Linguistics

An Introduction to Linguistic Theory

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Advance Praise for this Edition

"*Linguistics: An Introduction to Linguistic Theory* is a very impressive achievement, lucidly and engagingly presenting the major areas of Chomskian theoretical linguistics. Readers who work their way through the comprehensive presentation and the abundant well-chosen exercises will attain a deep understanding of what Chomskian generative grammar is all about, and, even more, a feel for what it is to actually participate in the enterprise."

Howard Lasnik, University of Connecticut

"This is by far the best introductory book and the one that I will use. It gives a real working knowledge of each area of linguistics and maintains a consistent level of intellectual challenge throughout. The exercises are excellent."

Edwin Williams, Princeton University

"This excellent and detailed introduction to the field of linguistics draws on an impressive range of languages. Any student that wants to find out about the scientific study of human language will profit immensely from this book."

Richard Kayne, New York University

"This textbook fills in all the gaps that are characteristic of other introductory texts in linguistics. Each section is written by a leading figure in a particular area of linguistic theory: morphology and syntax, semantics, and phonetics and phonology. It is impressive both in breadth and depth. Each section ends by considering how the particular principles that were described in that section emerge in the course of language development, thereby reinforcing the importance of linguistic theory for understanding young children's universal mastery of natural language."

Stephen Crain, University of Maryland at College Park

"This is an outstanding new introduction to contemporary linguistics, written by a team of the foremost scholars in the field. The orientation throughout is towards real, usually current, research questions. A very nice feature is the inclusion of chapters on language acquisition in connection with each subdiscipline of linguistics. I am sure this book will be the standard introductory textbook for some time to come."

Ian Roberts, Universität Stuttgart

"This introductory textbook is unique in the extent and depth of the coverage it provides. Teachers and beginning students of linguistics and cognitive science should find it both helpful and inspiring."

Maria Luisa Zubizarreta, University of Southern California

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and
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Contents

Preface vi
Notes on Authors viii

Part I Introduction 1
1 Linguistics: The Scientific Study of Human Language 3

Part II Morphology and Syntax 23
2 Morphology: The Structure of Words 25
3 Syntax I: Argument Structure and Phrase Structure 89
4 Syntax II: Syntactic Dependencies 195
5 Syntax III: The Distribution of Verbal Forms: A Case Study 257
6 Acquisition of Word and Sentence Structure 324

Part III Semantics 369
7 Semantics I: Compositionality 371
8 Semantics II: Scope 399
9 Semantics III: Cross-Categorial Parallelisms 421
10 Acquisition of Meaning 449

Part IV Phonetics and Phonology 475
11 Phonetics: The Sounds of Language 477
12 Phonology I: Basic Principles and Methods 518
13 Phonology II: Phonological Representations 579
14 Phonology III: Explanation and Constraints in Phonology 609
15 Acquisition of Phonetics and Phonology 658

Glossary 682
Bibliography 721
Index 729

Preface

This textbook is intended for introductory courses in linguistic theory for undergraduate linguistics majors or first-year graduate students. Its aim is to provide the students who have no previous knowledge of linguistics with the background necessary to continue with courses in the core areas of the field – phonetics, phonology, syntax, morphology, semantics. In each part the book is concerned with discussing the underlying principles of Universal Grammar common to all languages, showing how these are revealed in language acquisition and in the specific grammars of the world's languages. Theoretical concepts are introduced through the analysis of a wide set of linguistic data from Arabic to Zulu. By working through real linguistic data, students will learn how to do linguistics. The interplay between theory and data is highlighted in all the chapters. In addition to the basic components of the grammar, the book includes discussion on child language acquisition of the core components of the mental grammar. This reflects the recognition that an understanding of the child's ability to acquire language is central to the theory of Universal Grammar.

The text is divided into four parts. Part I introduces the student to the science of linguistics and presents a bird's-eye view of the history of the field and how we got to where we are today. Part II covers morphology (chapter 2) and syntax (chapters 3–5) and the acquisition of morphology and syntax (chapter 6). Part III covers semantics and the acquisition of meaning (chapters 7–10), Part IV includes phonetics (chapter 11) and phonology (chapters 12–14) and the acquisition of the sounds and sound patterns of language (chapter 15).

Extensive problems are presented as exercises in each core chapter. As students work through these exercises while reading the text, the basic concepts and the empirical basis for the principles proposed are revealed. Additional exercises follow each of the core chapters in each part. References for further reading follow each chapter, and an extensive glossary and a general bibliography are also included.

The textbook can be used for either a quarter or a semester course. In a shorter course, of say, 10 weeks, the instructor may decide not to assign chapters 5, 9, and 14, chapters that contain enriched and ground-breaking material which may be postponed for more advanced study. The chapters on acquisition can be used independently in courses on language acquisition, as can other sections, as readings for graduate-level courses in the specific sub-areas.

This textbook is a collective effort by the authors, all of whom were faculty members in the UCLA Department of Linguistics at the time of writing, a department that has a reputation for both excellent teaching and research. All of us teach both undergraduate and graduate courses including the course for which this textbook was written.

We would like to express our deep appreciation to all the students who have read through our handouts and worked through our problems and who should in many ways be considered co-authors of this textbook. We are grateful to Philip Carpenter and Steve Smith of Blackwell Publishers for the confidence they showed in the UCLA *gang of twelve*.

Finally, we acknowledge the huge debt that we believe linguistics owes to Noam Chomsky. His pioneering research in transformational generative grammar, in both syntax and phonology, and his vision of linguistics as a central player in the new field of cognitive science, ushered in what has come to be called the Cognitive Revolution. The questions that he raised regarding the nature of language, the structure of the mental grammar, and the problem of explaining how this system of knowledge is acquired by children remain the central focus of our field and of this book.

Notes on Authors

Victoria A. Fromkin, editor and contributor to this textbook, is a professor of linguistics at the University of California, Los Angeles (UCLA), where she also served as department chair, and Graduate Dean and Vice Chancellor of Graduate Programs. She is the recipient of the UCLA Distinguished Teaching Award and is a past president of the Linguistic Society of America, a member of the National Academy of Sciences, and a Fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, the Acoustical Society of America, the American Psychological Society, and the New York Academy of Science. She is the author (with Robert Rodman) of *An Introduction to Language* (6th edition) and over 100 monographs and papers. Her primary research lies in the interface between the mental grammar and linguistic processing, and issues related to brain, mind, and language.

Susan Curtiss received her Ph.D. at UCLA, where she is now a professor. She is best known for her work on the critical period for language acquisition and modularity. Her book *Genie: A Psycholinguistic Study of a Modern-Day "Wild Child"* has become a classic in the field. She has also published widely on dissociations of language and cognition in development and breakdown and on language acquisition in atypical circumstances. She has authored numerous language tests, including the internationally used *CYCLE,* co-authored with Jeni Yamada.

Bruce P. Hayes received his Ph.D. from MIT in 1980 and is now a professor of linguistics at UCLA, with a primary interest in phonology. His publications in this area include *Metrical Stress Theory: Principles and Case Studies* (University of Chicago Press, 1995), and various papers on stress, the phonetics/phonology interface, metrics, and segment structure.

Nina Hyams is a professor of linguistics at UCLA. She is author of the book *Language Acquisition and the Theory of Parameters* (D. Reidel, 1986) and has published numerous papers on grammatical development in children acquiring English and other languages. She has been a visiting scholar at the University of Utrecht and the University of Leiden in the Netherlands, and has given numerous lectures throughout Europe and Japan.

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Hilda Koopman was born in Nijmegen, the Netherlands, and studied General Linguistics at the University of Amsterdam. She received her Ph.D. from the University of Tilburg in 1984 and held a research position at the University of Québec for several years before joining the faculty at UCLA in 1985, where she currently is professor of linguistics. She is the author of numerous articles on syntactic theory, many of which are based on original fieldwork on African languages. Her books include *The Syntax of Verbs: From Kru Languages to Universal Grammar* (Foris Publications, 1984), *The Syntax of Specifiers and Heads* (Routledge, 1999), and *Verbal Complexes* (with Anna Szabolcsi; MIT Press, forthcoming).

Pamela Munro, a professor of linguistics at UCLA, received her Ph.D. from the University of California, San Diego. She has conducted fieldwork on over twenty indigenous languages of the Americas and is an author of ninety books and articles, descriptive and theoretical studies of the morphology, phonology, syntax, and historical development of languages of the Uto-Aztecan, Yuman, and Muskogean families of American Indian languages. Among her publications are dictionaries or grammars of Cahuilla, Chickasaw, Kawaiisu, and Mojave, as well as dictionaries of the Wolof language of Senegal and Gambia and of UCLA undergraduate slang.

Dominique Sportiche, after studying mathematics and physics in Paris, France, studied linguistics at the Massachusetts Institute of Technology,

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Edward P. Stabler studied philosophy and linguistics at MIT, receiving a Ph.D. in philosophy in 1981. After holding several industrial and academic positions, he moved to the University of California, Los Angeles, in 1989, where he is currently a professor of linguistics. He is an active member of the European Association for Logic, Language and Information (FoLLI) and the Association for Computational Linguistics (ACL). He is the author of *The Logical Approach to Syntax* (MIT Press, 1992) and other books and papers on formal and computational models of syntax and semantics.

Donca Steriade was born in Bucharest, Romania, and trained as a classicist before becoming a linguist. She obtained her Ph.D. in 1982 from MIT and taught at the University of California, Berkeley, and at MIT before joining the Department of Linguistics at UCLA where she is now a professor of linguistics. Her research focuses particularly on phonology, the phonology/phonetics interface, and optimality theory. She is the author of numerous studies of segmental, syllabic and metrical structure.

Tim Stowell received his Ph.D. in linguistics from MIT in 1981. He is now a professor of linguistics at UCLA, having served as Chair of that department from 1994 to 1998; he has also held visiting positions at the University of Massachusetts (Amherst) and the University of Vienna, and has been a fellow of the Netherlands Institute for Advanced Study. His research has been primarily in syntactic theory; his early work on the theory of phrase structure played an influential role in arguing against the existence of phrase structure rules, and in favor of deriving properties of phrase structures from general principles. His recent research has focused on the interface between syntax and semantics, investigating the phrase structure and interpretation of tense and quantifier scope.

Anna Szabolcsi was born in Budapest and received her Ph.D. from the Hungarian Academy of Sciences. She held a research position in the Institute of Linguistics in Budapest before coming to UCLA as a professor of linguistics, and is currently a professor of linguistics at

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Part I

Introduction

1

Linguistics:
The Scientific Study of Human Language

CHAPTER CONTENTS

1.0 Introduction
1.1 Panini to Chomsky and After
1.2 Aims of Linguistic Theory
1.3 What Constitutes Knowledge of Language? Grammar as the Representation of Linguistic Competence
  1.3.1 The lexicon
  1.3.2 Morphology
  1.3.3 Syntax
  1.3.4 Semantics
  1.3.5 Phonetics and phonology
1.4 Mental Grammar, Universal Grammar, Descriptive Grammars, Teaching Grammars, and Prescriptive Grammars
1.5 How is Knowledge of Language Acquired? The Logical Problem of Child Language Acquisition
1.6 How is Knowledge of Language Put to Use? Linguistic Performance
1.7 'Doing' Linguistics
1.8 Summary
Further reading

1.0 Introduction

Human language, that unique characteristic of our species, has been of interest throughout history. The scientific study of human language is called **linguistics**. A **linguist**, then, is not someone who speaks many languages (although many linguists do); such individuals are **polyglots**. A linguist is a scientist who investigates human language in all its facets, its structure, its use, its history, its place in society.

The form and structure of the kinds of linguistic knowledge speakers possess is the concern of theoretical linguistics. This theory of **grammar** – the mental representation of linguistic knowledge – is what this textbook is about. But the field of linguistics is not limited to grammatical theory; it includes a large number of subfields, which is true of most sciences concerned with phenomena as complex as human language.

SIDEBAR 1.1

A bird's-eye view of the field

Theoretical Linguistics (the concern of this textbook), often referred to as **generative linguistics**, has its basis in views first put forth by Chomsky's 1955 *The Logical Structure of Linguistic Theory*. In this and the subsequent books and articles by Chomsky and those that embraced these views, a major aim was to characterize the nature of human linguistic knowledge or **competence** (represented in the mind as a mental **grammar**); that is, to explain or account for what speakers know which permits them to speak and comprehend speech or sign (the languages of the deaf). The production and comprehension of speech is referred to as **performance**, distinct from competence but dependent on it.

Descriptive linguistics provides analyses of the grammars of languages such as Choctaw, Arabic, Zulu. 'Indo-European-linguistics,' 'Romance linguistics,' 'African linguistics,' refer to the studies of particular languages and language families, from both historical and synchronic points of view.

Historical linguistics is concerned with a theory of language change – why and how languages develop. The **comparative method**, developed in the nineteenth century by such philologists as the brothers Grimm and Hermann Paul, is a method used to compare languages in the attempt to determine which languages are related and to establish families of languages and their roots.

Anthropological or **ethno-linguistics** and **sociolinguistics** focus on languages as part of culture and society, including language and culture, social class, ethnicity, and gender.

Dialectology investigates how these factors fragment one language into many. In addition, **sociolinguistics** and **applied linguistics** are interested in language planning, literacy, bilingualism, and second language acquisition. Applied linguistics also covers such areas as discourse and conversational analysis, language assessment, language pedagogy.

Computational linguistics is concerned with natural language computer applications, e.g. automatic parsing, machine processing and understanding, computer simulation of grammatical models for the generation and parsing of sentences. If viewed as a branch of Artificial Intelligence (AI), computational linguistics has the goal of modeling human language as a cognitive system.

Mathematical linguistics studies the formal and mathematical properties of language.

Pragmatics studies language in context and the influence of situation on meaning.

Neurolinguistics is concerned with the biological basis of language acquisition and development and the brain/mind/language interface. It brings linguistic theory to bear on research on aphasia (language disorders following brain injury) and research involving the latest technologies in the study of brain imaging and processing (CT, PET, fMRI, MEG, ERP).

Psycholinguistics is the branch of linguistics concerned with linguistic performance – the production and comprehension of speech (or sign). An area of

psycholinguistics, which in some ways is a field in its own, is child **language acquisition** – how children acquire the complex grammar which underlies language use. This is a subject of major concern, particularly because of the interest in the biology of language. (This topic will be covered in the text because of its relevance to theories of grammar.)

There are textbooks which deal with each of these subfields, among others. Basic to all of them is the nature of language itself, the subject of this textbook.

1.1 Panini to Chomsky and After

The interest in the nature of human language appears to have arisen when the human species evolved in the history of time. There is no culture that has left records that do not reveal either philosophical or practical concerns for this unique human characteristic. Different historical periods reveal different emphases and different goals although both interests have existed in parallel.

Egyptian surgeons were concerned with clinical questions; an Egyptian papyrus, dated ca. 1700 BCE, includes medical descriptions of language disorders following brain injury. The philosophers of ancient Greece, on the other hand, argued and debated questions dealing with the origin and the nature of language. Plato, writing between 427 and 348 BCE, devoted his *Cratylus Dialogue* to linguistic issues of his day and Aristotle was concerned with language from both rhetorical and philosophical points of view.

The Greeks and the Romans also wrote grammars, and discussed the sounds of language and the structures of words and sentences. This interest continued through the medieval period and the renaissance in an unbroken thread to the present period.

Linguistic scholarship, however, was not confined to Europe; in India the Sanskrit language was the subject of detailed analysis as early as the twelfth century BCE. Panini's Sanskrit grammar dated ca. 500 BCE is still considered to be one of the greatest scholarly linguistic achievements. In addition, Chinese and Arabic scholars have all contributed to our understanding of human language.

The major efforts of the linguists of the nineteenth century were devoted to historical and comparative studies. Ferdinand de Saussure (1857–1913), a Swiss linguist in this tradition, turned his attention instead to the structural principles of language rather than to the ways in which languages change and develop, and in so doing, became a major influence on twentieth-century linguistics.

In Europe and America, linguists turned to descriptive synchronic studies of languages and to the development of empirical methods for their analysis. Scholars from different disciplines and with different interests turned their attention to the many aspects of language and language use. American linguists in the first half of the century included the anthropologist Edward **Sapir** (1884–1939), interested in the languages of the Americas, language and culture, and language in society, and Leonard **Bloomfield** (1887–1949), himself an historical and comparative linguist, as well as a major descriptive linguist who emerged as the most influential linguist in this period. Both Sapir and Bloomfield were also concerned with developing a general theory of language. Sapir was a 'mentalist' in that he believed that any viable linguistic theory must account for the mental representation of linguistic knowledge, its 'psychological reality'; Bloomfield in his later years was a follower of behaviorism, which was the mainstream of psychological thought at the time, a view that precluded any concern for mental representation of language and, in fact, for the mind itself.

In Europe, Roman Jakobson (1896–1982), one of the founders of the Prague School of Linguistics, came to America in 1941 and contributed substantially to new developments in the field. His collaboration with Morris Halle and Gunnar Fant led to a theory of **Distinctive Features** in phonology, and Halle has remained one of the leading phonologists of the last decades. In England, phoneticians like Daniel Jones (1881–1967) and Henry Sweet (1845–1912) (the prototype for G. B. Shaw's Henry Higgins) have had a lasting influence on the study of the sound systems of language.

In 1957 with the publication of *Syntactic Structures*, Noam Chomsky ushered in the era of generative grammar, a theory which has been referred to as creating a scientific revolution. This theory of grammar has developed in depth and breadth. It is concerned with the biological basis for the acquisition, representation and use of human language and the universal principles which constrain the class of all languages. It seeks to construct a scientific theory that is explicit and explanatory.

The chapters that follow are based to a great extent on the developments in linguistic theory that have occurred since the publication of *Syntactic Structures* in 1957 and *Aspects of the Theory of Syntax* in 1965. In subsequent years, Chomsky has continued to develop his theory in such major works as *Remarks on Nominalization* (1970), *Conditions on Transformations* (1973), *Lectures on Government and Binding* (1981), *Barriers* (1986), *Principles and Parameters in Syntactic Theory* (1981), and *The Minimalist Program* (1995).

In the following chapters, basic notions in these publications as well as many others in areas other than syntax are presented at an introductory and basic level.

1.2 Aims of Linguistic Theory

Three key questions were posed by Chomsky in 1986 which remain pivotal in linguistics today:

What constitutes knowledge of language? (Competence)
How is knowledge of language acquired? (Acquisition)
How is knowledge of language put to use? (Performance/language processing)

As stated above, this text will be primarily concerned with the first question viewed in relation to the second. The development of language from infancy provides insights into the nature and structure of language itself and therefore is discussed in each part. An understanding of language use (performance), the main tenet of psycholinguistic research, depends on our understanding of what is being put to use. We will discuss the distinction between linguistic knowledge (**competence**) and use (**performance**) below.

1.3 What Constitutes Knowledge of Language? Grammar as the Representation of Linguistic Competence

Knowledge of a language permits one to connect sounds (or gestures in sign languages) with meanings, that is, to understand a spoken or signed utterance, and to express our thoughts through speech or signs. Note that the **sign languages** of the deaf are basically the same as spoken languages, using a gestural/visual modality instead of the sound/aural perceptual modality of speech. Except where specifically referring to speech sounds, discussion of the nature and characteristics of language should be interpreted as referring to both spoken and signed languages.

Linguistic knowledge as represented in the speaker's mind is called a **grammar**. Linguistic theory is concerned with revealing the nature of the mental grammar which represents speakers' knowledge of their language.

If one defines grammar as the mental representation of one's linguistic knowledge, then a general theory of language is a theory of grammar. A grammar includes everything one knows about the structure of one's language – its **lexicon** (the words or vocabulary in the mental dictionary), its **morphology** (the structure of words), its **syntax** (the structure of phrases and sentences and the constraints on well-formedness of sentences), its **semantics** (the meaning of words and sentences) and its **phonetics** and **phonology** (the sounds and the sound system or patterns). A theory of

grammar specifies the nature of each of these components and the universal aspects of all grammars.

Each of these different kinds of linguistic knowledge constitutes a component of the mental grammar. But what kind of knowledge is this? What do speakers know? First it must be noted that we are not speaking of conscious knowledge. Most of us (before taking a course in linguistics) are totally unaware of the extent of our tacit unconscious knowledge of our language. We have no idea of the complexity of this knowledge. Some of this complex knowledge will be revealed in the chapters to come. As a way of introduction, however, we can illustrate the nature of this linguistic competence as represented in the components of our mental grammars.

1.3.1 The lexicon

Every speaker of language has a dictionary or **lexicon** in their head, with all the words which they know, words like *cat, witch, cauldron, Macbeth, jester, vocabulary, slay, betray, love, hate*. It has been estimated that the average person knows from 45,000 to 60,000 words; these must be stored in the mental lexicon (see chapter 2).

1.3.2 Morphology

A speaker of a language also knows how words are structured, that, for example, in English, words are composed of bare **roots** like *witch*, or roots with **suffixes** like *witch-es* or words with **prefixes** like *dis-en-chant* or words with prefixes and suffixes like *dis-en-chant-ment*, and furthermore they know that these parts of words must occur in a certain order. That is, to put a suffix like *ment* at the beginning of a word – **mentenchant* – would make it **unacceptable** or **ungrammatical**. (Throughout the book, linguistically ill-formed – unacceptable, or ungrammatical – words or phrases or sentences will be preceded by an **asterisk** *.) Since speakers can distinguish between acceptable and unacceptable forms, that is, they accept *lover* but reject **erlove*, for example, then this is part of our grammatical knowledge, represented in our mental grammars.

1.3.3 Syntax

Part of our linguistic knowledge tells us what constitutes a well-formed string of words, how to put words together to form phrases and sentences. We know when such strings of words are grammatical (**well-formed**) or ungrammatical (**ill-formed**), as in the difference between (1) and (2):

(1) Lear had three daughters.

(2) *Had three Lear daughters.

Note that grammaticality does not depend on our having heard the sentence before or whether it is true, since (3)

(3) Lear had only two daughters.

is a grammatical sentence but according to the Shakespeare tragedy it is not a true sentence. And since Lear is a character in a play and does not nor did not exist as a King with three daughters, the acceptability of (1) does not depend on whether there is a referent in the real world for the information being conveyed.

Our knowledge of syntax (and semantics) also accounts for the fact that we know that (4) is an ambiguous sentence (a sentence with more than one meaning).

(4) Cordelia loved Lear more than Regan.

Although one meaning may come to mind first upon our hearing such a sentence, perhaps

(4) a. Cordelia loved Lear more than Regan loved Lear.

speakers of English also know that (4b) may be the meaning of (4):

(4) b. Cordelia loved Lear more than Cordelia loved Regan.

The nature of syntax also accounts for the fact that there is an unlimited – infinite – set of sentences in any language. One cannot put a limit on the length of a sentence and thus cannot put a limit on the number of sentences.

(5) Lear loved Cordelia.

(6) Lear loved Cordelia and Cordelia loved Lear.

(7) Lear, who had three daughters, loved Cordelia the most.

(8) Lear, who loved Cordelia, became very angry with her when she would not tell him in words how much she loved him and that made him cut her off without any lands or riches, which pleased Regan and Goneril but was very unfair because Cordelia really loved him the most and was unselfish and kind and all of this led to the terrible tragedy of King Lear.

We are able to embed sentences within sentences as shown in (9a–c):

(9) a. Cordelia was Lear's youngest daughter.
b. She loved him.
c. Cordelia, who was Lear's youngest daughter, loved him.

We are also able to conjoin sentences as in (10):

(10) Cordelia was Lear's youngest daughter and she loved him.

We know how to negate sentences and form questions.

(11) Cordelia was not Lear's youngest daughter.

(12) Was Cordelia Lear's youngest daughter?

We also know that in (13) *him* cannot refer to Lear, but in (14) *him* can refer to Lear or to someone else:

(13) Lear loved him.

(14) Regan told Lear she loved him.

Chapters 3, 4, and 5 will deal with some of these questions and many more that have to do with our tacit knowledge of syntactic structure, knowledge which also must be represented in the mental grammar to account for our ability to make such judgments.

1.3.4 Semantics

Speakers also know quite a lot about what the expressions in their language mean or signify, and it is this knowledge which makes the patterns of sounds or gestures 'symbolic'. A sentence is like a sort of acoustic or gestural picture – it represents something – though the way they manage to be representational is different from pictures. For example, we know that the spoken or written word *Shakespeare* can be used to name a person; and we know that the spoken or written phrase *wrote plays* signifies a property that some people but not others have, and we can put these two ideas together to recognize the meaning of a sentence like:

(15) Shakespeare wrote plays.

The simple idea that the subject names something and the rest of the sentence tells us about that thing is not quite right, though. For example, this does not work for sentences like

(16) No witches wrote plays.

since sentence (16) is perfectly meaningful even though *no witches* does not refer to any particular person. In chapters 7, 8, and 9 we will provide an account of the meanings of sentences which handles both (15) and (16) equally well.

Furthermore, we can understand sentences that are built up in all the ways that the syntax allows: we understand sentences that are embedded and coordinated; we understand negated sentences and questions. Our ability to recognize syntactic structures comes with this parallel ability to understand what the infinite range of structures signifies.

When we consider the meanings of expressions, we also notice that similar meanings can sometimes be conveyed in very different ways. For example, the following two sentences have very similar meanings:

(17) Usually, a witch does not write plays.

(18) Most witches do not write plays.

This kind of knowledge represents semantic knowledge in our mental grammars and will be discussed in chapters 7, 8, and 9.

1.3.5 Phonetics and phonology

Speakers' knowledge of their language also includes knowledge of the sounds and sound patterns which occur. We know what sounds are in the language and what sounds are not. Speakers of English know, unconsciously for the most part, that there are more than five vowel SOUNDS in the language, as shown by the vowel sounds which differentiate the following words from each other: *bit, beat, bet, bait, bat, boot, but, boat, bought, put, pot*. We use five LETTERS – *a, e, i, o, u* – to represent these different vowel sounds in our writing system. We see that there is no one-to-one mapping between alphabetic symbols and the sounds they represent.

Speakers of English also know what strings of sounds are words, are possible words, and are impossible words in their language. Thus, *clasp* occurs in most speakers' mental dictionaries, while *clisp* or *klisp* does not (since no meaning is 'attached' to these sounds), but this nonsense form could become a word since it does not violate any constraints on sequences of sounds that are permitted in English. But **lkisp* is not a possible word in English nor is **ngisp* since in the first case, the sequence of the sounds *lk* cannot begin a word, and in the second case, *ng*, the sound which ends the word *king*, cannot begin a word. These are not 'rules' or 'laws' established by writers of textbooks but are constraints on the sound patterns of

language which children learn when they acquire their language. Such constraints and additional information about speech sounds and sound patterns, discussed in chapters 11 through 14, are part of our phonological knowledge represented in the mental grammar of English.

1.4 Mental Grammar, Universal Grammar, Descriptive Grammars, Teaching Grammars, and Prescriptive Grammars

Grammar as viewed here is different from the usual notion of grammar. When viewed as the representation of a speaker's linguistic competence, a grammar is a mental system, a cognitive part of the brain/mind, which, if it is one's first native language, is acquired as a child without any specific instruction. The word *grammar* is often used solely in reference to syntax. But we use it to refer to all aspects of linguistic competence. In addition to its use as referring to the mental system, when linguists describe this knowledge shared by a language community, the description is also called the grammar of the language. Of course no two speakers of a language have identical grammars; some may know words that others do not, some may have some idiosyncratic rules or pronunciations. But since they can speak to each other and understand each other there is a shared body of knowledge, which is what we are calling their mental grammars. **Descriptive grammars** are thus idealized forms of the mental grammars of all the speakers of a language community.

The grammars of all languages are constrained by universal 'laws' or 'principles,' a view which differs from that of many linguists in the pre-Chomsky period some of whom held that languages could differ in innumerable ways. The more we look at the languages of the world, the more support there is for the position taken by Roger Bacon, a thirteenth-century philosopher, who wrote:

> He that understands grammar in one language, understands it in another as far as the essential properties of grammar are concerned. The fact that he can't speak, nor comprehend, another language is due to the diversity of words and their various forms, but these are the accidental properties of grammar.

There is much evidence to support this view, which today is based on the recognition that there is a biological basis for the human ability to acquire language. The child enters the world with an innate predisposition to acquire languages which adhere to these universal principles, that is, a

genetically determined mental system which is referred to as **Universal Grammar** or **UG**. This will be discussed further below.

While UG constrains the form of the grammars of all human languages, there are the 'accidental differences' which constitute cross-linguistic variability. Using the theory of grammar which specifies UG, linguists investigate and analyze specific languages and construct the descriptive grammars, mentioned above. Thus, while UG may specify that the sound represented by *th* beginning the word *thane* (as in 'Macbeth, the *thane* of Cawdor') or *thigh* is a possible speech sound, the descriptive grammar of English will include this sound in its grammar but the grammar of French will not. Some languages permit the dropping of a pronominal subject, others do not. In some languages one complex word may be equivalent to a whole sentence in another language. These differences will be revealed in the descriptive grammars of these languages. Descriptive grammars also may serve as the basis for **teaching** or **pedagogical** grammars which are used to teach someone a second language or a variation (dialect) of one's native language.

Descriptive grammars aim at revealing the mental grammar which represents the knowledge a speaker of the language has. They do not attempt to prescribe what speakers' grammars should be. While certain forms (or dialects) of a language may be preferred for social or political or economic reasons, no specific dialect is linguistically superior to any other. The science of linguistics therefore has little interest in **prescriptive grammars**.

It should also be noted, as discussed in chapter 2, that the majority of languages of the world have no written form. They are, however, as complex and rational as languages with a written **orthography** or alphabet. Speech (or sign) is primary, part of the natural endowment of the human species; writing systems are derived from spoken languages, which is why every normal human anywhere in the world who receives linguistic input as a child will learn the language of the environment but will not necessarily learn to read or write unless being specifically taught. Even deaf children deprived of linguistic input 'invent' their own gestural language, which develops and changes to conform to the constraints of UG. But such children do not construct written languages on their own.

1.5 How is Knowledge of Language Acquired? The Logical Problem of Child Language Acquisition

Young children, limited in so many respects, accomplish with apparent ease a remarkable cognitive feat. In just a few short years, without benefit of any direct instruction or correction, they develop a very complex and uniform cognitive system of linguistic knowledge, a grammar of the

language being acquired. Just how children do this is a central question that linguistic theory tries to answer. What makes the acquisition problem particularly intriguing is that we come to know vastly more about our language than we are provided evidence for in our linguistic environment. Consider, for example, the sentences in (19) and (20):

(19) Polonius is eager to please.

(20) Polonius is easy to please.

Superficially, these sentences are very similar. Only the adjective is different, *easy* in (20) and *eager* in (19). Yet, upon reflection an English speaker will know that they differ in a way that goes beyond the choice of adjective. In (19) the subject *Polonius* is the pleaser, while in (20) Polonius is the one being pleased and someone else, unspecified in the sentence, is the pleaser. The sentence in (20) might be paraphrased as 'It is easy to please Polonius,' while the sentence in (19) has no such paraphrase. **It is eager to please John* is not a good sentence in English. What we as speakers know about such sentences goes beyond what is exemplified in the superficial form.

Similarly, the sentence in (21) has two meanings associated with it:

(21) Visiting witches can be dangerous.

Speakers of English know that this sentence can mean (a) that it is dangerous to visit witches, or (b) witches who are visiting are dangerous. The ambiguity of such a sentence is not given in the superficial form of the sentence. Yet, it is something we know. Just as we know that the sentence in (22) is a grammatical question in English while the sentence in (23) is not, though (22) and (23) mean essentially the same thing.

(22) What did Caesar drink nectar with?

(23) *What did Caesar drink nectar and?

Other examples of what constitutes our linguistic knowledge were mentioned above. The point is that we know more about our language than meets the eye – or ear. How did we come to know so much about the structure and meaning of sentences in our language when what we hear are simply sequences of sounds? This problem of explaining the ease, rapidity and uniformity of language development in the face of impoverished data is called **the logical problem of language acquisition**, and was first posed in this form by Noam Chomsky (1955).

The logical problem of language acquisition (LPLA)

SIDEBAR 1.2

The LPLA is one instance of a more general question concerning the acquisition of human knowledge, which the British philosopher Bertrand Russell summed up as follows:

> How comes it that human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as we do know? Is the belief in our knowledge partly illusory? And if not, what must we know otherwise than through the senses?

What Russell alludes to in the last line, is the possibility that much of our knowledge is not learned, does not come to us through our experiences with the world, our senses, but is innate, biologically determined.

In the course of acquiring a language, children are exposed to only a finite set of utterances. Yet they come to use and understand an **infinite** set of sentences, as discussed above. This has been referred to as the **creative** aspect of language use. This 'creativity' does not refer to the ability to write poetry or novels but rather the ability to produce and understand an unlimited set of new sentences never spoken or heard previously. The precise linguistic input children receive differs from child to child; no two children are exposed to exactly the same set of utterances. Yet, they all arrive at pretty much the same grammar. The input that children get is haphazard in the sense that caretakers do not talk to their children to illustrate a particular point of grammar. Yet, all children develop systematic knowledge of a language. Thus, despite the severe limitations and variation in the input children receive, and also in their personal circumstances, they all develop a rich and uniform system of linguistic knowledge. The knowledge attained goes beyond the input in various ways. How do we come to know as much as we do about our language if not from the linguistic environment?

In answer to the question of the logical problem of language acquisition, it has been proposed that much of what we know about our language is not in fact learned from the input, but is rather part of an innate endowment, which we referred to above as Universal Grammar (UG). UG specifies the form and functioning of human language in general, hence principles which hold in all languages. On this view, the child's mind does not approach language as a *tabula rasa* (a blank slate) to be written on by experience alone, or armed only with general problem-solving skills such as imitation, memorization, analogy, or general induction. Rather, children are equipped with a set of specific expectations about linguistic structure and the principles which govern language. UG helps them overcome the limitations of the input and guides their grammatical development in

SIDEBAR 1.3

The problem of no negative evidence

Ungrammatical sentences such as (23) (repeated here)

(23) *What did Caesar drink nectar and?

illustrate a particularly thorny aspect of the acquisition problem – the 'no negative evidence problem'. In (23) the questioned element is part of a coordination, as in *Caesar drank nectar and wine*. It seems that there is a restriction against questioning out of a coordinate structure and this restriction holds not just in English, but in all languages. But how can the child learn such a constraint since the relevant evidence is an ungrammatical sentence which he will never hear. The asterisk is a useful linguistic convention, but it is not part of the input to the child. In general, children do not have access to **negative evidence**, that is direct information that certain sentences are ungrammatical – yet another important respect in which the input to the child is deficient.

particular ways. So children develop language rapidly and efficiently, that is, with relatively few errors, and despite the **poverty of the stimulus** (for example, the lack of negative evidence), because the basic form of language is given to them by human biology. Our commonsense understanding of language acquisition is that children just 'pick up' language. This seems to be close to the truth. In fact it may be more appropriate to think in terms of language 'growth' rather than learning. This is not to say that there is no learning. Children must, of course, learn the lexicon of the particular language they are exposed to and other language-specific properties. As we will see throughout this book, languages such as English, French, Japanese, Swahili and so on share many essential properties – those that derive from UG – but they also differ from each other in various respects, and these differences must be learned by the child on the basis of experience. The best way to think about UG is as a kind of template with gaps that must be filled in through experience with a particular language.

There is an intimate connection between linguistic theory and language acquisition. By analyzing the structure of individual languages, linguists try to determine which aspects of our linguistic knowledge are universal and hence, arguably, available to the child as part of UG, and which aspects are language-particular and hence to be learned on the basis of linguistic input that the child receives. Thus, the study of particular grammars tells us something important about language development. At the same time, an understanding of the development of language in children can offer us further insight into the organization of human language. In chapters 6, 10, and 15 we will look more closely at the developmental stages that children go through on their way to adult linguistic competence.