

CONTENTS

| | |
|---|-----|
| List of Contributors | ix |
| Introduction <i>Thomas G. Bever, Jerrold J. Katz, & D. Terence Langendoen</i> | 1 |
| The Fall and Rise of Empiricism <i>Jerrold J. Katz & Thomas G. Bever</i> | 11 |
| The Influence of Speech Performance on Linguistic Structure <i>Thomas G. Bever</i> | 65 |
| Finite-State Parsing of Phrase-Structure Languages and the Status of Readjustment Rules in Grammar <i>D. Terence Langendoen</i> | 89 |
| A Dynamic Model of the Evolution of Language <i>Thomas G. Bever & D. Terence Langendoen</i> | 115 |
| Analogy or Ungrammatical Sequences That Are Utterable and Comprehensible Are the Origins of New Grammars in Language Acquisition and Linguistic Evolution <i>Thomas G. Bever, John M. Carroll, Jr., & Richard Hurtig</i> | 149 |
| A Case of Apparent Ungrammaticality <i>D. Terence Langendoen</i> | 183 |
| Dative Questions: A Study in the Relation of Acceptability to Grammaticality of an English Sentence Type <i>D. Terence Langendoen, Nancy Kalish-Landon, & John Dore</i> | 195 |
| Acceptable Conclusions from Unacceptable Ambiguity <i>D. Terence Langendoen</i> | 225 |

viii CONTENTS

| | |
|---|-----|
| Can a Not Unhappy Person Be Called a Not Sad One? <i>D. Terence Langendoen & Thomas G. Bever</i> | 239 |
| The Argument from <i>Lurk</i> <i>Robert M. Harnish</i> | 261 |
| Social Differentiation of Language Structure <i>Manfred Bierwisch</i> | 271 |
| Logical Form and Implicature <i>Robert M. Harnish</i> | 313 |
| Pragmatics and Presupposition <i>Jerrold J. Katz & D. Terence Langendoen</i> | 393 |
| Global Rules and Surface Structure Interpretation <i>Jerrold J. Katz</i> | 415 |
| Index | 427 |

LIST OF CONTRIBUTORS*

Thomas G. Bever (1, 11, 65, 115, 149, 239)
Columbia University

Manfred Bierwisch (271)
Deutsche Akademie der Wissenschaft zu Berlin

John M. Carroll, Jr. (149)
Columbia University

John Dore (195)
Baruch College, City University of New York

Robert M. Harnish (261, 313)
University of Arizona

Richard Hurtig (149)
Educational Testing Service, Princeton, New Jersey

Jerrold J. Katz (1, 11, 393, 415)
Graduate Center, City University of New York

Nancy Kalish-Landon (195)
California State University of Sacramento

D. Terence Langendoen (1, 89, 115, 183, 195, 225, 239, 393)
Graduate Center, City University of New York

*Numbers in parentheses indicate the pages on which the authors' contributions begin.

Introduction

THOMAS G. BEVER

JERROLD J. KATZ

D. TERENCE LANGENDOEN

In the late 1960s and early 1970s, generative grammar changed from a stable subject with a unified theory, called the "standard theory" and codified in Katz and Postal's *Integrated Theory of Linguistic Descriptions* (1964) and Chomsky's *Aspects of the Theory of Syntax* (1965), to a less than stable one with a number of different and conflicting theories. Not surprisingly, attitudes toward this change in the state of generative grammar vary depending on which of these theories one is committed to. Most generative grammarians have abandoned the standard theory in favor of one or another of the theories that emerged in the late 1960s and early 1970s, and accordingly, they view the change as progress toward a more adequate model of grammar. Some have changed their theory many times and so have an even stronger sense of progress. Nonetheless, almost all generative grammarians view the overall condition of their field with some dismay. The proliferation of diverse theories, they can agree, is not a state of affairs in which the field can take pride. Moreover, the reaction of scholars and researchers in related disciplines such as psycholinguistics, anthropological linguistics, and philosophy of language has been unfortunate. These scholars and researchers, who often have to employ grammatical theory in their studies, have been confused about which theory to employ, and there is now a trend to try to avoid grammatical theory entirely by resorting to a purely data-oriented approach. In this situation, it seems reasonable to raise the question whether the change that took place when the standard theory was abandoned really represented progress toward a more adequate theory of grammar.

In the case of each of the new theories of grammar to which generative grammarians turned, the change from the standard theory was motivated by the desire to handle phenomena within grammar that did not seem to fit naturally into the available formulation of the standard theory. It was thought that the standard theory could not, in principle, accommodate the new phenomena and

that therefore another theory, representing an extension of the standard theory, or a radical departure from it, would be required. A reconsideration of this revolutionary period in generative grammar must thus focus mainly on the question whether such phenomena should really be handled in grammar, and if so, whether the standard theory is really unable to handle them.

The aim of this book is to stimulate such a reconsideration. We think that the standard theory has been abandoned too hastily. Events moved too quickly for linguists to have had the time to carefully consider all the issues relevant to these major theoretical decisions, and linguists never carefully explored the important issue of whether the phenomena on which abandonment of the standard theory was based are genuinely grammatical phenomena. We think that the standard theory has many theoretical advantages over the theories proposed since, and that these advantages make it highly desirable to undertake such a reconsideration. In a sense, however, a reconsideration of this issue is already under way. This reconsideration has been taking place unnoticed in studies of questions that are seemingly unrelated to the issues surrounding the debate about the standard theory and its successors. These questions concern aspects of the theory of performance: speech perception, semantic aspects of speech production, stylistics, etc. This book pulls together a number of the more important and relevant of these studies, and focuses them on the question of whether linguists were right to abandon the standard theory. In this way, we hope to encourage a reconsideration of the status of the standard theory.

The standard theory contains the following principles: The structure of every sentence of a natural language must be stated in the form of an *underlying phrase marker* representing its deep structure, from which semantic rules construct its semantic interpretation; and a *superficial phrase marker* representing its surface syntactic structure, from which phonological rules construct its phonological interpretation. Syntactic transformational rules relate the underlying phrase marker of a sentence to its superficial phrase marker and thereby represent the sound/meaning correlation in the sentence. The underlying phrase markers of a sentence of a language are generated by a set of context-free phrase-structure rules and by local transformational rules that insert lexical items into the structures generated by the context-free phrase-structure rules. The superficial phrase markers are obtained by applying transformational rules, which are highly constrained operations that map phrase markers onto phrase markers. These transformations apply as a whole cyclically, from the most deeply embedded structures to the root of each structure, and within each cycle they apply in sequence, independently of each other.

The theory briefly sketched above represented the most natural formalization of Chomsky's original insights into linguistic structure, which had been responsible for overthrowing the earlier theory of taxonomic grammar. Chomsky's central insight into grammatical description was that taxonomic grammars were empirically inadequate because they provided only a description of the surface structure of sentences. Yet the most important grammatical relations in

sentences cannot be represented adequately in their surface structures, but rather in their deep structures. This was the point of the now classic examples "John is easy to please" and "John is eager to please"; "Flying planes can be dangerous"; and so on. The crucial feature of the standard theory was its postulation of a level of deep syntactic structure with special properties that give it a unique place in the explanation of grammatical phenomena. These properties, that the entities at this level are the input both to the semantic component and to the syntactic transformations, established the deep structure as the unique level that determines the semantic interpretations of sentences (relative to the semantic rules) and their phonological interpretation (relative to the global transformations in the syntactic component and the phonological rules). On the standard theory, then, the all-important grammatical relations connecting sound and meaning are located far beneath the surface structure of sentences.

The standard theory was also the optimal embodiment of Chomsky's anti-empiricist and antibehaviorist criticism of taxonomic grammar and structuralist linguistics generally. By making both the semantic and the phonological structures of sentences depend on their deep syntactic structure, which is both unobservable and too abstract to be inductively inferable from regularities in the surface structure of actual utterances, the standard theory takes the strongest antiempiricist and antibehaviorist position. No other plausible theory could state more clearly that the objective reality of a language consists not in corpora of utterances (actual or possible) or in stimulus-response relations between environmental features and verbal behavior, but rather in a speaker's internalization of its grammatical rules, that is, in internal psychological states. Similarly, no other plausible theory could state more clearly that the acquisition of grammar consists not in making inductive generalizations from observable distributional regularities but in developing innate schemata (which represent linguistic universals) into grammatical rules that embody hypotheses about the unobservable deep structure of the language.

Although much work early in the last decade fleshed out the standard theory and refined the formalization of theoretical insights (see for example Rosenbaum, 1967, and Chomsky, 1970) in the latter half of the sixties and the early seventies the emphasis shifted, and increasingly work in generative grammar has come to be concerned with developing alternatives to the standard theory. As codified in the early sixties, the standard theory was incomplete on several important points; the philosophical ideas and assumptions it embodied were not fully digested nor generally embraced; the philosophical and logical argumentation Chomsky introduced into linguistics was not well understood; the relations of grammar to the various disciplines that it now touched upon were unclear; and finally, describing natural languages using the apparatus of generative grammar was difficult.

The alternatives to the standard theory fall within either the *generative semantics* framework or Chomsky's *extended standard theory*. For generative semanticists the fundamental source of dissatisfaction was theoretical, while for

Chomsky it was almost entirely empirical. Ultimately, in both cases the issue came down to how well the various theories could handle the grammatical facts, to a blend of theoretical and empirical issues.

Generative semantics was the first alternative to appear. Its practitioners believed that the arguments supporting standard theory over taxonomic grammar had not been carried far enough and, if extended to their logical conclusion, would eliminate even the level of deep syntactic structure, leaving only a highly abstract and homogeneous mapping of semantic structures onto surface structures (see McCawley, 1968; Lakoff and Ross, 1967; Lakoff, 1971). Initially, the issue was between generative semantics and interpretive semantics, which was that part of the standard theory that embodied the particular thesis that grammars are *syntactically based* (derivations are initiated by the rules that generate underlying phrase markers), and that the meaning of a sentence is obtained as an *interpretation* of its syntactic structure, in particular, its underlying phrase markers. The question was whether the theory of *semantically based grammars* being proposed by generative semanticists was really new and simpler, or merely a notational variant of the standard theory itself, as both Katz (1971) and Chomsky (1972) argued. But before any clear conclusion was reached, a new set of issues arose with the development of Chomsky's extended standard theory. The generative semanticists then saw the extended standard theory, which of course was as interpretivist as the standard theory, as the "theory to beat." Their assumption was that if Chomsky extended his theory, abandoning the standard theory, it was pointless to argue directly against the latter, a position Chomsky no longer held.

Chomsky's prestige in the field at the time made this position almost irresistible; and indeed few linguists resisted it. But logically, of course, the assumption is only as strong as the reasons for the extension of the standard theory. If these reasons were insufficient, then perhaps the change in the theoretical scene, too, was misguided. We shall return to this question below.

The main stimulus for Chomsky's extended standard theory were linguistic phenomena that were difficult to account for within the framework of the standard theory. These phenomena included quantifier relations, the interaction of quantifiers and negation, topic-comment relations as in active/passive pairs, focus and presupposition, and certain apparent constraints on the operation of transformational rules. It was claimed that grammatical description should in principle be able to account for such phenomena, yet the standard theory seemed unable to do so. As Chomsky and a number of his students and colleagues saw it, the problem lay in the standard theory's restriction against semantic rules applying anywhere but at the level of deep structure. They argued that the recalcitrant linguistic facts could be described in grammars that allowed semantic interpretation rules to apply to both underlying and superficial phrase markers. Their contention that certain aspects of semantic interpretation occur at the level of surface syntactic structure was a denial of the Katz-Postal

thesis that syntactic transformations make no contribution to the meaning of sentences (see Chomsky, 1971; and Jackendoff, 1972). They claimed that the theory of grammar should contain universals for *surface interpretive rules* in the semantic component. Such surface interpretation rules, as Katz points out in his contribution to this volume, constitute a major extension of the range of possible grammars, not simply of the range of objects that undergo semantic interpretation within a grammar. These rules are significantly more powerful, since in a derivation they can make use of the structure of noncontiguous phrase markers.

Generative semanticists, too, employ such more powerful rules in their semantically based grammars, in order to increase the homogeneity of grammatical rules. Generative semanticists oppose the extended standard theory, a relatively articulated theory involving several components and various types of rules from various categories, with a theory that appears to be far simpler conceptually. Postal (1972) proposes a homogeneous framework of relatively simple phrase structure rules, which define the notion "well-formed semantic structure," and derivational constraints, which define the permitted relations between semantic representations and surface structures. The issue has become: Which increase in the power of grammars, that advocated by the generative semanticists under the name "derivational constraint" or that advocated by extended standard theorists under the name "surface interpretive rule," is necessary to account for the phenomena that both take to be outside the scope of the standard theory?

More recently, this issue has been further complicated on both sides. There are some generative semanticists (Hankamer, 1973; and Lakoff, 1973) who advocate an even more powerful apparatus, "transderivational constraints," which operate beyond the context of a single derivation and block certain derivations on the basis of other derivations. This raises all the more sharply questions of the relation between increases in the homogeneity of rules and the size of the class of possible grammars: how much of an increase in the set of possible grammars can be tolerated as the price of increases in homogeneity? What considerations can legitimately enter into deciding this question? Most basically, is it clear that the facts that motivate such radical increases in generative power are not describable in terms of a less powerful apparatus of some kind?

Chomsky and his followers further complicate the issue. Chomsky (1975) and Fiengo (1974) now propose the *revised extended standard theory*, in which all semantic interpretation occurs at the level of surface structure. As Katz points out in his contribution to this volume, the advantage of the revised extended standard theory is that it makes "global" rules unnecessary by having all interpretation occur at the same level. For this, however, it is necessary to enrich the surface structure, so that it can represent all of the syntactic structure necessary to predict semantic properties and relations.

These more recent refinements in generative semantics and the extended standard theory do not alter the common assumption underlying them: that

standard theory was abandoned for good reason; and that one or the other of these two theories is preferable to the standard theory. The present volume challenges this assumption. We think that it has been accepted too uncritically, and that it is based on a misconception about the linguistic phenomena motivating revisions of the standard theory. We think that the standard theory is *a priori* preferable to any of these extensions by virtue of its being the clearest expression of the original insights of transformational grammar and because it constitutes the narrowest constraints on the class of possible grammars. Thus, we think that linguistics stands to gain much if it can be shown that the best explanation of linguistic phenomena does not require extensions of the standard theory.

As we have already remarked, what fostered the development of the alternative theories was the belief that certain linguistic phenomena were (a) grammatical phenomena and (b) could not be handled in grammars in the framework of the standard theory. Although there has been much work in the latter area to demonstrate that linguistic phenomena cannot be handled in the standard theory, this means nothing unless it can be shown that the phenomena in question are indeed grammatical in nature. For example, it is meaningless to argue for a particular theory of intelligence on the grounds that that theory can, and other theories of intelligence cannot, handle a certain set of psychological facts if those psychological facts turn out to be about accident proneness rather than intelligence. Hence, what is necessary is a careful, systematic examination of the claim that the linguistic phenomena that motivate extensions of the standard theory are indeed grammatical, rather than extragrammatical facts of another sort. As we have indicated above, some investigations of this issue have been conducted, with, however, quite different aims and without any connection to each other. What we have done is bring some of the more important of these studies together in this volume as a first step toward a systematic examination of the issue of what are grammatical phenomena.

The picture revealed by integrating these independent studies is the following. For almost all linguistic phenomena that have provided empirical support for extensions of the standard theory, the assumption that they should be describable within a theory of grammatical competence is, at least, highly questionable. Recall that the early Chomskyan conception of grammars as theories of the internalization of a system of rules, and of linguistic theory as the initial competence of the language learner caused work in the description of languages to touch on a number of disciplines in a way that it had not earlier. Because the relation of grammar to these disciplines, in particular psychology, philosophy, sociology, and logic, was so new, it was as yet unclear. This meant that the boundaries of grammar and linguistic theory themselves were unclear, too. If, for example, we cannot say where the psychology of sentence perception begins, we are also unclear about where the grammar of sentence structure ends. At the same time, linguists working in grammar were successful in de-

scribing all sorts of grammatical phenomena that heretofore had not been describable in grammars. The new transformational model with its underlying levels of representation provided the possibility for description unavailable in previous theories; and grammarians were busy exploring the limits of this new descriptive apparatus. Therefore, when they came across linguistic phenomena that did not lend themselves to description directly, it was natural to think that one or another of the restrictions imposed on the use of this apparatus was at fault. On occasion, linguists did question whether the phenomena were really grammatical; consider Chomsky's argument that the loss of intelligibility in multiply center-embedded sentences is a matter of performance factors reflecting the limitation on immediate memory rather than a matter of ungrammaticality. But once these resistant phenomena became part of controversies about how to change the standard theory, little attention was paid to whether they were genuinely grammatical yet could not be incorporated properly into grammars modeled within the standard theory, or whether they were performance phenomena like loss in intelligibility of multiply center-embedded sentences.

When we pay attention to this question, it turns out that a good case can be made for the claim that such phenomena have been misclassified as grammatical in nature, and accordingly do not provide empirical support for "global" principles and other extensions of the theory of grammar. The studies collected in this volume offer various kinds of bases outside formal grammar—in psychology, philosophy, rhetoric, sociology—that account for very many of them in the same way that Chomsky accounted for loss of intelligibility in center-embedded sentences. They do not only show how such phenomena can be explained by theories belonging to areas outside grammar but how the obscurity of the boundaries between grammar and related disciplines can be clarified. They thus suggest various hypotheses about the scope and limits of grammar and also about its relations to neighboring disciplines. If these suggestions prove sound, much of the alleged evidence against the standard theory and in support of the various alternatives disappears.

The papers in this volume can be seen as attempts to develop theories of verbal ability that can in principle account for extragrammatical linguistic phenomena. Several papers in this volume develop Bever's initial effort (1970) to show that a theory of speech perception can account for many facts about acceptability and language universals. These are: "The Influence of Speech Performance on Linguistic Structure" by Bever; "A Dynamic Model of the Evolution of Language" by Bever and Langendoen; "Analogy" by Bever, Carroll, and Hurtig; "A Case of Apparent Ungrammaticality" by Langendoen; "Dative Questions" by Langendoen, Kalish-Landon, and Dore; and "Can a Not Unhappy Person Be Called a Not Sad One?" by Langendoen and Bever. Of these, the last three specifically address themselves to whether the standard theory jointly with a theory of speech perception and production can deal adequately with certain

phenomena, where univocal treatment in the grammar would necessitate abandoning the standard theory.

Katz's "Global Rules and Surface Structure Interpretation," points out the magnitude of the extension embodied in the extended standard theory and suggests that a major segment of the evidence for this theory is irrelevant to the issue, because it is stylistic or rhetorical rather than grammatical in nature. "Pragmatics and Presupposition" by Katz and Langendoen, and Harnish's papers "The Argument from *Lurk*" and "Logical Form and Implicature" provide strong grounds for thinking that various extensions of the standard theory in generative semantics were mistakenly based on pragmatic rather than grammatical phenomena. "Social Differentiation of Language Structure" by Bierwisch is concerned with the proper treatment of sociolinguistic phenomena outside grammar. "Finite-State Parsing of Phrase-Structure Languages and the Status of Readjustment Rules in Grammar" by Langendoen further articulates the standard theory; it provides a formalism for the notion of a syntactic readjustment rule and settles a previously open question about the boundary between competence and performance.

Finally, two general papers address directly the inadequacy of generative semantics. "Acceptable Conclusions from Unacceptable Ambiguity" by Langendoen points out the problems inherent in a current version of the theory of transderivational constraints and shows that certain of the phenomena in question can be handled within the standard theory. "The Fall and Rise of Empiricism" by Katz and Bever traces the history of transformational grammar from the work of Zellig Harris to that of generative semantics, and demonstrates that one wing of generative semantics involves a return to the empiricism of taxonomic linguistics in the 1930s and 1940s.

REFERENCES

- Bever, T. G. 1970. "The Cognitive Basis for Linguistic Structures." In *Cognition and the Development of Language*, ed. J. R. Hayes. Wiley.
- Chomsky, N. 1965. *Aspects of the Theory of Syntax*. M.I.T. Press.
- 1970. "Remarks on Nominalizations." In *Readings in English Transformational Grammar*, R. Jacobs and P. Rosenbaum, eds. Ginn-Blaisdell.
- 1971. "Deep Structure, Surface Structure and Semantic Interpretation." In *Semantics*, D. Steinberg and L. Jakobovits, eds. Cambridge University Press.
- 1972. "Some Empirical Issues in the Theory of Transformational Grammar." In *Studies on Semantics in a Generative Grammar*. Mouton.
- 1975. "Questions of Form and Interpretation." *Linguistic Analysis* 1: 75-109.
- Fiengo, R. 1974. *Semantic Conditions on Surface Structure*. Unpublished Ph.D. dissertation. M.I.T.

- Hankamer, J. 1973. "Unacceptable Ambiguity." *Linguistic Inquiry* 4: 17-68.
- Jackendoff, R. 1972. *Semantic Interpretation in a Generative Grammar*. M.I.T. Press.
- Katz, J. J. 1971. "Generative Semantics is Interpretive Semantics." *Linguistic Inquiry* 2: 315-331.
- Katz, J. J., and P. Postal, 1964. *An Integrated Theory of Linguistic Descriptions*. M.I.T. Press.
- Lakoff, G. 1971. "On Generative Semantics." In *Semantics*, D. Steinberg and L. Jakobovits, eds. Cambridge University Press.
- 1973. "On Transderivational Constraints." In *Essays in Honor of Henry and Renée Kahane*, B. Kachru, ed. Linguistic Research.
- Lakoff, G., and J. R. Ross. 1967. *Is Deep Structure Necessary?* Indiana University Linguistics Club.
- McCawley, J. 1968. "The Role of Semantics in a Grammar." In *Universals in Linguistic Theory*, E. Bach and R. Harms, eds. Holt, Rinehart and Winston.
- Postal, P. 1972. "The Best Theory." In *Goals of Linguistic Theory*, S. Peters, ed. Prentice-Hall.
- Rosenbaum, P. S. 1967. *The Grammar of English Predicate Complement Constructions*. M.I.T. Press.