs as well, regardless of their proficiency level.

12.4.4.2 Indeterminacy

There were 396 inconsistent responses (i.e. different responses by the same individual for the two presentations of the same item), and 99 "undecided" responses (out of 6,108 opportunities); only five participants used this response more than twice. A question arises regarding which items induced indeterminate responses. Of the 72 items given to all 31 participants, 59 induced more than one "undecided" or inconsistent response. There were four stimulus sentences that induced indeterminacy from more than eight participants (1/4 of the participants). Three involved the unaccusative verbs *kuru* "come" and *aru* "exist." The other one was a non-canonical word order sentence, shown in (20).

(20) *terebi-ni otoko-no-ko-ga mite imasu
TV-DAT boy-NOM watch-GER is-NONPAST

This sentence contains a non-prototypical transitive verb in OSV order. The participants correctly judged the grammatical S-*ga* O-*o mite imasu* sentence with 98 percent accuracy, but also incorrectly judged the ungrammatical S-*ga* O-*ni mite imasu* as grammatical 39 percent of the time (= 61 percent accuracy). Responses were more inaccurate (57 percent accuracy) and indeterminate for the OSV sentences.

The participants in the current grammaticality judgment task were determinate about their judgment most of the time. However, examination of the items that induced indeterminacy revealed that participants had difficulty with non-prototypical transitive verbs occurring in OSV word order.

12.4.4.3 Summary

Like the fill-in-the-blank data, the results from the grammaticality judgment task indicated that although L2 Japanese learners' knowledge of Case particles develops as their proficiency becomes higher, their knowledge of Case particles for scrambled OSV sentences does not necessarily develop. The difficulty of judging scrambled sentences is evident both in accuracy rates and in the response times across three proficiency levels.

12.4.5 Interviews

At the time that these interviews were conducted, the participants had already completed all the other tasks. After the fill-in-the-blank task, the participants must have known that variation of word order was somehow possible, because the fill-in-the-blank sheet showed sentences with different word orders. During the interviews, some participants reported that they had particular difficulty with OSV word order when asked what was the most difficult task. Participants who produced no (or few) OSV sentences were asked if they had known that OSV word order was possible.

One participant still felt that OSV sentences (i.e. O-*o* S-*ga* V) were not possible in Japanese. Most others felt that scrambled sentences were possible, but they were not accustomed to using them, as shown in responses such as (21a) and (21b). Some felt that it was not the word order per se that troubled them but choosing the particles that should be used in OSV sentences, as shown in (21c).

(21)a. *Interviewer*: Is it okay in Japanese to start with the fish [to describe the picture in which the cat has eaten the fish]?
Reply: Yes, it is, you can, but I always look for the simplest way of saying it and in the most straightforward way.
Interviewer: Did you know it before the sessions too?
Reply: I knew that was possible. But I found it more difficult this time just because I hadn't spoken like that for so long. I just wanted to say it directly, the simplest way.

b. *Interviewer*: Did you know that it was possible to start sentences with the object first?
Reply: Yeah. As long as you use the right phrase particles, it doesn't matter. I know it's possible, but it doesn't come naturally to say it that way. I just don't say it. But if I see it written, I know it is right.
Interviewer: You knew that these are possible before you participated in these sessions?
Reply: Yeah, I know. I think we learned it in class.

c. *Interviewer*: What was the reason why the picture description was so difficult?
Reply: It was mostly phrase particles, again. Because I knew how to do it one way, but then when I try to inverse the order I wasn't sure if I needed to change the particles.

In interviews, participants' responses indicated that most knew that Japanese allows some flexibility of word order, even if they experienced difficulties in either producing OSV sentences during the picture description task, or the fill-in-the-blank task.

12.5 Discussion

A series of experiments examined L2 knowledge and use of Case particles. The L2 learners displayed substantial individual differences in their knowledge of scrambling; this knowledge was not related to their overall proficiency. Some participants, including one high-proficiency participant, may have recognized only canonical SOV word order as a possible word order in Japanese. These participants' non-production of OSV sentences during picture description can be attributed to their not knowing the option of scrambled sentences. Three of the nine participants who never produced OSV sentences during picture description were among the five participants who scored lower than 60 percent in filling in blanks for OSV sentences containing basic transitive verbs.[7]

Perhaps one reason that higher proficiency does not necessarily guarantee the development of knowledge of scrambling is the infrequent occurrence of OSV sentences. Studies both on written text and conversational data indicate that OSV is a very infrequently used word order in Japanese. For example, Saeki (1960) found 22 occurrences of S-*ga* O-*o* V sentences in which S and O had a similar quality (e.g. S and O were about the same length, neither of them were deictic NPs) in four fictions, but did not find any O-*o* S-*ga* V sentences. Ono and Sadler (1999) examined spoken data and found only eight clauses containing two Case marked NPs, and of 4,000 only one was O-*o* S-*ga* V. Table 12.17 provides a summary of studies on the frequency of OSV sentences.

Table 12.17 Occurrence of OSV sentences in Japanese

	Data	*SOV*	*Marking*	*OSV*	*Marking*
Kuno (1973)[8]	Journalistic writing	17*	not reported	1*	not reported
Saeki (1960)	Fictions (four pieces)	22	*ga-o*	0	*o-ga*
Kokken[9] (1964)	Magazines	467	*ga-o*	27	*o-ga*
Ono and Sadler (1999)	Spoken (4,000 clauses)	7	*ga-o*	1	*o-ga*
Yamashita (in press)	Magazines (2,635 sentences)	not reported	n/a	2	*o-ga*

*Kuno's figures represent a ratio; the other figures represent actual numbers of sentences.

Regardless of the frequency of SOV and OSV sentences in input, and regardless of whether they have knowledge of scrambling, L2 Japanese speakers may not generate both types of sentences unless they recognize the need to use an OSV word order to accomplish a different communicative purpose than SOV.[10] Thus, L2 Japanese speakers may use the Subject-*ga* Object-*o* Verb sequence for ease of generating sentences with two NPs. This might have resulted in inaccurate performance in tasks where they were forced to use non-canonical sentences.

According to Otsu (1993, 1994a), it was the neglect of discourse factors[11] that resulted in low accuracy performance among children in prior comprehension studies (see section 12.1.2). In his experiment, he introduced an NP in discourse before it was used as a scrambled NP with the demonstrative *sono* "that," and this apparently facilitated children's comprehension of scrambling. Thus it is foreseeable that incorporating a discourse factor into an L2 production task may result in L2 speakers' performance that reflects their knowledge more accurately. It requires future research to determine whether L2 Japanese learners are also sensitive to discourse as a motivation for scrambling.

Otsu demonstrated that there must have been a gap between children's knowledge of scrambling and their performance in comprehension in prior studies. The current study showed a gap between L2 Japanese speakers' knowledge of scrambling and their speech production, and revealed errors that were due to processing strategies, rather than lack of knowledge. This was done by comparing each participant's responses in the fill-in-the-blank task with his/her responses in the picture description. It was found that L2 learners make errors while speaking despite their knowledge of scrambling. For instance, the participants whose responses on the fill-in-the-blank task indicated their knowledge of O-*o* S-*ga* Verb made the types of errors shown in (17). Moreover, six of the nine participants who never produced OSV sentences scored between 83–100 percent filling in blanks for OSV sentences containing transitive verbs.

The results indicated that errors based on a canonical sentence template can occur as the result of a processing strategy. L2 Japanese speakers may sometimes inadvertently produce NP1-*ga* NP2-*o* Verb sequences, despite their knowing that these are inappropriate for the message being expressed. This strategy of Case particle selection, which heavily depends on a canonical sentence, was not found among L1 adult speakers' speech errors (Iwasaki 2000). Yet, it is premature to conclude that this reflects L1 interference just because the participants' L1, English, has a rigid word order. According to Slobin and Bever (1982), children cross-linguistically use a canonical sentence schema, which serves as a framework for the application of both productive and perceptual strategies. As reviewed in section 12.1.2, L1 Japanese children also displayed a tendency to erroneously mark NP1 with *-ga* (Hakuta 1982) and NP2 with *-o* (Sano 1977). This canonical sentence strategy, therefore, is unlikely to be due to L1 interference.

L2 participants' statements in the interviews also indicated that they prefer to produce sentences in a single, simple way. To them, this way appears to be the canonical word order sentence, which is NP1-*ga*/-*wa* NP2-*o* Verb. Whether the L2 learners employ the "NP1-*ga* NP2-*o*" strategy as a whole, or employ an "NP1-*ga*" strategy or/and an "NP2-*o*" strategy independently should be determined in future

research. An L2 speaker may employ both strategies, or variably employ either strategy, depending on the individual.

Further comparison of each participant's performance on the fill-in-the-blank task and in picture description also revealed omissions due to processing factors. Although the L2 omission of *-o* generally conformed to patterns of legal Japanese Case marker drop (e.g. *-o* for the object NP is dropped when it is adjacent to the verb), the patterns of the omission of *-ga* for agent NPs cannot be explained. While Kanno (1997) used a grammaticality judgment task to show that L2 Japanese learners were sensitive to grammatical principles that determine where the Case marker drop is possible, L2 Japanese learners' performance in speech appears to require other explanations.

12.6 Conclusion

This study investigated L2 Japanese learners' knowledge and use of SOV and OSV sentences by administering four tasks. It was found that, even if L2 learners had knowledge of scrambling, they did not always accurately produce scrambled sentences. Moreover, the gap between L2 learners' knowledge and performance was not random performance failure; instead it revealed that L2 Japanese speakers use a canonical sentence template as a processing strategy. It is important to consider processing as well as knowledge in studying the acquisition of scrambling.

Notes

1 A non-reversible sentence contains an animate NP as a subject and an inanimate NP as an object. The grammatical roles of these two NPs cannot be reversed (e.g. A boy kicked a ball). A reversible sentence has two animate NPs, and the grammatical roles of the two NPs can be reversed (e.g. A cat chased a dog).

2 The ACTFL scales have four major categories: Novice, Intermediate, Advanced, and Superior. Within the first three, there are three sub-levels: low, mid, and high. In this study, Intermediate–Low or lower according to ACTFL was classified as "low"; Intermediate–Mid or Intermediate–High as "mid"; Advanced–Low or higher as "high."

3 The set(s) of items given to a given participant (i.e. items for low proficiency) did not precisely match their proficiency levels as assessed by OPI and SPOT. The participants were given a larger set of items than they might have been able to handle, in order to elicit the maximum amount of data.

4 In addition, for exploratory purposes, many of the verbs were presented with one NP in Subject–Verb or Object–Verb sequences. See Iwasaki (2000) for details of the research not discussed here.

5 The participants completed this task in a subsequent session, at their earliest convenience. There was an average of three–four days between the two sessions.

6 The construction in (14c) (by using the topic marker *-wa* for the Subject NP) has a contrastive reading for the subject (e.g. A man [but not a woman] ate a burger), and does not seem as appropriate as (a) and (b) when there is no animate participant to contrast the subject with. An O-*wa* S-*wa* Verb sequence is also possible in some unusual contexts; such responses were rated as 0.5.

7 The other two participants who scored lower than 60 percent on the fill-in-the-blank task produced a few OSV word order sentences. Their low accuracy in the fill-in-the-blank task stemmed from not knowing the appropriate particles for OSV sentences when instructed not to use the topic marker *-wa*.
8 Kuno (1973) did not cite the source of his figures, but it appears as though his ratio, 17:1, came from Kokken (1964).
9 Kokken is an abbreviation of *Kokuritu Kokugo Kenkyuuzyo* ("National Language Research Institute").
10 Some linguists regard the choice of word orders, OSV and SOV, as completely optional with no semantic differences (Saito 1985). However, others, such as Miyagawa (1997) claim that scrambling is not optional and that it involves semantic factors such as focus. However, as long as L2 Japanese learners regard SOV and OSV as having the same meanings, they will not be motivated to use scrambled sentences.
11 Discourse factors may indeed motivate scrambling. In analyzing text, both Saeki (1960) and Yamashita (in press) found that scrambled NPs are often deictic, referring to NPs already mentioned in a discourse (e.g. with a demonstrative).

13

Scrambling and Processing: Dependencies, Complexity, and Constraints

Irina A. Sekerina

13.1 Introduction

Two approaches characterize the current state of research in sentence processing. Both approaches aim to arrive at a well-grounded analysis of relevant constraints the construction is subject to. The first approach relies heavily on the hypothesis that a psycholinguistic investigation of a phenomenon can shed light on some unresolved linguistic problems. The second approach, advocated by Cognitive Science, suggests that ideally we would study every construction in a language from both linguistic and psycholinguistic points of view.

The first approach is firmly grounded in Linguistics. Syntacticians are interested in the derivation of sentences and have ways of investigating how a sentence's structural representation is defined by competence grammar. What distinguishes one syntactic theory from another is which linguistic grounds it uses to argue for a particular structural representation. Often, theories compete with each other over long periods of time because linguistic methods do not strongly favor one theory over the other. One possible way to answer linguistic questions, suggested by J.D. Fodor (1993), is to investigate sentence structure using psycholinguistic methods that reveal how speakers and readers mentally represent such structure. The phenomenon of *scrambling* is particularly fit to provide psycholinguistic evidence that may help to contrast different theories of grammar. These include movement grammar (Chomsky 1981, 1986a, 1995) and the non-movement grammars such as Head-Driven Phrase Structure Grammar (HPSG) (Pollard and Sag 1987, 1994), Lexical-Functional Grammar (LFG) (Bresnan 1998), and Categorial Grammar (Steedman 2000). The Principles and Parameters version of the movement grammar assumes that arguments in a sentence derived by syntactic movement leave empty categories, that is, phonetically null place-holders in their original positions. In contrast, the non-movement theories view empty categories, also known as traces,

as theoretically undermotivated constructs and prefer accounts that do not require them.

The second approach lies within the realm of contemporary Cognitive Science (Lepore and Pylyshyn 1999). The syntactic study of word order variation cross-linguistically should contribute to a theory of the universal principles and constraints on language variation which govern scrambling. It is also a necessary preliminary step in providing an account of how scrambled constructions are processed in sentence comprehension. Just as the theory of grammar has as its goal an account of Universal Grammar and parameters of language variation, the theory of sentence processing has as its goal the characterization of the universal parser, the human sentence processing mechanism. The theory of sentence processing has to address numerous questions. One question involves how movement constructions, usually referred to as *filler–gap dependencies*, are processed in general; another involves how scrambled constructions are processed in particular. Several theories of sentence processing argue for different accounts of scrambling, but most of them start with a hypothesis that scrambled sentences are more complex than sentences in canonical word order. Complexity of a sentence can be broadly defined in structural terms (Frazier and J.D. Fodor 1978; Frazier and Clifton 1996), in terms of constraints it violates (MacDonald, Pearlmutter, and Seidenberg 1994), in terms of computational resources (Gibson 1998), or as working memory load (Just, Carpenter, and Hemphill 1996).

A considerable amount of experimental work has been done on scrambling data from typologically diverse languages, using both the linguistic and psycholinguistic approaches. However, there is as yet no conclusive answer to the question of exactly how scrambled sentences are processed. Sentence processing experiments have been conducted in German, Japanese, Finnish, Serbo-Croatian, and Russian to establish the source of processing complexity of scrambled sentences in these languages, with the methodologies ranging from self-paced moving window technique to eye movement recording and cross-modal lexical priming. The studies will be compared in this chapter, and their implications for the linguistic and psycholinguistic theories of scrambling will be discussed. The literature on this topic is growing rapidly, and in order to stay within the limits of a survey, this chapter will concentrate only on basic, clause-internal phrasal scrambling of arguments. Other fascinating types of scrambling, Long-Distance and Split scrambling, will be left for another time. We will start with a brief introduction to sentence processing concepts and terms relevant to the subsequent discussion of the processing of scrambling.[1]

13.2 Scrambling and Theory of Sentence Processing

One of the crucial concepts in the theory of sentence processing is *processing complexity*. On the one hand, processing complexity is closely related to psychological approaches to complexity (Just, Carpenter, and Hemphill 1996; Jonides and Smith 1997). On the other, it relies heavily on various linguistic, computational, and performance-based approaches to structure building and representation (Kimball 1973; Frazier and J.D. Fodor 1978; Hawkins 1994; R.L. Lewis 1996; Gibson

1998). The notion of processing complexity is based on the assumption that parsing a sentence requires allocation of resources, and this allocation should be observable not only in ambiguous and complex constructions but also in unambiguous and simple ones. Most renowned cases of unambiguous complex constructions include center-embedding (see Gibson 1998 for overview), left- and right-branching (Mazuka and Lust 1990), and heavy constituents (Wasow 1997).

The most debated question is what constitutes the source or sources of processing complexity. In the Syntactic Prediction Locality Theory (SPLT) (Gibson 1998), processing any sentence requires linking each new lexical item with the material in the current partial phrase marker. Under such a resource-based view of complexity, lengthy integrations should produce difficulty even in unambiguous sentences. Thus, locality is a fundamental determinant of processing complexity in unambiguous constructions, since the difficulty associated with integrating a new input item is heavily determined by the length of the material intervening between the input item and the site of its target dependents (Konieczny 2000; Grodner, Watson, and Gibson 2000). Note that according to the locality- and resource-based accounts of processing complexity, constructions derived via movement constitute *filler–gap dependencies* between the moved phrase (*the filler*) and its trace (*the gap*) and should be more complex than unambiguous sentences without movement.

The Principles and Parameters theory of syntax (Chomsky 1986a) distinguishes two major classes of movement, A- and A′-movement, exemplified by NP-movement and WH-movement, respectively. The study of scrambling cross-linguistically has generated a vast literature concentrated on the question of whether surface word order variation is derived via movement on a par with NP-movement and WH-movement, or whether this variation is base-generated. If movement is involved, what type of movement is scrambling in terms of the nature of its landing site: A-, A′-movement, or of a mixed type? How does it relate to NP-movement and WH-movement? What kind of empty category, or gap, does it create? Various syntactic theories of scrambling (Saito 1985; Mahajan 1990; Y.-S. Lee 1993; Tada 1993; Haider 1994; Miyagawa 1997; Bošković and D. Takahashi 1998; among others) compete with each other without clear theoretical support for any single theory. This is just the right kind of setting to look for psycholinguistic arguments that may be consistent with one or the other linguistic accounts of scrambling.

There are several psycholinguistic accounts of movement constructions as well. If a scrambled constituent leaves a trace in the position in which it originated, then the processing of a trace leads to increased reading times since it necessarily requires maintaining its antecedent in working memory. The Trace Reactivation account (Nicol and Swinney 1989) relies on data obtained via cross-modal priming (Tabossi 1996). This account argues that in sentences with movement, in particular in the relative clauses and questions, the filler is reactivated at the position of the gap. The Direct Association account (Pickering and Barry 1991) holds that experimental effects at gap positions are due to processing of dependents at their subcategorizers, and that this has been confused with gap position effects because subcategorizers and gaps are usually adjacent. Under the Trace Reactivation account, the scrambled phrase will be primed by its semantic associate at the

gap position, independent of whether or not the verb is adjacent to it. In contrast, for the Direct Association account of scrambling, this will not be the case if the gap position is separated from the verb by an intervening phrase. The predictions of the psycholinguistic theories, and their implications for the syntactic account of scrambling as movement, are tested in several experimental studies of processing of scrambling in German (Featherston 1999; Clahsen and Featherston 1999; Muckel and Pechmann 2000) and in Japanese (Mazuka, Itoh, and Kondo, to appear; Miyamoto and S. Takahashi 2000) which are discussed below in sections 13.3 and 13.4, respectively.

Note that processing complexity of scrambling does not necessarily require the postulation of an empty category left by the scrambled phrase. The Scrambling Complexity hypothesis can attribute reactivation effects to greater processing complexity in general. Since an extracted argument must undergo more (or deeper) processing than an in situ argument, it attains a higher level of mental activation and is subsequently recognized more quickly. Processing complexity entails that on-line greater *processing cost*, or *load*, is associated with complex constructions compared to simple ones. An important assumption that underlies the notion of processing cost in sentence processing is that it can be measured experimentally (Haberlandt 1994). Put simply, participant reading times for more complex, e.g. scrambled, sentences will be longer than for sentences in canonical word order. Moreover, when the self-paced word-by-word reading method is used, longer reading times are found for particular words in scrambled sentences. This may be taken as evidence of *the locus* of processing complexity. The Scrambling Complexity hypothesis in a self-paced reading setting is tested in experimental studies for Japanese (Yamashita 1997; Mazuka, Itoh, and Kondo, to appear; Miyamoto and S. Takahashi 2000) and for Slavic languages, Serbo-Croatian (Stojanović 1999), and Russian (Sekerina 1997) – these studies will be presented below in section 13.6.

Another way of measuring processing cost experimentally is by recording subjects' eye movements. According to the mind–eye hypothesis, when the subject's eyes fixate on a word, the subject is processing this word using all available current information (Rayner and Sereno 1994). In an eye movement recording setting, if the Scrambling Complexity hypothesis is correct, subjects will fixate for a longer time on the scrambled phrase; their gaze duration (the sum of all fixations landing on the scrambled phrase before fixating away from it) will be longer than for the same phrase in its canonical position. An experimental study of processing of scrambled word orders in Finnish using eye movement recording (Hyönä and Hujanen 1997) will be described in section 13.5.

Processing of scrambled sentences also provides interesting testing material for various theories of sentence processing. The way these theories are usually tested involves studying how the processor copes with ambiguity. Ambiguity arises in a number of ways: speech segmentation can be ambiguous, words can have more than one meaning, and sentences can have more than one possible syntactic structure. There are two different types of syntactic ambiguity, global and temporary. For languages with scrambling, global and temporary syntactic ambiguity can arise due to ambiguous Case marking on an argument. For example, in German, Serbo-Croatian, and Russian, a Case marker for some NPs can be morphologically

ambiguous between the Nominative (NOM) and the Accusative (ACC) Cases. This creates syntactic ambiguity since the sentence can be interpreted either as canonical or scrambled word order. Numerous observations about subjects' intuitions in various languages and experimental studies have shown that when such ambiguity presents itself, subjects prefer the canonical word order over the scrambled one (J.A. Fodor, Bever, and Garrett 1974).[2]

An influential theory of sentence processing, the Garden-Path theory (Frazier and J.D. Fodor 1978; Frazier and Clifton 1996) explains this preference for canonical word order with the help of the Minimal Chain Principle (De Vincenzi 1991), which is argued to be universal. Scrambled word orders create filler–gap dependencies if they are derived via movement. A movement chain consists of a moved phrase and its trace. The Minimal Chain Principle states that unnecessary chain members should not be postulated; and when necessary, postulation of required chain members should not be delayed. The Lexicalist Constraint-Based theory that is rapidly gaining power (MacDonald, Pearlmutter, and Seidenberg 1994; Tanenhaus and Trueswell 1995; Spivey-Knowlton and Sedivy 1995) argues that syntactic ambiguity resolution proceeds via the same mechanism of constraint-satisfaction as the lexical ambiguity resolution. The most important of these non-structural constraints are frequency of structure, lexical preferences of the constituent words, plausibility, and contextual effects. According to this model, frequent constructions, e.g. in canonical word order, should be processed faster than similar, but less frequent, scrambled constructions. Appropriate context that precedes a scrambled sentence should facilitate its processing possibly to the point of eliminating any processing cost associated with such sentences in isolation.[3] Finally, the already mentioned Syntactic Prediction Locality Theory (Gibson 1998; Konieczny 2000; Grodner, Watson, and Gibson 2000), a theory that explains the relationship between processing and computational resources, can also be used to resolve syntactic ambiguity. The two main parts of the SPLT are an integration cost component and a component for the memory cost associated with keeping track of obligatory syntactic requirements. Relative ease of processing of canonical word order is predicted by the SPLT because there is no memory cost associated with the sentence-initial NP-NOM. Scrambled word orders are more complex because when the scrambled NP is encountered, it is necessary to retain the prediction of an NP-NOM, which is yet to appear. Experimental studies of ambiguous sentences in German (Bader 1994), Serbo-Croatian (Stojanović 1998, 1999), and Russian (Sekerina 1997) are dedicated to the issue of which processing theory better predicts processing cost of scrambling in such sentences. These studies simultaneously investigate the important question in current research on sentence processing, whether different languages are processed in the same way or differently.

13.3 Processing of Scrambling in German

German is closely related to English, but is different in three key features. First, German has a head-final verb phrase, which makes it easier to distinguish between effects at verbs and effects at direct object gap position. Second, German is a

verb-second language, which allows for testing direct object gaps that are remote from the overt position of their subcategorizing verb. Third, German allows short scrambling, that is, word order variations within the clause; this permits testing extraction dependencies that do not cross the verb. Featherston (1999) and Clahsen and Featherston (1999) used these features of German in an attempt to distinguish between the competing linguistic theories that make use of empty categories and those which do not require them.

Three types of German sentences were used in a series of cross-modal lexical priming experiments: V2-structures with a scrambled direct object (1a), the same as (1a) but with the verb plus particle (1b), and VP-topicalization (1c) (Featherston 1999; Clahsen and Featherston 1999).

(1)a. Die Frau gab ihre Münze$_1$ dem bitter weinenden Mädchen t_1
the woman gave her coin to.the bitterly crying girl
"The woman gave her coin to the bitterly crying girl"

b. Sie macht die Tür$_1$ grundsätzlich nur Freunden und Bekannten t_1 auf
she makes the door on.principle only friends and acquaintances open
"She only opens the door for friends and acquaintances as a matter of principle"

c. Den Mut$_1$ dem völlig durchschnittlichen Beamten t_1 zugetraut
that courage to.the quite average civil.servant expected
hat aber keiner
has but nobody
"Nobody expected such courage from such a mediocre civil servant"

The major question that was addressed in these experiments was whether there was reliable empirical evidence for an empty category (a gap) in the direct object position which would behave as a covert anaphor and thus would reactivate its antecedent, the filler. While no reactivation was found for sentences in (1a) due to the trace's position at the clause boundary, a semantically-associated prime for *die Tür* "the door" and *den Mut* "the courage" was responded to significantly faster at the gap position (597 msec and 591 msec) than the unrelated controls (626 msec and 619 msec). Clahsen and Featherston argued that the results of the three experiments provide empirical evidence of syntactic processing at gap positions. This processing is consistent with the effects being due to a trace, as predicted by the Principles and Parameters theory of grammar. These data also argue that German scrambled sentences are processed as filler–gap dependencies. They constitute a psycholinguistic argument in favor of movement analysis of scrambling in German (Den Besten and Webelhuth 1990; Fanselow 1990) and against a based-generation approach (Haider 1994).

Muckel and Pechmann (2000) argue that Clahsen and Featherston's results are also compatible with the lexicalist position. This would be the case if the German parser takes advantage of the prosody and, anticipating the occurrence of the clause-final verb, reactivates potential candidates for its argument structure in

advance. Using the cross-modal priming lexical decision task, these researchers presented participants with ergative sentences with topicalized objects, as in (2):

(2) Der Krug_1 ist [einem jungen Richter des Berliner -c Gerichts
the jug-NOM is a young judge-DAT the Berlin court-GEN
-t_1 zerbrochen]$_F$
broken
"The jug broke on a young judge of the Berlin court"

The identical prime, *Krug* "jug" or unrelated prime, *pilz* "mushroom," were presented in either control position *-c* or in the preverbal trace position *-t*. The word *gerichts* "court-GEN" contains a neutral focus exponent and immediately precedes the preverbal trace position *-t*, and the parser anticipates the verb to follow. If the scrambled constituent is directly associated with the verb as is predicted by the lexicalist Direct Association hypothesis (Pickering and Barry 1991), then the antecedent reactivation in the preverbal trace position cannot be due only to processing complexity associated with the hypothesized trace. Muckel and Pechmann (2000) found the reactivation effect in the preverbal sentence position (780 msec for the identical prime versus 885 msec for the unrelated prime) and concluded the German parser can reactivate the scrambled object since it can confidently anticipate the verb to follow. Without further experimental work to tease apart different predictions for sources of processing complexity, the available results on German scrambling remain inconclusive.

As a part of the larger project concerning the processing of German in general, Bader (1994) investigated implications of the Garden-Path theory for the processing of scrambling constructions in German; in particular, whether the Minimal Chain Principle (MCP) (De Vincenzi 1991) is applicable to such constructions. In a broad range of German examples, almost every permutation of arguments and adverbials can be found. Bader distinguished between basic and derived word orders, on the one hand, and neutral and discourse-marked word orders, on the other, with no simple one-to-one mapping between the two divisions. With lexical NPs, a word order is unmarked when it is basic. A scrambled clausal word order is derived but can be perceived as either marked or unmarked depending on the definiteness of the two NPs involved.

The results of an on-line self-paced reading experiment for sentences with lexical NPs showed that no additional processing complexity was associated with scrambled word order, even when temporary ambiguity due to Case-ambiguous marking would be expected to result in misanalysis on-line. Examples are shown in (3):

(3)a. . . . daß Maria das Unglück geahnt hat
that Maria-NOM/ACC the disaster-NOM/ACC foreseen has
". . . that Maria has foreseen the disaster"

b. . . . daß Maria das Unglück erschüttert hat
that Maria-NOM/ACC the disaster-NOM/ACC shattered has
". . . that the disaster has shattered Maria" (Bader 1994: 71)

In the examples in (3), each of the two sentence-initial NPs is ambiguous with respect to Case. The MCP would predict that the parser will always initially adopt the non-movement analysis, since a singleton chain is the preferred option. Thus, in both (3a) and (3b), the two Case-ambiguous NPs should be interpreted as a NOM ACC sequence. When the verb is encountered in the input, this prediction is fulfilled in (3a) but turns out to be incorrect in (3b) since the selectional properties of the verb require the second NP to be the subject. A garden-path effect was thus predicted for (3b); however, this MCP prediction was not confirmed by the experimental findings.[4]

Bader noted that intuitions of processing complexity indicate also that (4a) is no more difficult to parse than (4b) although the singular agreement at the verb in (4a) belatedly forces an analysis in which the first (conjoined, plural) NP is a scrambled object.

(4)a. . . . daß [Fritz und Maria]$_i$ niemand t_i retten konnte
that Fritz and Mary nobody rescue could-SG
". . . that nobody could rescue Fritz and Maria"

b. . . . daß [Fritz und Maria] niemanden retten konnten
that Fritz and Maria nobody rescue could-PL
". . . that Fritz and Maria could rescue nobody"

Bader concluded that of the three factors which characterize derived (scrambled) sentences like (4) – word order being derived, word order being marked, and underspecification for Case – none of them alone is sufficient to produce extra processing load. The results of German experiments combined with intuitive judgments show no increased processing complexity of scrambling constructions, in contradiction of the Minimal Chain Principle of the Garden-Path theory.

13.4 Processing of Scrambling in Japanese

The grammatical structure of Japanese is totally different from that of German. Three of its major characteristics should *prima facie* make Japanese sentence processing very difficult, if not totally impossible. First, Japanese is head-final: verbs follow arguments and complementizers follow clauses. Second, it allows for null pronouns, since any argument can be phonetically unrealized if the discourse identifies it. Finally, Japanese exhibits scrambling including Long-Distance scrambling. The consequence of these three characteristics is that Japanese tolerates massive local ambiguities; every sentence is ambiguous up to its final word. A prototypical example in (5) can be parsed in any number of ways, some of which are exemplified in (5a–c) (*e* stands for null pronoun):

(5)	NP-ni	NP-ga	NP-o	V	NP-o
	John-DAT	Mary-NOM	letter-ACC	sent	friend-ACC
	V Comp	V			
	introduced	said			

a. [e-ga [e-ga NP-ni [[NP-ga NP-o V] NP-o] V Comp] V]
b. [e-ga [NP-ni NP-ga [[NP-o V] NP-o] V Comp] V]
c. [NP-ni [NP-ga e [[[NP-o V] NP-o] V . . .

A considerable amount of theoretical and empirical work has been done on Japanese sentence processing (Mazuka and Nagai 1995; Inoue and J.D. Fodor 1995; among others). The strong claim is that Japanese parsing is serial, left to right, without delay or parallelism, and that every known principle of English parsing also applies to Japanese.

Traditionally, scrambling in Japanese occupies a very prominent position in both linguistic and sentence processing research. However, Yamashita (1997), citing a Japanese corpus study by Yamashita and Suzuki (1995), notes an extremely low frequency of scrambling constructions in Japanese; the study found that the frequency of any type of scrambled sentence in a transcription of informal discussions was less than 1 percent.[5] Canonically ordered sentences have their arguments in the order NP-*ga* NP-*ni* NP-*o*, that is, S IO DO V, as in (6a). Saito (1985) argued for a linguistic analysis of non-canonical word orders, with the scrambled IO NP-DAT (6b), the scrambled DO NP-ACC (6c), and both IO and DO scrambled (6d), as derived from the canonical (6a) by scrambling, which adjoins the scrambled phrase to the left of IP:

(6)a. Wakai zimuin-ga mukuti-na syatyoo-ni omosiroi hon-o ageta
young secretary-NOM quiet president-DAT fun book-ACC gave
b. *Mukuti-na syatyoo-ni* wakai zimuin-ga omosiroi hon-o ageta
c. *Omosiroi hon-o* wakai zimuin-ga mukuti-na syatyoo-ni ageta
d. *Omosiroi hon-o* *mukuti-na syatyoo-ni* wakai zimuin-ga ageta
"A young secretary gave the quiet company president a fun book"
(Yamashita 1997)

The initial hypothesis was that if Japanese sentences have configurational structure, and scrambled sentences are derived from an SOV structure, then scrambled OSV sentences should have more complex structure than those with the canonical word order. However, Nakayama (1995) found no difference between the canonical word order and scrambled sentences in probe-recognition experiments. In a series of self-paced experiments conducted by Yamashita (1997), the scrambled word orders (6b–d) were read as quickly as the canonical order (6a); that is, no significant difference was observed across the four word orders. Yamashita concluded that, contrary to her initial expectations, there was no increased difficulty in processing scrambled sentences in Japanese. She speculated that this is because the parser appears to have utilized Case information independently of the word order.

Recently, Mazuka, Itoh, and Kondo (to appear) presented results of four experiments (two questionnaires, a self-paced reading experiment, and an eye movement recording experiment) in which they contested Yamashita's findings of absence of processing load for Japanese scrambled sentences. They compared five types of sentences, a very simple canonical word order (7a), a simple scrambled

sentence (7b), a more complex canonical word order (7c), and two more complex scrambled structures (7d–e):

(7)a. NP-*ga* NP-*o* V
b. NP-o_1 NP-*ga* t_1 V
c. NP-*ga* [Relative Clause] NP-*o* V
d. [Relative Clause] NP-*o* NP-*ga* t_1 V
e. NP-*o* [Relative Clause] NP-*ga* t_1 V

Japanese speakers rated the scrambled sentences (7b) and (7e) as more difficult than their canonical word order counterparts (7a) and (7c), respectively. Eye movement data and self-paced reading times showed an increased processing cost for the scrambled sentences. The locus of the processing cost was the NP-*ga* in (7b): it had significantly longer reading times than the NP-*o* in the canonical word order (7a).

Miyamoto and S. Takahashi (2000) raised a question concerning several confounding factors in Yamashita (1997) and Mazuka, Itoh, and Kondo's experimental materials. In particular, in both of these studies, NPs with different Case markers were compared directly; reading time differences could therefore be potentially due to the intrinsic differences between NOM and ACC Case markers rather than to scrambling. Additionally, the NP-*ga* usually marks a clause boundary in Japanese, and the increased reading times observed on the NP-NOM in Mazuka, Itoh, and Kondo's experiment could be due to the positing of a new clause.

Miyamoto and S. Takahashi constructed complex sentences of the form (8) for their Experiment 1:

(8)a. Ofisu-de shokuin-ga kakarichoo-ni *ocha-wo* dashita
office-LOC employee-NOM manager-DAT tea-ACC served
josei-wo teineini hometa-to Aiharasan-ga hanashiteita
woman-ACC politely praised-COMP Aihara-NOM said

b. Ofisu-de shokuin-ga *ocha-wo* kakarichoo-ni dashita josei-wo
teineini hometa-to Aiharasan-ga hanashiteita
"At the office, Aihara said that the employee politely praised the woman who had served tea to the manager"

The locus of the potential processing difficulty is expected to be the NP-DAT *kakarichoo-ni* "manager-DAT" because it is the earliest point in the scrambled sentence (8b) at which it becomes clear that the NP-ACC *ocha-wo* "tea-ACC" was scrambled. Indeed, this NP-DAT was read significantly more slowly in the scrambled sentence than the NP-ACC in the same position in the canonical word order in (8a).[6] The NP-NOM as a clause boundary confounding factor was eliminated in the materials (8) since scrambling occurred VP-internally. Miyamoto and S. Takahashi concluded from these results that scrambling in Japanese does indeed increase processing load; however, the processing complexity could also be derived from different sources. They proposed to account for processing cost in Japanese scrambled sentences by postulating a movement analysis for Japanese scrambling, on par with the movement analysis for German scrambling (see

section 13.3 above). This interpretation of the results is another example of the use of psycholinguistic findings to attempt to answer linguistic questions. Psycholinguistic evidence for the trace in scrambled sentences, of interest in itself, favors the movement analysis of Japanese scrambling (Saito 1985; Tada 1993; Miyagawa 1997) in contrast to the base-generation account (Bošković and D. Takahashi 1998).[7]

13.5 Processing of Scrambling in Finnish

Finnish is yet another example of a non-Indo-European language that relies heavily on Case marking. It is agglutinative and uses numerous suffixes to express grammatical relations between sentence constituents. The subject is predominantly in the morphologically unmarked Nominative Case; the object's predominant Case is Partitive, followed by Genitive and Nominative. The adverbial phrases corresponding to prepositional phrases in English are also Case marked with one of the six locative Cases, such as Inessive. If a noun is preceded by an adjective, this adjective is marked with the inflectional Case marker identical to the one on the noun. Finnish word order is free with SVX (X may be adverbial, object, or predicative) being the canonical and most frequent one. The two other most common orders are XVS and VS, both of which are usually the result of Topicalization.[8]

Hyönä and Hujanen's (1997) eye movement recording experiment is an example of using Finnish scrambling to test the predictions of two structure-based theories of sentence processing, the Garden-Path theory (Frazier and J.D. Fodor 1978; Frazier and Clifton 1996; among others) and the Head-Driven processing model (Pritchett 1992). These researchers examined processing of scrambled word orders in Finnish by measuring eye fixations and gaze duration patterns on the critical nouns (the italicized nouns in (9)) as the subjects read sentences in isolation. The same critical noun, always in the second position in a sentence, was either the subject (in morphologically unmarked Nominative Case) in the canonical word order (9a), the scrambled direct object (in Genitive or Partitive Case) (9b), or the scrambled adverbial phrase (in Inessive Case) (9c).

(9)a. Lopulta *politiikka* tuhoaa joustavuuden päätöksenteossa
finally politics-NOM destroys flexibility-GEN decision making-INESS
"Finally the politics destroy the flexibility in decision making"

b. Lopulta *politiikka**n*** tuhoaa jatkuvasti kasvava
finally politics-GEN destroys continually growing
nukkuvien puolue
body of non-voters-NOM
"Finally the politics are destroyed by the continually growing body of non-voters"

c. Lopulta *politiika**ssa*** tuhoaa moni poliitikko kansansuosionsa
finally politics-INESS destroys many politicians popularity-his
"Finally in politics many politicians destroy their popularity"

The second factor manipulated in this study was the type of word that preceded the critical noun: either a word that did not carry a Case marker, as *lopulta* "finally" in (9), or a modifying adjective that agreed in Case with the critical noun, e.g. *kuiva/kuivan/kuivassa* "dull-NOM/GEN/INESS". In the latter case, the grammatical role of the critical noun (subject, object, adverbial) can be assigned on the basis of the adjective alone, even before the noun is encountered.

Assuming that the effect of scrambling in Finnish should entail processing cost as was hypothesized for German and Japanese, the canonical word order should be processed faster than either of the two scrambled word orders. Also, Case marking on the adjective that precedes the critical noun should facilitate the processing of the noun, since it allows the processor to anticipate the noun's grammatical function in the sentence. Two relevant types of data were collected in the study: the duration of the first fixation on the target and the gaze duration (the sum of all fixations). Surprisingly, the first fixation was reliably longer on the critical noun when it was the subject (223 msec) than when it was the object (214 msec) or the adverbial (210 msec). Hyönä and Hujanen attributed this result to the fact that the subject was most often read with a single fixation. Because of the variability in the length of the critical nouns, the residual gaze durations and not raw means were compared for all three types of grammatical functions. The objects (9b) and the adverbials (9c) received significantly longer gazes than the subjects (7.6 msec, 4.7 msec, and 12.5 msec, respectively). In addition, the presence of Case marking on the preceding adjective was important: the critical nouns preceded by the agreeing adjective received shorter gazes than the ones preceded by the non-agreeing word. However, the interaction between the grammatical function and Case marking revealed that the facilitating effect of Case marking was present only for objects and adverbials.

Hyönä and Hujanen concluded that their results, in general, favor the full immediate attachment processing advocated by the Garden-Path model. This is because the initial processing of the critical nouns was influenced by the Case marking information on adjectives that preceded objects and adverbials before the main verb was encountered. However, the fact that reading times for Case marked adjectives in object NPs and adverbials were no longer than for non-adjectives suggests that grammatical role assignment in Finnish may not be completed until the head noun is processed. Finally, the most interesting results for the theory of processing of scrambling involved initial fixations on the critical nouns in the grammatical role of sentence subject. These results did not confirm the Scrambling Complexity hypothesis for Finnish scrambled sentences since they had the shortest fixation times of all.

13.6 Processing of Scrambling in Slavic Languages

It was only a matter of time before it became obvious that Slavic data can provide a valuable testing ground for both the universal theory of scrambling and the theory of sentence processing. Investigation of the syntactic properties of scrambling in Slavic is interesting because phrase structure in Slavic languages differs typologically from that of configurational languages with scrambling such as Japanese,

Korean, German, Dutch, Hindi, and Latin, and from non-configurational languages with scrambling such as Warlpiri and other Australian Aboriginal languages. For example, Russian has been argued to be a configurational but not verb-final language (T.H. King 1995; Bailyn 1995); it has a canonical SVO word order. Its discourse-oriented flexibility of surface word order is taken as evidence of scrambling that is much less heavily restricted than in many other scrambling languages. Scrambling accounts for as much as 17 percent of sentences in a Russian corpus study reported in Bailyn (1995). This contrasts with Japanese, for example, in which scrambled constructions represent less than 1 percent of all sentences (Yamashita and Suzuki 1995). There seems to be reason to believe that in Russian, scrambling, WH-movement, Topicalization, and Right Extraposition may be indistinguishable from each other, and could all be subsumed under the general heading of Focus-driven scrambling. This situation is different from that of other scrambling languages where WH-movement, Topicalization, and scrambling have distinct properties (G. Müller and Sternefeld 1993). Finally, Russian is a member of the subset of the scrambling languages which exhibits Split scrambling, a process in which XPs can be broken up and their subparts moved to different locations in the sentence.

13.6.1 Serbo-Croatian

Serbo-Croatian offers a number of novel features for the study of on-line processing of filler-gap dependencies. First, although the language has a rich morphological system, in some cases morphological ambiguity allows a potential local syntactic ambiguity to arise. Second, scrambling in Serbo-Croatian, unlike in German and Dutch, is unrestricted with respect to the position of the verb, making it possible to create numerous word order configurations. In addition, the same word order variation may be carried over to the WH-constructions, such as relative clauses, which allows for direct comparisons between these two types of filler-gap dependencies. Stojanović in her dissertation (1999) builds on the previous off-line work with Serbo-Croatian (Urošević, Carello, Savić, Lukatela, and Turvey 1988) and reports a series of experiments on processing of different word orders in this language.

Using the self-paced frame-by-frame scrambling experiment, Stojanović tested the predictions of the Minimal Chain Principle for four types of morphosyntactically ambiguous sentences in Serbo-Croatian. In these sentences, the semantics of the verb played a disambiguating role (10):

(10) Celo selo je bilo svesno toga da je . . .
"The whole village was aware of the fact that . . .

a.	venćanie wedding- NOM/ACC	izazvalo caused	divljenje admiration- NOM/ACC	ćak i kog gostiju iz grada even in guests from city	SVO
b.	divljenje	izazvalo	venćanie	ćak i kog gostiju iz grada	OVS
c.	venćanie	divljenje	izazvalo	ćak i kog gostiju iz grada	SOV
d.	divljenje	venćanie	izazvalo	ćak i kog gostiju iz grada	OSV

the wedding has caused admiration even in the guests from the city"

The two critical NPs, the subject *venćanie* "wedding-NOM/ACC" and the object *divljenje* "admiration-NOM/ACC" do not differ morphologically and either can be taken as the agent or the patient of the clause. The disambiguating verb came either early, in the second position following the first noun (SVO and OVS conditions), or late, in the third position, following the second noun (SOV and OSV conditions). The SVO sentence (10a) represents the canonical word order in Serbo-Croatian and does not involve any movement operations. The OVS sentence (10b) involves two movement operations, scrambling of the direct object and Right Extraposition of the subject. The remaining two sentences, SOV and OSV, are both derived via object scrambling. They differ in movement length, which is shorter for (10c) and longer for (10d). If indeed the Minimal Chain Principle is applicable in these constructions, then the hierarchy of predicted processing cost, as reflected in lengthening of reading times, should yield the following results in terms of reading time patterns: OVS > SOV, OSV > SVO.

The results revealed that with respect to the total reading times, SVO was read faster than SOV (4,560 msec versus 4,904 msec), and OVS was read faster than OSV (4,744 msec versus 5,024 msec); overall, there were no significant effects for any of the sentences at any of the four positions tested. The difference of 122 msec in Position 3, however, was significant for the five slowest subjects. All of this suggests that the parser assigns the subject theta role to the initial Case-ambiguous NP in (10b) and then reanalyzes it as a scrambled object. The absence of difference for the SOV and OSV sentences can be interpreted as evidence for delayed parsing in the situation when the Case-ambiguous NPs are immediately adjacent to each other: the parser waits for disambiguating information in the form of the verb. Stojanović hypothesizes that the absence of the predicted processing difficulty may be due to a combination of factors, such as working memory capacity differences, the location and strength of disambiguation cues, and frequency effects.

13.6.2 Russian

Russian shares many typological characteristics with Serbo-Croatian. It exhibits a rich morphological system of Case marking. Subjects in Russian usually appear in the NOM Case and impose subject–object agreement on the predicate. Direct objects usually appear in the ACC Case and indirect objects in the DAT Case. Since grammatical relations are reflected by the Case marking, arguments can be freely ordered in the clause. Although word order is free with respect to grammatical relations, it does reflect the organization of a sentence on a communicative level. The most often discussed factor in determining Russian word order is the so-called *Given*/*New* (or *Theme*/*Rheme*, or *Topic*/*Comment*) distinction (Yokoyama 1986; Fowler 1987). The Theme is the starting point of the utterance and is often known to the listener or can be determined from the surrounding context. The Rheme tells the listener something about the Theme, carries the main communicative load of the utterance, and contains new information. In neutral speech the Theme precedes the Rheme. The Theme/Rheme distinction plays a major role in explaining the properties of Russian word order as a result of scrambling in recent theories of T.H. King (1995), Bailyn (1995), Kondrashova (1996), and Junghanns and Zybatow (1997).[9]

The first attempt to provide an account of how scrambled constructions in Russian are processed is exemplified by four experiments reported in Sekerina (1997). Two of these experiments dealt with clause-internal scrambling, the focus of the present chapter.[10] Globally ambiguous Russian sentences were used as experimental materials in a sentence processing study of scrambling. The goal was to determine the accessibility of each of the two possible meanings for these sentences, to be used as evidence for operations the parser finds easy or difficult. On the basis of this, it can be established whether the Garden-Path theory of sentence processing can account for processing of Russian scrambled constructions. Do proposed universal principles of structure-building, most relevantly the MCP and Minimal Revision (J.D. Fodor and Inoue 1995), apply in Russian processing? Do they suffice to account for the processing profile associated with scrambling or are other principles needed as well?

The globally ambiguous sentences that were tested were of three different types: they contained a Nominative/Accusative ambiguity (11), a Dative ambiguity (12), or an Instrumental ambiguity (13).

(11)a. Trolleybus obognal *avtobus*
trolleybus-NOM/ACC passed bus-NOM/ACC
b. Trolleybus *avtobus* obognal
c. *Avtobus* trolleybus obognal
MEANING 1: "The trolleybus passed *the bus*"
MEANING 2: "*The bus* passed the trolleybus"

(12)a. Smirnov byl poslan na zavod *direktorom*
Smirnov-NOM was sent to the plant director-INSTR
b. Smirnov *direktorom* byl poslan na zavod
c. *Direktorom* Smirnov byl poslan na zavod
MEANING 1: "Smirnov was sent to the plant *as a director*"
MEANING 2: "Smirnov was sent to the plant *by the director*"

(13)a. Prixoditsja ob"jasnjat' principy *prepodavateljam*.
have to explain principles instructors-DAT
b. Prixoditsja *prepodavateljam* ob"jasnjat' principy
c. *Prepodavateljam* prixoditsja ob"jasnjat' principy
MEANING 1: "pro have to explain the principles to *the instructors*"
MEANING 2: "*The instructors* have to explain the principles"

These sentences were selected to represent a variety of ambiguous constructions which are not found in English. This was done in order to contribute some new facts to the many findings on syntactic ambiguity in English. The NOM/ACC ambiguity occurs in simple sentences where the Case markers on subject and object are morphologically ambiguous. This makes it possible not only to investigate the Scrambling Complexity hypothesis, that is, whether there is a processing cost of scrambling, but also to test an observation made for German by Bader and Meng (1999). They found that in sentences with Case ambiguity, the parser prefers structural Case over lexical Case; of the structural Cases, it prefers NOM

to ACC. The DAT ambiguity involves the syntactic identity of the position at which the dative phrase is attached in the tree, and crucially relies on the bidirectionality of scrambling. Finally, the INSTR ambiguity involves an ambiguity between an argument and an adjunct, an ambiguity important for the Construal hypothesis (Frazier and Clifton 1996).

Experiment 1 was an off-line questionnaire designed to test application of the MCP and Minimal Revision in processing of Russian scrambled sentences of these three types. Experiment 1 sought evidence of the accessibility of the two possible meanings for the globally ambiguous sentences, for each of the three ambiguity types, by asking subjects to rate the naturalness of each possible meaning. If it can be shown that subjects systematically favor unscrambled structures and avoid revisions, this would constitute *prima facie* evidence for the MCP and Minimal Revision. Experiment 2 was an on-line reading study designed to investigate how ambiguous scrambled constructions in Russian are processed. It aimed to establish the parser's preferred analysis in terms of answers to comprehension questions and reading times. The comprehension question data provided more information about whether the MCP and Minimal Revision are at work in processing of Russian scrambled constructions. Easier accessibility of a particular meaning and a shift in patterns of accessibility as a function of word order can constitute an argument for or against these principles. The evidence from this experiment, as from Experiment 1, was positive. Reading times lengthened as a result of scrambling, which can be taken as evidence for a processing load associated with scrambling, that is, the Scrambling Complexity hypothesis. The results of the two experiments on scrambling show that Russian appears to fit well with the Garden-Path theory; both the MCP and Minimal Revision apply in the standard way and no new principles are required. Russian also provides evidence for the Scrambling Complexity hypothesis; scrambling imposes an additional processing cost compared to unscrambled sentences, as reflected in longer reading times for scrambled sentences.

In the two experiments described above, the sentences were presented to subjects in isolation; that is, in null context. This is a relatively common practice in sentence processing since contextual effects are believed to be hard to observe; also, the use of context in reading is mediated by working memory. In general, contextual effects are subordinated to local factors, and only some subjects make effective use of contextual constraints. Scrambling, however, is a phenomenon that relies heavily on appropriate contexts and is often triggered by it. It is therefore a very desirable move to test scrambled sentences under discourse-appropriate conditions. The next step in these investigations involves introducing context as a factor in the experiment design and presenting the same sentences both in context and in isolation. This manipulation has made it possible to investigate whether contextual constraints can facilitate processing of scrambled sentences to the extent that the processing cost of scrambling could be eliminated when the context triggers scrambling.

Two new self-paced reading experiments with Russian scrambled sentences address the question implicit in title of this chapter: do contextual constraints and complexity interact in processing of filler–gap dependencies when these dependencies are in the form of scrambled sentences and WH-movement? In the design of Experiment 3, 24 control sentences in the canonical SVO word order (14a) were

contrasted with the scrambled OSV sentences (14b) and sentences with WH-movement of the direct object (14c), resulting in four different conditions.

(14)a. Utrom poslušnaja devočka ponesla bol'noj babuške
In the morning obedient girl-NOM carried sick Grandma-DAT
svežuju klubniku v korzinke
fresh strawberries-ACC in a basket

b. Utrom svežuju klubniku poslušnaja devočka ponesla
In the morning fresh strawberries-ACC obedient girl-NOM carried
bol'noj babuške v korzinke
sick Grandma-DAT in a basket
"In the morning, the obedient girl carried the fresh strawberries to her sick Grandmother in a basket"

c. Utrom kakuju klubniku poslušnaja devočka ponesla
In the morning which strawberries-ACC obedient girl-NOM carried
bol'noj babuške v korzinke?
sick Grandma-DAT in a basket

d. Utrom poslušnaja devočka ponesla bol'noj babuške
In the morning obedient girl-NOM carried sick Grandma-DAT
kakuju klubniku v korzinke?
which strawberries-ACC in a basket
"In the morning, which strawberries did the obedient girl carry to her sick Grandmother in a basket?"

In Experiment 4, an additional sentence type was used to complete the 2×2 factorial design, a WH-in situ question illustrated in (14d). Each experimental sentence was preceded by a single-sentence context that generated discourse-appropriate conditions for using scrambled sentence (14b) but did not necessarily contribute anything to the WH-movement sentences (14c).

The subjects were told that the experiment would test their knowledge of well-known fairly tales. No proper names were used in the experimental sentences but relevant hints were supposed to help them identify these fairy tales. The quadruple in (14) was meant to be representative of the Russian version of "Little Red Riding Hood," and the context ran like this:

(15) Mama skazala dočke, čto babuška zabolela,
Mother-NOM told daughter-DAT that Grandma-NOM was sick
a v ogorode sozreli jagody
and in garden were ripening berries
"Mother told her daughter that her Grandmother was sick and that the berries were ripening in the garden"

After having read the contextual sentence (15) presented as a whole and one of the experimental sentences from (14) presented in phrase-by-phrase mode, the

subjects were asked to answer a comprehension question: "Is this '*The Little Red Riding Hood*'?"

Twenty-four double-object verbs were used in the experimental quadruples and each was used only once. Some examples of the verbs are as follows: *ponesla* "carried," *prodal* "sold," *pokazal* "showed," *ob"jasnil* "explained," *vernul* "returned," *zadala* "ordered," *odarila* "bestowed," *rasskazal* "told," *obeščala* "promised," *vnušali* "convinced," *predstavil* "introduced," *dostal* "produced." Since Russian allows for major constituents to scramble, numerous scrambled word orders can be derived from the canonical word order in (14a). Only one of them, with the direct object *svežuju klubniku* "fresh strawberries-ACC" scrambled in front of the subject, was chosen for testing. It is important to point out that the direct object consisted of an adjective and a head noun, and, as always in Russian, both were marked for Case, gender, and number. The ACC Case marker on both the adjective and the noun *unambiguously* signaled a scrambled word order in the hope that the allocation of processing resources would be observable even in unambiguous complex constructions.

The phrase-by-phrase chunking of the experimental sentences indicated by the "/" symbol resulted in six frames. The following is an English translation of an example of a full item: contextual sentence, experimental sentence, and a comprehension question.

(16) Mother told her daughter that the Grandmother was sick and that the berries were ripening in the garden.
In the morning / the obedient girl / carried / to her sick Grandma / fresh strawberries/ in a basket/
Is this "*The Little Red Riding Hood*"?

Reading times (RTs) were recorded only in the four relevant positions of the following five, depending on the sentence type: Position 1 (nothing/scrambled/WH-moved direct object), Position 2 (subject), Position 3 (verb), Position 4 (indirect object), and Position 5 (nothing/direct object/indirect object). Crucially, Positions 2 through 4 had identical lexical material in all four conditions.[11]

Thirty-three native Russian speakers participated in Experiment 3 and 88 in Experiment 4. Subject-based analyses (collapsing over items) and item-based analyses (collapsing over subjects) were conducted on the self-paced reading time data, both for each experiment separately and for each of the five positions separately. Two factors of interest were sentence type (Declarative versus Question) and movement (+Movement versus –Movement) combined in a standard 2×2 factorial design. The predictions for the outcome of the two experiments are schematically represented in table 13.1 (the symbols >, >> mean longer reading times).

First, since scrambling is discourse-oriented, the presence of appropriate context coupled with the unambiguous Case marking in the scrambled direct object should facilitate the processing of all sentences in general. Context, however, does not necessarily constrain WH-movement, and may not have any facilitating processing effect. Second, if scrambling involves movement of the direct object, then both conditions with movement, scrambling, and WH-movement, will have an

Table 13.1 Predictions for the outcome of Russian self-paced reading Experiments 3 and 4

Factors	*Experiment 3 (no context)*	*Experiment 4 (with context)*
Context effects	Scrambling >> Canonical WH-movement >> Canonical	Scrambling > Canonical WH-movement >> WH-in situ
Processing cost	Scrambling >> Canonical WH-movement >> Canonical	Scrambling > Canonical WH-movement > WH-in situ

Table 13.2 Mean reading times (in msec) as a function of sentence type and ±Movement of Russian self-paced reading Experiments 3 and 4

	Experiment 3 (no context)			*Experiment 4 (with context)*			
	Declarative		*Question*	*Declarative*		*Question*	
	−Movement	*+Movement*	*+Movement*	*−Movement*	*+Movement*	*−Movement*	*+Movement*
DO	—	866	790	—	610	—	589
S	801	927	919	606	634	588	648
V	687	707	711	520	591	521	601
IO	840	893	974	640	649	620	684
DO	923	—	—	657	—	642	—
Total:	3,251	3,393	3,394	2,423	2,484	2,371	2,522

additional processing cost in comparison with the canonical and the WH-in situ word orders. The order of the processing cost should be substantially smaller for Experiment 4 than for Experiment 3 due to context facilitation. Finally, the self-paced reading method is suitable for detecting at which particular positions the processing cost occurs. This is predicted to be the verb position according to the Direct Association hypothesis (Pickering and Barry 1991), and the indirect object position consistent with the Trace Reactivation account (Nicol and Swinney 1989).

Table 13.2 summarizes the data for all five frames from both experiments.

It is evident from the data patterns represented graphically in figure 13.1 that there is a striking difference between the reading times of Experiment 3 and Experiment 4. There is a consistent 250 msec (on average) overall increase in reading times for Experiment 3 compared to Experiment 4. Contextual constraints make processing easier and more coherent in general.

In both experiments, total reading times were longer for scrambled sentences than for sentences in canonical word order (the bottom row in table 13.2). Data analysis showed the lengthening of reading times to be reliable: for Experiment 3, there was a significant main effect of movement in the subject-based analysis, $F1(1,31) = 4.53$, $p < .02$; for Experiment 4, there was a significant interaction between sentence type (Declarative versus Question) and movement (absence versus presence), $F1(1,86) = 4.6$, $p = .035$, $F2(1,22) = 4.82$, $p = .04$. This might be interpreted as signaling greater overall processing difficulty for sentences with movement, either scrambling or WH-movement.

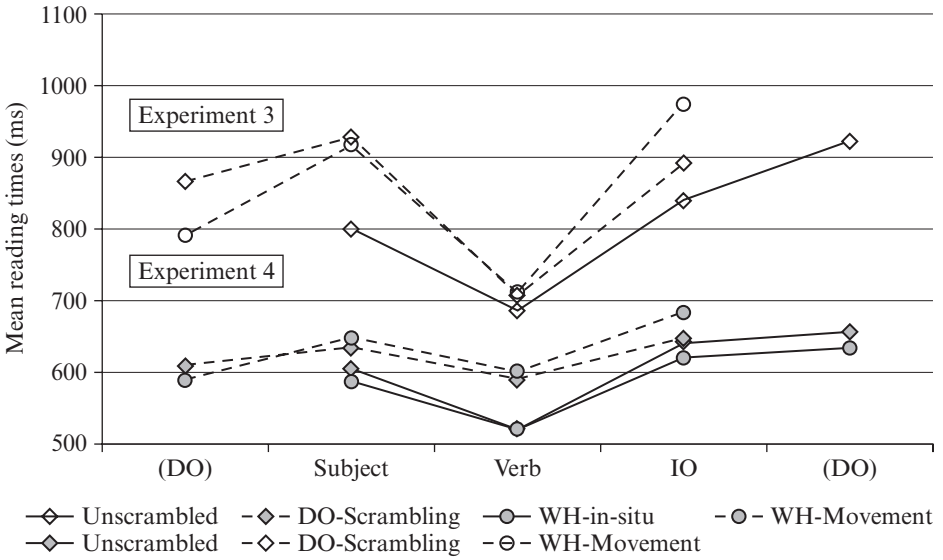


Figure 13.1 Mean reading times by positions for Russian self-paced reading Experiments 3 and 4

Let us now turn to the issue of processing cost locus. In general, the reading times data by position are also strongly indicative of processing cost. Recall that the appearance of the scrambled direct object in sentence-initial position unambiguously signals a scrambled sentence. As a result, reading times for the subject position are significantly longer for both scrambled and WH-movement sentences (the S row in table 13.2): there is main effect of movement, for Experiment 3, $F1(1,31) = 6.94$, $p < .01$, $F2(1,20) = 13.48$, $p < .001$, and for Experiment 4, $F1(1,84) = 127.15$, $p < .001$, $F2(1,20) = 84.77$, $p < .001$. Apparently, the parser had to allocate additional processing resources like creating a movement chain given an initial ACC-marked NP followed by the subject in the NOM.

Does the evidence for additional cost in processing scrambled sentences arise in the magnitude of difference at the verb position, as argued by the Direct Association hypothesis of Pickering and Barry (1991)? For Experiment 3, inspection of table 13.2 reveals that the reading time differences between the canonical, scrambled, and WH-movement word orders were not significant. For Experiment 4, however, the situation is different. The reading times were significantly longer for the scrambled and WH-movement sentences in comparison to their counterparts without movement (591 msec versus 520 msec, and 601 msec versus 521 msec, respectively). The analyses showed that, overall, there is a highly significant main effect of movement, $F1(1,84) = 127.15$, $p < .001$, $F2(1,20) = 84.77$, $p < .001$. There was neither a main effect of the sentence type, that is, declarative sentences did not differ from questions, nor was there an interaction between the two factors. Reading time lengthening between the scrambled and canonical sentences (Δ71 msec) was similar to the lengthening between WH-movement and WH-in situ sentences (Δ81 msec). Finally, for the indirect object position, there is a significant

effect of movement in both experiments: for Experiment 3, $F1(1,31) = 9.42$, $p < .001$, $F2(1,20) = 6.99$, $p = .02$; for Experiment 4, $F1(1,84) = 14.98$, $p < .001$, $F2(1,20) = 6.22$, $p = .02$. Moreover, the interaction term of the analysis in Experiment 4 showed greater lengthening in reading times for questions (Δ64 msec) than for declarative sentences (Δ9 msec).

To summarize, the context had an overall facilitation effect for processing all sentence types: reading times in Experiment 4 (with context) are shorter than reading times in Experiment 3 (without context). Second, the overall reading time data for two types of declarative sentences (canonical versus scrambled) and two types of questions (WH-movement versus WH-in situ) showed that the sentences with movement in Russian do have increased processing cost. The sentences with movement, either scrambling or WH-movement, took subjects longer to read than their counterparts without movement. Scrambled sentences, however, did not differ from sentences with WH-movement, suggesting that both types of sentences represent filler–gap dependencies that have a similar magnitude of experimentally measurable processing cost. Finally, the evidence from the reading time data by position revealed that the dynamics of complexity in the course of processing differs for the two types of movement. The cost is detected at the sentence subject position since it immediately follows an ambiguously marked NP-ACC that signals movement for both scrambled sentences and sentences with WH-movement in both experiments. At the next position, the verb, the effect of movement for scrambling and WH-movement continues to build in Experiment 4, but not in Experiment 3 (although the numerical difference in Experiment 3 is in the right direction, it is not statistically significant). These results are consistent with the Direct Association hypothesis. The data for the two types of movement diverge at the final position of interest, the indirect object position. Processing cost for scrambling, as reflected in lengthening of reading time, peaks at the verb and disappears at the indirect object in Experiment 4 but continues to accumulate in Experiment 3. This suggests that the context in the former experiment has a gradual facilitating effect, and in its absence, processing cost lingers on until the end of the sentence. This finding may potentially provide evidence against the Trace Reactivation account (Nicol and Swinney 1989) but the evidence should be confirmed using the cross-modal priming experimental technique. The data from these experiments also could be tentatively used to claim that scrambling and WH-movement have different patterns with respect to processing complexity. It thus may constitute a potential psycholinguistic argument in favor of the recent syntactic analysis of movement in Russian by Bailyn (this volume), and fits in nicely with the similar divergence between scrambling and WH-movement in German found in the neuroimaging studies of Friederici, Schlesewsky, and Fiebach (this volume, chapter 14).

13.7 Concluding Remarks

The current findings in adult sentence processing research on scrambling cross-linguistically reveal that the experimental arguments for the Scrambling Complexity hypothesis are inconclusive at this time. Likewise, there is not enough

convincing evidence from psycholinguistic results to confidently claim the superiority of one linguistic theory over the other. Nevertheless, the foundation for this research program has been laid out and it is possible to speculate on future directions.

Research on processing of scrambling will continue to evolve in several directions. First, data from other scrambling languages will help fill in missing pieces. For some of these languages, such as Turkish, Hindi, Tamil, and Persian, theoretical syntactic accounts have been proposed (this volume); they can be used as stepping stones to initiate testing of experimental data. For others, like Native American and Australian Aboriginal languages, a well-grounded analysis of scrambling from both linguistic and psycholinguistic points of view may proceed in parallel. Second, so far several different experimental techniques have been used to investigate processing of scrambled sentences, but there has not been an attempt to apply them consistently to the same set of experimental materials. Ideally, we would want to study a particular scrambling phenomenon using not only well-established techniques such as questionnaires, self-paced reading, cross-modal priming, and eye movement recording in reading, but also take advantage of new cutting-edge technologies such as head-mounted eye-tracking (Tanenhaus et al. 1996) and neuroimaging (Gazzaniga 2000). Third, the standard research strategy in psycholinguistics has been to devise tasks designed to isolate specific processing components under controlled experimental conditions. Although this strategy is tried and true, it must be balanced by consideration of how the component processes might be reintegrated into a broad theory of language.

Scrambling cross-linguistically obeys a number of structural and discourse constraints, is often caused by information structure of the context, like topic and focus, and is characterized by specific prosodic properties. The constraint-satisfaction approach advocated by Optimality Theory (OT) (Choi 1999; Hajičová 1999) is a particularly appealing formalism in theoretical syntax with which to study scrambling. The psycholinguistic counterpart of OT, the Lexicalist Constraint-Based theory, requires various non-structural constraints to be incorporated into the processing accounts of any phenomena; it has not been tested on scrambling data. Investigation of frequency effects, plausibility, and contextual influence require a labor-intensive component of searching through parsed corpora to extract such information, as well as extensive norming studies. Studying scrambling in spoken language is another promising, but hard to implement experimentally, line of research. However, with the advance of interface studies of interaction between prosody and syntax (Brown and Hagoort 2000), the potential results outweigh logistical difficulties.

Finally, psycholinguistic investigation of scrambling remains to be integrated into a multidisciplinary theory of scrambling. Such a comprehensive theory must explain simultaneously the entire range of phenomena gathered under the heading of scrambling. In addition to explaining how adults comprehend and produce scrambled sentences (psycholinguistics), it must be able to account for the variety of their grammatical representations (theoretical linguistics), how scrambled constructions and their usage as recorded in various corpora affects their processing (computational linguistics), how scrambling processing is implemented in the brain (neurolinguistics), and how children learn to comprehend, produce and parse it

(acquisition and learnability) (Clahsen 1999). The challenges are daunting but the promise of what lies ahead drives us forward.

Notes

1 See Frazier (1987), Tanenhaus and Trueswell (1995), and J.D. Fodor (1995) for a comprehensive introduction to the theory of sentence processing, as well as topics, issues, and models beyond processing of scrambling.

2 Both Dutch and German are studied extensively with respect to subject/object preferences in the processing of basic and derived word orders in declarative sentences. For details see Frazier and Flores d'Arcais (1989), and Kaan (1996) for Dutch; Hemforth (1993), Hemforth, Konieczny, Scheepers, and Strube (1998), and Bader and Meng (1999) for German.

3 The issue of syntactic ambiguity, and the different sources of information used by the processor, is most relevant to the issue of whether processing is autonomous or interactive. It ultimately leads to the global question of the architecture of the human sentence processing mechanism. I deliberately leave out this entire debate since its discussion would take us too far aside from the main topic of the present chapter. See T.A. Harley (1995) for a concise overview of the autonomy/modularity/interactionism issue.

4 Cf. Schlesewsky et al. (1997, 1999) who found evidence for cost of WH-movement in German and proposed a new parsing principle, the Cost of Movement, according to which the need to store a WH-phrase in memory creates cognitive costs slowing down the parser.

5 Miyamoto and S. Takahashi (2000) are more optimistic in their count of scrambled sentences of a particular type in Japanese. In a sample of 1,834 sentences that contained two arguments and a ditransitive verb, 65.5 percent were in the canonical word order (S IO DO V), and 30.8 percent had the NP-ACC scrambled to the position immediately before the NP-DAT (S DO_1 IO t_1 V).

6 Miyamoto and S. Takahashi used the standard procedure of comparing the residual reading times, that is, the difference between words in the same position in a pair of sentences. In this procedure, the reading time for the canonical word order is subtracted from the reading time for the scrambled sentence, after the word length difference has been adjusted a step which is necessary when words of different character length are compared.

7 Recall that within sentence processing theory, the Trace Reactivation account (Nicol and Swinney 1989) attributes priming effects in sentences with gaps to reactivation of antecedents at the trace position, but the Direct Association hypothesis (Pickering and Barry 1991) derives them from processing of dependents at their subcategorizing verbs (it is often the case that gaps and verbs are adjacent). Miyamoto and S. Takahashi report preliminary results of Experiment 2 with Japanese scrambled sentences, in which, in contrast to the materials from Experiment 1, a long adverbial XP constituent intervenes between the gap and the verb. This experiment, designed to tease apart the predictions of the two competing processing accounts, is still in progress and will not be discussed here any further.

8 Although a priori it is not obvious whether word orders derived via Topicalization should have the properties similar to the scrambled word orders, I will assume so for the purposes of this chapter. In syntactic analysis, it is possible for some languages to clearly distinguish between the effects of different movement operations. For example, Topicalization and scrambling are distinct in German due to the V2 phenomenon that

unambiguously identifies a preverbal XP as a landing site for the topicalized constituent. In Japanese, the topicalized phrase is marked with a special topic-marker *-wa*. Hyönä and Hujanen do not provide any discussion of whether Finnish exhibits scrambling separate from Topicalization. Moreover, I speculated (Sekerina 1997) that at least in syntax, Russian potentially does not distinguish between Topicalization, scrambling, and WH-movement. It is a very interesting project to see if these three movement operations can have different processing characteristics (see Schlesewsky et al. 1997, 1999 and section 13.6.2 below).

9 See the chapter "Does Russian Scrambling Exist?" by John Frederick Bailyn in this volume for discussion of syntactic properties of word order in Russian within the current generative syntax framework.

10 For discussion of processing of Split scrambling in Russian and its implications for the Scrambling Complexity hypothesis see Sekerina (1999) and Zybatow and Mehlhorn (2000).

11 The 24 experimental and 36 filler items (an item constituting a contextual sentence, an experimental sentence, and its associated comprehension question) were assembled to create an experiment in four versions. So that identical materials would not be presented twice to any subject, the experimental sentences of any word order quadruple were assigned to the four versions in a standard counterbalanced design.

14

WH-Movement versus Scrambling: the Brain Makes a Difference

Angela D. Friederici, Matthias Schlesewsky, and Christian J. Fiebach

14.1 Theoretical Background

14.1.1 Introduction

Within theoretical linguistics, there is an ongoing debate as to whether WH-movement and scrambling are two sides of the same coin or whether they are distinct phenomena.[1] Consider the following sentences, which illustrate scrambling in German.

(1)a. Vielleicht will der Peter den Physiker überlisten
perhaps wants the$_{NOM}$ Peter the$_{ACC}$ physicist outwit
"Perhaps Peter wants to outwit the physicist"

b. Vielleicht will den Physiker der Peter überlisten
perhaps wants the$_{ACC}$ physicist the$_{NOM}$ Peter outwit

(2)a. Der Onkel wollte dem Neffen das Auto schenken
the uncle wanted the$_{DAT}$ nephew the$_{AMB}$ car to give
"The uncle wanted to give the car to the nephew"

b. Der Onkel wollte das Auto dem Neffen schenken
the uncle wanted the$_{AMB}$ car the$_{DAT}$ nephew give

Whereas some authors assume that scrambling differs from WH-movement in that it does not involve a movement operation (Haider 1997; Fanselow 2001), other authors describe scrambling as an instance of movement (Fanselow 1990; G. Müller 1995, ch. 3 for an overview). Given that the sentences in (1b) and (2b)

are the result of a movement operation, we must ask how this operation is related to other types of movement such as WH- or NP-movement. Not unexpectedly, we can find arguments for the perspective that scrambling is an instance of A-movement (Fanselow 1990; Frey and Tappe 1991), as well as for the position that scrambling can be analyzed as A′-movement (e.g. G. Müller 1995). Additional problems arise in ditransitive structures such as (2). Whereas it seems uncontroversial that the subject precedes the object, it has been subject to debate whether or not there is a default order for object arguments in German (Haider 1997; Lenerz 1977; G. Müller 1995). Thus, assuming the existence of a scrambling operation, it is not entirely clear how scrambled sentences can be distinguished from their non-scrambled counterparts.

To aggravate the situation, the argument order in German seems to be a consequence of various factors such as animacy, definiteness, Case, focus, and thematic role (Uszkoreit 1986; Lenerz 1977; Hoberg 1981; Primus 1991). Furthermore, pronouns appear to behave somewhat differently to full NPs with respect to word order (Lenerz 1977; Hoberg 1981; G. Müller 1995). Example (3) shows that pronouns may be scrambled in front of the subject without difficulty, whereas the same construction seems to be unacceptable with full DPs.

(3)a. Vielleicht hatte es ihm der Präsident überreicht
perhaps had it$_{ACC}$ him$_{DAT}$ the$_{NOM}$ president presented
"Perhaps the president had presented him with it"

b. ??Vielleicht hatte den Pokal dem Sportler der Präsident überreicht
perhaps had the$_{ACC}$ trophy the$_{DAT}$ sportsman the$_{NOM}$ president presented
"Perhaps the president had presented the sportsman with the trophy"

With respect to scrambling amongst objects, however, acceptability patterns are reversed, i.e. sentences involving pronouns appear to be more restrictive with respect to word order than those involving full DPs. This is illustrated in (4).

(4)a. Wollte Peter es ihm nicht heute schenken?
wanted Peter it$_{ACC}$ him$_{DAT}$ not today give
"Didn't Peter want to give it to him today?"

b. ?*Wollte Peter ihm es nicht heute schenken?
wanted Peter him$_{DAT}$ it$_{ACC}$ not today give

c. Wollte Peter das Buch dem Richter nicht heute schenken?
wanted Peter the$_{ACC}$ book the$_{DAT}$ judge not today give
"Didn't Peter want to give the book to the judge today?"

d. Wollte Peter dem Richter das Buch nicht heute schenken?
wanted Peter the$_{DAT}$ judge the$_{ACC}$ book not today give

In view of the numerous conclusions reached theoretically and of the subtle judgments that these are based on, the question of how scrambling in German is best described may be a fruitful one to examine using psycholinguistic techniques. Thus, in this paper we will bring together a number of experimental results bearing on the issue at hand. The first section discusses some behavioral results with respect to possible differences between WH-movement and scrambling. In the second section we present a number of studies using event-related brain potentials (ERPs) which show that WH-movement and scrambling elicit different brain responses. Finally, we discuss the results presented and conclude that scrambling in German, while not being an illegitimate syntactic operation, induces a local syntactic violation, whereas WH-movement does not.

14.1.2 Previous studies on WH-movement and scrambling in German

In the last five years, there have been a number of behavioral studies examining the nature of WH-movement and scrambling in German. Let us first consider WH-movement. In a series of self-paced reading studies, Meng (1997), Schlesewsky, Fanselow, Kliegl, and Krems (1999), Fanselow, Kliegl, and Schlesewsky (1999) and Schriefers, Friederici, and Kühn (1995) found a subject preference in initially ambiguous WH-sentences and relative clauses (5) as well as a processing advantage for initially unambiguous nominative-first clauses (6).

(5)a. Welche Botschafterin besuchte der Jäger?
which ambassador$_{AMB}$ visited the$_{NOM}$ hunter
"Which ambassador did the hunter visit?"

b. Das ist die Botschafterin, die die Jäger besucht haben
this is the ambassador, that the hunters visited have
"This is the ambassador that the hunters visited"

(6)a. Welcher Lehrer bewunderte den Steuerberater?
which$_{NOM}$ teacher admired the$_{ACC}$ accountant
"Which teacher admired the accountant?"

b. Welchen Lehrer bewunderte der Steuerberater?
which$_{ACC}$ teacher admired the$_{NOM}$ accountant
"Which teacher did the accountant admire?"

While the ambiguous sentences only allow one to observe a subject preference, which may be due to some sort of cognitive advantage for subject-initiality, the initial reading time advantage for unambiguous subject-first sentences (as in 6a) can be directly linked to theories which assume a cognitive cost of movement (Clifton and Frazier 1989; Gibson 1998 for an overview).[2]

With regard to scrambling, Clahsen and Featherston (1999) reported two cross-modal priming studies, in which they presented sentences, such as (7), where the

direct object was moved out of the base position and scrambled before the indirect object.

(7) Nach zwei Tagen Streit sprach der Richter das Geschäft
after two days of.dispute awarded the judge the business
dem ziemlich überraschten Andreas #zu
the rather surprised Andreas to

The authors found a reactivation at the supposed base position (#) and argue that this result reflects the existence of scrambling as a movement operation as well as the psychological reality of the trace position. Furthermore, they believe the data to show that there is a default word order of arguments (subject > indirect object > direct object) in German.

Another interesting experiment on the acceptability of scrambling in German was conducted by Pechmann, Uszkoreit, Engelkamp, and Zerbst (1994), who compared five different variations of argument order against an ungrammatical word order. One of the permutations of subject, direct object, and indirect object and the ungrammatical control are illustrated in (8).

(8)a. Bald wird dem Nachbarn den Schuppen der Maler streichen
soon will the neighbor the shed the painter paint
"Soon the painter will paint the shed for the neighbor"

b. *Bald wird den Schuppen streichen dem Nachbarn der Maler
soon will the shed paint the neighbor the painter

In a paper and pencil test, subjects were asked to judge sentences on a five-point scale with respect to acceptability. Table 14.1 shows the mean rating values for the experimental conditions.

As we can see, there is a clear acceptability range as, for example, predicted by Uszkoreit (1986). Interestingly, we can observe a gradual increase in the acceptability but are unable to find a break point that indicates a transition from a grammatical sentence to an ungrammatical one.

Finally, Bader and Meng (1999) compare different types of movement, as illustrated in (9), in a speeded grammaticality task.

(9)a. WH-sentences
. . . [welche NP]$_{\text{AMB.sg}}$ [die NP]$_{\text{AMB.pl}}$ V$_{\text{sg / pl}}$

b. relative clauses
. . . die$_{\text{AMB.sg}}$ [die NP]$_{\text{AMB.pl}}$ V Aux$_{\text{sg / pl}}$

c. complement clauses (NP)
. . . dass [die NP]$_{\text{AMB.sg}}$ [die NP]$_{\text{AMB.pl}}$ V$_{\text{sg / pl}}$

d. complement clauses (pronoun)
. . . dass [sie]$_{\text{AMB.sg}}$ [die NP]$_{\text{AMB.pl}}$ V$_{\text{sg / pl}}$

Table 14.1 Mean rating values for the six sentence formats

S–IO–DO	*S–DO–IO*	*IO–S–DO*	*DO–S–IO*	*IO–DO–S*	**DO–V–IO–S*
4.71	3.64	2.85	2.26	1.81	1.66

Source: Pechmann et al. 1994

Table 14.2 Percent correct responses for different types of subject–object asymmetries

Word order/type	*Relative clause*	*Indirect question*	*Complement (pronoun)*	*Complement (NP)*
Subject–object	81	78	89	91
Object–subject	53	54	55	34

Source: Bader and Meng 1999

Given that the parser assigns the subject role to a sentence-initial ambiguous element on the basis of language-specific grammatical requirements or a general cognitive strategy that is independent of the particular structural configuration (Clifton and Frazier 1989; Fanselow, Schlesewsky, Cavar, and Kliegl 1999), a sentence must be reanalyzed if the final auxiliary requires a plural-marked subject whereas the first NP is marked for singular. In this study, the authors found that regardless of the sentence type, the forced revision of the initial subject preference induces a garden-path effect which is reflected in lower accuracies (cf. table 14.2).

These results support the assumption stated above that, regardless of the structural configuration, the subject role will be associated with the first possible argument that is able to fulfill the requirements of this grammatical function. In addition, the data of this experiment show that sentences containing scrambled non-pronominal elements were judged with a significantly lower accuracy than all other conditions. This suggests that there are construction-specific requirements which are independent of a general subject-first preference and which inhibit or facilitate the garden-path effect and therefore the cost of reanalysis. Furthermore, whereas in sentences including a WH-moved element (WH-clauses, relative clauses) the movement operation seems to be unaffected by construction-specific requirements, in complement clauses illustrating different types of scrambling (pronoun versus non-pronominal full DP), a difference with respect to the strength of reanalysis can be observed. This could be taken to indicate that scrambling is analogous to WH-movement with regard to the movement operation, while the two differ with regard to the landing position of the dislocated element (G. Müller 1995). The nature of the landing position of pronominal scrambling is difficult to decide on, seeing that one might assume either that scrambling of pronouns is licensed by the availability of a specific position or that pronouns dislocated by scrambling target the same position as fronted WH-elements. Both alternatives

yield the prediction that the strength of a reanalysis induced by pronominal scrambling is akin to that induced by WH-movement. By contrast, non-pronominal DPs are scrambled to a position that must be created by adjunction and that is therefore both structurally distinguishable from the other landing positions and not incrementally predictable during on-line parsing. Thus, this operation should lead to a locally illegitimate processing step, since an object must be integrated into a subject position that, in principle, is not open to it due to grammatical constraints. On the other hand, and this is simply speculative but also not unlikely, the contrast between WH-movement and non-pronominal scrambling may be attributable to frequency differences, i.e. a quantitative modulation only.

Unfortunately, on the basis of Pechmann et al.'s findings and Bader and Meng's results we can decide neither whether scrambling could lead to an illegitimate utterance nor whether scrambling and WH-movement are qualitatively different. As mentioned above, the gradience in the acceptability ratings themselves only shows us a quantitative difference between different types of movement operations. However, we are unable to decide about possible qualitative differences, because, even if a break point dissociating between different processes exists, there is no way to render it visible.

In order to do so, it is necessary to employ a method yielding more fine-grained results. In the following we will present a number of studies which provide electrophysiological evidence for the view that WH-movement and scrambling differ.

14.2 Syntax-Related Brain Potentials

Traditional behavioral measurements used in psycholinguistics, such as grammaticality judgment or reading time measures, only enable us to observe a higher processing load for sentences with a moved element. As scrambling and WH-movement both involve moved elements, these measures do not allow us to detect a possible difference between the two. Event-related brain potential measures provide a more fine-grained pattern and, thereby, the chance to observe possible underlying differences.

Event-related potentials (ERPs) are small brain potentials within the spontaneous electrical activity of the brain, which are time-locked to the occurrence of concrete events (e.g. to words in sentences). ERP components are characterized in terms of polarity (positive or negative), latency (i.e. temporal relationship to stimulus), scalp distribution (i.e. particular ERP deflections are typically large at some locations and small or non-existent at others), and in terms of the experimental manipulations they are elicited by. The ERP technique is potentially powerful in psycholinguistic research because ERPs are continuous, on-line, and have a temporal resolution in the range of milliseconds (msec) (e.g. see Garnsey 1993; Kutas and Van Petten 1994). Moreover, the multidimensional nature of ERPs (i.e. polarity, latency, and scalp distribution) makes them suitable for differentiating between qualitatively different processes. ERPs have been used in the last decade more and more systematically to investigate language processing, both in

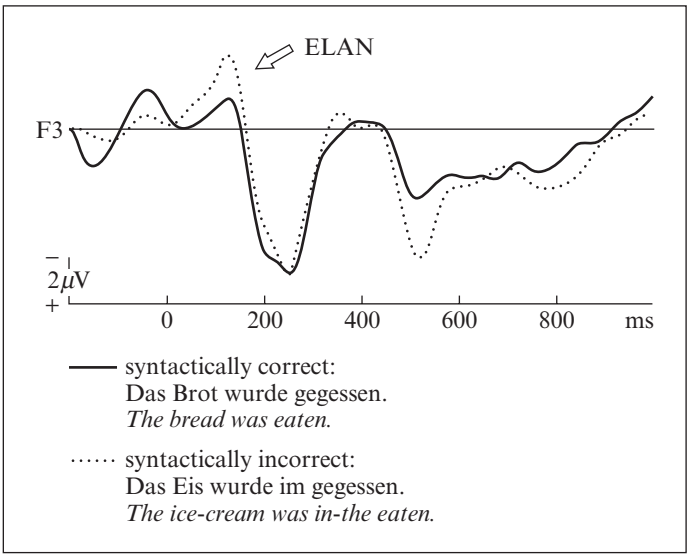


Figure 14.1 Grand averages of event-related brain potentials (ERPs) for the critical sentence-final word (*gegessen*: "eaten") superimposed for the correct (solid line) and the incorrect (broken line) condition. The figure displays a left frontal electrode (F3). Negativity is plotted up. The arrow indicates the early left anterior negativity (ELAN) for the incorrect condition

the domain of semantics and of syntax. The particular ERP effects that have been identified to correlate with syntactic processes are two transient ERP components and a sustained frontal negativity. The two transient components are short-lived, i.e. they are only present for about 1000 msec after the critical element. The sustained frontal negativity, in contrast, spans several elements within a sentence.

We will first consider the two transient ERP components. The first component is a left anterior negativity, called LAN. So far it has been shown to be evoked by outright syntactic violations, such as phrase structure violations or morphosyntactic violations. It usually appears about 300–500 msec after the onset of the critical word when the stimulus material is presented visually in a word-by-word manner (Neville, Nicol, Barss, Forster, and Garrett 1991; Roesler, Friederici, Puetz, and Hahne 1993; Münte, Szentkuti, Wieringa, Matzke, and Johannes 1997; Gunter, Friederici, and Hahne 1999).

Figure 14.1 presents this left anterior negativity (note that negativity is plotted up) exemplified with a German sentence containing a phrase structure violation (Gunter, Friederici, and Hahne 1999). The critical element that turns the sentence into an incorrect one is the sentence-final verb which is preceded by a preposition. The preposition requires a noun phrase to follow, and therefore a verb in this position is an outright syntactic violation.

The other transient syntax-related ERP component is a late centro-parietal positivity present about 600 msec and beyond, called P600, which is observed in

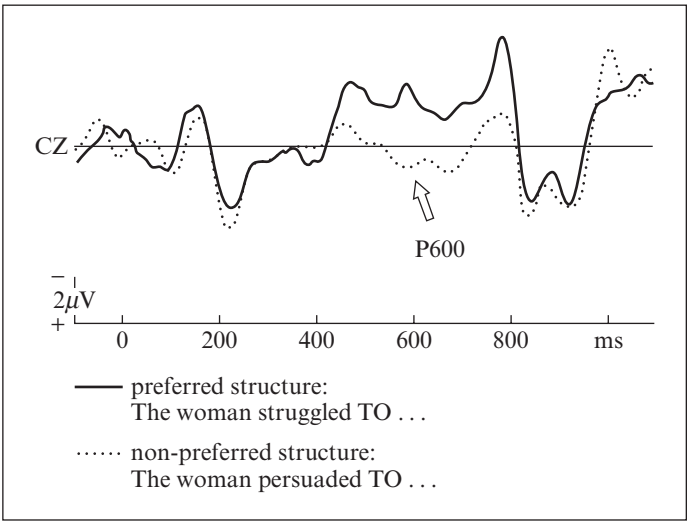


Figure 14.2 Grand averages of the ERPs for the critical word *to* superimposed for the preferred (solid line) and the non-preferred (broken line) condition. The figure displays the central electrode (CZ). Negativity is plotted up. The arrow indicates the late positivity (P600) for the non-preferred structure

garden-path sentences at the critical disambiguating element (Osterhout and Holcomb 1992; Osterhout, Holcomb, and Swinney 1994).

Figure 14.2 exemplifies the P600 at the critical element of a garden-path sentence. The example is taken from Osterhout and Holcomb (1992) in which the critical element is the word "*to*." Note that a late positivity is not only seen in correlation with syntactic anomalies as in garden-path sentences, but also with outright syntactic violations following the LAN (Münte et al. 1997; Coulson, J.W. King, and Kutas 1998; Hahne and Friederici 1999; or alone, Hagoort, Brown, and Groothusen 1993).

On the basis of the available data we have proposed the following functional interpretation for these two components: the LAN reflects first-pass parsing processes, whereas the late positivity reflects secondary processes of syntactic reanalysis in garden-path sentences and repair in incorrect sentences (Friederici 1995; Friederici, Hahne, and Mecklinger 1996). Thus these two components are taken to indicate different stages of syntactic parsing.

In addition to these two transient ERP components at the sentence's critical word, there is another ERP effect that has been correlated with the processing of syntactically complex sentences. Sustained frontal negativities (e.g. figure 14.3) have mainly been observed in embedded relative clause sentences (J.W. King and Kutas 1995; H.M. Müller, J.W. King, and Kutas 1997). They were interpreted as reflecting increased working memory load in syntactically complex sentences.

The three syntax-related ERP effects, therefore, seem to reflect different aspects of syntactic processing.

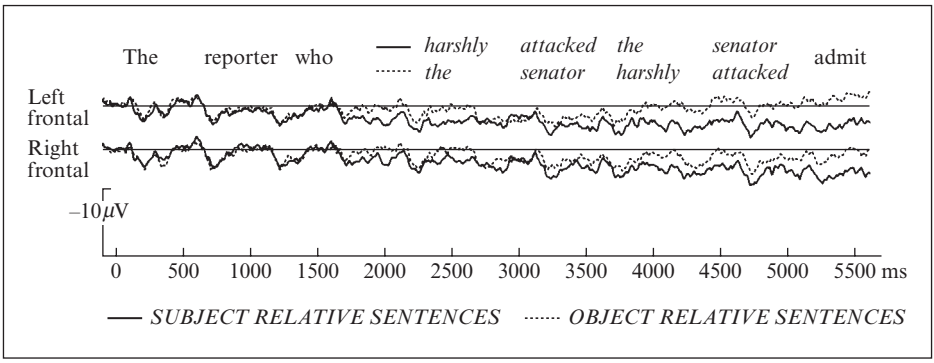


Figure 14.3 Grand averages of the ERPs for relative sentences. Superimposed are subject relative (solid line) and object relative (broken line) sentences. The figure displays a left frontal and a right frontal electrode. Negativity is plotted up

14.3 Three ERP Studies in German

In the following we will discuss three ERP studies on German sentence processing that speak to the issue laid out above.

14.3.1 WH-sentences

The first study investigated the processing of WH-constructions. This study varied two factors systematically: first, the WH-element was unambiguously marked either for subject or for object, and second the distance between the WH-element (filler) and its trace position (gap) was either long or short. Examples of the stimulus sentences are given in (1)–(4).

(10) Long WH-Sentences

a. S–WH: Thomas fragt sich, wer am Dienstag nachmittag
Thomas asks himself, who$_{NOM}$ on Tuesday afternoon
nach dem Unfall den Doktor verständigt hat
after the accident the doctor$_{ACC}$ called has

b. O–WH: Thomas fragt sich, wen$_i$ am Dienstag nachmittag
Thomas asks himself, who$_{ACC}$ on Tuesday afternoon
nach dem Unfall der Doktor ___$_i$ verständigt hat
after the accident the doctor$_{NOM}$ called has

(11) Short WH-sentences

a. S–WH: Thomas fragt sich, wer am Dienstag den Doktor
Thomas asks himself, who$_{NOM}$ on Tuesday the doctor$_{ACC}$
verständigt hat
called has

b. O–WH: Thomas fragt sich, wen_i am Dienstag der
Thomas asks himself, who_{ACC} on Tuesday the
Doktor $\_\_\_\__i$ verständigt hat
$doctor_{NOM}$ called has

If object-marked WH-elements in clause-initial position are considered by the parser as grammatical, we should not observe a local LAN indicating the detection of a syntactic error. If the object-marked WH-element rather is identified immediately as a filler whose original position (trace/gap) is further down in the sentence, we expect to find an ERP correlate signaling that this element is held in working memory until its original position is encountered. That is, we expect a sustained frontal negativity spanning the distance between the filler and the gap.

Twenty-two German native speakers (12 females; ten males) participated in the experiment. All participants were students of the University of Leipzig, right-handed, and had normal or corrected-to-normal vision.

Sentences were presented visually in a chunk-by-chunk fashion with the WH-element and each of the NPs and PPs as well as the verb presented as separate chunks. The presentation rate of each chunk was either 600 msec for single words or 700 msec for phrases (i.e. NPs and PPs) and the verb. After each sentence a comprehension question was presented visually. Participants were required to read the sentences attentively and to answer the "yes/no" question following each sentence by pressing a response button.

A total of 160 WH-sentences were presented. In half of them the WH-element was unambiguously marked as subject, and in the other half as object. In half of the object WH-questions the distance between the filler and the gap was long (eight words) and in half it was short (four words). Thus, each of the four conditions contained 40 sentences. For details of the procedure and the ERP analysis see Fiebach, Schlesewsky, and Friederici (in preparation).

Although ERPs were recorded from 51 electrodes, we will restrict the following presentations to one representative electrode from the left frontal area (F3). The distribution of observed activity is displayed with difference maps indicating the difference in the brain's activity between the subject–WH-sentences and the object–WH-sentences.

Figure 14.4 displays the wave forms for the subject–WH-sentences (solid line) and the object–WH-sentences (broken line) overlaid for the long-distance conditions beginning with the WH-element until the verb. At the first PP following the Case marked WH-element, we observed a more negative-going wave form (note that, following the conventions of electrophysiological research, negativity is plotted up) for the object–WH-sentences than for the subject–WH-sentences. The negativity is sustained and spans over the entire filler–gap range. The difference map in the right panel of Figure 14.4 was calculated over the time range of the sustained negativity, i.e. from 1,000 to 4,000 msec after the onset of the WH-filler. It clearly indicates that the maximum of this sustained negativity is in the left frontal area over the scalp.

In line with an earlier ERP study on the processing of subject and object relatives in English (J.W. King and Kutas 1995), we interpret the sustained left frontal activity as brain activity reflecting working memory processes that seem necessary for holding the filler in memory until the gap is encountered.

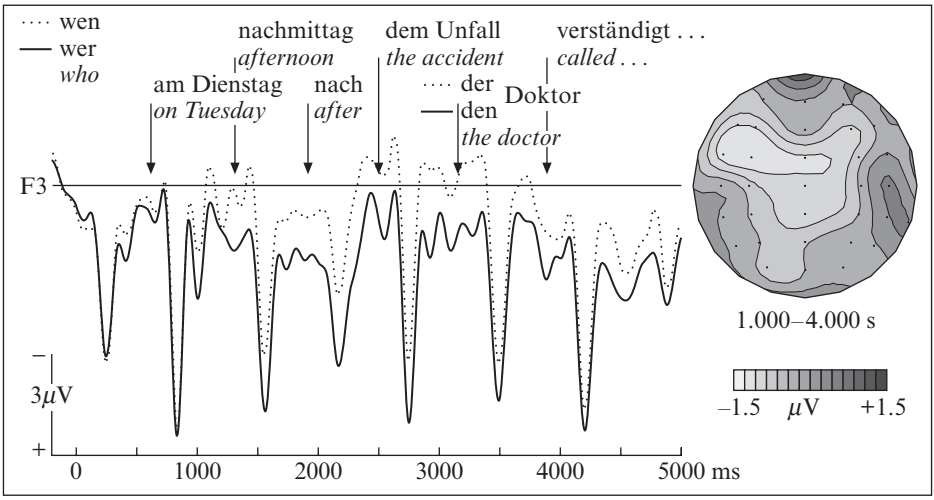


Figure 14.4 Multi-word ERPs to long WH-questions. Left: One left anterior electrode (F3) ERPs to long object (dotted line) compared with long subject WH-questions (solid line). Right: Potential map displaying the difference between long object and subject WH-questions in the time range from 1,000 to 4,000 msec after the onset of the filler

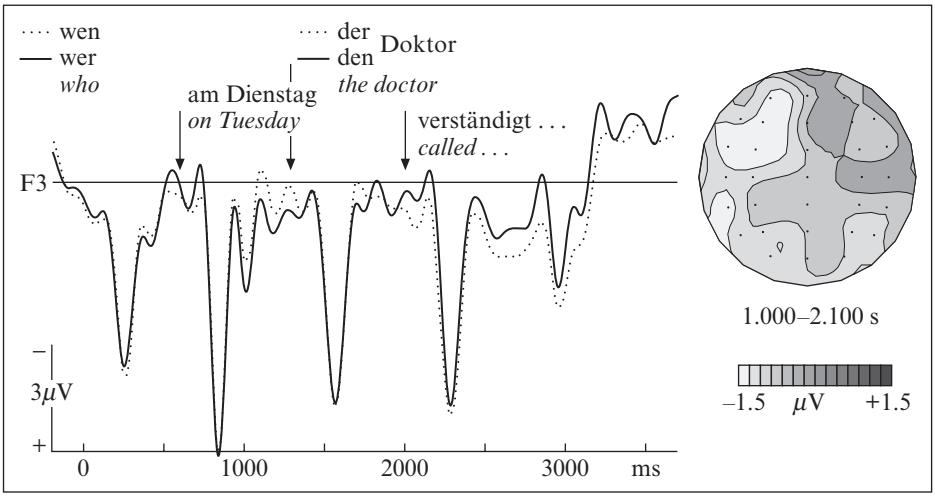


Figure 14.5 Multi-word ERPs to short WH-questions. Left: One left anterior electrode (F3) ERPs to short object (dotted line) compared with short subject WH-questions (solid line). Right: Potential map displaying the difference between short object and subject WH-questions in the time range from 1,000 to 2,100 msec after the onset of the filler

Figure 14.5 gives the average ERP results for the short conditions. Again, subject–WH-sentences (solid line) and object–WH-sentences (broken line) are overlaid, and the difference map for the analogous time window (i.e. 1,000 to 2,100 msec) is presented in the right panel. There is no reliable difference between

subject– and object–WH-sentences, suggesting that the linkage of the filler with its gap is effortless in sentences with short filler–gap distance.

The combined data from the short and the long condition suggest that the parser processes the object-marked WH-element as being grammatical, immediately assigning it an object filler that has to be stored in memory until its original position out of which it has been moved (trace or gap) is encountered.

14.3.2 Relative clauses and complement clauses

A second study investigated the processing of subject relative (SR) and object relative (OR) clause sentences and compared these to the processing of subject-first complement clauses (SC) and to object-first complement (OC) clauses. The critical difference between the two sentence types is that object, as well as subject, relative clauses contain moved elements, whereas only object complements, but not subject complements, contain elements moved from their original position. Object complements are considered to be scrambled, whereas object relatives are not. The study was conducted to look at processes of reanalysis. Therefore, subject and object NPs contained ambiguous Case markings not allowing an immediate ultimate interpretation. Sentences were disambiguated only at the sentence-final auxiliary, which was marked for number indicating either a subject-first or an object-first interpretation.

(12) Relative clauses

a. SR: Das sind die Professorinnen, die die Studentin gesucht *haben*
These are the professors that the student sought have

b. OR: Das sind die Professorinnen, die die Studentin gesucht *hat*
These are the professors that the student sought has

(13) Verb complement clauses

a. SC: Er wusste, dass die Professorinnen die Studentin gesucht *haben*
He knew that the professors the student sought have

b. OC: Er wusste, dass die Professorinnen die Studentin gesucht *hat*
He knew that the professors the student sought has

According to a well-established psycholinguistic theory (Frazier 1978, 1987), it is assumed and supported by a number of sentence processing studies (Bader and Meng 1999; De Vincenzi 1991; Frazier and Flores d'Arcais 1989; Friederici and Mecklinger 1996; Gorrell 1995, 2000; Schlesewsky, Fanselow, Kliegl, and Krems 1999; Schriefers, Friederici, and Kühn 1995) that the parser, when confronted with a temporary syntactic ambiguity, applies as an initial structure the simplest analysis that is compatible with the input. In case of subject/object-first ambiguous sentences, the simplest structure is the subject-first. Thus we predicted to observe an ERP effect signaling reanalysis – that is, we predicted a late positivity at the sentence-final auxiliary.

Moreover, as the reanalysis from a subject- to an object-relative clause only requires a recoindexation, whereas the reanalysis from a subject-first to an

object-first complement requires the installation of a new structure containing a filler–gap relation, we predicted to see a reflection of this difference in the difficulty of reanalysis in the late positivity.

Twenty German native speakers (12 females; eight males) participated in the experiment. All participants were students of the Free University of Berlin. They all were right-handed and had normal or corrected-to-normal vision.

Sentences were presented to them in a chunk-by-chunk manner of either one or two words, with the NPs being presented as one chunk. Chunks and interstimulus intervals ranged from 300 to 550 msec depending on the length of the chunks. After each sentence a comprehension question concerning the content of the sentence was presented visually and participants were instructed to answer the yes/no question by pressing a response key.

Thirty-two sentences of each type (SR, OR, SC, OC) were presented visually. ERPs were recorded from 11 electrodes. Here, only two representative electrodes from the frontal (F3) and the parietal area are (Pz) presented.

Figure 14.6 displays the average ERP for the critical disambiguating auxiliary in the relative clauses. ERPs for the subject relatives (solid line) and object relatives (broken line) are overlaid. As expected, we observed a late positivity for the object relatives compared to the subject relatives. This positivity was shown to start early and to peak at 600 msec. For details of the analysis see Friederici and

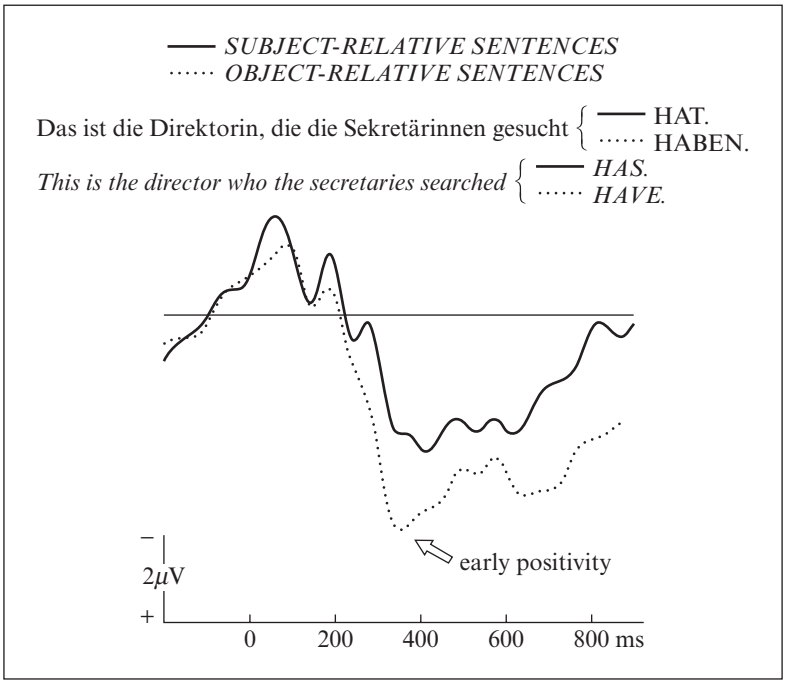


Figure 14.6 Grand averages for critical sentence-final auxiliary superimposed for subject-relative (solid line) and object relative (broken line) sentences. The figure displays the central electrode (Cz). Negativity is plotted up. The arrow indicates the early positivity for the object relatives

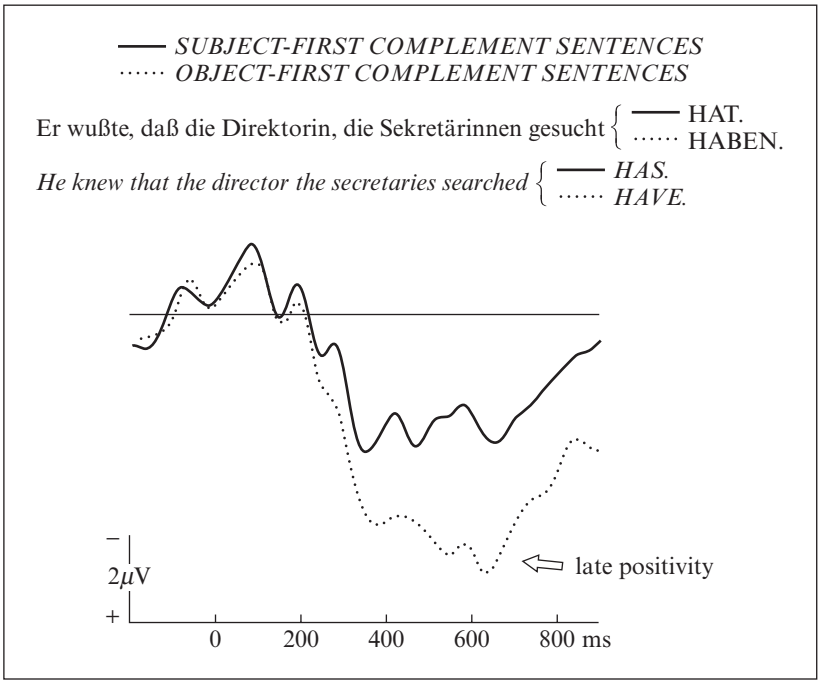


Figure 14.7 Grand averages of the ERPs for critical sentence-final auxiliary superimposed for subject-first complement (solid line) and object-first (broken line) sentences. The figure displays the central electrodes (Cz). Negativity is plotted up. The arrow indicates the late positivity for the object-first complement

colleagues (Friederici 1998; Friederici, Mecklinger, Spencer, Steinhauer, and Donchin, submitted).

Figure 14.7 displays the average ERP for the critical disambiguating element, i.e. the auxiliary, in the complement clause. ERPs for the subject-first (solid line) and the object-first (broken line) complements are overlaid. As expected, we observed a late positivity for the object-first as compared to the subject-first complements. This late positivity differs from that observed for the relative clauses in that it has a later peak.

In an additional analysis performed on the ERP data, we have identified the late positivity as consisting of two factors: one reflecting the diagnosis that a reanalysis is required, and one reflecting the actual recomputation necessary. For details of this analysis see Friederici and colleagues (Friederici, Mecklinger, Spencer, Steinhauer, and Donchin, submitted). For the relatives, these two factors are active in the same time domain, indicating that reanalysis can be performed immediately. For the complement sentences, the diagnosis that a revision is necessary, as reflected by one of the two factors, appears to take place early (as this factor is active in an early time window). However, that factor reflecting the actual reanalysis is only active in a late time window, indicating that recomputation is performed late.

Thus, it appears that the two positivities observed for the relatives and for the complements directly reflect the different types of recomputation necessary for each of these structures, immediate recoindexation for the relatives and actual restructuring for the complements. This difference in the ERPs may be taken as a reflection of the different structures underlying object relative clauses and object complement clauses, that is WH-movement and scrambling, respectively.

14.3.3 Scrambled sentences

The processing of scrambled Case marked NPs in German was investigated by Roesler and colleagues (Roesler, Pechmann, Streb, Röder, and Hennighausen 1998). We will present this study as a third ERP study relevant for the issue under discussion.

The authors set out to study Case marked double-object sentences (*The father gave the pacifier to the baby*). Each NP appeared in each possible position, resulting in six different conditions. Each condition contained 50 sentences.

(14) S–IO–DO: Dann hat der Vater dem Sohn den Schnuller gegeben
Then has the father to the son the pacifier given

(15) S–DO–IO: Dann hat der Vater den Schnuller dem Sohn gegeben
Then has the father the pacifier to the son given

(16) IO–S–DO: Dann hat dem Sohn der Vater den Schnuller gegeben
Then has to the son the father the pacifier given

(17) DO–S–IO: Dann hat den Schnuller der Vater dem Sohn gegeben
Then has the pacifier the father to the son given

(18) IO–DO–S: Dann hat dem Sohn den Schnuller der Vater gegeben
Then has to the son the pacifier the father given

(19) DO–IO–S: Dann hat den Schnuller dem Sohn der Vater gegeben
Then has the pacifier to the son the father given

Seventeen German native speakers (eight females; nine males) participated in the experiment. All participants were students of the University of Marburg. They all were right-handed and had normal or corrected-to-normal vision.

Stimulus sentences were presented to them visually in a word-by-word fashion with a presentation rate of 250 msec and an interstimulus interval of 250 msec. For further methodological details see Roesler et al. (1998).

Given the sentence material, several different ERPs can be expected dependent on whether the parser treats the sentences in which one of the objects is fronted as grammatically correct or not. If the parser considers these object-first sentences as grammatically correct, than we would expect a sustained frontal negativity starting after the unambiguously Case marked direct or indirect object, as this Case marking signals that the first NP is not a subject-NP and must therefore be stored in memory until its original position is encountered.

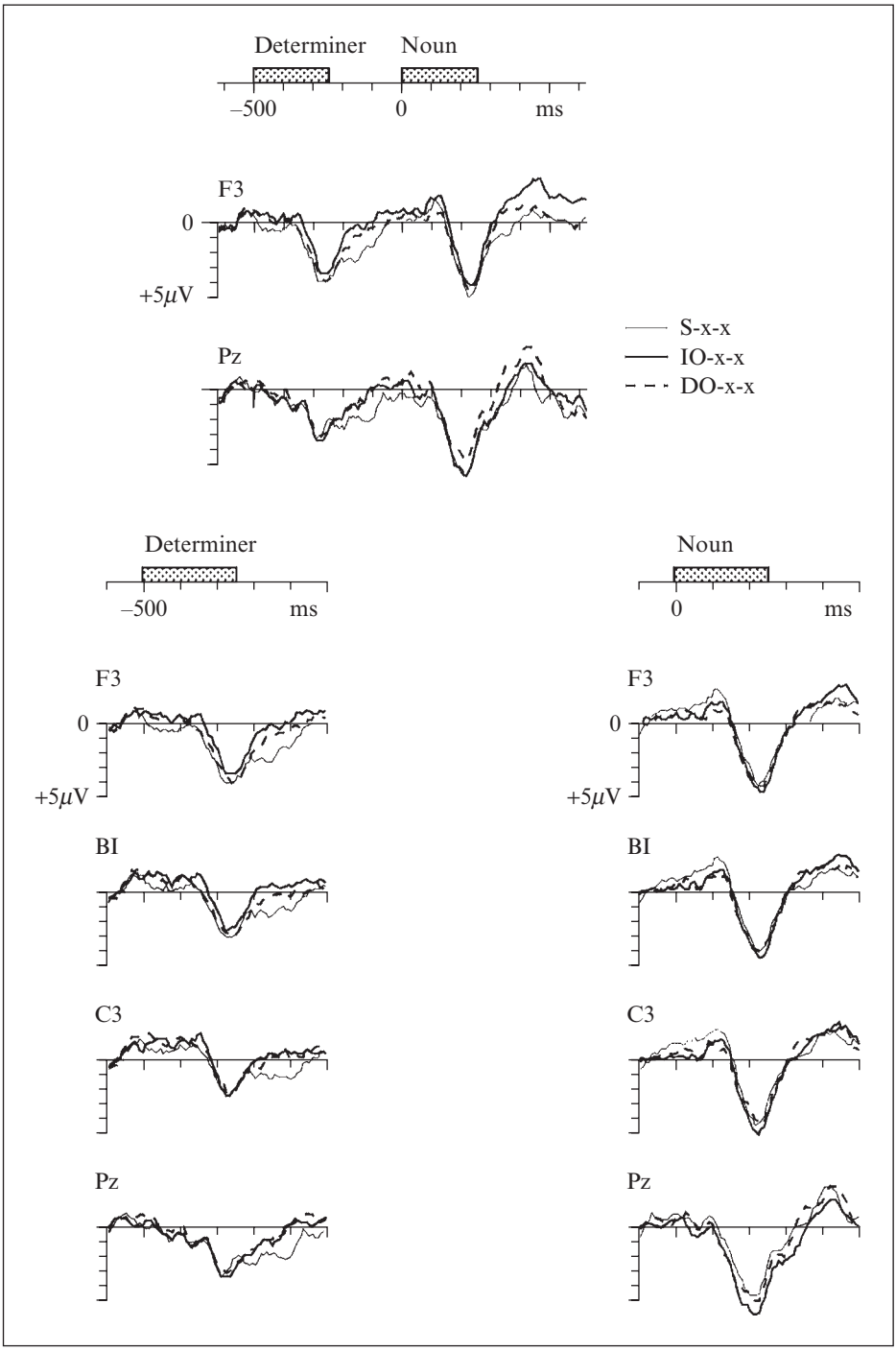


Figure 14.8 Grand averages of the ERPs for determiner (left column) and noun (right column) in the different sentence types (for further explanation see text). Superimposed are the critical words for subject-first, indirect object-first, and direct object-first conditions. (Adapted from Roesler et al. 1998)

If, however, the parser treats these sentences, in which full object NPs are fronted, as grammatically incorrect, then we expect a local, transient LAN at clause-initial object-marked elements, i.e. the Case marked determiner.

The data Roesler et al. (1998) present in their paper fulfill the latter expectations.

The left column of figure 14.8 displays ERP averages at the clause-initial determiner for the three different sentence types that can be identified at this point, namely subject-first (i.e. an average of S–IO–DO and S–DO–IO), indirect object-first (i.e. IO–S–DO and IO–DO–S), and direct object-first (i.e. DO–S–IO and DO–IO–S). Data presented are from three left hemisphere electrodes (F3, Bl, and C3) and the parietal electrode Pz for the determiner and the following noun. We can identify a difference between these three conditions at the left frontal electrode with a more negative-going wave for the two object-first conditions compared to the subject-first condition. The distribution of this difference is plotted in figure 14.9. Figure 14.8 (right column), furthermore, shows that this difference is no longer present at the noun following the determiner. Thus the observed left anterior negativity is very local, suggesting that readers process the fronted object NP as a grammatical violation. Roesler et al., however, interpret the observed effect nonetheless as a memory effect.

> However, considering the fact that the LAN is temporally restricted to the case marker in our study and that it resolves before the to-be-stored noun is read at all, it seems unlikely that the LAN-effect indicates storage as such. If this type of LAN effect is related to working memory activity at all, it seems more likely that it is a manifestation of some preparatory processing step which enables storage of the forthcoming noun. (Roesler et al. 1998: 171)

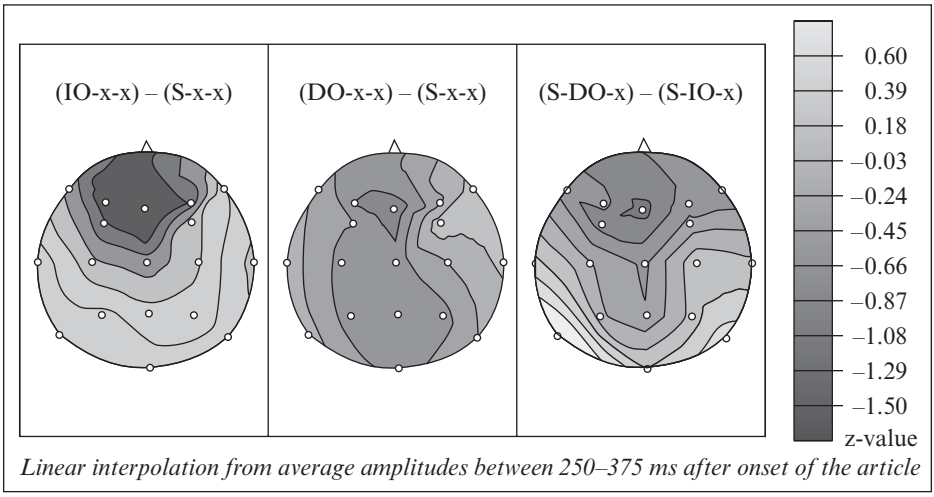


Figure 14.9 Difference maps for indirect object-first minus subject-first sentences (left column), direct object-first minus subject-first (middle column) and subject-first/direct object-second minus subject-first/indirect object-second (right column). Dark shading indicates negativity

Table 14.3

	WH-movement	*Scrambling*
unambiguous (clause-medially)	sustained left frontal negativity	left anterior negativity
ambiguous (sentence final)	late positivity	late positivity

We do, however, think that the observed local LAN in the Roesler et al. study can be interpreted differently. As the object-first word order is not licensed by the German grammar (at least not when full NPs are fronted in a sentence which is presented out of context) the LAN may well be an indication of grammatical violation detected by the parser.

14.4 Conclusions

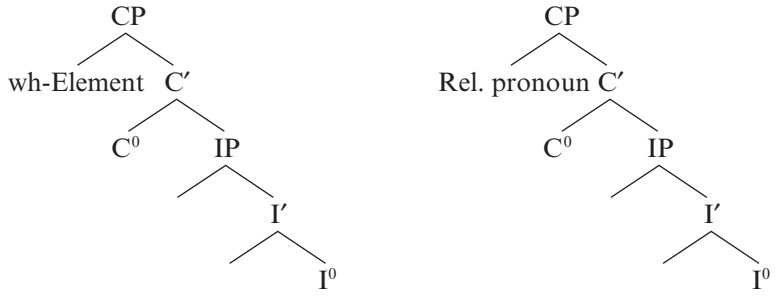
In a first step let us consider a summary of the results in table 14.3.

Firstly, in ambiguous sentences we can observe that there is no difference between WH-movement and scrambling. In both types of structures, a late positivity is elicited when a subject interpretation of an initial argument must be revised during processing of the finite information. In unambiguous sentences, by contrast, the two types of structures elicit different components. Whereas sentences including WH-movement elicit a sustained left frontal negativity that reflects maintenance of the critical (dislocated) argument in working memory, sentences involving scrambled arguments induce a left anterior negativity.

In order to interpret these findings, we must consider how sentences are parsed incrementally. During on-line parsing, the parser predicts what the next structural position will be on the basis of the current element and the structure built so far (Stabler 1994). When the next word is encountered, there are two possibilities: this element may fulfill the requirements of the predicted structural position or it may not. If the latter is the case, a local structural violation is induced, thus giving rise to a LAN. The finding of such an effect in sentences allowing a possible grammatical continuation shows that the LAN need not reflect a global ungrammaticality (from a representational point of view), but can also be induced by a local syntactic mismatch. This provides further evidence for the assumption that the LAN is an effect of early syntactic integration (as predicted by Friederici 1995). From such a perspective, the differences found for the unambiguous structures may be explained.

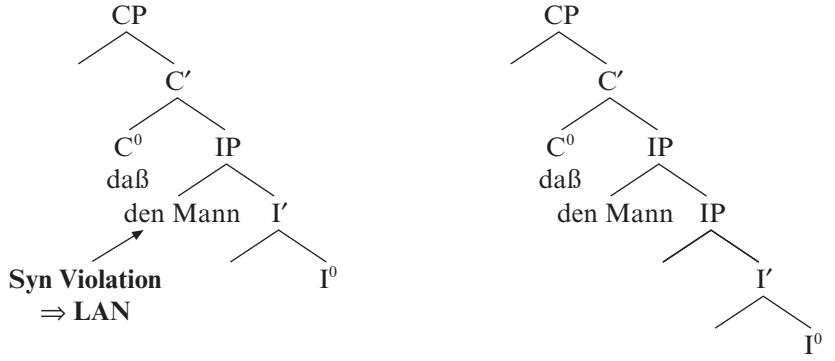
Consider WH-sentences. The position [SPEC, CP], which the WH-element targets, is both predictable and a multi-purpose-position (Gärtner and Steinbach 2000), into which different elements can be moved. Thus, subjects as well as objects can fulfill the structural requirements of this position, and the sustained left frontal negativity on the following positions reflects only the memory load induced by differences with respect to filler–gap dependencies. This is illustrated in (20).

(20)



By contrast, in scrambled sentences, the parser predicts a special-purpose position [SPEC, IP] that follows the finite auxiliary. A scrambled object argument, however, cannot fulfill the structural requirements of this position. The consequence is a local syntactic violation that finds its expression in a LAN[3] (see example (21)).

(21)



In ambiguous sentences, there is no difference with respect to component P600, but only with respect to the latency of the component. As mentioned above, this latency difference reflects the difference between reindexation (WH-movement) and restructuring (scrambling). Whereas the former entails removing the trace from the subject position to which it was initially assigned and placing it in the object position, in the latter the reindexation of the initial ambiguous element is combined with a restructuring of the current tree. In this case an additional adjoined position must be posited over the subject position in the middle field.

An open question, however, is why the ambiguous scrambled sentences do not induce a LAN, while their unambiguous counterparts do. We have argued that the LAN in scrambled constructions reflects a temporary syntactic violation caused by a local syntactic mismatch between a special-purpose position and an element that does not fulfill the properties of this position. However, the absence of a LAN in ambiguous constructions shows that the scrambling operation in itself does not render an expression ungrammatical. Rather, it is the point of recognizing that such an operation has applied that is crucial. When the parser encounters a scrambled element clause-medially, the resulting local syntactic mismatch gives rise to a LAN. By contrast, in sentences in which a scrambled word order may

only be recognized upon reaching the last word, there is no longer any reason for such a mismatch to occur, seeing that the parser has all the information that is necessary for a restructuring operation available. In this way, we take the P600 in the initially ambiguous scrambled constructions to reflect such processes of restructuring.

In sum we can conclude that WH-movement and scrambling differ with respect to the underlying structural requirements during structure building.

Notes

1 It is, of course, also controversial whether movement is only a metaphor (Wunderlich 1997; Bresnan 1982) or rather describes a truly syntactic operation (e.g. Chomsky 1981). On the basis of theoretical arguments (e.g. Mahajan 1990; Saito 1985; Mahajan 2000) as well as psycholinguistic findings (e.g. Clifton and Frazier 1989; De Vincenzi 1991; McElree and Bever 1989; and Nicol, J.D. Fodor, and Swinney 1994) we will assume in this paper that movement is indeed a component of the syntax and, moreover, a psychologically real concept.

2 The assumption that the preference for subject-initial structures results from memory effects or the like is not uncontroversial. While Frazier (1987) assumes that in object-initial clauses the moved item (i.e. the WH-phrase) must be "held in a special memory buffer [. . .] for longer than is necessary" in the subject-initial case, Pickering and Barry (1991) argue for a syntactic dependency between the displaced argument and its subcategorizer. Under the latter view, only the properties of the direct linking (association) between the elements in question causes processing effects and induces preferences. A specific recursion to "memory buffer" or traces is not necessary.

3 Such a line of argumentation avoids the problem of assuming that the LAN is linked to storage or prediction cost, as stipulated by Roesler et al. (1998; see also section 14.3.3) For theoretical problems with such a view see Gibson's SPLT-approach (Gibson 1998).

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