

# An Introduction to Language

SEVENTH EDITION

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An Introduction to Language,  
Seventh Edition

Victoria Fromkin, Robert Rodman, Nina Hyams

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To the memory of Victoria Fromkin

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PART

# The Nature of Human Language



Reflecting on Noam Chomsky's ideas on the innateness of the fundamentals of grammar in the human mind, I saw that any innate features of the language capacity must be a set of biological structures, selected in the course of the evolution of the human brain.

—S. E. Luria, *A Slot Machine, A Broken Test Tube, An Autobiography*

The nervous systems of all animals have a number of basic functions in common, most notably the control of movement and the analysis of sensation. What distinguishes the human brain is the variety of more specialized activities it is capable of learning. The preeminent example is language.

—Norman Geschwind, 1979

Linguistics shares with other sciences a concern to be objective, systematic, consistent, and explicit in its account of language. Like other sciences, it aims to collect data, test hypotheses, devise models, and construct theories. Its subject matter, however, is unique: at one extreme it overlaps with such 'hard' sciences as physics and anatomy; at the other, it involves such traditional 'arts' subjects as philosophy and literary criticism. The field of linguistics includes both science and the humanities, and offers a breadth of coverage that, for many aspiring students of the subject, is the primary source of its appeal.

—David Crystal, 1987

# What Is Language?

When we study human language, we are approaching what some might call the “human essence,” the distinctive qualities of mind that are, so far as we know, unique to man.

Noam Chomsky, *Language and Mind*



Whatever else people do when they come together — whether they play, fight, make love, or make automobiles — they talk. We live in a world of language. We talk to our friends, our associates, our wives and husbands, our lovers, our teachers, our parents, our rivals, and even our enemies. We talk to bus drivers and total strangers. We talk face-to-face and over the telephone, and everyone responds with more talk. Television and radio further swell this torrent of words. Hardly a moment of our waking lives is free from words, and even in our dreams we talk and are talked to. We also talk when there is no one to answer. Some of us talk aloud in our sleep. We talk to our pets and sometimes to ourselves.

The possession of language, perhaps more than any other attribute, distinguishes humans from other animals. To understand our humanity, one must understand the nature of language that makes us human. According to the philosophy expressed in the myths and religions of many peoples, language is the source of human life and power. To some people of Africa, a newborn child is a *kintu*, a “thing,” not yet a *muntu*, a “person.” Only by the act of learning language does the child become a human being. According to this tradition, then, we all become “human” because we all know at least one language. But what does it mean to “know” a language?

Sprach-  
beweise

# Linguistic Knowledge

When you know a language, you can speak and be understood by others who know that language. This means you have the capacity to produce sounds that signify certain meanings and to understand or interpret the sounds produced by others. We are referring to normal-hearing individuals. Deaf persons produce and understand sign languages just as hearing persons produce and understand spoken languages. The languages of the deaf communities throughout the world are, except for their modality of expression, equivalent to spoken languages.

Most everyone knows a language. Five-year-old children are nearly as proficient at speaking and understanding as their parents. Yet the ability to carry out the simplest conversation requires profound knowledge that most speakers are unaware of. This is true for speakers of all languages, from Albanian to Zulu. A speaker of English can produce a sentence having two relative clauses without knowing what a relative clause is, such as

My goddaughter who was born in Sweden and who now lives in Iowa is named Disa, after a Viking queen.

In a parallel fashion, a child can walk without understanding or being able to explain the principles of balance and support, or the neurophysiological control mechanisms that permit one to do so. The fact that we may know something unconsciously is not unique to language.

What, then, do speakers of English or Quechua or French or Mohawk or Arabic know?

## Knowledge of the Sound System

Part of knowing a language means knowing what sounds (or signs<sup>1</sup>) are in that language and what sounds are not. This unconscious knowledge is revealed by the way speakers

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<sup>1</sup> The sign languages of the deaf will be discussed throughout the book. As stated, they are essentially the same as spoken languages, except that they use gestures instead of sound. A reference to "language" then, unless speech sounds or spoken languages are specifically mentioned, includes both spoken and signed languages.

of one language pronounce words from another language. If you speak only English, for example, you may substitute an English sound for a non-English sound when pronouncing "foreign" words like French *ménage à trois*. If you pronounce it as the French do, you are using sounds outside the English sound system.

French people speaking English often pronounce words like *this* and *that* as if they were spelled *zis* and *zat*. The English sound represented by the initial letters *th* in these words is not part of the French sound system, and the French mispronunciation reveals the speakers' unconscious knowledge of this fact.

Knowing the sound system of a language includes more than knowing the inventory of sounds. It includes knowing which sounds may start a word, end a word, and follow each other. The name of a former president of Ghana was *Nkrumah*, pronounced with an initial sound like the sound ending the English word *sink*. While this is an English sound, no word in English begins with the *nk* sound. Speakers of English who have occasion to pronounce this name, often mispronounce it (by Ghanaian standards) by inserting a short vowel sound, like *Nekrumah* or *Enkrumah*. Children who learn English recognize that *nk* does not begin a word, just as Ghanaian children learn that words in their language may begin with the *nk* sound.

We will learn more about sound systems in chapters 6 and 7.

## Knowledge of Words

Knowing the sounds and sound patterns in our language constitutes only one part of our linguistic knowledge. Knowing a language is also to know that certain sound sequences signify certain concepts or meanings. Speakers of English know what *boy* means, and that it means something different from *toy* or *girl* or *pterodactyl*. When you know a language, you know words in that language, that is, the sound units that are related to specific meanings.

### ARBITRARY RELATION OF FORM AND MEANING

The minute I set eyes on an animal I know what it is. I don't have to reflect a moment; the right name comes out instantly. I seem to know just by the shape of the creature and the way it acts what animal it is. When the dodo came along he [Adam] thought it was a wildcat. But I saved him. I just spoke up in a quite natural way and said, "Well, I do declare if there isn't the dodo!"

Mark Twain, *Eve's Diary*

If you do not know a language, the words (and sentences) will be mainly incomprehensible, because the relationship between speech sounds and the meanings they represent in the languages of the world is, for the most part, an arbitrary one. You have to learn, when you are acquiring the language, that the sounds represented by the letters *house* signify the concept ; if you know French, this same meaning is represented by *maison*; if you know Twi, it is represented by *ɔdag*; if you know Russian, by *dom*; if you know Spanish, by *casa*. Similarly, is represented by *hand* in English, *main* in French, *nsa* in Twi, and *ruka* in Russian.

Gebärdensprache o Sprache d Gehörlosen

competence

th (ɒ, ɔ)

Semantik

rather shape or sound of the animal determine its proper creation

Arbcho refat





Our creative ability not only is reflected in what we say but also includes our understanding of new or novel sentences. Consider the following sentence: "Daniel Boone decided to become a pioneer because he dreamed of pigeon-toed giraffes and cross-eyed elephants dancing in pink skirts and green berets on the wind-swept plains of the Midwest." You may not believe the sentence; you may question its logic; but you can understand it, although you probably never heard or read it before now.

Knowledge of a language, then, makes it possible to understand and produce new sentences. If you counted the number of sentences in this book that you have seen or heard before, the number would be small. Next time you write an essay or a letter, see how many of your sentences are new. Few sentences are stored in your brain, to be pulled out to fit some situation or matched with some sentence that you hear. Novel sentences never spoken or heard before cannot be stored in your memory.

Simple memorization of all the possible sentences in a language is impossible in principle. If for every sentence in the language a longer sentence can be formed, then there is no limit to the length of any sentence and therefore no limit to the number of sentences. In English you can say:

This is the house.

or

This is the house that Jack built.

or

This is the malt that lay in the house that Jack built.

or

This is the dog that worried the cat that killed the rat that ate the malt that lay in the house that Jack built.

And you need not stop there. How long, then, is the longest sentence? A speaker of English can say:

The old man came.

or

The old, old, old, old, old man came.

How many "olds" are too many? Seven? Twenty-three?

It is true that the longer these sentences become, the less likely we would be to hear or to say them. A sentence with 276 occurrences of "old" would be highly unlikely in either speech or writing, even to describe Methuselah. But such a sentence is theoretically possible. If you know English, you have the knowledge to add any number of adjectives as modifiers to a noun.

All human languages permit their speakers to form indefinitely long sentences; creativity is a universal property of human language.

=: universality

vor d. Sinnhaft  
der Mensch, der  
das höchste  
Alter erreichte  
g. 697.

## Knowledge of Sentences and Nonsentences

To memorize and store an infinite set of sentences would require an infinite storage capacity. However, the brain is finite, and even if it were not, we could not store novel sentences. When you learn a language you must learn something finite — your vocabulary is finite (however large it may be) — and that can be stored. If putting one word after another in any order always formed sentences, then language could simply be a set of words. You can see that words are not enough by examining the following strings of words:

- Satz, VP, Verbalphrase, Relativsatz
- (1) a. John kissed the little old lady who owned the shaggy dog.  
b. Who owned the shaggy dog John kissed the little old lady.  
c. John is difficult to love.  
d. It is difficult to love John.  
e. John is anxious to go.  
f. It is anxious to go John.  
g. John, who was a student, flunked his exams.  
h. Exams his flunked student a was who John.
- imper. condit.  
trans. imperf. Verben

If you were asked to put an asterisk or star before the examples that seemed "funny" or "no good" to you, which ones would you mark? Our intuitive knowledge about what is or is not an allowable sentence in English convinces us to star *b*, *f*, and *h*. Which ones did you star?

Would you agree with the following judgments?

- (2) a. What he did was climb a tree.  
b. \*What he thought was want a sports car.<sup>3</sup>  
c. Drink your beer and go home!  
d. \*What are drinking and go home?  
e. I expect them to arrive a week from next Thursday.  
f. \*I expect a week from next Thursday to arrive them.  
g. Linus lost his security blanket.  
h. \*Lost Linus security blanket his.

If you find the starred sentences unacceptable, as we do, you see that every string of words does not constitute a well-formed sentence in a language. Our knowledge of a language determines which strings of words are and which are not sentences. Therefore, in addition to knowing the words of the language, linguistic knowledge includes **rules** for forming sentences and making the kinds of judgments you made about the examples in (1) and (2). These rules must be finite in length and finite in number so that they can be stored in our finite brains. Yet, they must permit us to form and understand an infinite set of new sentences. They are not rules determined by a judge or a legislature, or even rules taught in a grammar class. They are unconscious constraints on sentence formation that are learned when language is acquired in childhood.

<sup>3</sup> The asterisk is used before examples that speakers, for any reason, find unacceptable. This notation will be used throughout the book.

wohl-  
geformt





## What Is Grammar?

We use the term "grammar" with a systematic ambiguity. On the one hand, the term refers to the explicit theory constructed by the linguist and proposed as a description of the speaker's competence. On the other hand, it refers to this competence itself.

N. Chomsky and M. Halle, *The Sound Pattern of English*

### Descriptive Grammars

There are no primitive languages. The great and abstract ideas of Christianity can be discussed even by the wretched Greenlanders.

Johann Peter Suessmilch, 1756, in a paper delivered before the Prussian Academy

The **grammar** of a language consists of the sounds and sound patterns, the basic units of meaning such as words, and the rules to combine all of these to form sentences with the desired meaning. The grammar, then, is what we know. It represents our linguistic competence. To understand the nature of language we must understand the nature of grammar, and in particular, the internalized, unconscious set of rules that is part of every grammar of every language.

Every human being who speaks a language knows its grammar. When linguists wish to describe a language, they attempt to describe the grammar of the language that exists in the minds of its speakers. There will be some differences among speakers' knowledge, but there must be shared knowledge too. The shared knowledge — the common parts of the grammar — makes it possible to communicate through language. To the extent that the linguist's description is a true model of the speakers' linguistic capacity, it is a successful description of the grammar and of the language itself. Such a model is called a **descriptive grammar**. It does not tell you how you should speak; it describes your basic linguistic knowledge. It explains how it is possible for you to speak and understand, and it tells what you know about the sounds, words, phrases, and sentences of your language.

We have used the word *grammar* in two ways: the first in reference to the **mental grammar** speakers have in their brains; the second as the model or description of this internalized grammar. Almost two thousand years ago the Greek grammarian Dionysius Thrax defined grammar as that which permits us either to speak a language or to speak about a language. From now on we will not differentiate these two meanings, because the linguist's descriptive grammar is an attempt at a formal statement (or theory) of the speakers' grammar.

When we say in later chapters that there is a rule in the grammar such as "Every sentence has a noun phrase subject and a verb phrase predicate," we posit the rule in both the mental grammar and the descriptive model of it, the linguist's grammar. When we say that a sentence is **grammatical**, we mean that it conforms to the rules of both grammars; conversely, an **ungrammatical** sentence deviates in some way from these rules. If, however, we posit a rule for English that does not agree with your intuitions as a

speaker, then the grammar we are describing differs in some way from the mental grammar that represents your linguistic competence; that is, your language is not the one described. No language or variety of a language (called a **dialect**) is superior to any other in a linguistic sense. Every grammar is equally complex, logical, and capable of producing an infinite set of sentences to express any thought. If something can be expressed in one language or one dialect, it can be expressed in any other language or dialect. It might involve different means and different words, but it can be expressed. We will have more to say about dialects in chapter 10.

No grammar, therefore no language, is either superior or inferior to any other. Languages of technologically undeveloped cultures are not primitive or ill-formed in any way.

### Prescriptive Grammars

It is a rule up with which we should not put.

Winston Churchill

I don't want to talk grammar. I want to talk like a lady.

G. B. Shaw, *Pygmalion*

The views expressed in the preceding section are not those of all grammarians now or in the past. From ancient times until the present, "purists" have believed that language change is corruption, and that there are certain "correct" forms that all educated people should use in speaking and writing. The Greek Alexandrians in the first century, the Arabic scholars at Basra in the eighth century, and numerous English grammarians of the eighteenth and nineteenth centuries held this view. They wished to *prescribe* rather than *describe* the rules of grammar, which gave rise to the writing of **prescriptive grammars**.

In the Renaissance a new middle class emerged who wanted their children to speak the dialect of the "upper" classes. This desire led to the publication of many prescriptive grammars. In 1762 Bishop Robert Lowth wrote *A Short Introduction to English Grammar with Critical Notes*. Lowth prescribed a number of new rules for English, many of them influenced by his personal taste. Before the publication of his grammar, practically everyone — upper-class, middle-class, and lower-class — said *I don't have none*, *You was wrong about that*, and *Mathilda is fatter than me*. Lowth, however, decided that "two negatives make a positive" and therefore one should say *I don't have any*; that even when *you* is singular it should be followed by the plural *were*; and that *I* not *me*, *he* not *him*, *they* not *them*, and so forth should follow *than* in comparative constructions. Many of these prescriptive rules were based on Latin grammar, which had already given way to different rules in the languages that developed from Latin. Because Lowth was influential and because the rising new class wanted to speak "properly," many of these new rules were legislated into English grammar, at least for the **prestige dialect**.

The view that dialects that regularly use double negatives are inferior cannot be justified if one looks at the standard dialects of other languages in the world. Romance

languages, for example, use double negatives, as the following examples from French and Italian show:

*French:* Je ne veux parler avec personne.  
I not want speak with no-one.

*Italian:* Non voglio parlare con nessuno.  
not I-want speak with no-one.

*English translation:* "I don't want to speak with anyone."

Grammars such as Lowth's are different from the descriptive grammars we have been discussing. Their goal is not to describe the rules people know, but to tell them what rules they should know.

In 1908 the grammarian Thomas R. Lounsbury wrote: "There seems to have been in every period in the past, as there is now, a distinct apprehension in the minds of very many worthy persons that the English tongue is always in the condition approaching collapse and that arduous efforts must be put forth persistently to save it from destruction."

Today our bookstores are filled with books by language "purists" attempting to do just that. Edwin Newman, for example, in his books *Strictly Speaking* and *A Civil Tongue*, rails against those who use the word *hopefully* to mean "I hope," as in "Hopefully, it will not rain tomorrow," instead of using it "properly" to mean "with hope." What Newman fails to recognize is that language changes in the course of time and words change meaning, and the meaning of *hopefully* has been broadened for most English speakers to include both usages. Other "saviors" of the English language blame television, the schools, and even the National Council of Teachers of English for failing to preserve the standard language, and they mount attacks against those college and university professors who suggest that African American English (AAE)<sup>4</sup> and other dialects are viable, living, complete languages.

Prescriptivists are bound to fail. Language is vigorous, dynamic, and constantly changing. All languages and dialects are expressive, complete, and logical, as much so as they were 200 or 2000 years ago. If sentences are muddled, it is not because of the language but because of the speakers. Prescriptivists should be more concerned about the thinking of the speakers than about the language they use. Hopefully, this book will convince you of this.

We as linguists wish you to know that all languages and dialects are rule governed and that what is grammatical in one language may be ungrammatical in another (equally prestigious) language. While we admit that the grammars and usages of particular groups in society may be dominant for social and political reasons, they are neither superior nor inferior, from a linguistic point of view, to the grammars and usages of less prestigious segments of society.

Having said all this, it is undeniable that the **standard** dialect (defined in chapter 10) may indeed be a better dialect for someone wishing to obtain a particular job or achieve a position of social prestige. In a society where "linguistic profiling" is used to

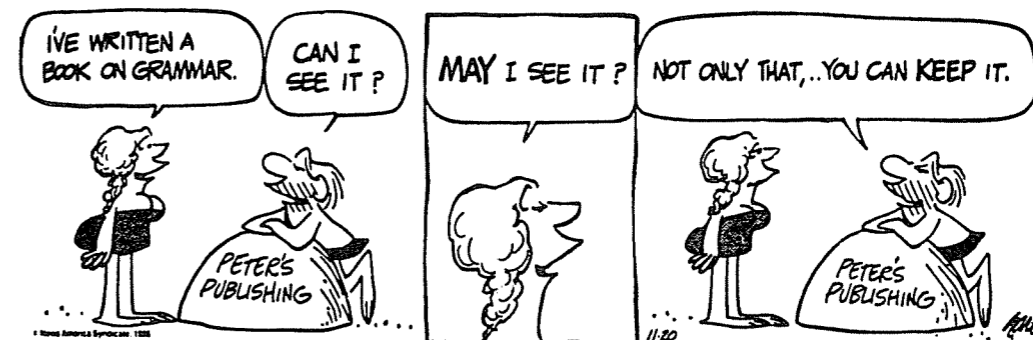
<sup>4</sup> AAE is also called African American Vernacular English (AAVE), Ebonics, and Black English (BE). It is spoken by some but by no means all African Americans. It is discussed in chapter 10.

discriminate against speakers of a minority dialect, it may behoove those speakers to learn the prestige dialect rather than wait for social change. But linguistically, prestige and standard dialects do not have superior grammars.

Finally, all of the preceding remarks apply to *spoken* language. Writing (see chapter 12), which is not acquired through exposure (see chapter 8), but must be taught, follows certain prescriptive rules of grammar, usage, and style that the spoken language does not, and is subject to little if any dialectal variation.

## Teaching Grammars

The descriptive grammar of a language attempts to describe everything speakers know about their language. It is different from a **teaching grammar**, which is used to learn another language or dialect. Teaching grammars are used in school to fulfill language requirements. They can be helpful to persons who do not speak the standard or prestige dialect, but find it would be advantageous socially and economically to do so. Teaching grammars state explicitly the rules of the language, list the words and their pronunciations, and aid in learning a new language or dialect.



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It is often difficult for adults to learn a second language without being instructed, even when living for an extended period in a country where the language is spoken. Teaching grammars assume that the student already knows one language and compares the grammar of the target language with the grammar of the native language. The meaning of a word is given by providing a **gloss**—the parallel word in the student's native language, such as *maison*, "house" in French. It is assumed that the student knows the meaning of the gloss "house," and so the meaning of the word *maison*.

Sounds of the target language that do not occur in the native language are often described by reference to known sounds. Thus the student might be aided in producing the French sound *u* in the word *tu* by instructions such as "Round your lips while producing the vowel sound in *tea*."

The rules on how to put words together to form grammatical sentences also refer to the learners' knowledge of their native language. For example, the teaching grammar

*Learn Zulu* by Sibusiso Nyembezi states that “The difference between singular and plural is not at the end of the word but at the beginning of it,” and warns that “Zulu does not have the indefinite and definite articles ‘a’ and ‘the.’” Such statements assume students know the rules of their own grammar, in this case English. Although such grammars might be considered prescriptive in the sense that they attempt to teach the student what is or is not a grammatical construction in the new language, their aim is different from grammars that attempt to change the rules or usage of a language already learned.

This book is not primarily concerned with either prescriptive or teaching grammars, which, however, are considered in chapter 10 in the discussion of standard and non-standard dialects.

## Language Universals

In a grammar there are parts that pertain to all languages; these components form what is called the general grammar. In addition to these general (universal) parts, there are those that belong only to one particular language; and these constitute the particular grammars of each language.

Du Marsais, c. 1750

2 / 1 / 10 / 8  
excellent

The way we are using the word *grammar* differs from most common usages. In our sense, the grammar includes everything speakers know about their language — the sound system, called **phonology**; the system of meanings, called **semantics**; the rules of word formation, called **morphology**; and the rules of sentence formation, called **syntax**. It also, of course, includes the vocabulary of words — the dictionary or **lexicon**. Many people think of the grammar of a language as referring largely to morphological rules like “add *-s* to third-person singular verbs,” or syntactic rules such as “a sentence consists of a subject and a predicate.” This is often what students mean when they talk about their class in “English grammar.”

Our aim is more in keeping with that stated in 1784 by the grammarian John Fell in *Essay towards an English Grammar*: “It is certainly the business of a grammarian to find out, and not to make, the laws of a language.” This business is just what the linguist attempts — to find out the “laws” of a language, and the laws that pertain to all languages. Those laws representing the universal properties of all languages constitute a **universal grammar**.

About 1630, the German philosopher Alsted first used the term *general grammar* as distinct from *special grammar*. He believed that the function of a general grammar was to reveal those features “which relate to the method and etiology of grammatical concepts. They are common to all languages.” Pointing out that “general grammar is the pattern ‘norma’ of every particular grammar whatsoever,” he implored “eminent linguists to employ their insight in this matter.”<sup>5</sup>

Three and a half centuries before Alsted, the scholar Robert Kilwardby held that linguists should be concerned with discovering the nature of language in general. So con-

<sup>5</sup> V. Salmon. 1969. “Review of *Cartesian Linguistics* by N. Chomsky,” *Journal of Linguistics* 5:165–87.

cerned was Kilwardby with universal grammar that he excluded considerations of the characteristics of particular languages, which he believed to be as “irrelevant to a science of grammar as the material of the measuring rod or the physical characteristics of objects were to geometry.”<sup>6</sup> Kilwardby was perhaps too much of a universalist. The particular properties of individual languages are relevant to the discovery of language universals, and they are of interest for their own sake.

Someone attempting to study Latin, Greek, French, or Swahili as a second language may assert, in frustration, that those ancient scholars were so hidden in their ivory towers that they confused reality with idle speculation. Yet the more we investigate this question, the more evidence accumulates to support Chomsky’s view that there is a universal grammar that is part of the human biologically endowed language faculty. It may be thought of “as a system of principles which characterizes the class of possible grammars by specifying how particular grammars are organized (what are the components and their relations), how the different rules of these components are constructed, how they interact, and so on.”<sup>7</sup>

To discover the nature of this universal grammar whose principles characterize all human languages is a major aim of **linguistic theory**. The linguist’s goal is to discover the “laws of human language” as the physicist’s goal is to discover the “laws of the physical universe.” The complexity of language, a product of the human brain, undoubtedly means this goal will never be fully achieved. All scientific theories are incomplete, and new hypotheses must be proposed to account for new data. Theories are continually changing as new discoveries are made. Just as physics was enlarged by Einstein’s theories of relativity, so grows the linguistic theory of universal grammar as new discoveries shed new light on the nature of human language.

## The Development of Grammar

Linguistic theory is concerned not only with describing the knowledge that an adult speaker has of his or her language, but also with explaining how that knowledge is acquired. All normal children acquire (at least one) language in a relatively short period with apparent ease. They do this despite the fact that parents and other caregivers do not provide them with any specific language instruction. Indeed, it is often remarked that children seem to “pick up” language just from hearing it spoken around them. Children are language learners par excellence — whether a child is male or female, from a rich family or a disadvantaged one, whether she grows up on a farm or in the city, attends day care or is home all day — none of these factors fundamentally affect the way language develops. A child can acquire any language he is exposed to with comparable ease — English, Dutch, French, Swahili, Japanese — and even though each of these languages has its own peculiar characteristics, children learn them all in very much the same way. For example, all children start out by using one word at a time. They then combine words into simple sentences. When they first begin to combine words into sentences,

<sup>6</sup> Ibid.

<sup>7</sup> N. Chomsky. 1979. *Language and Responsibility* (based on conversations with Misou Ronat), New York: Pantheon Press, p. 180.

certain parts of the sentence may be missing. For example, the English-speaking two-year-old might say *Cathy build house* instead of *Cathy is building the house*. On the other side of the world, a Swahili-speaking child will say *mbuzi kula majani*, which translates as “goat eat grass,” and which also lacks many required elements. They pass through other linguistic stages on their way to adultlike competence, but by about age five children speak a language that is almost indistinguishable from the language of the adults around them.

In just a few short years, without the benefit of explicit guidance and regardless of personal circumstances, the young child — who may be unable to tie her shoes or do even the simplest arithmetic computation — masters the complex grammatical structures of her language and acquires a substantial lexicon. Just how children accomplish this remarkable cognitive achievement is a topic of intense interest to linguists. The child’s success, as well as the uniformity of the acquisition process, point to a substantial innate component of language development. Chomsky, following the lead of the early rationalist philosophers, proposed that human beings are born with an innate “blueprint” for language, what we referred to earlier as Universal Grammar. Children are able to acquire language as quickly and effortlessly as they do because they do not have to figure out all the rules of their language, only those that are specific to their particular language. The universal properties — the laws of language — are part of their biological endowment. Linguistic theory aims to uncover those principles that characterize all human languages and to reveal the innate component of language that makes language acquisition possible. In chapter 8 we will discuss language acquisition in more detail.

## Sign Languages: Evidence for Language Universals

It is not the want of organs that [prevents animals from making] . . . known their thoughts . . . for it is evident that magpies and parrots are able to utter words just like ourselves, and yet they cannot speak as we do, that is, so as to give evidence that they think of what they say. On the other hand, men who, being born deaf and mute . . . are destitute of the organs which serve the others for talking, are in the habit of themselves inventing certain signs by which they make themselves understood.

René Descartes, *Discourse on Method*

The sign languages of deaf communities provide some of the best evidence to support the notion that humans are born with the ability to acquire language, and that these languages are governed by the same universal properties.

Because deaf children are unable to hear speech, they do not acquire spoken languages as hearing children do. However, deaf children who are exposed to sign language learn it in stages parallel to those of hearing children learning oral languages. Sign languages are human languages that do not use sounds to express meanings. Instead, sign languages are visual-gestural systems that use hand, body, and facial gestures as the forms used to represent words. Sign languages are fully developed languages, and those who know sign language are capable of creating and comprehending unlimited numbers of new sentences, just like speakers of spoken languages.

Current research on sign languages has been crucial in the attempt to understand the biological underpinnings of human language acquisition and use. Some understanding of sign languages is therefore essential.

About one in a thousand babies is born deaf or with a severe hearing deficiency. One major effect is the difficulty that deaf children have in learning a spoken language. It is nearly impossible for those unable to hear language to learn to speak naturally. Normal speech depends largely on auditory feedback. A deaf child will not learn to speak without extensive training in special schools or programs designed especially for deaf people.

Although deaf persons can be taught to speak a language intelligibly, they can never understand speech as well as a hearing person. Seventy-five percent of spoken English words cannot be read on the lips accurately. The ability of many deaf individuals to comprehend spoken language is therefore remarkable; they combine lip reading with knowledge of the structure of language, the meaning redundancies that language has, and context.

If, however, human language is universal in the sense that all members of the human species have the ability to learn a language, it is not surprising that nonspeaking languages have developed among nonhearing individuals. The more we learn about the human linguistic ability, the more it is clear that language acquisition and use are not dependent on the ability to produce and hear sounds, but on a much more abstract cognitive ability, biologically determined, that accounts for the similarities between spoken and sign languages.

## AMERICAN SIGN LANGUAGE

The major language used by deaf people in the United States is **American Sign Language (ASL)**. ASL is a fully developed language that historically is an outgrowth of the sign language used in France and brought to the United States in 1817 by the great educator Thomas Hopkins Gallaudet.

Like all human languages, ASL has its own grammar. That grammar encompasses knowledge of the system of gestures, equivalent to the phonology of spoken languages,<sup>8</sup> as well as the morphological, syntactic, and semantic systems, and a mental lexicon of signs.

In the United States there are several signing systems that educators have created in an attempt to represent spoken and/or written English. These artificial languages consist essentially in the replacement of each spoken English word (and grammatical elements such as the *s* ending for plurals and the *ed* ending for past tense) by a sign. The syntax and semantics of these manual codes for English are thus approximately the same as those of ordinary English. The result is unnatural in that it is similar to trying to speak French by translating every English word or ending into its French counterpart. Problems result because there are not always corresponding forms in the two languages.

<sup>8</sup> The term *phonology*, which was first used to describe the sound systems of language, has been extended to include the gestural systems of sign languages.





Figure 1.2 The ASL sign DECIDE: (a) and (c) show transitions from the sign; (b) illustrates the single downward movement of the sign. Reprinted from *The Signs of Language* by Edward Klima and Ursula Bellugi: Cambridge, Mass.: Harvard University Press. Copyright © 1979 by the President and Fellows of Harvard College.

In ASL the letters of the English alphabet are represented by a series of hand shapes and movements. This permits signers to represent new coinages, foreign words, acronyms, proper nouns for which there may not be a sign, technical vocabulary, or obsolete words as might be found in a signed interpretation of a play by Shakespeare.

Signs, however, are produced differently than are finger-spelled words. "The sign DECIDE cannot be analyzed as a sequence of distinct, separable configurations of the hand. Like all other lexical signs in ASL, but unlike the individual finger-spelled letters in D-E-C-I-D-E taken separately, the ASL sign DECIDE does have an essential movement but the hand shape occurs simultaneously with the movement. In appearance, the sign is a continuous whole."<sup>9</sup> This sign is shown in Figure 1.2.

Signers communicate ideas at a rate comparable to spoken communication. Moreover, language arts are not lost to the deaf community. Poetry is composed in sign language, and stage plays such as Sheridan's *The Critic* have been translated into sign language and acted by the National Theatre of the Deaf (NTD).

Deaf children acquire sign language much in the way that hearing children acquire a spoken language. Deaf children often sign themselves to sleep just as hearing children talk themselves to sleep. Deaf children report that they dream in sign language as French-speaking children dream in French and Hopi children dream in Hopi. Deaf children sign to their dolls and stuffed animals. Slips of the hand occur similar to slips of the tongue; finger fumlbers amuse signers as tongue twisters amuse speakers. Sign languages resemble spoken languages in all major aspects, showing that there truly are universals of language despite differences in the modality in which the language is performed. This universality is predictable because regardless of the modality in which it is expressed, language is biologically based.

<sup>9</sup> Klima and Bellugi, *The Signs of Language*, pp. 38 and 62.

## Animal "Languages"

No matter how eloquently a dog may bark, he cannot tell you that his parents were poor but honest.

Bertrand Russell

Is language the exclusive property of the human species? The idea of talking animals is as old and as widespread among human societies as language itself. All cultures have legends in which some animal plays a speaking role. All over West Africa, children listen to folktales in which a "spider-man" is the hero. "Coyote" is a favorite figure in many Native American tales, and many an animal takes the stage in Aesop's famous fables. The fictional Doctor Doolittle's forte was communicating with all manner of animals, from giant snails to tiny sparrows.

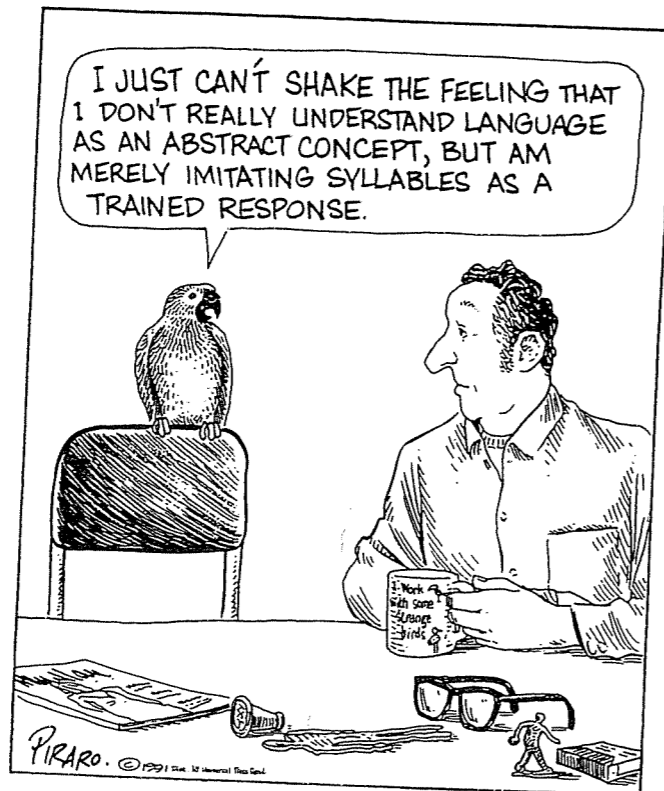
If language is viewed only as a system of communication, then many species communicate. Humans also use systems other than language to relate to each other and to send and receive "messages," like so-called "body language." The question is whether the communication systems used by other species are at all like human linguistic knowledge, which is acquired by children with no external instruction, and which is used creatively rather than in response to internal or external stimuli.

### "Talking" Parrots

Most humans who acquire language use speech sounds to express meanings, but such sounds are not a necessary aspect of language, as evidenced by the sign languages. The use of speech sounds is therefore not a basic part of what we have been calling language. The chirping of birds, the squeaking of dolphins, and the dancing of bees may potentially represent systems similar to human languages. If animal communication systems are not like human language, it will not be due to a lack of speech.

Conversely, when animals vocally imitate human utterances, it does not mean they possess language. Language is a system that relates sounds or gestures to meanings. Talking birds such as parrots and mynah birds are capable of faithfully reproducing words and phrases of human language that they have heard, but their utterances carry no meaning. They are speaking neither English nor their own language when they sound like us.

Talking birds do not dissect the sounds of their imitations into discrete units. *Polly* and *Molly* do not rhyme for a parrot. They are as different as *hello* and *good-bye*. One property of all human languages (which will be discussed further in chapter 6) is the discreteness of the speech or gestural units, which are ordered and reordered, combined and split apart. Generally, a parrot says what it is taught, or what it hears, and no more. If *Polly* learns "Polly wants a cracker" and "Polly wants a doughnut" and also learns to imitate the single words *whiskey* and *bagel*, she will not spontaneously produce, as children do, "Polly wants whiskey" or "Polly wants a bagel" or "Polly wants whiskey and a bagel." If she learns *cat* and *cats*, and *dog* and *dogs*, and then learns the word *parrot*, she will be unable to form the plural *parrots* as children do by the age of three; nor can a parrot form an unlimited set of utterances from a finite set of units, nor understand



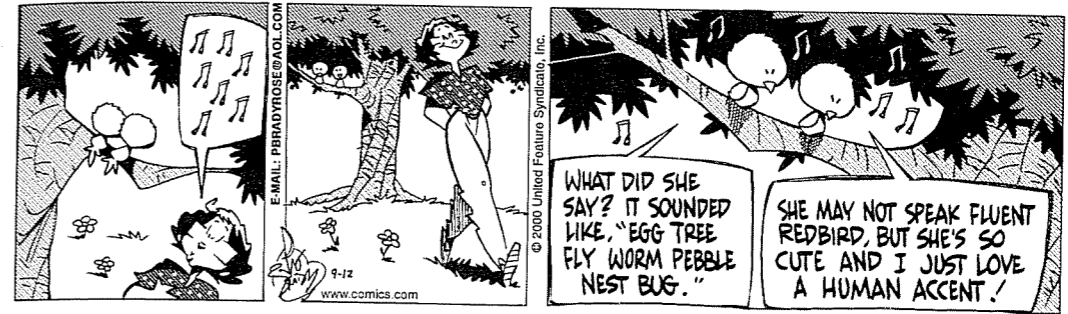
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utterances never heard before. Recent reports of an African gray parrot named Alex studied by Dr. Irene M. Pepperberg suggest that new methods of training animals may result in more learning than was previously believed possible. When the trainer uses words in context, Alex seems to relate some sounds with their meanings. This is more than simple imitation, but it is not how children acquire the complexities of the grammar of any language. It is more like a dog learning to associate certain sounds with meanings, such as *heel*, *sit*, *fetch*, and so on. Alex's ability may go somewhat beyond that. However, the ability to produce sounds similar to those used in human language, even if meanings are related to these sounds, cannot be equated with the ability to acquire the complex grammar of a human language.

### The Birds and the Bees

The birds and animals are all friendly to each other, and there are no disputes about anything. They all talk, and they all talk to me, but it must be a foreign language for I cannot make out a word they say.

Mark Twain, *Eve's Diary*



"Rose Is Rose" copyright © 2000 United Features Syndicate. Reprinted by permission.

Most animals possess some kind of "signaling" communication system. Among certain species of spiders there is a complex system for courtship. The male spider, before he approaches his ladylove, goes through an elaborate series of gestures to inform her that he is indeed a spider and a suitable mate, and not a crumb or a fly to be eaten. These gestures are invariant. One never finds a creative spider changing or adding to the courtship ritual of his species.

A similar kind of gestural language is found among the fiddler crabs. There are forty species, and each uses its own claw-waving movement to signal to another member of its "clan." The timing, movement, and posture of the body never change from one time to another or from one crab to another within the particular variety. Whatever the signal means, it is fixed. Only one meaning can be conveyed.

The imitative sounds of talking birds have little in common with human language, but the calls and songs of many species of birds do have a communicative function, and they resemble human languages in that there may be "dialects" within the same species. **Birdcalls** (consisting of one or more short notes) convey messages associated with the immediate environment, such as danger, feeding, nesting, flocking, and so on. **Bird songs** (more complex patterns of notes) are used to stake out territory and to attract mates. There is no evidence of any internal structure to these songs, nor can they be segmented into independently meaningful parts as words of human language can be. In a study of the territorial song of the European robin,<sup>10</sup> it was discovered that the rival robins paid attention only to the alternation between high-pitched and low-pitched notes, and which came first did not matter. The message varies only to the extent of how strongly the robin feels about his possession and to what extent he is prepared to defend it and start a family in that territory. The different alternations therefore express intensity and nothing more. The robin is creative in his ability to sing the same thing in many ways, but not creative in his ability to use the same units of the system to express many different messages with different meanings.

Despite certain superficial similarities to human language, birdcalls and songs are fundamentally different kinds of communicative systems. The kinds of messages that can be conveyed are limited, and messages are stimulus controlled.

<sup>10</sup> R. G. Busnel and J. Bertrand. 1962. "Recherche du Supporte de l'Information dans le Signal Acoustique de Défense Territoriale du Rougegorge," *C. R. Acad. Sci. Paris* 254:2236-38.

This distinction is also true of the system of communication used by honeybees. A forager bee is able to return to the hive and communicate to other bees where a source of food is located. It does so by performing a dance on a wall of the hive that reveals the location and quality of the food source. For one species of Italian honeybee, the dancing behavior may assume one of three possible patterns: round (which indicates locations near the hive, within 20 feet or so); sickle (which indicates locations at 20 to 60 feet from the hive); and tail-wagging (for distances that exceed 60 feet). The number of repetitions per minute of the basic pattern in the tail-wagging dance indicates the precise distance; the slower the repetition rate, the longer the distance.

The bees' dance is an effective system of communication for bees. It is capable, in principle, of infinitely many different messages, like human language; but unlike human language, the system is confined to a single subject — food source. An experimenter who forced a bee to walk to the food source showed the inflexibility. When the bee returned to the hive, it indicated a distance twenty-five times farther away than the food source actually was. The bee had no way of communicating the special circumstances in its message. This absence of creativity makes the bees' dance qualitatively different from human language.<sup>11</sup>

In the seventeenth century, the philosopher and mathematician René Descartes pointed out that the communication systems of animals are qualitatively different from the language used by humans:

It is a very remarkable fact that there are none so depraved and stupid, without even excepting idiots, that they cannot arrange different words together, forming of them a statement by which they make known their thoughts; while, on the other hand, there is no other animal, however perfect and fortunately circumstanced it may be, which can do the same.<sup>12</sup>

Descartes goes on to state that one of the major differences between humans and animals is that human use of language is not just a response to external, or even internal, stimuli, as are the sounds and gestures of animals. He warns against confusing human use of language with “natural movements which betray passions and may be . . . manifested by animals.”

To hold that animals communicate by systems qualitatively different from human language systems is not to claim human superiority. Humans are not inferior to the one-celled amoeba because they cannot reproduce by splitting in two; they are just different sexually. They are not inferior to hunting dogs, whose sense of smell is far better than that of human animals. All the studies of animal communication systems, including those of chimpanzees (discussed in chapter 8), provide evidence for Descartes' distinction between other animal communication systems and the linguistic creative ability possessed by the human animal.

<sup>11</sup> K. Von Frisch. *The Dance Language and Orientation of the Bees*, trans. L. E. Chadwick, Cambridge, MA: Harvard University Press, 1967.

<sup>12</sup> R. Descartes. 1967. “Discourse on Method,” *The Philosophical Works of Descartes*, Vol. 1, trans. E. S. Haldane and G. R. Ross, Cambridge, England: Cambridge University Press, p. 116.

## What We Know about Language

Much is unknown about the nature of human languages, their grammars and use. The science of linguistics is concerned with these questions. Investigations of linguists and the analyses of spoken languages date back at least to 1600 B.C.E. in Mesopotamia. We have learned a great deal since that time. A number of facts pertaining to all languages can be stated.

1. Wherever humans exist, language exists.
2. There are no “primitive” languages — all languages are equally complex and equally capable of expressing any idea in the universe. The vocabulary of any language can be expanded to include new words for new concepts.
3. All languages change through time.
4. The relationships between the sounds and meanings of spoken languages and between the gestures and meanings of sign languages are for the most part arbitrary.
5. All human languages use a finite set of discrete sounds or gestures that are combined to form meaningful elements or words, which themselves may be combined to form an infinite set of possible sentences.
6. All grammars contain rules of a similar kind for the formation of words and sentences.
7. Every spoken language includes discrete sound segments, like *p*, *n*, or *a*, that can all be defined by a finite set of sound properties or features. Every spoken language has a class of vowels and a class of consonants.
8. Similar grammatical categories (for example, noun, verb) are found in all languages.
9. There are universal semantic properties like “male” or “female,” “animate” or “human,” found in every language in the world.
10. Every language has a way of negating, forming questions, issuing commands, referring to past or future time, and so on.
11. Speakers of all languages are capable of producing and comprehending an infinite set of sentences. Syntactic universals reveal that every language has a way of forming sentences such as:

Linguistics is an interesting subject.

I know that linguistics is an interesting subject.

You know that I know that linguistics is an interesting subject.

Cecelia knows that you know that I know that linguistics is an interesting subject.

Is it a fact that Cecelia knows that you know that I know that linguistics is an interesting subject?

12. Any normal child, born anywhere in the world, of any racial, geographical, social, or economic heritage, is capable of learning any language to which he or she is exposed. The differences we find among languages cannot be due to biological reasons.



It seems that Alsted and Du Marsais (and we could add many other universalists from all ages) were not spinning idle thoughts. We all possess human language.

## Summary

We are all intimately familiar with at least one language, our own. Yet few of us ever stop to consider what we know when we know a language. No book contains, or could possibly contain, the English or Russian or Zulu language. The words of a language can be listed in a dictionary, but not all the sentences can be; and a language consists of these sentences as well as words. Speakers use a finite set of rules to produce and understand an infinite set of possible sentences.

These rules are part of the **grammar** of a language, which develops when you acquire the language and includes the sound system (the **phonology**), the structure of words (the **morphology**), how words may be combined into phrases and sentences (the **syntax**), the ways in which sounds and meanings are related (the **semantics**), and the words or **lexicon**. The sounds and meanings of these words are related in an **arbitrary** fashion. If you had never heard the word *syntax* you would not, by its sounds, know what it meant. The gestures used by signers are also arbitrarily related to their meanings. Language, then, is a system that relates sounds (or hand and body gestures) with meanings. When you know a language you know this system.

This knowledge (**linguistic competence**) is different from behavior (**linguistic performance**). If you woke up one morning and decided to stop talking (as the Trappist monks did after they took a vow of silence), you would still have knowledge of your language. This ability or competence underlies linguistic behavior. If you do not know the language, you cannot speak it; but if you know the language, you may choose not to speak.

Grammars are of different kinds. The **descriptive grammar** of a language represents the unconscious linguistic knowledge or capacity of its speakers. Such a grammar is a model of the **mental grammar** every speaker of the language knows. It does not teach the rules of the language; it describes the rules that are already known. A grammar that attempts to legislate what your grammar should be is called a **prescriptive grammar**. It prescribes. It does not describe, except incidentally. **Teaching grammars** are written to help people learn a foreign language or a dialect of their own language.

The more that linguists investigate the thousands of languages of the world and describe the ways in which they differ from each other, the more they discover that these differences are limited. There are linguistic universals that pertain to each of the parts of grammars, the ways in which these parts are related, and the forms of rules. These principles comprise **universal grammar**, which defines the basis of the specific grammars of all possible human languages, and constitutes the innate component of the human language faculty that makes normal language development possible.

Strong evidence for Universal Grammar is found in the way children acquire language. Children learn language by exposure. They need not be deliberately taught, though parents may enjoy “teaching” their children to speak or sign. Children will learn any human language to which they are exposed, and they learn it in definable

stages, beginning at a very early age. By four or five years of age, children have acquired nearly the entire adult grammar. This suggests that children are born with a genetically endowed faculty to learn and use human language, which is part of the Universal Grammar.

The fact that deaf children learn **sign language** shows that the ability to hear or produce sounds is not a prerequisite for language learning. All the sign languages in the world, which differ as spoken languages do, are visual-gestural systems that are as fully developed and as structurally complex as spoken languages. The major sign language used in the United States is **American Sign Language (ASL)**.

If language is defined merely as a system of communication, then language is not unique to humans. There are, however, certain characteristics of human language not found in the communication systems of any other species. A basic property of human language is its **creative aspect**—a speaker’s ability to combine the basic linguistic units to form an infinite set of “well-formed” grammatical sentences, most of which are novel, never before produced or heard.

Sign languages show us that the ability to hear or produce sounds is not a necessary condition for the acquisition of language; nor is the ability to imitate the sounds of human language a sufficient basis for learning language. “Talking” birds imitate sounds but can neither segment these sounds into smaller units, nor understand what they are imitating, nor produce new utterances to convey their thoughts.

Birds, bees, crabs, spiders, and most other creatures communicate in some way, but the information imparted is severely limited and stimulus-bound, confined to a small set of messages. The system of language represented by intricate mental grammars, which are not stimulus-bound and which generate infinite messages, is unique to the human species.

Because of linguistic research throughout history, we have learned much about Universal Grammar, the properties shared by all languages.

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## Exercises

1. An English speaker's knowledge includes the sound sequences of the language. When new products are put on the market, the manufacturers have to think up new names for them that conform to the allowable sound patterns. Suppose you were hired by a manufacturer of soap products to name five new products. What names might you come up with? List them.

We are interested in how the names are pronounced. Therefore, describe in any way you can how to say the words you list. Suppose, for example, you named one detergent *Blick*. You could describe the sounds in any of the following ways:

*bl* as in *blood*,  
*i* as in *pit*,  
*ck* as in *stick*

*bli* as in *bliss*,  
*ck* as in *tick*

*b* as in *boy*,  
*lick* as in *lick*

2. Consider the following sentences. Put a star (\*) after those that do not seem to conform to the rules of your grammar, that are ungrammatical for you. State, if you can, why you think the sentence is ungrammatical.
- Robin forced the sheriff go.
  - Napoleon forced Josephine to go.
  - The devil made Faust go.
  - He passed by a large pile of money.

- He came by a large sum of money.
  - He came a large sum of money by.
  - Did in a corner little Jack Horner sit?
  - Elizabeth is resembled by Charles.
  - Nancy is eager to please.
  - It is easy to frighten Emily.
  - It is eager to love a kitten.
  - That birds can fly amazes.
  - The fact that you are late to class is surprising.
  - Has the nurse slept the baby yet?
  - I was surprised for you to get married.
  - I wonder who and Mary went swimming.
  - Myself bit John.
  - What did Alice eat the toadstool with?
  - What did Alice eat the toadstool and?
3. It was pointed out in this chapter that a small set of words in languages may be onomatopoeic; that is, their sounds "imitate" what they refer to. *Ding-dong*, *tick-tock*, *bang*, *zing*, *swish*, and *plop* are such words in English. Construct a list of ten new onomatopoeic words. Test them on at least five friends to see if they are truly nonarbitrary as to sound and meaning.
4. Although sounds and meanings of most words in all languages are arbitrarily related, there are some communication systems in which the "signs" unambiguously reveal their "meaning."
- Describe (or draw) five different signs that directly show what they mean.  
 Example: a road sign indicating an S curve.
  - Describe any other communication system that, like language, consists of arbitrary symbols. Example: traffic signals, where red means stop and green means go.
5. Consider these two statements: I learned a new word today. I learned a new sentence today. Do you think the two statements are equally probable, and if not, why not?
6. What do the barking of dogs, the meowing of cats, and the singing of birds have in common with human language? What are some of the basic differences?
7. A wolf is able to express subtle gradations of emotion by different positions of the ears, the lips, and the tail. There are eleven postures of the tail that express such emotions as self-confidence, confident threat, lack of tension, uncertain threat, depression, defensiveness, active submission, and complete submission. This system seems to be complex. Suppose that there were a thousand different emotions that the wolf could express in this way. Would you then say a wolf had a language similar to a human's? If not, why not?
8. Suppose you taught a dog to *heel*, *sit up*, *roll over*, *play dead*, *stay*, *jump*, and *bark* on command, using the italicized words as cues. Would you be teaching it language? Why or why not?

9. State some rule of grammar that you have learned is the correct way to say something, but that you do not generally use in speaking. For example, you may have heard that *It's me* is incorrect and that the correct form is *It's I*. Nevertheless you always use *me* in such sentences; your friends do also, and in fact, *It's I* sounds odd to you.

Write a short essay presenting arguments against someone who tells you that you are wrong. Discuss how this disagreement demonstrates the difference between descriptive and prescriptive grammars.

10. Think of song titles that are “bad” grammar, but which, if corrected would lack effect. For example, the 1929 “Fats” Waller classic “Ain’t Misbehavin’” is clearly superior to the bland “I am not misbehaving.” Try to come up with five or ten such titles.
11. Linguists who attempt to write a descriptive grammar of linguistic competence are faced with a difficult task. They must understand a deep and complex system based on a set of sparse and often inaccurate data. (Children learning language face the same difficulty.) Albert Einstein and Leopold Infeld captured the essence of the difficulty in their book *The Evolution of Physics*, written in 1938:

In our endeavor to understand reality, we are somewhat like a man trying to understand the mechanism of a closed watch. He sees the face and the moving hands, even hears its ticking, but he has no way of opening the case. If he is ingenious he may form some picture of a mechanism which could be responsible for all the things he observes, but he may never be quite sure his picture is the only one which could explain his observations. He will never be able to compare his picture with the real mechanism and he cannot even imagine the possibility of the meaning of such a comparison.

Write a short essay that speculates on how a linguist might go about understanding the reality of a person’s grammar (the closed watch) by observing what that person says, and doesn’t say (the face and moving hands.) For example, a person might never say *the sixth sheik’s sixth sheep is sick as a dog*, but the grammar should specify that it is a well-formed sentence, just as it should somehow indicate that *Came the messenger on time* is ill-formed.

## 2 CHAPTER

# Brain and Language

The functional asymmetry of the human brain is unequivocal, and so is its anatomical asymmetry. The structural differences between the left and the right hemispheres are visible not only under the microscope but to the naked eye. The most striking asymmetries occur in language-related cortices. It is tempting to assume that such anatomical differences are an index of the neurobiological underpinnings of language.

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[The brain is] the messenger of the understanding [and the organ whereby] in an especial manner we acquire wisdom and knowledge.

*Hippocratic Treatise on the Sacred Disease*, c. 377 B.C.E.



Attempts to understand the complexities of human cognitive abilities and especially the acquisition and use of language are as old and as continuous as history. Three long-standing problems of science include the nature of the brain, the nature of human language, and the relationship between the two. The view that the brain is the source of human language and cognition goes back over 2000 years. Assyrian and Babylonian cuneiform tablets mention disorders of language that may develop “when man’s brain holds fire.” Egyptian doctors in 1700 B.C.E. noted in their papyrus records that “the breath of an outside god” had entered their patients who became “silent in sadness.” The philosophers of ancient Greece also speculated about the brain/mind relationship but neither Plato nor Aristotle recognized the brain’s crucial function in cognition or language. Aristotle’s wisdom failed him when he suggested that the brain is a cold sponge whose function is to cool the blood. Nevertheless, others writing in the same period