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# Parameters of Slavic Morphosyntax

*Steven Franks*

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*Steven Franks*

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# *Foreword*

In order to fully appreciate the contribution of Steven Franks's book *Parameters of Slavic Morphosyntax* to both Slavic and theoretical linguistics, it is necessary to understand the relation between generative theory and Slavic linguistics in the United States since 1957.

There is virtually complete agreement now that the publication of Noam Chomsky's *Syntactic Structures* in 1957 was a revolution: linguistics would never be the same again. In the early years, the focus of attention was discovering the rules of English syntax, the assumption being that it was sufficient to thoroughly analyze a single language in order to understand the essential syntactic structure of any human language. A result of this approach was that the subject matter of syntactic analysis was dictated by and large by the structure of English; the specific problems of highly inflected languages like the Slavic languages (e.g., case) were more or less ignored. It was assumed that case assignment, agreement phenomena, and so on were relatively superficial phenomena that could be accounted for by late, superficial rules. Thus, in Chomsky's *Aspects of the Theory of Syntax* (1965), only a few pages at the end of the book are devoted to inflectional processes (e.g., p. 170); one German example is discussed.

While the rapid development of generative theory all but ignored the kinds of problems that are at the heart of the Slavic languages, the field of Slavic linguistics itself, which was dominated by the theories of Roman Jakobson, proceeded with little or no concern for the goals and accomplishments of generative theory. Jakobsonian theory, with its extensive use of privative binary oppositions, was concerned primarily with phonological analysis and the feature decomposition of grammatical categories; it did not lend itself to syntactic analysis and little if anything of lasting value dealing with Slavic syntax was produced in Jakobson's framework. Thus the concerns of generative theory and Slavic linguistics were far removed: each developed without regard for the other—to the detriment of both.

The rapprochement of Slavic linguistics and generative theory began with a

number of books and articles in the early 1970s (for details, see R. Brecht and C. Chvany [eds.], *Slavic Transformational Syntax,* [1974]). But the realization that data from the Slavic languages could make a major contribution to generative theory came from a shift in the theory of generative grammar itself.

Starting with Chomsky's *Lectures on Government and Binding* (1980), the focus of attention shifted from language-particular rules to the search for universal principles of language structure. The major hypothesis underlying this work is that these basic principles are innate. Now, if the basic principles underlying the structure of all human languages are innate, the following question naturally arises: How are we to account for the language diversity that obscures the universal foundation of human language? What has come to be known as Principles and Parameters theory accounts for language diversity in terms of parameterization of the universal principles alluded to above. Upon hearing the language spoken by those who surround him/her, the child "learns" his/her native language by setting certain parameters. For example, simple facts of word order allow the setting of the headedness parameter, which is responsible for the typologically prominent distinction between left-branching and right-branching languages. The setting of these parameters has wide-ranging effects on the language's structure.

Principles and Parameters theory recognizes that the way to test these hypotheses is to look at a wide variety of languages and to determine whether the differences we observe between them can be accounted for in terms of parametric variation. This has produced a renaissance in comparative grammar. A crucial role in this research is played by the study of closely related languages: Do the differences among them conform to the predictions of Principles and Parameters theory? It is in this context that Slavic linguistics and generative theory have found a common ground.

Steven Franks's book *Parameters of Slavic Morphosyntax* is, to the best of my knowledge, the first attempt to analyze a number of the salient typological syntactic properties of the Slavic languages in the Principles and Parameters framework. It is for this reason that I consider his book so important. It is obvious that it will be a major contribution to Principles and Parameters theory. What may be less obvious is its contribution to the field of Slavic linguistics: it explains the basic notions of Principles and Parameters theory with admirable clarity and will therefore serve as an introduction to the generative study of Slavic syntax for a new generation of Slavic linguists.

LEONARD H. BABBY

# *Preface*

The past decade has seen a remarkable spurt of activity in the areas of theoretical and comparative syntax. Syntacticians in various frameworks have sought to impose theoretically consistent analyses of diverse phenomena from a broad range of languages, in the hope of establishing the mechanisms and limitations of the human linguistic capacity. The impetus for this work was largely due to the "principles and parameters" model of Chomsky's (1981a) Government and Binding (GB) theory, and it is within this general framework that the present monograph is conceived.

One language group that has received little attention from this perspective is Slavic. Even a comprehensive and influential study like Baker (1988) mentions Slavic languages only in passing, and with regard to a single construction. Yet this language group offers an especially valuable source of insight into parametric variation. It is my intention to demonstrate this in the pages to follow, where Slavic data will be used to test and refine theoretical proposals.

The research reported here rests on the belief that analyses of Slavic languages should be of significance to general linguists in having implications for modifying their theories, and also that such theories ought to assist Slavists by shedding light on how to analyze particular problems in the grammars of Slavic languages. These two goals complement each other; they are opposite sides of a mutual concern with discovering how language works. This book is thus intended for Slavic and general linguists alike. As such, although it assumes a familiarity with the basic concepts of GB theory, it explores recent developments within the theory that should be of interest to Slavists, and it makes Slavic data available to syntacticians, developing new analyses within the confines of GB theory. It is hoped that the result will contribute to our understanding of how the abstract structures and principles of the human language faculty interact to calculate the range of linguistic forms and meanings found in the Slavic languages, and that it will promote communication among linguists investigating diverse aspects of Slavic syntax.

## The Language Faculty

It has long been recognized that the ability to learn language sets human beings apart from the other animals, but we are far from understanding what makes the miracle of language acquisition possible. Given that children accomplish this complex feat in just a few years, regardless of individual intelligence and typically in the absence of explicit instruction, one promising approach is to attribute as many facets of language learning as possible to our innate biological endowment. In other words, the distinctly human capacity to "project" a grammar from primary language data can be explained in terms of some kind of language-learning cognitive system. It is this special "language faculty" that renders us, through a little understood combination of maturation and stimulation, mentally capable of developing linguistic competence.

Linguistic research traditionally consists in the uncovering of systematic patterns within and across languages. Generative grammarians argue that these patterns, in order to satisfy minimal criteria of learnability, must in some way derive from inherent properties of the human language faculty. In this view, as articulated in, for example, Chomsky (1986b), the fundamental goal of cognitive linguistics is to discover the nature of "knowledge of language." A grammar is an internalized system of rules and representations by which we compute and manipulate linguistic structures. By studying the properties of grammars, we may learn about the structure of our language faculty. A grammatical analysis should therefore be regarded as a theory of mind—it makes specific empirical claims about abstract mental representations.

Although in principle there is a broad range of evidence open to scrutiny for testing these claims, in practice native speaker intuitions offer the most prolific source of information. That is, facts garnered through introspection into our linguistic knowledge can be analyzed into grammatical systems, and these systems can be studied in turn for general organizational principles. Linguistic theory thus defines a research program for investigating the language faculty, and this methodology for seeking the principles that regulate grammars currently provides our best avenue into the workings of the human mind.

## Principles, Parameters, and Parametric Variation

Linguistic analysis reveals the existence of general, unifying principles that regulate the operation and output of grammatical processes. Most work within syntactic theory is directed toward the identification and elaboration of these principles, the content of which will be introduced as needed in the discussion of specific issues in the syntax of Slavic languages. Treating such principles as absolute universals, however, leads to an obvious dilemma: How can the rigidity of universals be reconciled with the variation of individual grammars? One method of accomplishing this is to claim that, although the principles hold universally, details of their imple-

mentation may vary. According to the Principles and Parameters model, we are able to acquire language because the human language faculty contains a universal set of general principles subject to a highly restricted degree of parametric variation (cf. Chomsky, 1981b). Minor parametric distinctions, since they pertain to broadly interacting principles, proliferate throughout the grammar, sometimes with major structural ramifications. Language "learning," at least with respect to the central or "core" aspects of grammar, thus reduces to the acquisition of lexical items and the fixing of the values of these parameters. Although many open questions remain, especially regarding the status of maturational factors, the relative significance of general and language-specific cognitive capacities, the accessibility of input data, and the roles played by markedness theory and the core/periphery dichotomy in language acquisition, this approach has defined a new and promising research agenda for cognitive linguistics, providing impetus for much exciting and productive work.

Within the Principles and Parameters paradigm, the comparison of grammars of related languages has come to play a key role. As Chomsky (1981a, 6) observes, while deep study of a single language may yield "principles of explanatory force," study of closely related languages is particularly valuable for the opportunities it affords to identify the parameters that permit variation in the proposed principles. In trying to flesh out and delimit the ways in which grammars may vary, it is often vital to compare similar phenomena within a closely knit group of languages. The Slavic languages, which display both curious differences and suspiciously persistent similarities in their syntax, constitute a particularly fertile testing ground for theoretical proposals about potential parametric variation.

## Overview

The primary goal of this study is to explore parametric accounts of syntactic diversity among the Slavic languages, unifying analyses of similar phenomena across the different languages. Most of the problems to be addressed deal with issues of phrase structure and case assignment. It will consequently be crucial to consider how the principles of GB's abstract "case theory," which have mostly been proposed on the basis of languages with impoverished morphology, can be extended to accommodate the intricate morphological case phenomena found in languages with rich inflectional systems. Although the grammars of both types of language are superficially disparate, the Principles and Parameters approach mandates that they have a common and innate basis. I will therefore need to develop a general model of case assignment flexible enough to handle a range of constructions within diverse languages. Just such a model is proposed in chapter 2, laying the groundwork for the specific issues to be investigated in subsequent chapters.

Chapters 3 through 8 deal mostly with traditional problems in Slavic syntax, some of which have engendered a considerable body of insightful analysis. This work, however, has not generally been carried out within a comprehensive theory of language and, more importantly, typically lacks a concern for explaining variation (although, of course, there are notable exceptions, such as the work of Corbett,

Rudin, or Růžička). Yet the tenets of parametric theory make it essential that Slavic linguists hold their analyses of one language ultimately responsible also for clarifying the data of another, since a crucial measure of the validity of any analysis is its ability to handle variation. The present study therefore attempts to integrate particular investigations of specific problems in the various languages into a conceptually and analytically unified account.

My point of departure in the pages to follow will depend on the nature of the construction at hand and on existing analyses, although to some extent I will be concerned with extending available treatments of Russian to the other Slavic languages, with primary focus within South Slavic on Serbo-Croatian and within West Slavic on Polish. Chapter 1 offers an introduction to GB theory, and chapter 2 extends this framework in order to accommodate case phenomena in Slavic, discussing the problem of morphosyntactic features in depth. Chapter 3 considers across-the-board dependencies in Russian and Polish in light of the proposed system. Chapters 4 and 5 then examine the morphosyntax of quantified structures, addressing such questions as why numerals sometimes agree with the nouns they modify and sometimes govern them and why verbs sometimes agree with quantified subjects and sometimes do not. Chapter 6 deals with secondary predication. It studies the conditions under which predicate adjectives agree with their antecedents and the factors determining their form and distribution when they do not. Chapter 7 investigates a host of issues relating to null subject phenomena and draws attention to important differences among the Slavic languages, leading to a new approach to null subjects. Chapter 8 is concerned with problems of voice in Slavic and the roles of the reflexive and passive morphemes in the various languages. Finally, chapter 9 offers a brief summary and discussion of the kinds of parameters considered in my attempt to accommodate these dimensions of variation in Slavic morphosyntax.

*Bloomington, Ind.* S. F.
*June 1994*

# *Acknowledgments*

This book is the product of many years' labor. The actual writing began in 1990, while I was on a Mellon post-doc at the University of Pennsylvania, but the thinking follows a line of argumentation about Slavic morphosyntax that I have been developing for a dozen years. During that time, it has been my good fortune to interact with linguists too numerous to name. Here I can merely acknowledge the impact a handful of otherwise innocent individuals have had on the contents of this tome. First and foremost, I wish to thank Wayles Browne, my dissertation advisor at Cornell, for his unflagging efforts at keeping me honest. Your knowledge of Slavic linguistics is peerless; your readiness to share that knowledge, boundless. Two other esteemed Slavic linguists with whom I have been lucky enough to study are Len Babby and Charlie Townsend, both of Princeton. Without your influence I would never have written this book. Several colleagues and valued friends who have helped me better to understand the material in these pages are Katarzyna Dziwirek, George Fowler, Gerry Greenberg, Catherine Rudin, and especially Ljiljana Progovac. I am indeed honored to know people like you. During my years at Indiana University, many students have contributed to my ongoing comparison of morphosyntactic structures in the various Slavic languages. Among these I would like to single out Stephen Dickey, Annie Joly Sperling, Curt Woolhiser, Michael Yadroff, and above all Martina Lindseth. You took my ideas seriously enough to disagree with them, and were usually right. Thanks for keeping me on my toes!

Much of the material in this book has appeared elsewhere in various guises. I am indebted to my coauthors Katarzyna Dziwirek, Gerry Greenberg, and Norbert Hornstein for allowing me to "borrow" from our joint publications. I thank Elsevier Science Publishers for material that originally apeared in *Lingua* as Franks (1990c) and Franks (1992), AATSEEL and the editors of *Slavic and East European Journal* for permission to use portions of Greenberg and Franks (1991), and the MIT Press for granting permission to use material that appeared in *Linguistic Inquiry* as Franks (1993). I also appreciate the willingness of the *International Journal of Slavic*

*Linguistics and Poetics, Chicago Linguistic Society,* and the *Journal of Slavic Linguistics* to let me draw freely from the following publications: Franks (in press); Franks (1982), Franks and House (1982), and Franks and Greenberg (1998); Franks and Dziwirek (1993). Finally, portions of Franks (1990a), which appeared in *Russian Linguistics,* and Franks and Hornstein (1992), which appeared in the volume *Control and Grammar,* are reprinted by permission of Kluwer Academic Publishers. Specific places where portions of chapters have been published are also acknowledged in those chapters.

Finally, my family has suffered many hours of patient exile while I struggled with the manuscript. I wish I could tell my parents, Cyril and Violet, who have always been supportive beyond credulity; my enduring wife, Karen, who understands everything that is not in this book; and my miraculous children, Julia, David, and Elisabeth, who are the joy of my existence, that it will never happen again. All I can say is that *even* linguistics without you would be meaningless. You have blessed my life with love.

# *Contents*

# PARAMETERS *of* SLAVIC MORPHOSYNTAX

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# 1

# Introduction

This chapter establishes the theoretical background for the problems in Slavic syntax to be examined in the subsequent chapters. I begin by surveying the general concepts of Government and Binding (GB) theory. A brief presentation of the principles of abstract case as embodied in GB theory follows, establishing the background for the formalism for representing and assigning morphological case proposed in chapter 2.

## 1.1. Theoretical Preliminaries

Generative grammar holds that the projection problem can be solved by postulating a sufficiently rich and specific language faculty. That is, there is a complex and dedicated system[1] that enables children eventually to acquire a mature grammar solely on the basis of exposure to an unstructured and unreliable fragment of the adult language. It is this deficiency in the primary linguistic data that leads linguists to conclude that "much of the child's final ability is determined by genetically encoded principles, which are triggered or activated by environmental stimulus" (Hornstein and Lightfoot, 1981, 13).

As pointed out by Hornstein and Lightfoot (1981, 9), there are really three aspects of the poverty of stimulus argument to be contended with. First of all, the speech a child is actually exposed to "does not consist uniformly of complete grammatical sentences," in that it is fraught with the effects of performance factors. Second, a child is ultimately "able to deal with an infinite range of novel sentences," far exceeding those that might in fact have been heard. These first two aspects, Hornstein and Lightfoot contend, would require an inductive theory of language acquisition to be extremely elaborate. Third, for much of what a speaker knows of the structure of his or her language, there is *no* evidence at all in the primary linguistic data. Linguists are able to devise complicated hypothetical sentences and elicit consistent grammatical judgments, even though the child in the course of acquiring a

grammar may never have experienced similar sentences. Moreover, speakers are able to reject sentences as ill-formed without ever having been instructed that they are ungrammatical. This third aspect of the deficiency of data poses an insurmountable problem for any account of language "learning" based exclusively on experience, since the very evidence from which induction might be made is lacking. It is for this reason that linguists postulate a language faculty that embodies innate properties facilitating the acquisition of grammar.

The initial configuration of the language faculty is known as Universal Grammar (UG). As a "language acquisition device," UG must be sufficiently rich to allow children to acquire the grammar of any human language, but restrictive enough to explain how they are able to construct a grammar relying on deficient data. The Principles and Parameters theory is one type of solution to this dilemma. In discovering the abstract principles of UG and establishing the ways in which they may be parameterized, however, one is of course torn between the desire to describe a wide range of phenomena and the need to explain such phenomena (cf. Chomsky, 1981b, 43). A model of grammar that can resolve this tension must have a rich deductive structure, with highly integrated principles and limited options. In this section, the basic properties of the GB framework, which aims to satisfy these criteria, are sketched out.

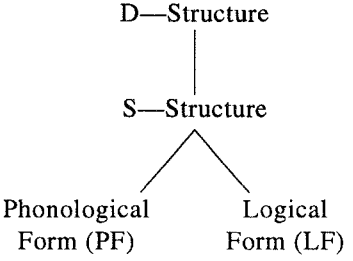
### 1.1.1. The Modular Conception of Grammar

One way of dealing with the complexity of UG, regarded as a set of systems of principles and parameters, is to divide it into modules. This is the approach taken within GB theory. There are two distinct aspects of viewing UG as a collection of modules. First, a grammar consists of several rule systems, each a separate subcomponent pertaining to a distinct level of representation. Second, there are subsystems of principles that interact with these rule systems. The core grammar of a language is then the specification of some of the options of these modular subtheories. Each of these is examined in turn.

### 1.1.2. Levels and Components

The so-called T-model of core grammar, which reflects standard assumptions about the organization of grammar (cf. e.g. Chomsky and Lasnik, 1977, 431), is shown in (1).

(1)



Each of these four levels of representation is meant to embody different kinds of information about the structure of a sentence. A grammar must provide every sentence with a structure at every level. Crucially, the model in (1) makes the empirical claim that PF and LF are autonomous subsystems.

Associated with the levels in (1) are various components. The PF component contains rules that operate on S-structures to derive PF representations. Similarly, the LF component contains rules that generate LF representations from S-structure ones. So, for example, a constituent might delete in PF without having any effect on the sentence's LF representation, or move in LF without altering its PF representation.

The transformational component maps D-structures into S-structures. In the detailed grammars that characterized early transformational-generative grammar, all sorts of complex rules were proposed, often obfuscated by complicated conditions on these rules. The subsequent shift in the focus of research from the properties of rules to the regularities of rule systems, however, gradually led to the reduction of the transformational component to a single rule, Move $\alpha$. This has been made possible through the introduction of general principles that regulate the operation and output of grammatical processes. Movement leaves behind a coindexed trace that, together with the moved element, forms a "chain." Traces are syntactically present but phonologically null or "empty" categories. These silent elements are required by the principles of the theory of thematic roles, to be discussed in the next section.

All of the levels of representation in (1) are phrase structure trees, which are themselves the products of a phrase structure grammar or "categorial" component. Just as with transformational rules, although earlier analyses often specified a detailed categorial component, it has now been shown that most, if not all, of its properties follow from independently motivated principles of grammar.

Lastly, a grammar must include a lexical component, or "lexicon." The lexicon contains the lexical items that serve as terminal elements of the phrase structure trees. In it must be specified all idiosyncratic information about lexical items (words, morphemes, and sometimes even phrases; cf. Di Sciullo and Williams, 1987), including phonological, semantic, and morphosyntactic information, as well as all special properties that help to determine their distribution.

### 1.1.3. Subsystems of Principles

Research into rule systems has made it possible to formulate increasingly general and abstract principles, the study of which is central to GB theory. Because they seem to pertain to different aspects of the grammar, they may be viewed as falling into discrete subsystems. This, then, is the second way in which UG can be said to be organized in modules.

Chomsky (1981a, 5) enumerates the following subsystems of principles: bounding theory, binding theory, control theory, government theory, theta-theory, and case theory. These contain principles that interact with rules of grammar to restrict their operation. The assumption of principles in UG allows for extremely general rules, eliminating the need to append specific conditions.

Bounding theory deals with how far an item may be moved in the syntax (i.e. on the way from D-structure to S-structure). It consists of a single principle—Subjacency. Subjacency states that an element may move over at most one "bounding node," where what counts as a bounding node may vary from language to language, but is generally seen to include S and/or S', NP, and in many languages also PP (cf. e.g. van Riemsdijk, 1978; Sportiche, 1981; and Rizzi, 1982). Although this variation in bounding nodes has often been cited as a paradigm example of parameterization, Rizzi (1989) has recently observed that this is an atypical and thus somewhat suspect instance of parametric variation.

Binding theory delimits the possible antecedents for pronouns (e.g. *him*) and anaphors (e.g. *himself*), stipulating a domain (not necessarily identical; cf. e.g. Huang, 1983) in which anaphors must be bound and pronouns cannot be. Referring expressions (R-expressions; e.g. *John* or *the man*) and variables (traces of *wh* and other operator movement), on the other hand, cannot have an argument antecedent in any syntactic domain (cf. Chomsky, 1981a, 188). These three principles are summarized in (2), where the precise nature of "domain D" is left unspecified.[2]

(2) a. Principle A: An anaphor must be bound in domain D.
b. Principle B: A pronoun must be free in domain D.
c. Principle C: An R-expression must be free everywhere.

"Bound" is defined as "coindexed with a c-commanding antecedent," and "free" essentially means "not bound." One standard definition of "c-command" is that the first branching node dominating the c-commanding element also dominates the c-commanded one, as in Reinhart (1983). Another common one, now known as "m-command," is that all maximal (i.e. phrasal) projections are shared, as proposed in Aoun and Sportiche (1983). Chomsky (1986a, 8) points out that these are distinct and independently necessary notions, in that while m-command is required in the definition of government, c-command still seems useful for the binding theory. It should also be noted that within GB the terms "anaphor" and "pronoun" are technically defined in terms of the features [±anaphoric, ±pronominal], as are all nominal expressions.

(3) a. anaphor = [+anaphoric, −pronominal]
b. pronoun = [−anaphoric, +pronominal]
c. R-expression, variable = [−anaphoric, −pronominal]

The binding principles in (2) are thus properly stated in terms of the features in (3).[3] This accords with the view that all elements in a phrase structure tree are formally matrices of morphosyntactic features, and that all relevant operations and conditions must be stated in terms of these features.

Control theory is the set of principles that determine the referent of the empty category PRO, an abstract and caseless element that typically occupies the positions of subject of infinitive and gerund. Most attempts to devise a specific control theory within GB involve a reworking of the binding theory to incorporate control (cf. e.g. Bouchard, 1984; Manzini, 1983; Sportiche, 1983). It has also been assimilated to the generalized binding theory of Aoun (1986) in Hornstein and Lightfoot (1987). I shall

adopt a similar approach in chapter 6, where the interaction between control and secondary predication is examined.

The concept of government is more of a theme that unites the different subsystems of GB than a theory in and of itself. Government involves the relationship between a head of a phrase and its dependents. This relationship, familiar from traditional grammar, runs throughout the subsystems of principles in GB. Chomsky (1981a) argues that government is relevant for the theories of binding, theta-roles and case, while others employ it to determine obligatory control (e.g. Bouchard, 1984; Manzini, 1983; Franks and Hornstein, 1992) and the bounding nodes for subjacency (e.g. Kayne, 1981a). Various formalizations of the notion of government exist, mostly based on the c-command relationship, depending on how and in which modules it is being applied. One common definition of government is provided by Chomsky (1986a, 9), who roughly states that one node governs another node if it m-commands it and there is no intervening barrier (with considerable debate as to what constitutes a "barrier" and how "intervening" is to be construed).

There is general consensus, however, about the existence of one principle of broad explanatory power that comes under the purview of government theory. This is the Empty Category Principle (ECP), which requires the trace left behind by Move $\alpha$ (i.e. [−pronominal] empty categories) to be "properly" governed. The effect of this condition is to prohibit movement from subject and adjunct positions, which are generally not properly governed, although special mechanisms are available in some languages for circumventing this. Quite a variety of formulations of proper government have been proposed, depending on the range of phenomena the ECP is intended to account for as well as general theoretical assumptions. Most of them regard proper government as an instance of government in which the governor must be a lexical category.

Theta-theory and especially case theory will play much more significant roles in this study than any of the other modules. These are basically concerned with how semantic roles, known in GB as theta-roles, and abstract case are assigned to arguments. I conclude this section with a sketch of the major properties of theta-theory, deferring the discussion of case theory until section 1.2.

Chomsky (1986b, 98 ff.) argues that a reasonable property of LF is that it obey a "principle of full interpretation," meaning that every element must be appropriately licensed and, in particular, play some semantic role.[4] Individual arguments are associated with particular theta-roles, such as agent, theme (or patient), experiencer, instrument, and goal, and verbs are regarded as having a predicate-argument structure in that they take arguments with specific theta-roles (cf. Grimshaw, 1990, or Jackendoff, 1990a, for theories of argument structure). At LF, then, the theta-roles borne by the arguments of a verb must satisfy the requirements of that verb's predicate-argument structure. This one-to-one pairing between roles and arguments is the Theta-Criterion, which can be stated as follows (Chomsky, 1981a, 36):

(4) Each argument bears one and only one theta-role, and each theta-role is assigned to one and only one argument.

This principle is not merely a criterion of adequacy for LF, however, but holds rather at all levels of the syntax. The requirement that the pairing of theta-roles and

syntactic positions mandated by (4) remain consistent throughout the derivation is known as the Projection Principle, one statement of which is as follows (Pesetsky, 1982, 17):[5]

(5) Representations at each syntactic level (LF, D-structure, S-structure) are projected from the Lexicon in that they observe the theta-marking properties of lexical items.

The conjunction of the Theta-Criterion and the Projection Principle has a variety of pervasive effects on the grammar. Together, they restrict syntactic representations and constrain the operation of rules in important ways. For one thing, these principles help to predict the existence and inventory of empty categories that has been postulated on other grounds (cf. e.g. Chomsky, 1975). In particular, the association of a theta-role with a position implies that the position be occupied, even if not by any overt element. Moreover, because the Projection Principle extends this association to all syntactic levels, phonologically empty categories will also be present at all levels. The result is that movement from a theta-position necessarily leaves behind a trace. In addition, in order not to violate the Theta-Criterion, movement must always be to a non-theta position, otherwise the argument chain would be assigned multiple theta-roles.

Consider NP-movement in the simple passive and raising structures in (6), where boldface **e** represents an empty category, in this instance the trace of *the book*.

(6) a. the book$_1$ was being read $\mathbf{e}_1$ (by Bill)

b. the book$_1$ seems $\mathbf{e}_1$ to be interesting

The subject of neither a passive nor raising verb is in a theta-position, since the agent in (6a) can be expressed using the *by*-phrase and (6b) can be paraphrased as *it seems that the book is interesting*. Hence, movement is possible to these positions. Of course, this conclusion only makes sense if *the book* and **e** are regarded as a single entity for the purposes of theta-theory. That is, the Theta-Criterion is properly defined on chains of coindexed elements sharing a single theta-role. Only one member of a chain, the one occupying the argument's original D-structure position, will actually be in a position to which a theta-role is assigned. In this sense, then, D-structure is a pure representation of the association between grammatical functions (e.g. subject, object, indirect object) and theta-roles (e.g. agent, theme, goal).

In sum, theta-theory, with its two guiding principles (4) and (5), has great explanatory value, deriving among other things the following properties of the levels in (1):

(7) a. S-structure and LF are enriched with traces.

b. D-structure is a pure representation of the pairing between grammatical functions and theta-roles.

c. Movement is to non-theta positions only.

### 1.1.4. The Categorial Component

The remainder of this chapter deals with case. Before addressing case theory, however, it is necessary to outline the properties of the phrase structure component, which plays such a vital role in determining case relationships.

GB assumes the framework of "X-bar syntax" to constrain the categorial component. This theory, as originally put forward in Chomsky (1970), has two essential aspects. First of all, part-of-speech categorial labels are actually abbreviations for feature complexes. The major parts-of-speech—noun (N), verb (V), adjective (A), and preposition (P)—can be defined in terms of the features [±N(ominal)] (or "substantive") and [±V(erbal)] (or "predicative"), as follows:

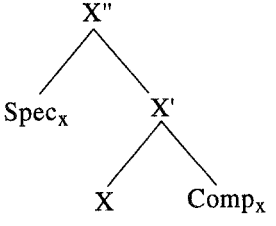
(8)

| | −V | +V |
|---|---|---|
| −N | P | V |
| +N | N | A |

Breaking words down into features in this manner facilitates the expression of cross-categorial generalizations (cf. e.g. Stowell, 1981, for discussion).

The second basic property of X-bar syntax is that phrasal nodes are viewed as projections of terminal nodes, so that relationships between constituents can be hierarchically represented. The degree of projection of a node X is represented by the number of prime nodes, and the maximal projection of a node X is the phrasal node XP (or X''). A typical phrase will permit a specifier (subject) and complement (object), as shown in (9).

(9)



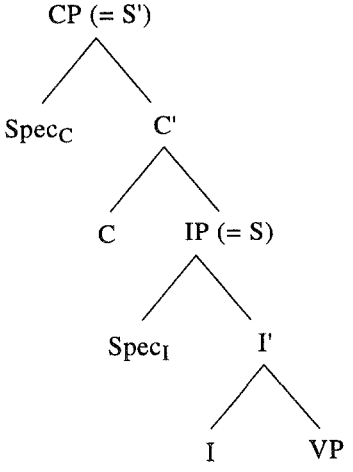

Spec$_X$ and Comp$_X$ are not themselves category symbols; instead, they simply stand for the sets of categories that can serve as the specifier or complement of X.

X-bar syntax in and of itself does not specify the order of constituents in the schema in (9). Rather, it separates dominance relationships from precedence ones, restricting the former but leaving the latter to be independently determined.[6] Whether phrases are left-headed or right-headed in a particular language is subject to parametric variation. The child must therefore establish this, presumably on the basis of verb–object order. It has been proposed (cf. e.g. Koopman, 1984; Travis, 1984, 1989) that direction of headedness is not actually the appropriate concept, and instead follows from more basic parametric choices such as direction of case assignment and/or government.

The range of X has recently been extended from the lexical categories in (8) to a host of functional (i.e. purely grammatical) categories (cf. e.g. Pesetsky, 1982;

Chomsky, 1986a; Pollock, 1989). Here I adopt the system of Chomsky (1986a). In it, both S and S' are seen as maximal projections of the functional categories I(nflection) and C(omplementizer), respectively, as in (10).

(10)




Spec$_c$ is typically the target of *wh*-movement and Spec$_I$ is the position of the sentential subject. This uniform system assimilates S and S' to the other endocentric categories, allowing further cross-categorial generalizations and making it possible to restrict phrase structure representations to binary branching (cf. e.g. Kayne, 1984).

## 1.2. Case Theory

The remaining module of GB theory that needs to be presented is case theory, which plays a fundamental role in many of the grammatical processes in the Slavic languages. Abstract case is divorced from the traditional notion of morphological case in that NPs in all languages have abstract case whether or not they manifest it morphologically. The abstract case system of standard GB theory is examined in this section and is then extended to accommodate the kinds of detailed morphological case phenomena found in Slavic in the next chapter. The two central questions concerning abstract case are (1) What receives abstract case and why? and (2) What assigns abstract case and how? The first is addressed in section 1.2.1, the second in 1.2.2.

### 1.2.1. Principles of Abstract Case

The basic observation that drives case theory is that overt NPs are only licensed in positions to which case is assigned. Thus, the examples in (11) are ungrammatical because *Bill* lacks case.

(11) a. *John painted a picture *Bill*

b. *John is proud *Bill*

c. *John laughed *Bill*

d. *John hopes *Bill* to leave

The condition that requires every nominal with a phonetic matrix to have case is known as the Case Filter, which Chomsky (1981a, 49) states as follows:

(12) *NP if NP has phonetic content and has no Case.

The examples in (11) are thus ruled out, since in none of them does *Bill* have any source for case.

This version of the Case Filter treats case as a property of NPs prerequisite to lexicalization and, as a principle of morphological well-formedness, pertains to the PF side of the grammar. In this sense, case can be construed as making NPs "visible" at PF.

In more recent work within the GB paradigm, stemming from suggestions made in chapter 6 of Chomsky (1981a), abstract case is regarded as a property of well-formedness at LF. This effect is accomplished by requiring that arguments have case at LF in order for their theta-roles to be visible, thus tying case theory into the Theta-Criterion. This version of the Case Filter, following Chomsky (1981a, 334–335), is roughly as in (13).

(13) A theta-role can be assigned to an argument chain only if that chain has case or is headed by PRO.

Although (13) is stated as a condition on theta-role assignment, it should properly be understood as a condition on the visibility of theta-roles at LF. An argument chain must have case at LF in order for its theta-role to be visible. Note that this technically allows case assignment (or checking) to be postponed until LF, a point that will play an important role in the analysis of null subjects in chapter 7. Also, the disjunction must be stipulated because PRO necessarily lacks case but nonetheless always bears a theta-role. PRO must therefore be independently licensed at LF. Presumably this is accomplished by virtue of the fact that PRO is an obligatory element, as suggested in Hornstein and Lightfoot (1987), in the sense that its existence follows from the requirement that all clauses have subjects. The Case Filter thus appears to have two sides, one pertaining to PF-visibility, as in (12), and the other to LF-visibility, as in (13). Although Chomsky's intention in proposing (13) was to subsume the filter in (12), there is a residue of effects that cannot be brought under the theta-theoretic Case Filter. Recent work by Milsark (1988), Belletti (1988), Raposo and Uriagereka (1990), and Lasnik (1992a) demonstrates that the PF Case Filter must have independent status. These issues will be discussed in chapter 7, where it is argued that both versions of the Case Filter are necessary.

The question posed above of what receives case can now be addressed. Since (12) is rooted in nominal morphology, it should extend to all NPs present at PF, whether or not they bear a theta-role or are even present at LF.[7] The LF-visibility Case Filter (13), on the other hand, should pertain to all argument chains, regardless of their morphological category and hence whether or not they are actually able to bear morphological case. This means that argument chains headed by clauses and PPs must also in some way be associated with case features if these are to bear theta-

roles. This reasoning drives much of Stowell's (1981) theory of phrase structure, where he attacks the problem of what determines the relative ordering of non-heads within a phrase. Relevant aspects of his theory will be presented in chapter 7, when the case properties of clausal arguments are discussed. It can thus tentatively be concluded that case is motivated both by PF-visibility of nominals and by LF-visibility of arguments.

### 1.2.2. Case Assignment

According to standard GB theory, case is assigned to an NP by a lexical head under the configurational relationship of government. The canonical instance of case assignment occurs when an NP is governed by a V or a P—that is, by a [−N] category, as in (14).

(14) a. $[_{V'}$ read $[_{NP}$ the book]]
b. $[_{P'}$ in $[_{NP}$ the book]]

The [+N] categories N and A, on the other hand, do not assign case to their complements, as shown in (15).

(15) a. *$[_{N'}$ reader $[_{NP}$ the book]]
b. *$[_{A'}$ proud $[_{NP}$ the book]]

The structure in (15) can be salvaged through the mechanism of *of*-insertion, however, as suggested by Chomsky (1981a, 50–51), whereby the minimal preposition *of,* arguably devoid here of semantic content, is inserted to mark case on *the book,* as in (16).[8]

(16) a. $[_{N'}$ reader [of $[_{NP}$ the book]]]
b. $[_{A'}$ proud [of $[_{NP}$ the book]]]

Case in English is also assigned to subjects of finite clauses, as in (17).

(17) $[_{IP}$ $[_{NP}$ the book] $[_{I'}$ is on the table]]

The Agr(eement) element heading the Inflection Phrase (IP) governs its specifier NP and is thus able to assign it nominative case. Alternatively, it may be that Agr is itself nominative and that the subject receives nominative case through "SPEC-head agreement" rather than through government.

This approach seems particularly plausible under the extended X-bar system discussed in chapter 8, in which IP is broken down into its components and AgrP constitutes a separate functional projection. Finally, subjects of NPs are themselves assigned genitive, as in (18).

(18) $[_{NP}$ $[_{NP}$ the book's] $[_{N'}$ cover]]

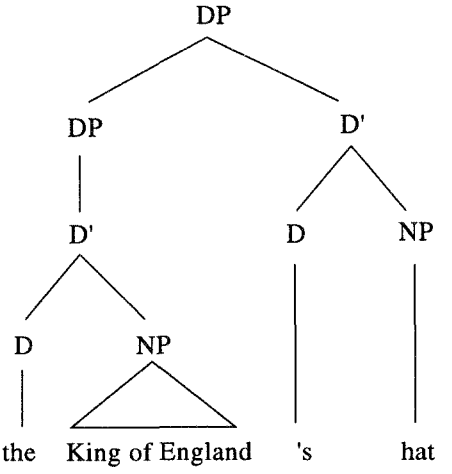
Once again, one might imagine that case assignment is licensed here because the head N governs its specifier. There is reason to suspect, however, that genitive assignment in English is not actually case assignment under government by N. Chomsky (1981a, 170) states that genitive is assigned to the left sister of X' within

NP, that is, under sisterhood to N'. Perhaps, then, it could be assimilated to nominative, with P and V assigning case to the right and N' and I' to the left. This might allow case assignment to be restricted to sisterhood, rather than government. Alternatively, it may be that the *'s* is a case assigner rather than a manifestation of case itself, on a par with Agr, so that SPEC-head agreement can again be invoked.[9] This is supported by the fact that *'s* cliticizes onto the entire NP.

(19) $[_{NP}\ [_{NP}$ the king of England]'s $[_{N'}$ hat]]

This analysis has given rise to the Determiner Phrase (DP) hypothesis, according to which NPs are in fact complements of determiners, as, for example, in Fukui and Speas (1986), Abney (1987), and Stowell (1989). The DP is headed by functional elements such as determiners, demonstratives, and (in some analyses, but not Abney's) the possessive morpheme. The structure of (19) could thus more accurately be represented as in (20).

(20)




This idea further helps to increase the symmetry between NPs and clauses. However the subject DP *the king of England* receives case in (20), one can claim that subjects of IP are in a comparable configuration, whether government by D/I, sisterhood to D'/I', or SPEC-head agreement with D/I is the relevant factor. Since most of the Slavic languages (other than Macedonian, Bulgarian, and North Russian dialects) display little overt evidence for a separate DP projection, however, I will continue to refer to NPs and use DP only when specifically warranted. There is, nonetheless, one unifying aspect of the DP/IP theory that will play an important role in this study. Since the subject/specifier of DP or IP is actually an argument of the NP or VP complement to D or I, respectively, it seems natural to assume that this subject originates as the subject of NP/VP and subsequently raises to SPEC-DP/IP. This movement is motivated by considerations of case—the subject of NP/VP requires case but is not generated in a case-marked position, hence it must move to SPEC-DP/IP, where it can be assigned case. This kind of derivation is completely parallel to other standard instances of NP-movement, such as raising to derive $John_1$

*appears* [$e_1$ *to be tired*]. Under this view, then, both NP and VP contain all their arguments at D-structure and D and I are raising categories.[10]

Abstract nominative and genitive in GB theory seem to correspond to their morphological manifestations. I shall argue that there is in principle no difference between specific abstract cases and morphological ones. Thus, while Chomsky (1981a, 170) calls the abstract cases assigned by V and N objective and oblique, respectively, there is no real reason to distinguish the two in English. The English pronominal system has only objective, nominative, and genitive, with objective case arising in default situations. By "default" I mean that *whenever an NP is assigned case*, and that case is not specified as nominative or genitive, it appears in the objective. This explains the complete syntactic identity of any cases assigned by any V or P. Kayne (1981b) uses the observation that V and P both assign objective in English to account for a host of differences between French and English. For example, he claims that reanalysis of V-P groups, permitting subsequent preposition stranding, is made possible by the identical case-marking properties of these two categories in English.[11]

This completes the survey of the Principles and Parameters model of syntax and the modules proposed within GB theory. These will be elaborated upon in the chapters to follow to explain specific problems in the syntax of the Slavic languages.

## Notes

1. The language faculty is thus an "input system" in the sense of Fodor (1983). Properties of such systems include that they are domain specific, their operation is fast and mandatory, they are informationally encapsulated and allow only limited access to the representations they compute, and they are associated with fixed neural architecture and exhibit characteristic breakdown patterns.

2. There are numerous proposals in the literature to revise the binding theory, which is given in (2) in its simplest form.

3. This raises many interesting and open questions, such as (i) what feature complexes each principle pertains to, (ii) what level(s) of representation the principles apply at, and (iii) whether or not the principles apply as a block. It is reasonable to suppose, for example, that (2b) should be formulated in terms of [−anaphoric] rather than [+pronominal] and that (2a) and (2b) should be divorced from (2c). I return to this issue in chapter 6.

4. This principle also rules out things like vacuous quantification, free variables and expletive elements at LF.

5. Pesetsky's formulation, instead of the original one in Chomsky (1981a, 29), is chosen in that it makes specific reference to the projection of theta-roles rather than subcategorization in general. An empirical difference between the two will be discussed in chapter 4.

6. Other frameworks, notably Generalized Phrase Structure Grammar (cf. Gazdar, Klein, Pullum, and Sag, 1985), also factor phrase structure rules into precedence and dominance statements. GB, however, does this by eliminating the categorial component altogether and ascribing its properties to distinct modules, rather than embellishing it.

7. Chomsky (1986b) argues that the principle of full interpretation forces expletive elements to be eliminated at LF and proposes a rule of "expletive replacement."

8. Whether the complement in the derived structure should be regarded as an NP, with *of* adjoined, or a PP, with *of* the head of a phrase, is unclear.

9. One problem with this idea is that postnominal genitive NPs still require *of*-insertion,

despite the presence of the putative case assigner *'s*, as in *a friend *(of) John's*. See Anderson (1984) and Abney (1987) for discussion.

10. This analysis is developed in Abney (1987) for DP/NP and in Koopman and Sportiche (1988) for IP/VP.

11. Objective as a "default" case might also explain its use with topics (i), inside conjunctions (ii), and in copular constructions (iii).

(i) *Them*, they always come late.
(ii) *Me* and John want to go first.
(iii) It is *me*.

Certain potentially serious problems with this notion nonetheless remain. For one thing, in chapter 2 I shall argue for a feature system that regards *accusative* as the default case in Russian (at least when governed by V or P), although nominative is still employed in contexts (i) and (iii). More importantly, the appearance of spurious nominative NPs in contexts where only PRO is admitted must be prevented.

# 2

# Matrices, Indices, and Morphosyntactic Features

This chapter develops a system of case representation and assignment originally proposed in Franks (1985, 1986). Section 2.1 presents the basic framework and the mechanisms involved. Section 2.2 examines the issue of what kinds of morphosyntactic case features are appropriate for describing Russian, with special reference to the set of features put forward in Jakobson (1936, 1958).

## 2.1. A Model of Morphological Case

Most of the work on case theory within the Government and Binding (GB) paradigm focuses on the factors motivating and regulating abstract case assignment, with the concomitant assumption that this will be instantiated morphologically whenever possible. In this study, however, I argue that morphological case is not fundamentally distinct from abstract case, but rather reflects its language-particular realization. The problem of relating abstract case to morphological case should therefore be attacked from the opposite direction. Case theory must first and foremost be able to account for morphological case properties such as are found in Slavic. It needs to be based upon explicit and detailed morphological analysis of nominals, connecting that analysis to abstract and general properties of case assignment. In this section, just such a theory is proposed.

### 2.1.1. Case Submatrices

Most theories of phrase structure, including X-bar syntax, assume that syntactic nodes are actually bundles of morphosyntactic features, whether or not they are generally explicitly represented as such. In chapter 1, for example, it was argued that category symbols such as V and A are really abbreviations for the feature complexes [+V, −N] and [+V, +N] and that the referential status of NPs can be described in

terms of the features [ ± a(naphoric), ± p(ronominal]. This breakdown, however, only supplies limited information about a node's features. Clearly, part-of-speech does not exhaust the set of morphosyntactic properties that must be formally represented. If the idea that all nodes are exhaustively feature complexes is taken seriously, other kinds of information should also be reflected, depending on what the grammatical processes of the language require. In Russian, this might include gender, number, case, and sometimes animacy for nouns; gender, number, person, case, and animacy for pronouns; gender, number, and case for adjectives; person, number, tense, aspect, and sometimes gender for finite verbs, and so on.

Whether these are supplied syntactically or are inherent to the lexical item is technically immaterial—they must be represented in the eventual feature matrix. A node may accrue features through agreement or movement, as in recent GB analyses stemming from Chomsky (1986a) and expanded in Pollock (1989), who show that verbs acquire tense and agreement features through movement to tense and agreement nodes. This has been extended to other verbal properties such as mood and aspect, and proposals also exist in the literature for treating nominals similarly through the proliferation of functional categories such as case, gender, and number phrases. More recently, Chomsky (1992) adopts the idea that words are inserted complete with morphosyntactic features, which are then checked against licensing functional categories. In this book, however, I assume a more traditional derivational approach. Whatever system ultimately proves to be correct, the result is that by S-structure all terminal nodes must be fully specified as clusters of morphosyntactic features.

I take this kind of representation as prerequisite to the successful operation of lexical insertion, which I regard as the replacement of morphosyntactic feature matrices with phonological ones drawn from the lexicon. More precisely, the first rule of the phonology is one pairing the morphosyntactic feature matrices of X° elements—terminal nodes in phrase structure trees—with non-distinct ones in lexical entries, and then replacing these with their appropriate phonological representations.[1] I thus envision a two-stage process of lexical insertion.[2] At D-structure, words are inserted into phrase structure trees on the basis of non-distinctness from X° feature complexes, that is, so long as they do not contrast in terms of part-of-speech. Lexical insertion presumably introduces the word itself, that is, a stem with the intended meaning, together with all the word's inherent features. For nouns this probably includes all morphosyntactic information *except case,* which is syntagmatically determined. For adjectives, on the other hand, gender and number would also remain unspecified, since these features are induced through agreement. In the course of the derivation, all unspecified features become fixed (in a manner to made explicit in the next section), eventually enabling insertion of the word in its paradigmatic phonological form at or by PF.[3]

There are several interesting consequences of this general system worth noting. It allows both derivational and inflectional morphology to be done in the lexicon, distinguishing the two in that inflectional features are syntactically relevant. Lexical entries must be fully formed and contain or be able to access entire paradigms, consisting of complete morphosyntactic matrices and associated phonological representations. Moreover, the two-stage model of lexical insertion resulting from the

adoption of the traditional distinction between "words" and "wordforms" meshes nicely with the standard T-model presented in chapter 1. Morphosyntactic representations are visible to the rules of LF, but are no longer available to this component once they have been mapped into phonological representations. LF rules cannot operate on phonological representations, just as PF rules cannot operate on morphosyntactic ones.[4] This approach induces the bifurcation of the grammar, obviating any need to stipulate that the rules of the PF and LF components interpret S-structures, neither being able to depend on information exclusively germane to the other component. PF and LF are thus mutually opaque.

Two important empirical issues arise if, just as part-of-speech can be broken down into features, so also must all other morphological categories be reduced to their distinctive components. The first and more general one concerns how these feature complexes might be represented. The second, more specific issue deals with the problem of what features are appropriate for expressing each morphological category. Here I will address the first issue, postponing the feature question until section 2.2, when the Russian case features are examined in detail.

Taking features as discrete bipolar categories, and abstracting away from the content of the case features $F_1$, $F_2$, and $F_3$, the Russian form *knigu* 'book(acc sg)' might simply be represented as a list of all its features.[5]

(1)

| | |
|---|---|
| +N | PART-OF-SPEECH |
| −V | |
| −a | REFERENCE |
| −p | |
| +fem | GENDER |
| −masc | |
| −pl | NUMBER |
| −1 | PERSON |
| −2 | |
| ?$F_1$ | |
| ?$F_2$ | CASE |
| ?$F_3$ | |

I do not regard the feature matrix as a seamless whole, however. Additional structure must be introduced in order to allow each category to function to some degree independently.[6] I suggest that each morphological category be regarded as a bundle of features. These will be represented as "submatrices" internal to the larger matrix that constitutes the node itself, as in (2).

(2)
$$\left[\begin{array}{l}\left[\begin{array}{l}+N\\-V\end{array}\right]\\\left[\begin{array}{l}-a\\-p\end{array}\right]\\\left[\begin{array}{l}+fem\\-masc\end{array}\right]\\\left[-pl\right]\\\left[\begin{array}{l}-1\\-2\end{array}\right]\\\left[\begin{array}{l}?F_1\\?F_2\\?F_3\end{array}\right]\end{array}\right]$$

Representing each set of features as a submatrix facilitates the statement of processes like agreement and government, which involve entire categories. It is now possible to refer to "case" relationships in general and directly, with succinct formulations of these relationships. That is, case assignment does not selectively ignore certain features—it either obtains, or it does not. All features of a given morphological category behave uniformly in that they are subject to morphosyntactic processes as a set. The submatrix approach is thus amenable to traditional pronouncements about Russian grammar, such as "predicate adjectives (and past tense verbs) agree with their subjects in gender and number, but not in person, whereas (non-past tense) verbs agree with their subjects in person and number, but not in gender." It also accommodates processes such as case assignment and feature propagation in a straightforward way. This is discussed in the next section, where several applications of the above system are demonstrated.

### 2.1.2. Coindexation

Although morphosyntactic matrices are composites of inherent and syntactically dependent information, all the feature values therein do not arise in a uniform manner. Thus part-of-speech, from which phrases are projected, is specified at D-structure, whereas case is determined in the syntax (and in some instances also at D-structure). One way to accomplish this is to assume that feature values may be either fixed or variable, in the sense that their values are open and in need of determination. A feminine singular noun might therefore be more accurately represented upon lexical insertion at D-structure as in (3), an adjective as in (4).

(3) $\begin{bmatrix} \begin{bmatrix} +N \\ -V \end{bmatrix} \\ \begin{bmatrix} -a \\ -p \end{bmatrix} \\ \begin{bmatrix} +fem \\ -masc \end{bmatrix} \\ \begin{bmatrix} -pl \end{bmatrix} \\ \begin{bmatrix} -1 \\ -2 \end{bmatrix} \\ \begin{bmatrix} \alpha F_1 \\ \beta F_2 \\ \gamma F_3 \end{bmatrix} \end{bmatrix}$

(4) $\begin{bmatrix} \begin{bmatrix} +N \\ +V \end{bmatrix} \\ \begin{bmatrix} \alpha fem \\ \beta masc \end{bmatrix} \\ \begin{bmatrix} \alpha pl \end{bmatrix} \\ \begin{bmatrix} \alpha F_1 \\ \beta F_2 \\ \gamma F_3 \end{bmatrix} \end{bmatrix}$

The variable feature values become fixed in the course of the derivation.

Clearly, this fixing comes about through the operation of government and agreement processes. I suggest that the various processes with this effect can be conceptually unified if they are all formally regarded as involving coindexation. Assume, as a matter of definition, that all matrices may bear indices, hence all syntactic nodes may bear them (cf. e.g. Williams, 1982, 294). Next, assume that these indices are distinct unless principles of grammar specify otherwise. In particular, the grammar contains various principles that require the identification of the values of indices on distinct nodes. Perhaps the most familiar coindexation rule is the one binding anaphors in their governing categories. Others to be investigated in this section include projection coindexation, agreement coindexation, and theta-role assignment coindexation. I will argue that case assignment is a concomitant result of the application of coindexation in all these instances.

The system works by taking advantage of the idea that submatrices, as matrices themselves, can also be endowed with indices. There is then one overarching principle that sets the variable values of the features in a submatrix in one node equal to the specified ones in the submatrix of another node when these two bear the same index. This Agreement Principle can be stated as follows:

(5) Everything else being equal, the values of the features in coindexed matrices are the same.

What I mean by "everything else being equal" is that if the feature values have already been fixed, either syntactically or inherently, then they cannot be altered by the Agreement Principle. Principle (5) does not change feature values; it only sets them. This idea that, once established, feature values remain fixed, is known as the Principle of Inertness (cf. e.g. Babby, 1985, 108).

(6) No rule of grammar may alter morphosyntactic feature values.

Binding, for example, has no effect on feature values, since it applies at S-structure and/or LF. Thus, the cases of each argument are necessarily different in (7).

(7) Ivan uvažaet sebja
'Ivan(nom) respects himself(acc)'

The reflexive object *sebja* 'self' is marked accusative and the subject *Ivan* nominative before binding principle A coindexes them.

That binding theory does not apply at D-structure can be shown by the fact that it is fed by both NP-movement and scrambling, as shown by the following examples:[7]

(8) a. John$_1$ seems to himself [$\mathbf{e}_1$ to be upset]

b. ja sebja$_1$ sčitaju [čto on uvažaet $\mathbf{e}_1$]
I self(acc) consider that he respects

c. ja studentov$_1$ drug drugu poobeščal [PRO sprosit' $\mathbf{e}_1$]
I students(acc) each other promised to-ask

In English (8a), *John* can bind *himself* only after it has raised. Similarly, in Russian (8b), scrambling the reflexive *sebja* results in ambiguity, since moving it out of the domain of the lower tensed Inflection node (INFL) allows it to be bound by *ja*. In Russian (8c), *studentov* 'students' has been scrambled to a position from which it can bind the reciprocal *drug drugu*, rendering the sentence grammatical. Returning then to example (7), it is clear that the coindexation induced by binding theory occurs too late to cause *sebja* to be assigned nominative by the Agreement Principle. Note, incidentally, that the reflexive still must match its antecedent in pronominal features (although this is only evident in the English gloss). This, however, is an independent requirement on proper binding (cf. e.g. Lasnik and Uriagereka, 1988), ruling out, for example, (8c) with *studentov* in situ.

Before going on to illustrate how the Agreement Principle effects case assignment, there are several mechanical details of the system that need to be made explicit. Since (5) really applies to coindexed submatrices, the problem of how these acquire indices must be addressed. It seems to me there are two subcases. For submatrices whose features are inherently specified, I claim that their indices are the same as that of the superordinate node, since inherent properties arise by virtue of the word itself. Submatrices whose feature values are variable, on the other hand, can be understood either as lacking indices at D-structure or as having indices distinct from all others in the tree. I will adopt the former alternative in order to preserve insights of the Aoun, Hornstein, Lightfoot, and Weinberg (1987) approach to the ECP, although the difference is irrelevant at this point. Either way, it is necessary to ensure that submatrices of coindexed nodes be coindexed as well, if their contents are of the same morphosyntactic category, in order for the Agreement Principle to work. This is stated in (9), where "compatible" means "of the same morphological type."

(9) Coindex all compatible submatrices of coindexed matrices.

The noun in (3) and the adjective in (4) thus have the indexical structures in (10) and (11).[8]

(10) $\left[\begin{array}{l}\left[\begin{array}{l}+N\\-V\end{array}\right]_1\\\left[\begin{array}{l}-a\\-p\end{array}\right]_1\\\left[\begin{array}{l}+fem\\-masc\end{array}\right]_1\\\left[-pl\right]_1\\\left[\begin{array}{l}-1\\-2\end{array}\right]_1\\\left[\begin{array}{l}\alpha F_1\\\beta F_2\\\gamma F_3\end{array}\right]\end{array}\right]_1$

(11) $\left[\begin{array}{l}\left[\begin{array}{l}+N\\+V\end{array}\right]_2\\\left[\begin{array}{l}\alpha fem\\\beta masc\end{array}\right]\\\left[\alpha pl\right]\\\left[\begin{array}{l}\alpha F_1\\\beta F_2\\\gamma F_3\end{array}\right]\end{array}\right]_2$

The 1 index of the N node is identified with those of the part-of-speech, reference, gender, number, and person submatrices; the 2 index of the A node is identifed only with the part-of-speech submatrix. The case feature submatrices of the N and the gender, number, and case feature submatrices of the A, however, remain unindexed but will become fixed by S-structure, eventually enabling insertion of the correct wordform.

In this section I have outlined a general system for representing and manipulating morphosyntactic features. All nodes are matrices bearing indices, some of which are required to be identical in accordance with principles that remain to be explicated. This implies that the sole function of indices cannot be to indicate coreferentiality, otherwise the inventory of coindexation principles would be too small to be of benefit. Instead, indices have multiple functions, the most transparent of which is referential. In other words, indices do not "mean" reference, or anything else for that matter. They are merely a formalism, and as such are free to be interpreted in any appropriate manner. This view of indices is, I believe, in harmony with the spirit of generative grammar, which eschews any one-to-one correspondence between form and function. Grammars are formal constructs, their abstract properties therefore existing independently of any of language's many functions.

### *2.1.2.1. Projection*

The clearest illustration of the Agreement Principle can be found in the phenomenon of percolation. This is the mechanism by which morphosyntactic features propagate throughout a phrase and, in particular, up and down the projectional spine of a category. Everything else being equal, the values of the features of a node X and its phrasal projection XP are equivalent. This is necessitated by the observation that some of the properties of X are inherent to X, whereas others depend on the position of XP. So, for example, an NP might be feminine because its head N is feminine, but the N might be dative because the NP is the complement of a preposition assigning dative.

This effect can be simply achieved by assuming the following principle of coindexation:[9]

(12) All members of a projection bear the same index.

Thus, at D-structure the N in (10) would project up to NP, forcing agreement by virtue of the Agreement Principle, as in (13), simplifying somewhat for ease of exposition.

(13)

$$\left[\left[\begin{matrix}+N\\-V\end{matrix}\right]_1 \left[\begin{matrix}+fem\\-masc\end{matrix}\right]_1 \left[-pl\right]_1 \left[\begin{matrix}\alpha F_1\\ \beta F_2\\ \gamma F_3\end{matrix}\right]\right]_1''$$

$$\Big|$$

$$\left[\left[\begin{matrix}+N\\-V\end{matrix}\right]_1 \left[\begin{matrix}+fem\\-masc\end{matrix}\right]_1 \left[-pl\right]_1 \left[\begin{matrix}\alpha F_1\\ \beta F_2\\ \gamma F_3\end{matrix}\right]\right]_1'$$

$$\Big|$$

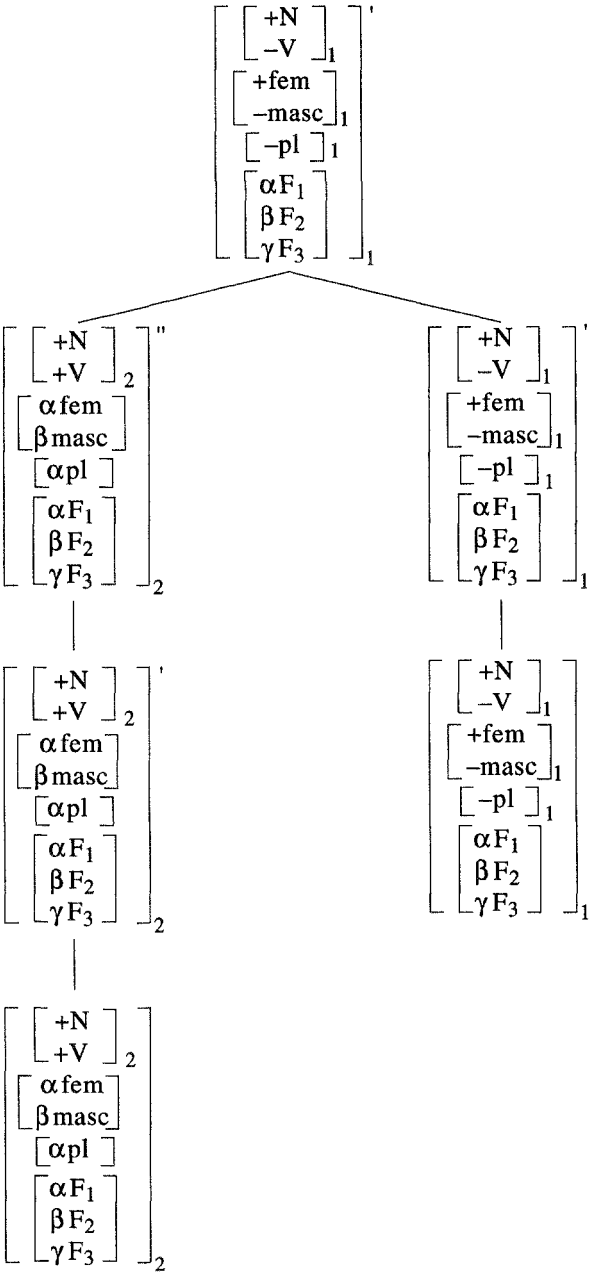
$$\left[\left[\begin{matrix}+N\\-V\end{matrix}\right]_1 \left[\begin{matrix}+fem\\-masc\end{matrix}\right]_1 \left[-pl\right]_1 \left[\begin{matrix}\alpha F_1\\ \beta F_2\\ \gamma F_3\end{matrix}\right]\right]_1$$

The maximal projection NP will subsequently be assigned case, which in turn will percolate down to the head N. This percolation system is thus bidirectional, a property that follows from the transitive nature of indices.

### *2.1.2.2. Agreement*

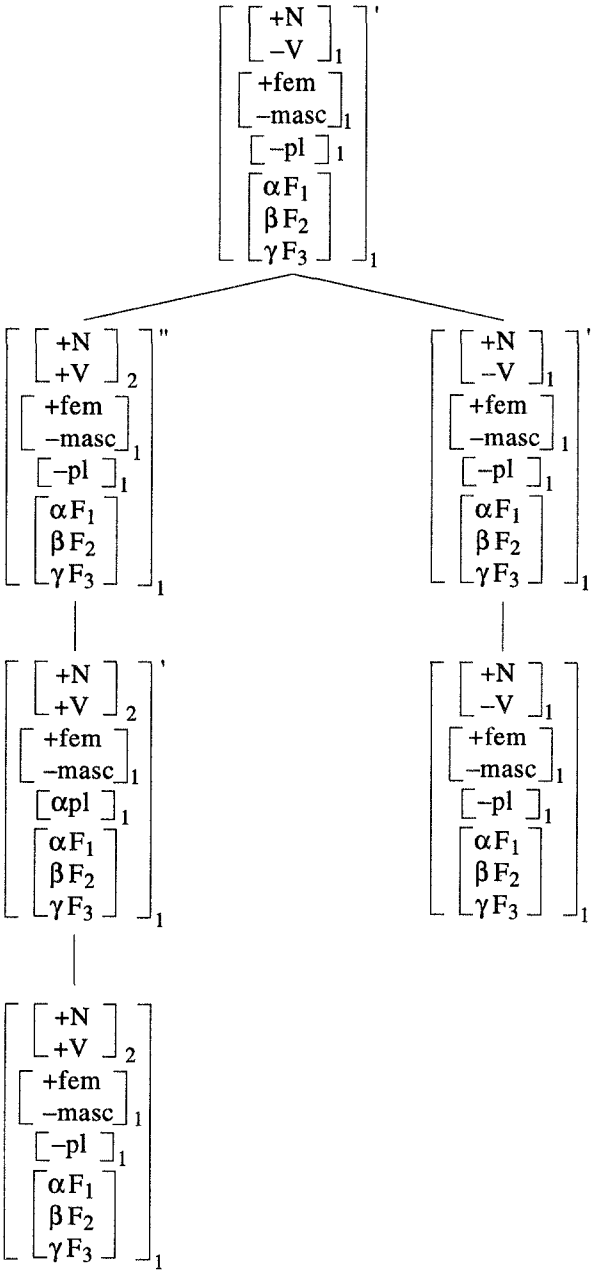
Adjective–noun agreement can be handled in a similar manner, if it is assumed that modification is also a coindexation relationship (as, for example, suggested in Bouchard, 1984). If so, the adjective in (11) and the noun in (10) can be combined as follows:[10]

(14)




Once the index 2 of the AP is identified with index 1 of the N, agreement in pronominal features occurs and percolates down the A projection, as in (15).[11]

(15)




Eventually, when NP is assigned case, agreement will also take place with respect to this submatrix as well.

I leave open the issue of just what principle requires this coindexation. Possibilities include simply stipulating that modifiers are coindexed with what they mod-

ify, perhaps in order to facilitate interpretation at LF, including it under the percolation projection of Kayne (1984), or utilizing the Strict Opacity Condition of Williams (1982), which roughly states that nothing can be free in anything. Of significantly more interest will be the relationship between predicate APs and the NPs they predicate, since these involve neither string adjacency nor constituency. Agreement nonetheless does occur between predicate adjectives and NPs, a fact that will be treated at length in chapter 6.

### *2.1.2.3. Theta-roles and Case*

In this section I develop a mechanism that allows case assignment to be a consequence of theta-role assignment. In order to accomplish this, theta-role assignment must also be regarded as a coindexation process. This is done by adapting to the submatrix model Stowell's (1981) idea that theta-role assignment involves the entering of an argument's index into the grid of theta-roles (his "theta-grid") of a theta-role–assigning element.

Assume first of all that the property of assigning a theta-role is on a par with the morphosyntactic categories in that it is directly represented as a part of a syntactic node. Under this view, syntactic nodes may actually contain a theta-role submatrix alongside submatrices for the other, more familiar features. I shall refer to this submatrix as a theta-slot in order to differentiate it from Stowell's theta-grid. Each node may assign at most one theta-role, drawn from the inventory of available theta-roles in the theta-grid in the lexical representation of the head's predicate-argument structure.[12] Although theta-slots presumably can also be decomposed into bundles of features, I will refer to their contents using the traditional theta-role labels. Thus, for example, a verb or preposition can be partially represented as follows:

(16) $\left[\left[\begin{matrix}-\mathrm{N}\\+\mathrm{V}\end{matrix}\right]_1 \; \cdot \; \cdot \; \cdot \; [\mathrm{theme}]_1\right]_1$

(17) $\left[\left[\begin{matrix}-\mathrm{N}\\-\mathrm{V}\end{matrix}\right]_2 \; \cdot \; \cdot \; \cdot \; [\mathrm{goal}]_2\right]_2$

Note that I have endowed the theta-slots with the indices of their containing nodes, since they are inherent lexical properties of the items in question.

Next I assume that case-assigning nodes contain submatrices, just as case-bearing ones do. That is, any node may in principle contain a case submatrix or not, regardless of whether it itself can bear case. The [−N] categories V and P do not themselves show case morphologically, but rather realize it indirectly on their [+N] arguments. Providing (16) and (17) with case submatrices gives rise to the following structures: