Fifth Edition

A Concise Introduction to Linguistics

Bruce M. Rowe and Diane P. Levine

A Concise Introduction to Linguistics

Now in its fifth edition, *A Concise Introduction to Linguistics* provides students with a detailed introduction to the core concepts of language as it relates to culture. The textbook includes a focus on linguistic anthropology, unpacking the main contributions of linguistics to the study of human communication and culture. Aimed at the general education student, the textbook also provides anthropology, linguistics, and English majors with the resources needed to pursue advanced courses in this area.

Written in an accessible manner that does not assume previous knowledge of linguistics, this new edition contains expanded discussions on linguistic anthropology, sociolinguistics (including a section on gender and language), and pragmatics. The textbook incorporates a robust set of pedagogical features including marginal definitions, a substantial glossary, chapter summaries, and learning exercises. Brand new to this edition are suggested reading lists at the end of every chapter, and recommended websites and apps to further aid students in their study.

Bruce M. Rowe is a professor emeritus of anthropology at Los Angeles Pierce College, USA, where he has taught since 1970.

Diane P. Levine is a professor emerita of anthropology at Los Angeles Pierce College, USA, where she has taught cultural and physical anthropology, as well as linguistics.

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DEDICATION

This book is dedicated to our families:
Christine, Aaron, Andrew, Ariela, and Dalia Rowe
Brian, Dale, Kevin, and Samantha Levine; Heidi Levine,
and Theo and Lucy Sturm

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PREFACE

Why we wrote this book

Linguistics courses are taught in several academic departments, including linguistics, English, and anthropology. In addition, students with majors other than linguistics, English, and anthropology might be required to take an introductory course in linguistics. These majors include communications, education, journalism, sociology, and deaf studies. Moreover, an introductory linguistics course often fulfills a general liberal arts requirement. Most linguistics books on the market are directed specifically to linguistics, English, or anthropology majors. Also, most linguistics texts reflect the research interests and theoretic stance of the author or authors.

We have attempted to write an introductory text that covers the core topics of linguistics and provides the information and concepts that will allow students to understand more detailed and advanced treatments of linguistics, should they pursue the field further. In other words, our book is written with the general education student in mind; but it also provides the linguistics, English, and anthropology major with the resources needed to succeed in the next level of courses. The authors are anthropologists, and have included numerous cross-cultural examples relevant to each of the topics covered.

We have written this book in a manner that does not assume previous knowledge of linguistics on the part of the student. We explain all concepts in a systematic way, assisted by numerous pedagogical aids. We attempt to make complex linguistic topics as easy to learn as possible.

Features of the book

The book includes numerous pedagogical aids:

Learning objectives: These are provided for each chapter to help the student know in advance of reading the chapter what concepts to keep in mind as they read a chapter. The student should be able to carry out the objective after reading the chapter.

Numerous exercises and study questions: Short sections (usually three to seven pages) of each chapter are followed by exercises and/or study questions on that section. This helps the student understand one subject before moving on to the next. Most other books have all of their exercises at the ends of the chapters.

Suggested reading and websites at the end of each chapter, and suggested apps for some chapters: Because this is a "concise" introduction to the topic, we provide more sources for further reading than most books. If students want to learn more about a topic that has been introduced briefly, they can use the sources provided. The sources might also be useful to students required to write a paper for the course. We added new suggested readings to the fifth edition.

Chapter summaries: Each chapter concludes with a concise overview of its contents.

In-margin running glossary and an end-of-the-book glossary: Using the in-margin glossary, students can quickly check the definitions of terms they read in the text. In the end-of-the-book glossary, students can check the definition of a concept they have read earlier if they do not remember the chapter in which it was first used.

Cross-cultural examples: We have numerous cross-cultural examples. As we explain concepts of importance to all students of language, we draw upon examples from around

the world. Chapters 6, 7, 8, 9, 10, 13 and 14 cover topics of primary interest to linguistic anthropologists.

Instructor's manual with tests: The author-written test bank features nearly 1000 questions in four question types—multiple-choice, true/false, matching, and essay. The fifth edition includes new questions on all new sections of the text.

Instructor's companion website: The answers to all of the exercises that are not answered in the text or in Appendix B are provided to instructors in the test bank. Please visit the companion website at www.routledge.com/9780133811216.

Student's companion website: The companion website for students includes sample tests with general multiple-choice questions, multiple-choice questions for the illustrations, true and false questions, and short answer questions. It also includes learning objectives, chapter summaries, and PowerPoint presentations for each chapter.

New to this edition: All chapters have been updated. Below are the major changes.

- Chapter 6 of the fourth edition, *Semantics and Pragmatics*, has been divided into two, Chapter 6—*Semantics: the study of meaning* and Chapter 7—*Pragmatics: how language is used and the effect of context on meaning*. The coverage of each of these topics has been expanded.
- In the new Chapter 6, we briefly discuss some basic concepts of semiotics, especially the concept of a *symbol* and the concept of an *index*. We also added a section called *Entailment and presupposition* and a new box called *Computational linguistics and artificial intelligence*. In addition, several new exercises were added.
- In the new Chapter 7, new material on speech acts, indexicality (deixis), and discourse analysis was added. New topics are discussed, including politeness theory, implicature, and the difficulty of processing pragmatics for some people.
- Chapter 7 of the fourth edition, *Sociolinguistics and Linguistic Anthropology*, has also been divided into two, Chapter 8—*Sociolinguistics: language and society* and Chapter 9—*Linguistic anthropology: language and culture*.
- In the new Chapter 9, the concept of *culture* is more clearly defined, and the concept of disappearing and extinct languages is discussed (the topic was in a different chapter in the fourth edition). The topic of linguistic relativity has been rewritten and expanded, and the topics of habituation, language and identity, and language enculturation have been added to the chapter. A new box is included—*Linguistic anthropology is a comparative field*. Several new exercises were added.

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ABOUT THE AUTHORS

Photo by Christine L. Rowe

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Diane P. Levine is a professor emerita of anthropology at Los Angeles Pierce College, where she has taught cultural and physical anthropology, as well as linguistics. She was the chair of the Department of Anthropological and Geographical Sciences. As a former teacher of English and English as a second language (ESL), she has written articles on the use of literature in the ESL classroom, and presented seminars on critical thinking in the language arts classroom. Professor Levine was on the advisory board for *Annual Editions: Anthropology* and was also a national advisor for the Emmy Award-winning film series *Cultural Anthropology: Our Diverse World*. She is a member of the American Anthropological Association and the Society for Anthropology in Community Colleges.

CHAPTER 1

Introduction: the nature of communication

LEARNING OBJECTIVES

- **Explain the difference in the meaning of the words *communication* and *language*.**
- **Recognize that language is rule-governed and explain this fact.**
- **Compare the differences between linguistic competence and linguistic performance.**
- **Analyze the statement: "Language is not dependent on hearing or on speech."**
- **Describe the ways that nonhuman communication systems differ from language.**
- **Explain the statement: "Human communication is like an elaborate dance."**
- **Construct a chart or a list that explains why most linguists believe that apes, such as Washoe and Koko, are not fully displaying human language abilities.**

Linguistics is the scientific study of any aspect of language. Since language is a human universal, all academic fields that study humans have an interest in language. In general, a linguist might study the rules by which linguistic elements are formed—that is, grammar (Chapters 4 and 5); how linguistic elements carry meaning (semantics and related studies, Chapter 6); and how language context influences and shapes meaning (pragmatics and related fields, Chapter 7).

Many animals are social animals—that is, they live in groups. Language expands the human capability for social interaction beyond that of other social animals. Because language is so important to social interaction, over the years some sociologists, anthropologists, psychologists, and others who study human behavior have synthesized their studies with linguistic knowledge and created the fields of sociolinguistics (Chapter 8), linguistic anthropology (Chapter 9), and psycholinguistics.

Since the potential for language is ultimately a biological potential, linguistics has become important in biology. Neurolinguistics deals with the parts of the brain that allow for language to be acquired, developed, and used (Chapter 10). Evolutionary linguistics deals with how that potential might have originated and evolved in the human species (covered in several chapters). Clinical linguistics deals with helping people with language pathologies.

Historical linguistics studies language change and the historical relationship between languages (Chapter 14). There are also many areas of applied linguistics. Applied linguists use knowledge gained from linguistics to help people learn languages and to aid people in language-related issues of everyday life. They can have careers as foreign language or second language teachers, interpreters/ translators, dialect coaches, and other similar areas.

In addition to these different areas of linguistic study (and the above listing is not complete) there are also many different theoretical approaches to linguistic topics. For instance, there are many ways to analyze grammar. This book is a brief introduction to linguistics, and we will only skim the surface of the complex and varied field of linguistics. You can read additional general information about linguistics on the Linguistics Society of America's website at: www.linguisticsociety.org/.

The nature of communication

A male firefly moves through the evening air flashing a distinctive signal. A female sailing over the meadow responds with a brief flash. The male alights and mating occurs.

A foraging robin spots an owl. Immediately the robin produces a sharp call that sounds like "chink." Other birds in the area are alerted by this vocalization; the predator has lost the element of surprise.

A young, lost monkey continually produces squeaks, screams, and "rrah"-sounding calls. The racket attracts the attention of the infant's mother. They are reunited.

Broadly smiling, a college student returns home. "I got an A on my linguistics midterm; can you believe it?" The parents respond, "It's hard to believe, but we have never known you to lie."

Communication is behavior that affects the behavior of others by the transmission of information.

Communication is behavior that affects the behavior of others by the transmission of information. When an organism or machine communicates, it sends messages about itself or its environment. The result of communication is change. The monkey changed a potentially dangerous situation into a secure one; the student changed the parents' opinion.

A **code** is a complex pattern of associations of the units of a communication system. In language, those units could be sound units; meaningful units, such as words; or meaningful units that are larger than words, such as phrases, clauses, and sentences.

Language in its narrowest sense is, for most linguists, a uniquely human cognitive system used to produce and understand precise meaningful utterances.

An **utterance** is a stretch of speech between two periods of silence or a potential (perceived) silence. An utterance does not have to be a complete sentence.

To **encode** is to put a message into code.

In order for communication to take place, a receiver must detect the sender's message. The sender's message could be information about an internal state, such as fear, hunger, or sexual receptivity, or about an external condition, such as the presence of a predator. The message is placed into a **code**. The firefly's code is made up of specific patterns of flashes. Humans have a highly elaborate code called **language**, made up of large numbers of individually distinct words and the rules to combine them. The words *language* and *communication* are not synonymous. Communication is a very broad concept. All organisms communicate. Language is a much narrower concept, and in its narrowest sense language is seen by linguists as a uniquely human capacity used to produce and understand precise meaningful **utterances** (stretches of speech between two periods of silence or potential silence). (See Box 1-1).

All codes have rules. Certain types of flashes in a specific sequence make up the firefly's code. When it has a message to convey, the firefly **encodes** that message according to the rules. How does the firefly know these rules? Well, it doesn't. It is preprogrammed by its species-specific genetics to encode certain messages at certain times. These messages might be encoded as the result of internal physiological processes (such as the production of specific hormones) or when specific external stimuli activate a response to encode the message.

Grammar is the system (pattern) of elements (such as words) and of the rules of phonology, morphology, syntax, and semantics inherent in a language. The term grammar also refers to the study of those elements and rules.

Although there might be universal aspects of all languages that are innate, specific languages are learned. The potential to acquire a language is also innate. Humans have the genetic potential to learn to encode their messages by acquiring the rules, or **grammar**, of their language. Some nonhumans might have a limited potential to grasp very basic principles of grammar, but complex principles of language are well beyond their abilities.[1]

[1]W. Tecumseh Fitch and Marc D. Hauser, "Computational Constraints on Syntactic Processing in a Nonhuman Primate," *Science* 303 (January 13, 2004), 377–380.

BOX 1-1

The faculty of language in the broad sense and the faculty of language in the narrow sense

Two biologists, Marc Hauser and W. Tecumseh Fitch, and linguist Noam Chomsky point out that current evidence indicates that nonhuman animals including apes and birds, such as Alex the parrot, may share some of the characteristics that are important for the facility of language in humans. They called these shared capabilities the faculty of language in the broad sense (FLB). The FLB includes the motor and neurological systems that allow us to interact with the world around us, and the physical and neurological systems that allow us to create sounds and movements that have the potential to communicate. Some nonhuman animals have conceptual-intentional systems that store knowledge about the world and allow the animal to form intentions on the basis of that knowledge and act on those intentions, as when a chimpanzee in the wild makes a tool in order to exploit a food source. Some animals have complex navigational systems; others can recognize themselves in mirrors or react differently to different colors, shapes, and numbers of items. Some psychologists even think that chimpanzees can infer from actions of others what a person or other chimpanzee is thinking.

Noam Chomsky's linguistic theory defines language as a cognitive computational function. The human mind can take a finite number of items (sounds or words, for instance) and rearrange them into a potentially infinite number of messages according to a program (grammar). Some of the elements of that program are universal and innate, and some of the elements are learned. In this regard, Hauser, Chomsky, and Fitch believe that there are characteristics of language that are unique to human language. They call the unique characteristics of language the faculty of language in the narrow sense (FLN). The primary feature of FLN is **recursion**. Recursion is the process whereby any linguistic unit can be made longer by embedding another unit in it. I can say, "I am going to the store." Or I can say, "My wife and I are going to the store." Or I could say, "My wife, children, and I are going to the store." In fact, I can add to the first sentence endlessly. Notice that I can also add to the end of the sentence: "My wife, children, and I are going to the store and then we are going to a movie." The recursiveness of language allows people to compare, analyze, and combine thoughts in a limitless way. To Hauser, Chomsky, and Fitch, the recursive property of language is the main thing that makes language unique to humans.[2] However, even this has been questioned recently. Linguist Dan Everett has said that the language of a people who inhabit the rainforest of northwestern Brazil, the Pirahã, does not display recursion. Although this conclusion is controversial, if this were true, then concepts of universal grammatical principles would also be questionable. The June 2009 issue of the journal *Language* contains a debate on this important topic.[3] There is more on this in Chapter 9.

Recursion is the process whereby any linguistic unit can be made longer by embedding another unit in it.

Communication occurs if the receiver then **decodes** the message that is sent. To decode a message means to react in a way that reflects the reason the message was encoded. If a person speaks a language that a second person does not know, the listener will not decode the first person's message. The listener will not know what the words mean and, of course, will not know the grammar implicit in the message.

To **decode** a message is to react to it in a way that reflects the reason that the sender encoded it.

There are several levels of grammar that must be acquired. Acquiring a language involves acquiring the **phonological system** of that language: what sounds are used and how they relate to each other. It also involves learning the vocabulary or **lexicon** of a language and the ways

The **phonological system** of a language is the grammar (pattern) of sounds of that language.

A **lexicon** is a mental dictionary, the vocabulary that one has stored in the brain.

[2]Marc D. Hauser, Noam Chomsky, and W. Tecumseh Fitch, "The Faculty of Language: What Is It, Who Has It, and How Did It Evolve?" *Science* 298 (November 22, 2002), 1569–1579.

[3]Andrew Nevins, David Pesetsky, and Cilene Rodrigues, "Pirahã Exceptionality: A Reassessment," *Language* 85 (June 2009), 355–404. Daniel L. Everett, "Pirahã Culture and Grammar: A Response to Some Criticism," *Language* 85 (June 2009), 405–442. Also see: R. Futrell, L. Stearns, D.L. Everett, S.T. Piantadosi, and E. Gibson, "A Corpus Investigation of Syntactic Embedding in Pirahã," PLoS One 11 (March 2, 2016). http://dx.doi.org/10.1371/journal.pone.0145289.

in which lexical items, such as words, are constructed; these are the **morphological rules** of a language. Acquiring a language also involves learning how sentences are constructed and how sentences relate to each other; this is knowledge of the **syntax** of a language. A person must also recognize how words and sentences relate to the objects to which they refer and the situations that they describe. **Semantics** is the study of the rules of meaning, the systems by which we derive meaning from a message.

Morphological rules are the rules used to construct words from their component parts.

Syntax is the set of rules a person uses to form units of language larger than words. The term syntax also refers to the study of those rules.

Semantics is the study of meaning.

Although grammar is learned, it is learned so subtly that most of the rules are subconsciously known. This (mostly) subconscious knowledge of the grammar and lexicon of language is **linguistic competence** that is drawn upon to properly encode and decode a potentially infinite number of linguistic messages. If you speak English, you know that the following sentence is syntactically correct: "I am going to the store." You also know that the following sentence is not correct: "*Store to the going am I."[4]

Linguistic competence is the (mostly) subconscious knowledge of language that allows a speaker to create a potentially infinite number of messages.

You know that in an English sentence (a declarative sentence), such as the correct one above, the subject comes first, followed by the verb, and then information to complete the idea, such as a prepositional phrase. If you are a native speaker of English, you were not taught this in a formal manner. You acquired knowledge of the syntactic rules involved in this sentence by listening to other people speak. As you listened to and experimented with language, you built up a subconscious inventory of rules. These rules let you do an amazing thing: create a virtually unlimited number of utterances from a limited number of words. You have never before spoken most of the sentences that you will speak today. This creative aspect of language is **productivity**. It allows us to express and understand ideas that have never before been expressed.

Productivity is the ability to produce messages that one has never produced before and to understand messages that one has never heard or seen before.

The fact that we have an internalized linguistic competence does not mean that we always apply it correctly. If you are tired, sick, or distracted, you might make mistakes. You might repeat a sound that occurred earlier in a phrase. For instance, the intended utterance "Bob gave the baby a toy" might be said as "Bob gave the baby a boy."

This is not a mistake in competence. The speaker will most likely know he or she said something wrong. It is a mistake in **linguistic performance**. Performance errors are often systematic. That is, certain types of errors occur regularly. For instance, certain sounds are consistently substituted for others, sounds are systematically transposed with other sounds, and sounds are added or omitted in predictable ways. Because speech errors are not accidental, their study has shed light on the mental organization underlying linguistic competence.

Linguistic performance is the application of linguistic competence to actually produce an utterance.

Humans encode and decode linguistic messages on the basis of shared knowledge of a learned code. Two people speaking the same dialect (variety) of English will have little problem communicating with each other. On the other hand, two people who speak mutually unintelligible languages will not be able to communicate linguistically. However, they may be able to communicate through sharing information by some other means, such as gesturing.

Communication can be sent over a number of channels. The movement of the vocal apparatus puts air into motion. The resulting sound waves are received by the ears and decoded by the brain. Most language is conveyed in this way—that is, by speech. However, there are people who cannot speak or hear. For them, the vocal-auditory channel is closed. Yet this does not mean that they cannot communicate linguistically. Language resides in the mind—that is, the brain. It does not depend on hearing or speech. People who do not speak use silent languages based on movements of the hands and body. These are full languages, capable of communicating any message an oral language can convey. Humans can also communicate linguistically through another channel—writing. Speech, sign language, and writing are **delivery systems of language**. Language is the lexicon and grammar that exists in your head. Speech, sign language, and writing are the ways that linguistic (**verbal**) knowledge gets out of your head and into the heads of others; that is, these are systems to deliver linguistic information. Speech, sign language, and writing will be discussed later in this book.

A **delivery system of language** is the way in which knowledge of language (linguistic competence) is used to send a message. The three basic ways of delivering a message linguistically are speech, writing, and sign language.

Verbal means language: speech, writing, or sign language.

[4] An asterisk * placed before a linguistic form (word, sentence, etc.) means that the form is ungrammatical or unacceptable.

Humans also communicate in **nonverbal** ways. Nonverbal means nonlinguistic—that is, not through speech, sign language, or writing. Humans, as well as other animals, communicate with gestures, by changing the spatial arrangement between individuals in a group, by their physical appearance, facial expressions, touching behavior, and other means (see Chapter 13). Communication cannot be completely explained in a linear fashion—that is, in terms of a simple transmission of a message (information) from a sender to a receiver over a channel of communication. Instead, it might be characterized as an elaborate "dance." This dance includes a **synchrony** (simultaneousness) of linguistic messages with nonverbal messages. As people talk, their bodies move to punctuate what they are saying, and sometimes to contradict what they are saying. Their words are reinforced with the emotions conveyed through facial expressions and even pupil dilations and contractions. They touch each other to express concern, reinforcement, and affection. They take turns. In fact, if you watch people communicate "with the sound off," that is, from a distance, they appear to be involved in an elaborate dance. Through this dance, messages evolve that may not conform to the original intent of the initiator of the communication. In other words, human communication is dynamic, involving feedback that is both linguistic (verbal messages) and nonlinguistic (nonverbal messages). The outcome is often, perhaps usually, not completely predictable.

Nonverbal means not language. Nonverbal communication is any communication that is not conveyed through speech, writing, or sign language.

Synchrony is the connection and relationship between two or more things that occur at the same time.

The result of a communicative act is not always predictable because the meaning of a message is not contained only in the message itself. The meaning of a message is dependent on such factors as the intention of the sender, the relationship of the sender to the receiver, the social context of the message, and the personal and cultural background and biases of the sender and the receiver (see Box 1-2). In addition, there can be interference in the transmission of a message. This interference (sometimes called *static* or *noise*) might have to do with the physical environment. Examples of physical interference to communication might be traffic noise, a loud air conditioner, someone standing in front of a sign language interpreter, or a page produced by a printer that was almost out of ink. There can also be semantic interference. For instance, a receiver simply might not completely understand what the sender intended to say. Or a person might make the wrong assumptions about the person with whom he or she is communicating, and this will affect the decoding of the message. Communication involves "engagement and disengagement, synchrony and discord, breakdown and repair."[5] From this dance, messages emerge. (For a fieldwork exercise in observing and analyzing people's linguistic behavior, see Exercise 1, Appendix C. For a more detailed discussion of various models of communication, see http://sgmoraes2.tripod.com/conteudo/comunicacao/shannon_weaver_model.html.)

BOX 1-2

Miscommunication based on cultural differences

People from the same culture might misinterpret the meaning of one another's messages partially because of individual differences based on personality traits and differences in socialization. For instance, one person might, with positive intention, ask another person questions that are thought to be overly personal and invasive. However, it is even more likely that people from different cultures will misinterpret one another's messages.

Travelers, including businesspeople, who enter foreign countries often experience what anthropologists call **culture shock**. Culture shock is the disorientation and anxiety that occur when social expectations are not met. Culture shock sometimes leads to depression, homesickness, and negative attitudes about a foreign culture.

Culture shock is the disorientation and anxiety that occur when social expectations are not met.

Within a culture, people's behaviors are relatively predictable. If one American meets another American for a business meeting, a firm handshake might communicate confidence, sincerity, and a willingness

[5]Stuart Shanker and Barbara King, "The Emergence of a New Paradigm in Ape Language Research," *Behaviorial and Brain Sciences* 25 (October 2002), 605–620.

to conduct business. However, among some Middle Eastern, Asian, and American Indian cultures, a firm handshake might be interpreted in a negative way, indicating aggression and lack of respect. The misinterpretation of intent will most probably affect whatever interaction follows. Thousands of verbal and nonverbal behaviors that we learn, mostly subconsciously, as a part of our culture might have an unintended consequence in a foreign culture. What topics we choose to talk about, how long we talk about those topics, how fast or slow we talk, to whom we address our conversation (based on the age and gender of the people in a room, for instance), when and why we laugh, whether we look directly at the person we are talking to, where and when we touch another person will all affect how others judge us and react to us (see Chapter 13 on nonverbal communication).

Culture shock might occur when the norms that we take to be the correct and positive ways to act receive negative feedback from others. It can also occur when we don't understand the norms and social cues of other people. Often this will lead a person to negatively evaluate another culture as being "wrong," or "primitive," or even "evil." This is called **ethnocentrism**. Ethnocentrism is judging other cultures by the standards of your culture; it is also the belief that your culture is superior to other cultures. Often, as people have more experience with a foreign culture and gain more understanding of that culture, their ethnocentrism decreases. As cross-cultural understanding increases, the opportunity for static or interference in communication decreases.

Ethnocentrism is judging other cultures by the standards of your culture; it is also the belief that your culture is superior to other cultures.

For information on cultural differences in behavior that might specifically affect business communication, access *International Business Etiquette and Manners* at www.cyborlink.com. The website gives information on doing business in numerous countries. Also, see Box 13-4 on cultural differences in the meaning of color.

Nonhuman and human communication compared

In the previous section, some basic concepts about communication and language were introduced. Now we will refine our understanding of these topics through comparison.

The dance of the honeybee

A bee, home from the discovery of a nearby source of food, begins to "dance" on or inside the hive. This dance, called the *round dance*, contains no directional information. It simply arouses the other bees. They are stimulated to take flight around the hive in a search for the odor that the dancer has brought from the food source (see Figure 1-1).

When a bee returns from a more distant food source, she does what is called the *Schwanzeltanz* or the *waggle dance* (see Figure 1-2). She wags her abdomen as she runs straight for a short distance while making a rasping sound with her wings. She makes turns that create a figure-eight design. The movements of the dance indicate to the other bees in the hive where the scout bee found the food. Karl von Frisch was the first to decode the dances of honeybees.[6] As early as the 1940s, he found that honeybees can communicate the direction, distance, and quality of a food source to members of their hive through elaborate dances.

A **pheromone** is a chemical that is secreted by one individual and acts from a distance on another individual to alter that individual's behavior.

Redundancy occurs when the same message (or elements of a message) is encoded in different ways and is simultaneously sent to the receiver of the message.

Scientists have also discovered that the bees produce a hive-specific **pheromone** that they leave at the source of the nectar, helping to direct the other bees to the site. A pheromone is a chemical that is secreted by one individual and acts from a distance on another individual to alter that individual's behavior. The scout bee also brings back the scent of the nectar itself, which further aids the other bees in locating the food source. So there are several indicators of where the food is located: the "dance," the pheromone, and the odor of the food. In other words, there is **redundancy** in the bee's communication about the nectar.

[6]Karl von Frisch, "Dei Tänze der Bienen," *Österreichische zoologische Zeitschrift* 1 (1946), 1–48. More recently, see Karl von Frisch, "Decoding the Language of the Bee," *Science* 185 (1974), 663–668.

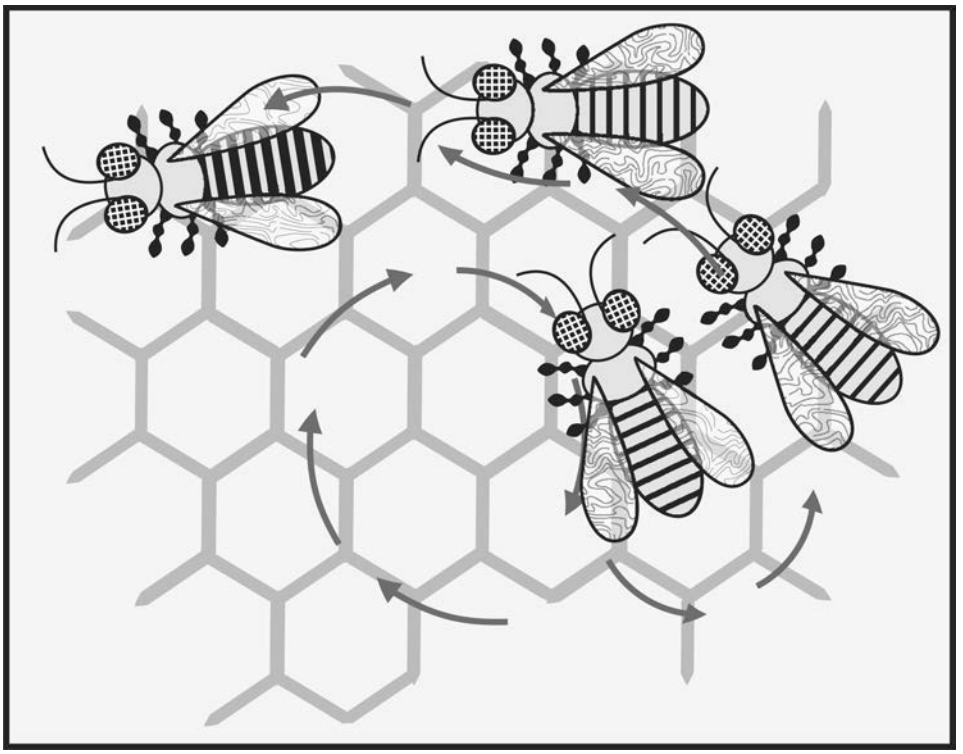

FIGURE 1-1 Honeybee round dance

The forager bee (uppermost) moves in circles. Taking rapid rocking steps, she is followed by three workers. The workers acquire knowledge of a food source that is close to the hive. Different types of honeybee use this dance to indicate food at different distances. Usually, this distance does not exceed 85 meters.

Source: Reprinted by permission of the publisher from *The Dance Language and Orientation of Bees* by Karl von Frisch, translated by Leigh E. Chadwick (Cambridge, MA: The Belknap Press of Harvard University Press, 1967), 29. Copyright © 1967, 1993 by the President and Fellows of Harvard College.

The condition of redundancy exists when there are multiple channels of information or multiple messages over the same channel of communication that indicate the same information. Redundancy helps to get the message to the receiver of the message. If there is interference or "static" on one channel of communication or in one of the repetitive messages on the same channel, another of the messages might still get through. If there is a wind or competing odors that obscure the pheromonal message or the scent of the food source, then the bees may still locate the nectar primarily on the basis of the dance. If the view of the dance is blocked or interrupted, the bees may still find the nectar on the basis of odor. Redundancy in human communication, including language, will be discussed in later chapters.

In recent years, the strength of the above scenario has been questioned.[7] Some studies indicate that the main function of the dance is simply to motivate the observer bees to go out and forage for nectar. Although the information described above is encoded in the bees' dance, most of the bees are stimulated by the dance to search for nectar in areas they have been before, rather than to follow the directions in the dance or even the olfactory information. Nevertheless, the dance shows how complicated the process of communication can be in an animal such as an insect.

[7]Christoph Grüter, M. Sol Balbuena, and Walter M. Farina, "Informational Conflicts Created by the Waggle Dance," *Proceedings of the Royal Society of London—Series B: Biological Sciences* 275 (June 7, 2008), 1321–1327.

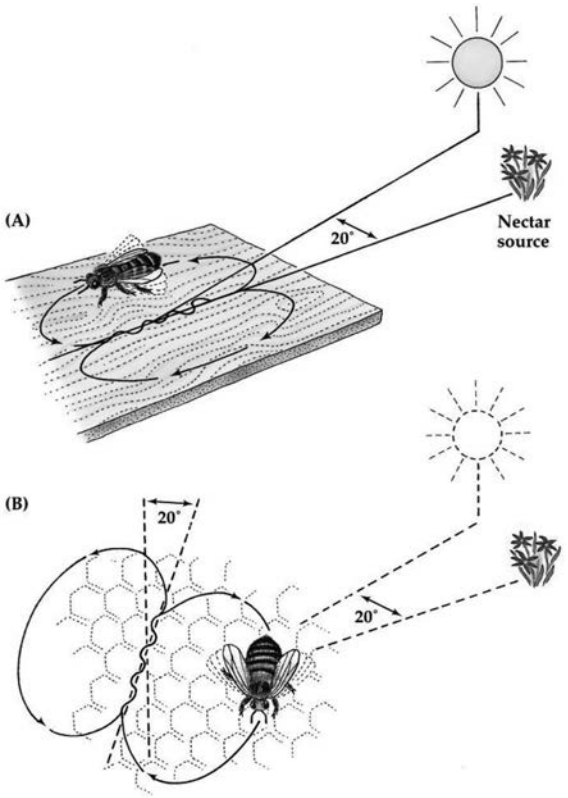

FIGURE 1-2 Waggle dance of the honeybee

Source: John Alcock, *Animal Behavior: An Evolutionary Approach,* 10th edition (Oxford, England, Oxford University Press), 33. Copyright © 2013 by Oxford University Press, Reprinted by permission.

Do bees learn their behavior?

When introduced to a hive, a bee raised in isolation will do all the dances that the hive-raised bees do. However, it will not do the dances with equal precision. It appears that a young bee needs a couple of hours of flying experience to be able to use the sun's course accurately. A young bee must also practice following dancers before it can react accurately to the other bees' dances. So we can say that the general pattern of bee dancing is innate, but precision is partially learned.

Bees dance. Birds dance, too, especially in mating rituals. But it is the calls and songs of birds rather than their dances that we turn to next.

The vocalization of birds

The **sound spectrograph** is an instrument used to analyze sound by producing a visual record of the time duration of the sound, its frequency (number of occurrences within a specific unit of time), and its amplitude (degree of loudness).

Calls are usually relatively short vocal signals that might communicate a variety of messages. A variety of other species might respond to the calls of a given species.

Songs are longer and more complex sequences of sound that, in birds, are usually associated with attracting a mate. Songs are species specific.

Danger lurks all around for birds. A main response to a potential predator is the alarm call. A blackbird, sensing a danger to its nest, will produce a call that sounds like "dook." A call that sounds like "ziep" will advertise that the danger is considerably more serious. Depending on the species, birds have a code containing as few as three and as many as thirty calls. The most frequent calls broadcast a potential or actual danger. When a bird gives out an alarm call, the predator has lost one of its most potent weapons: surprise.

Calls are not limited to signaling alarm. The chicks of some species signal each other while still in the egg! Apparently this synchronizes the time that they will hatch. Other calls coordinate a flock while in the air; keep a mated pair together; mislead enemies; convey begging; indicate hunger, pain, or abandonment; show the need for rest; or indicate the presence of a nest.

The development of an instrument called the **sound spectrograph** revolutionized the study of sound signals, both animal and human. It produces pictures of sound. These graphic expressions make detailed analyses of sound much easier than analyses done from a sound recorder. Figure 1-3 is a sound spectrogram of the flight-alarm calls of five species of birds. All of these

alarm calls are long, with a tapered beginning and end. The similarity in these calls is most likely because this type of call makes it difficult to pinpoint the location of the bird that is emitting it.

Calls are one of two main categories of bird sounds. The other category is **song**. Like most things in nature, the distinction between these categories is not clear cut. Generally, calls are short, consisting of up to a few notes. Bird songs are more elaborate, as illustrated in Figure 1-4. Calls and songs also serve different functions. A male bird attracts a mate basically by using a song. The male bird also uses a song to warn other birds away from a specific area he has claimed. Whereas calls of various species of birds are often similar, songs are not. This makes good sense. An alarm call of one bird will often alert other birds to danger. All potential prey will benefit. Yet a bird must find a mate of its own species and establish its own territory. Hence, bird songs are species specific, and to some degree can be individual specific. Another difference between calls and songs has to do with the acquisition of these sounds. With few exceptions, calls seem to be completely innate. On the other hand, the acquisition of bird songs shows a complex relationship among genetics, learning, and the environment.

Inheritance and learning in bird songs

A bird reared in isolation will not sing the same as a bird reared in its natural environment. As with bee dancing, this indicates that the bird learns details of its song from its environment. A classic experiment involving the American white-crowned sparrow showed this convergence of heredity and learning. The white-crowned sparrow raised in isolation will not develop the normal song. It will sing, but the song will be simpler and lack features of the normal song. The bird must be exposed to members of its own species. The exposure must take place within

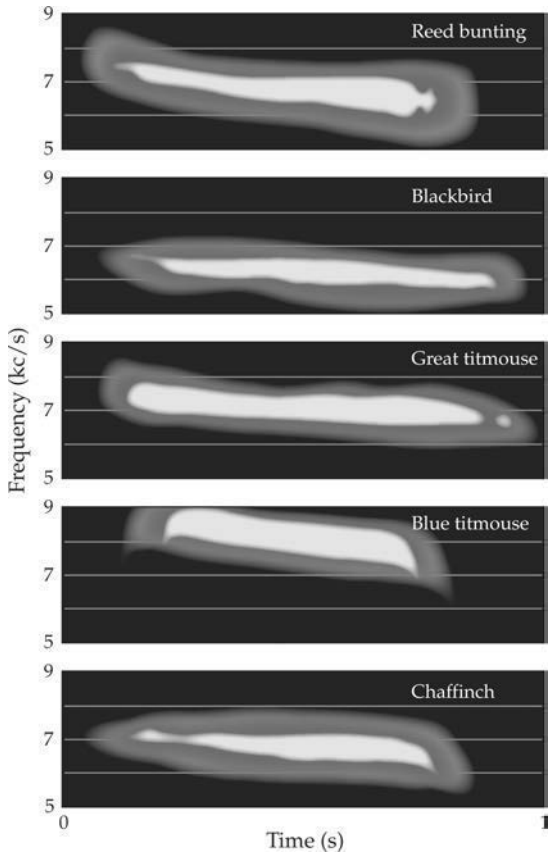

FIGURE 1-3 Sound spectogram of bird alarm calls

The flight-alarm calls of five bird species given when a hawk flies over, shown as graphic expressions.

Source: Based on an illustration in W. H. Thorpe, *Bird-Song: The Biology of Vocal Communication and Expression in Birds* (Cambridge: Cambridge University Press, 1961).

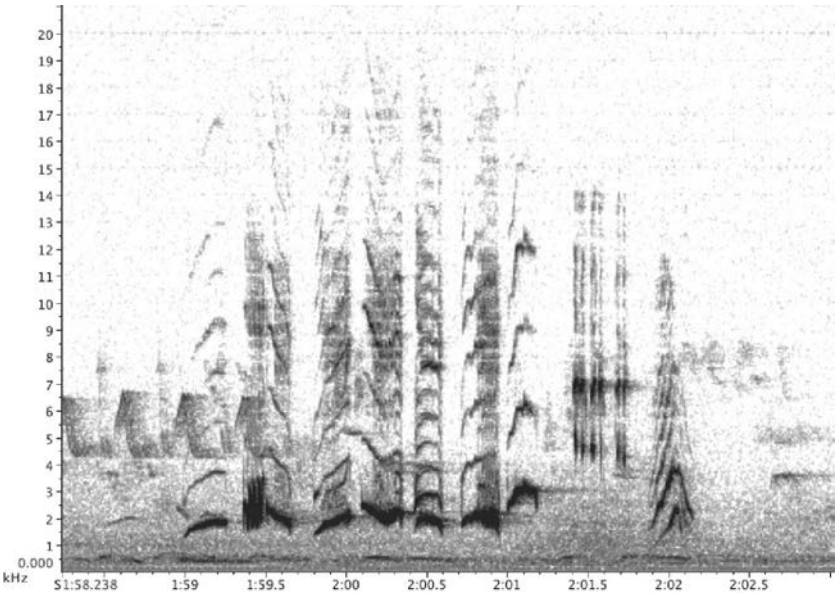

FIGURE 1-4 Sound spectrogram of a section of a blackbird's song
Source: Gerhard Thielcke, *Vogelstimmen* (Berlin: Springer, 1970). Reprinted by permission.

fifty days of hatching. The fact that the isolated bird will sing a song that is similar to a normal song indicates that the general pattern of the song is innate. Because the bird will learn to sing only its species-specific song, the ability to detect and vocalize its own song must also be innate. However, the fine-tuning of the song is learned.

A bird will hear its song long before it is old enough to produce it. If a bird is deafened after hearing its species-specific song, but before it has begun to sing, the song will be abnormal. The bird must be able to match its memory of the song with its practice in vocalizing it. Deafening a fully adult bird has no effect on its song.

Bees, birds, and humans

Openness is the ability to add new words, phrases, or other meaningful units to a language.

Compared to birds, bees, and any other nonhuman communication system, language is impressive for its broad scope. Humans can coin new words at will. This ability to add new lexical items is called **openness**. Another creative aspect of language is productivity, which was discussed earlier. Openness and productivity are nonexistent or strictly limited in other animals. It is true that the bee's waggle dance can produce a virtually unlimited number of messages about the distance, direction, and quality of a food source, but that is where productive communication ends. The bee cannot be productive about other features of its environment. Bird songs and calls do not even embody this limited productivity. The bird is able to communicate about a limited number of events in a fixed manner. The human can communicate about any event from any number of perspectives and points of view. The number of messages that can be generated by language is potentially infinite.

A **discrete signal** is one that does not blend with other signals.

Birds and mammals produce a number of discrete signals, usually limited to fewer than thirty. A **discrete signal** is one that does not blend with other signals. It is individually distinct, or noncontinuous. Humans produce discrete signals, but without limit and usually strung together to form sentences. The individual words of a language are discrete, or independent of each other. They can be combined into an infinite number of sentences. The bird, which produces a number of calls, will not order and reorder those calls into "sentences." The human can say a sentence such as, "The big cat is sitting on a fence." That person can then dissect the sentence and use any of those words in different combinations. For instance, the person can say, "The big bird is sitting on a fence." Even a parrot, taught to speak, cannot creatively recombine words that it has learned. For example, a parrot may be taught to say, "Hello, my name is

Bill." Even if it has learned all of the words separately or in different combinations, it will not spontaneously greet its owner with, "Hello. How are you, George?" It would have to be taught this sentence verbatim. There are some tentative indications that some nonhuman primates have an extremely limited ability to combine discrete calls in different ways to produce different meanings.[8] Yet, only humans can communicate by combining and rearranging discrete units in a highly productive way.

Linguistic forms, such as words or sentences, have an **arbitrary** relationship to their meaning. The word *fire*, in spoken, written, or signed form, has no direct relationship to the concept of fire. This is why different languages will have different words for this concept. Are the various elements of the bee's dance and the bird's calls arbitrary? The element of the bee's dance that indicates direction has a nonarbitrary (direct) relationship to what it indicates. The direction of the bee's run is the same direction as the nectar source when the bee is dancing outside the hive on the landing platform. On the other hand, bird songs and calls are arbitrary because the form of a specific call or song has no direct relationship to what these sounds indicate.

Arbitrary, in relationship to language, means that features of language, such as words, have no direct relationship to their meaning.

If a bee finds a source of food or a bird spots a potential predator, neither will choose to ignore those things. Indeed, a healthy animal cannot ignore them. They are genetically programmed to act in very specific ways in response to very specific events or factors in their environment. In other words, animals are by and large **stimulus-bound**. If a specific stimulus occurs, such as a fire or the approach of a predator, the animal will react with a specific behavior. Both the fire and the predator represent danger.

A **stimulus-bound** behavior is one that occurs only as a result of a specific environmental trigger (occurrence).

The content of human linguistic messages is almost always controlled by internal concepts, not directly by the external stimuli. One human, let's say an Australian Aborigine, sees a grub worm, and says to a friend, "What a nice snack." A Manhattanite seeing the same type of worm might respond, "Yuck." In either case, the environment is responsible for initiating communication, but the communication act is not fixed by the stimulus. The response is a learned attitude, relative to a specific culture or individual. Human communication is generally not stimulus-bound.

Bees or birds usually begin to communicate under the influence of some direct stimulus. However, they may continue to communicate in the absence of that stimulus. The bee dances because it has found nectar. Yet it dances at a distance away from this food and at a time after it has found it. The bird calls out in alarm at the sight of a predator, but it might continue to give out such calls long after the danger has passed. This ability to communicate about things at times other than the present and to communicate about things not directly in front of the sender and/or receiver is called **displacement**. The communicative systems of many animals allow for some displacement. Like other elements of nonhuman communication, the ability for displacement is strictly limited. This is not so for humans.

Displacement is the ability to communicate about things at times other than the present and to communicate about things not directly in front of the sender and/or receiver.

Humans can communicate about any past event or about any potential future happening. When we discuss a future night on the town, give our ideas on some historical event, or express our anxiety over the grade we expect to receive on an exam, we are displaying displacement.

Humans can discuss dragons, mermaids, or the culture of the aliens in the movie *Avatar*; they also can tell lies. This ability to say false or fictional things is called **prevarication**. Prevarication is generally absent from the communicative systems of other animals. Exceptions might be that some animals fake conditions, like death, to confuse a predator. Some animals mimic the sounds of other species. This "playing dead" and mimicking other species is similar to lying. The main difference is that nonhuman animals "lie" because of genetic preprogramming, whereas humans learn to lie.

Prevarication, in the linguistic sense, refers to the ability to communicate about things that are not verifiable, things for which there is no empirical proof.

Bees and birds do learn some of the elements of their communicative systems. Again, this learning seems to be strictly limited. An isolated bee will dance in a recognizable way, and an isolated bird will still sing its species-specific song. Both types of animal will not do these things in a refined manner. On the other hand, a human child totally isolated from birth will not learn a language. However, certain abused and semi-isolated children will learn to speak

[8]Karim Ouattara, Alban Lemasson, and Klaus Zuberbühler, "Campbell's Monkeys Concatenate Vocalizations into Context-specific Call Sequences," *Proceedings of the National Academy of Sciences* 106 (December 9, 2009), 22026–22031.

TABLE 1-1 Human language and nonhuman communication compared

Communicative act	Nonhuman communication	Language
How performed	Sometimes performed by discrete signals (bird calls, for example) and sometimes by continuous signals (bee dancing, for example). In both cases, the number of potential messages is strictly limited.	Performed by producing units that are perceived as being discrete. This allows for unlimited messages (openness).
When and where performed	Usually performed only under direct control of a stimulus or at a specific time of the year (the mating songs of birds, for instance). The messages are stimulus-bound and not performed in novel situations. There may be limited displacement, but usually not prevarication.	Any message can be produced at any time and in any location—even in socially inappropriate places and times. The messages are stimulus-free and can be produced in novel situations. Messages can be produced in locations far removed from the referents mentioned in the message. This displacement is pervasive in language.
Who performs	Who produces specific messages may be restricted due to innate (genetic) predetermination. For instance, male birds usually initiate mating songs, and worker bees, not queens, find honey.	Who produces specific messages is restricted by cultural convention, not innate predetermination. Any human adult can potentially produce any message that any other human can produce. Social and cultural restraints, which are learned, may prevent this potential from being realized.
Why performed	Communicative acts are performed to fulfill immediate survival needs of the individual, the individual's social group, and/or the species. These needs are not consciously understood.	Communicative acts are performed to fulfill the immediate survival needs of the individual, the individual's social group, and/or the species. These needs may or may not be consciously understood. Humans also communicate to create social and cultural reality. Humans create a large portion of their world by categorizing it linguistically.

or sign with only minimal language input. This indicates that there is a genetic predisposition for language. But humans must learn the rules and vocabulary of the specific language(s) that they will use. Table 1-1 summarizes and expands on this comparison of human and nonhuman communication.

Chimpanzees and gorillas in controlled environments

Chimpanzees' human-like nonverbal (nonlinguistic) behavior has made them favorites at circuses, on television, and for other forms of entertainment. Even in the wild, chimpanzees that meet might bow, kiss, hold hands, embrace, groom each other, or pat each other on the back. They show reactions similar to human responses in joyful and fearful situations. Although their nonlinguistic behavior sometimes appears close to ours, chimpanzees' vocalizations are not similar to those of humans. Chimpanzees in the wild produce calls, as do most other mammals or birds. And their call systems do not include more calls or show any more features of human language than the call systems of other animals. One species of chimpanzee, *Pan troglodytes* (sometimes called the common chimpanzee), produces up to thirty-four distinct calls. The fact that chimpanzee calls are not significantly closer to human systems of communication than other mammals is somewhat unexpected in light of the evolutionary closeness of humans and apes. Because of this closeness, some scientists believe that if an ape is put into a human environment, it will acquire language.

As far back as 1913, an attempt was made to raise a chimpanzee in a home environment and to teach it to speak. That attempt failed. The only success came almost thirty years later

when a chimpanzee named Viki was taught to "speak" four words: *mama, papa, cup*, and perhaps *up*. But these sounds were so crudely produced that some doubted whether they really were those words at all.

Could the linguistic competence of chimpanzees be limited to the mumbling of a few "possible" words? Language is a mental process, and speech is one delivery system for language. Could it be that the chimpanzee's brain is capable of understanding more linguistic principles than can be measured by its speaking abilities? Viki and other chimps have shown their ability to let others know some of their desires through gestures. Chimpanzees in the wild communicate by gesture and body posture, as well as by sounds. Perhaps using a system of gestures to tap the hidden potential of the simian mind could best test the chimpanzee's mental and linguistic abilities.

On the basis of such a premise, a series of experiments began in 1966. This research raised intriguing questions and prompted interesting hypotheses in the academic community. The simian subjects of these experiments are reportedly being taught to "converse" by using the gestural language of the Deaf. (See Box 11-2, for an explanation of the capitalization of Deaf.)

When news of these ape-language experiments became generally known, two polar opposite reactions occurred. There were those who emphatically insisted that the apes were capable of human language, if only on a very rudimentary level. But there were also those who maintained that only humans possess language abilities, and that the potential for these abilities had evolved over millions of years of **hominin** evolution after the hominins had split off from the ape lineage. Whatever the apes were doing, it was not language. The skepticism over the ape-language studies was extensively formulated beginning in 1979 and the early 1980s. We will first look at early experiments done by the people who argued for the apes' linguistic ability, and then proceed to the criticism of these experiments, followed by concluding remarks on ape-language research.

The term **hominin** refers to modern humans and to the ancestors of modern humans that go back in time more than six million years.

Washoe

An eleven-month-old African-born chimpanzee arrived in Reno, Nevada, in June 1966 and was named Washoe. University of Nevada psychologists Allen and Beatrice Gardner hypothesized that the linguistic competence of the chimpanzee could be displayed by a system of gestures. The Gardners chose American Sign Language (ASL or AMESLAN for short) as the channel to discover Washoe's abilities. ASL is a system of signs made with the hands (see Chapter 11). Washoe was not to hear a word of English. The researchers communicated with her solely by using a modified form of ASL and by making chimpanzee-like noises. By 1975, Washoe had learned 160 signs that she, according to the Gardners, used accurately to describe objects, to ask and answer questions, to follow instructions, and to perform a wide range of communicative acts. What was more important than the use of individual signs, however, was Washoe's ability to string signs together to form what the Gardners called sentences.

Roger Fouts, who had worked with the Gardners, took Washoe to the Institute of Primate Studies in Oklahoma. There, Fouts was able to teach ASL to several other chimpanzees, indicating that Washoe was not unique in her abilities.

Fouts also believed that Washoe's use of signs displayed rudimentary syntax. When Washoe's vocabulary was no larger than about twelve signs (at about the tenth month of her training), she began to do a remarkable thing. She started to combine her signs without having been taught to do so. Washoe had seen the Gardners use a series of signs, but they had not yet attempted to teach her this when she began spontaneously signing such things as "gimme sweet" and "come open." She developed a preference for putting her signs in a specific order, such as preceding the sign for "me" with the sign for "you."

An especially interesting question when Washoe was transferred to the Institute of Primate Studies was, "Will Washoe transmit her knowledge to any children she may have?" The

opportunity to answer this question presented itself twice, once in 1976 and again in 1979, when Washoe became a mother. Unfortunately, both of her babies died. However, in 1979 Washoe "adopted" a ten-month-old chimpanzee named Loulis. Loulis had been taught only seven ASL signs by humans. In 1980, Fouts and the chimpanzees moved to Central Washington University.[9] Here, Washoe and Loulis joined other signing chimps. Chimp-to-chimp signing interactions as well as other research topics continue at Central Washington University. By 1987, Loulis knew about fifty signs. Fouts claims that most of these signs were learned directly from interactions with Washoe and three other chimpanzees in the project. Washoe died in 2007.

Many chimpanzees have been taught what their trainers call ASL. Other chimpanzees have been taught either to place plastic discs representing words on a magnetic board or to create messages at a computer console.

Kanzi

In the 1980s, articles about a young bonobo named Kanzi began to appear. (Bonobos are a type of ape, *Pan paniscus*, once known as the pygmy chimpanzee.) Kanzi was raised around apes that were being taught to use a computer keyboard. One of the other apes was his adoptive mother, Matata. Kanzi had no training in this skill, but would watch as Matata was trained. There were arbitrary symbols on the keyboard, each representing a word. Investigators at the Yerkes Regional Primate Center in Georgia were amazed when Kanzi spontaneously began to use the computer and "asked" to be chased. Kanzi also seems to understand spoken language and responds correctly to certain oral commands.

Psychologist Sue Savage-Rumbaugh, who works with Kanzi, maintains that he has a simple understanding of grammar. For instance, if Matata initiated an action, Kanzi would describe the incident by putting the verb second, as in "Matata bite." However, if Matata was acted upon, the verb would go first, as in "grabbed Matata," meaning someone grabbed Matata. Kanzi appears to be able to respond correctly to sentences such as "Go to the office and bring back the red ball" in a manner similar to a two-and-a-half-year-old child.[10] The conclusion that Kanzi might display a basic understanding of simple grammar has been reinforced by recent studies with other primates.[11] It has also been asserted that bonobos understand and utilize what might be a language universal: turn taking.[12]

Koko

Many students of animal behavior thought that gorillas were not as smart as chimpanzees, but Koko, a lowland gorilla (*Gorilla gorilla*), has begun to dispel this idea. Koko, who is being taught a modified form of ASL, had an active vocabulary of 375 signs by the age of seven. According to psychologist Francine Patterson, by the time Koko was thirty-eight, in 2010, she could use about 1000 ASL signs and also understand about 2000 words of spoken English.

In April 1998, Koko became the first nonhuman to chat on the Internet. Through interpreters, she answered questions posed to her by people using America Online. Koko has from time to time become well known to a large segment of the general population.

A nonprimate that received a fair amount of media coverage for its supposed communication abilities was Alex the parrot. Alex is the subject of Box 1-3.

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[9]See www.cwu.edu/primate/research-and-internship and www.friendsofwashoe.org.

[10]William H. Calvin, "The Emergence of Intelligence," *Scientific American* 271 (1994), 100–107 (revised in 1998).

[11]Fitch and Hauser, 377–380. Also, see Paul Raffaele, "Speaking Bonobo," *Smithsonian* 37 (November 2006).

[12]Janni Petersen and William M. Fields, "Aspects of Repetition in Bonobo–Human Conversation: Creating Cohesion in a Conversation between Species," *Integrative Psychological and Behavioral Science* 43 (March 2009), 22–41.

BOX 1-3

Alex the parrot

Alex with Irene Pepperberg. Rick Friedman/Getty Images

When he died in 2007, Alex was thirty-one years old, and Irene Pepperberg of Brandeis and Harvard University had been studying Alex for his communication abilities for thirty years. Alex was an African grey parrot that Dr. Pepperberg believes did more than just mimic human language. Mimicking is a "mindless" repetition of something seen or heard. Pepperberg believes that Alex could, to some degree, imitate what he saw and heard. Imitation involves cognitive processes not involved in mimicking, such as matching one's own behavior to that of others. She contends that Alex could use the words he had learned to coin new words and to pronounce words somewhat differently than they are by humans. For instance, parrots do not have lips, so Alex could not produce *b, p,* and *m* sounds that are in part made by bringing both lips together (a bilabial sound described in the next chapter). He substituted different sounds for the ones that he could not produce.[13] Not everyone believes that these are examples of true imitation.

Pepperberg believes that Alex was capable of thinking, which includes reasoning and making calculated choices among alternatives. For instance, if Alex was asked to name the color of corn, he replied *yellow* even though he could vocalize the names of six other colors. According to Pepperberg he could identify one hundred objects, count objects up to the number six, and identify several shapes. She says Alex could also do mental tasks such as decide whether something is bigger, smaller, or the same size as something else. Pepperberg does not call Alex's vocalizations language, but she does believe that Alex was doing some of the mental tasks made possible in humans by language abilities.[14]

Although this may not have a direct relationship to Alex's skills, in 2004 researchers reported that a gene present in both birds and humans has a role in the vocalizations of both. In humans, speaking dysfunctions occur if there is a mutation (a chemical change) to this gene, which geneticists call the FoxP2 gene. Although motor functions remain normal, people with the mutation lose their ability to understand complex language, pronounce words properly, or string words into grammatical sentences. Researchers determined that in birds that vocalize, the gene "switches on" just before a bird begins to change a song. The researchers hypothesize that the gene allows learning flexibility that permits the bird to imitate the sounds that it hears.

Source: Based on Sebastian Haesler, et. al., "FoxP2 Expression in Avian Vocal and Non-Vocal Learner," *Journal of Neuroscience* 24 (March 31, 2004), 3164–3175.

[13]Irene M. Pepperberg, "Grey Parrots Do Not Always 'Parrot': The Roles of Imitation and Phonological Awareness in the Creation of New Labels from Existing Vocalizations," *Language Sciences* 29 (January 2007), 1–13.

[14]See Dinitia Smith, "A Thinking Bird, or Just Another Birdbrain?" *New York Times* (October 9, 1999) and Irene M. Pepperberg, "Animal Language Studies: What Happened?" *Psychonomic Bulletin and Review* (July 1, 2016), doi:10.3758/s13423-016-1101-y.

Skepticism over ape-language studies

One early skeptic of the ape's ability to learn language is Noam Chomsky, a linguist who we will discuss in subsequent chapters. Although Chomsky has never done ape-language research, he once said, "It's about as likely that an ape will prove to have a language ability as that there is an island somewhere with a species of flightless birds waiting for human beings to teach them to fly."[15] Cognitive psychologist Steven Pinker agrees with Chomsky and says, "You can train animals to do all kinds of amazing things."[16] In recent years, Chomsky has tempered somewhat his ideas about the uniqueness of human language, as shown in Box 1-1. However, the uniqueness of language to humans is still hotly debated.

In 1973, psychologist Herbert S. Terrace set out to add information to the other ape-language research projects which would aid in disproving Chomsky's original contention. Terrace even named his chimpanzee Nim Chimpsky as a play on Noam Chomsky's name (see Figure 1-5). However, after forty-four months of working with Nim, Terrace became one of the strongest supporters of Chomsky's original idea that language is unique to humans. Here we will see why.

For a communication system to be called language, it must have a lexicon and a grammar. Terrace is not convinced that the apes display the ability to learn grammar or the ability to use it. He points out that in word sequences the ape might simply be using two or more behaviors that would individually net the same reward. For instance, when Washoe used the sequence "more drink," Terrace believes this did not display the ape's knowledge of *more* as a modifier of *drink*. Instead the ape had learned (through conditioning) that either the word *more* or *drink* would be rewarded with food, a hug, a pat, or other positive reinforcement. The combination of signs maximizes the chance of reward and need not imply any knowledge of grammar. If Terrace is correct, it also might mean that the ape did not recognize the ASL (or computer readout) as having meaning in the same way a human would. If all of this is true, then the ape's lack of a true lexicon and grammar would indicate a lack of language abilities, at least as reflected in the early ape-language studies.

Terrace also offers another criticism. He believes that the ape researchers were giving their subjects subtle subconscious clues to the correct response. He noted this in his own research. When Terrace studied videotapes of his assistants communicating with Nim, he discovered the subtle prompting. For instance, an assistant was holding a cat. She prompted a response from Nim, which turned out to be "me hug cat." At first this seems like a sentence. On examining individual frames of the videotape, it was detected that the researcher was signing *you*

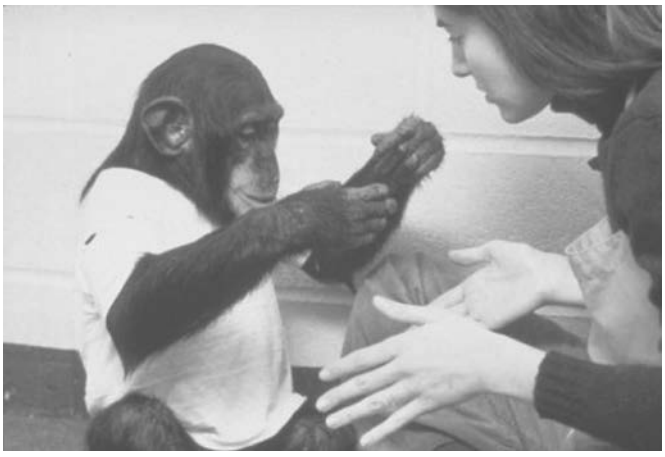

FIGURE 1-5 Nim Chimpsky producing the sign for BOX

[15]"Are Those Apes Really Talking?" *Time* (March 10, 1980), 50, 57.
[16]George Johnson, "Chimp Talk Debate: Is It Really Language?" *New York Times* (June 6, 1995), Section C, 1.

when Nim was signing *me*; she was signing *who* when the chimpanzee was signing *cat*. Nim had learned to sign *cat* for *who* during drills. Could it be that Nim was simply responding with a conditioned response to the assistant's cues? If the chimpanzee were responding in a conditioned way, then the resulting utterance would not be a sentence in the human sense. The chimpanzee could have been unknowingly cued to produce a string of signs that yield a reward. It might have been the act of producing that string of signs—not the individual meanings of the separate signs—that was significant. In fact, the behavioral psychologist B.F. Skinner (1904–1990) said that he could teach a pigeon to do the same thing that the apes were doing.

Terrace examined film of other "talking" apes and found the same type of prompting. Thomas Sebeok and Donna Jean Umiker-Sebeok have discussed an even more subtle type of cueing. They believe that the **Clever Hans effect** is at work in the ape-language studies. Clever Hans was a horse that learned to do amazing feats, such as stamp out the answers to mathematical and verbal problems using his hoof. The horse was actually reacting to unintentional cues from the trainer or his audiences. The Sebeoks think that the apes are also reacting to such things as the researcher's facial expressions, breathing patterns, and perhaps pupil dilations.

The **Clever Hans effect** is the name given to the fact that a nonhuman's or human's behavior might be influenced or directed by subtle and often unintentional cues of others. In terms of experimentation, these cues might reflect a researcher's expectations of what the results of the experiment should be.

Terrace includes the following additional criticisms of ape-language studies:

1. Nim's utterances did not increase in length over time.
2. Eighty-eight percent of Nim's utterances followed the researcher's utterances.
3. Nim's responses were not usually spontaneous.
4. Many of the ape's responses were imitations of the human utterances.
5. Nim rarely added information to a "conversation."
6. The ape had no concept of turn taking in a conversation.

So to Terrace, what Nim (and the other apes) was doing did not look like human language. This conclusion and that of the Sebeoks have outraged many of the pioneers in ape-language research. The Gardners have characterized Terrace's criticisms as "weasel talk" and "innuendo." They had even considered suing him.[17] In turn, the Gardners and others have labeled Terrace's Nim project as "poor" and a "gross oversimplification."[18] Patterson has said that Terrace's "use of information on the gorilla Koko for comparative purposes is selective and, in some instances, inaccurate and misleading."[19] Terrace contends that apes do not learn to communicate with ASL and other systems in the same way that children learn language. However, many people have criticized Terrace's understanding of how children do learn language. The exact mechanisms of human language acquisition are not known. For instance, the Clever Hans effect might be important in a child's acquisition of language. If this were so, then the fact that the Clever Hans effect takes place with the apes would not be in itself a valid criticism of the conclusion that the apes are producing human language. Indeed, nonverbal cues are extremely important in human communication, often more important than speech. To assess the language-learning competence of apes, we must know much more about the process in human children. Only then could valid ape–child comparisons be made.

Many of the same detractors from the ape-language studies have been critical of people who equate Alex the parrot's vocalizations to language (see Box 1-3). For instance, Herbert Terrace believes that Alex's responses were conditioned responses that only minimally involved anything close to thinking. Alex responded to some immediate external stimulus. Humans respond in that way too, but they also respond to constructs that only exist in the mind. This displacement was absent in Alex.

The proponents of ape-language studies, such as Sue Savage-Rumbaugh, counter that their critics have adopted a Cartesian dualism approach.[20] The followers of the seventeenth-century

[17]"Are Those Apes Really Talking?," 50, 57.
[18]Joel Greenberg, "Ape Talk: More Than 'Pigeon English'?." *Science News* 117 (May 10, 1980), 298.
[19]Francine G. Patterson, "Ape Language," *Science* 211 (January 2, 1981), 86–87.
[20]Robert Seyfarth, "Apes, Language, and the Human Mind," *Nature* 395 (September 3, 1998), 29–30.

philosopher, mathematician, and scientist René Descartes (1596–1650) believed that only humans had minds and language. This made them unique in the animal kingdom. Savage-Rumbaugh thinks that this dualism is artificial; humans and apes are so closely related that there is no reason to assume that apes do not share with us at least the rudimentary elements of language potential.

Savage-Rumbaugh's argument is misleading. Although chimpanzees and bonobos are our closest relatives genetically (with other apes close behind), humans and apes split from a common ancestor sometime between 5 and 8 million years ago. The predominance of evidence seems to indicate that the human capacity for language-type communication does not go back beyond about 2.6 million years ago. This evidence is admittedly indirect. Our human ancestors began making stone tools 2.6 million years ago. Starting at this point we see in the fossil and archaeological record an increase in technological sophistication, and an accompanying increase in brain size.

Broca's area of the brain controls the larynx, lips, tongue, and other areas of the digestive and respiratory systems involved with oral and facial fine motor skills in the production of speech.

By about 2 million years ago, in a hominin species called *Homo habilis*, endocranial casts (casts of the inside of the braincase) show the impression of **Broca's area of the brain**. In addition to the brain, the act of speaking is made possible by elements of the digestive and respiratory systems. Many of the parts of these systems have evolved over the last 2–3 million years in ways that facilitate the ability to speak. Broca's area of the brain controls the larynx, lips, tongue, and other areas of the digestive and respiratory systems involved with oral and facial fine motor skills in the production of speech.

Modern apes are the result of a different evolutionary path that was not accompanied by complex tool manufacture, major increases in the brain, or major development of the language areas of the brain.[21] This does not mean that certain abilities of the common ancestors of apes and humans had nothing to do with the evolution of language abilities. Some of these traits and mutations (changes) to the FoxP2 gene (see Box 1-3) might have acted as a catalyst to language evolution in the hominin line and to nonlanguage gestural abilities in the ape line. Also, recent research indicates that at least one species of monkey, the macaque, and perhaps by extension other nonhuman primates, can produce several human-like speech sounds, including five common vowels. The authors of this research believe that some nonhuman primates have the anatomical ability to produce humanlike speech, but lack the brain circuitry to organize those sounds into language.[22]

Wernicke's area of the brain is one of the areas that is involved with the comprehension of speech and the selection of lexical items.

Broca's aphasia is a condition caused by damage to Broca's area of the brain and is characterized by problems in the production of speech and loss of some grammatical understanding of language.

Wernicke's aphasia, caused by damage to Wernicke's area of the brain, is characterized by speech that includes lexical errors and nonsense words.

With humans, each cerebral hemisphere is specialized for different functions. Language is not exclusively a left-brain function, but many of the major areas of the brain associated with language are on the left side. They include Broca's area and **Wernicke's area of the brain**. Broca's area is primarily involved with speech production. Damage to this area leads to a condition known as **Broca's aphasia**, characterized by problems in the production of speech and loss of some grammatical understanding of language. Wernicke's area is involved with the comprehension of speech and the selection of lexical items. Damage to Wernicke's area leads to a condition called **Wernicke's aphasia**, characterized by speech that includes lexical errors and nonsense words. The speech of aphasic individuals does not have understandable meaning or syntax.

Chimpanzees, bonobos, and gorillas show development in an area of the brain where Broca's area resides in humans.[23] Chimpanzees show development in an area of the brain that in humans is Wernicke's area.[24] Apes have larger left hemispheres than right, as do humans. This evidence might indicate that the neurological stage for language was set well before humans

[21]Stanley H. Ambrose, "Paleolithic Technology and Human Evolution," *Science* 291 (March 2, 2001), 1748.
[22]W. Tecumseh Fitch, Bare De Boer, Neil Mathur, and Asif A. Ghazanfar, "Monkey's Vocal Tracks Are Speech Ready," *Science Advances* 2 (December 9, 2016), http://advances.sciencemag.org/content/2/12/e1600723.full.
[23]Claudio Cantalupo and William D. Hopkins, "Asymmetric Broca's Area in Great Apes," *Nature* 414 (November 29, 2001), 1038.
[24]Patrick J. Gannon, Ralph L. Holloway, and Allen R Braun, "Asymmetry of Chimpanzee Planum Temporale: Humanlike Pattern of Wernicke's Brain Language Area Homolog," *Science* 279 (January 9, 1998), 220–222.

started to make stone tools. However, the fact that modern apes have some development in Broca's and Wernicke's areas of the brain does not mean that they have language abilities. Claudio Cantalupo and William D. Hopkins believe that the development in these areas in the ape evolutionary line might have to do "with the production of gestures accompanied by vocalization."[25]

Theory of mind

Another contrast between human and nonhuman communication involves the concept of the **theory of mind**—the ability to characterize and predict the mental states of others. Humans, perhaps from a time before they can even speak, show a desire to share what they have on their minds. Certainly, five-year-old children constantly inform their parents (or anyone else who will listen) about what they want and what interests them. They might make predictions about people's emotional states, and ask people if they are happy or sad based on something said or on tone of voice, facial expression, or other nonverbal behavior. Similarly, adults are always making assumptions about what other people believe or know, including what other people think about them. Much of this is not expressed openly but exists as internal dialog (mind chatter). In fact, long ago sociologists and psychologists concluded that our personalities are in large part constructed on the basis of reacting to and altering our behavior based on perceptions of what others think of us. Sociologist Charles Horton Cooley (1864–1929) called this phenomenon **the looking glass self**. This is the human characteristic of building a concept of self through interpreting the perceptions we believe that others have of us and their behavioral reactions toward us. This is made possible by the theory of mind.

Theory of mind refers to the ability to characterize and predict the mental states of others.

The looking glass self is the human characteristic of building a concept of self through interpreting the perceptions we believe that others have of us and their behavioral reactions toward us.

Although some research indicates that animals show behaviors that seem to be empathetic and affectionate (every dog owner will tell you this) and nonhuman animals can coordinate activities with each other (perhaps even with humans, as discussed earlier with the turn-taking example of a bonobo and its researcher), it is not clear what motivates such behaviors and activities. They could be strictly the result of innate or conditioned behavior. But when humans communicate with each other they are constantly—sometimes very consciously—calculating the effect of what they say or do on others, and what the consequences will be to them. These calculations and predictions are based primarily on a person's socialization within a particular society within a particular culture, which in turn is constructed on culturally relative values, beliefs, and behaviors. An extreme example of this would be a speech by a politician where every word and phrase is evaluated for its effect on the target audience. The ability to calculate (not always accurately) the thoughts of others is a major trait of human cognition and communication; it appears to be absent or highly limited in other animals. However, it is difficult to test for the existence of a theory of mind in nonhumans.

The jury is still out

If true language abilities are in part a result of the evolution of bipedalism (the great apes are quadrupeds when on the ground), then language in the narrow sense may indeed be a uniquely human potential that evolved long after the hominin/ape lines split off from a common ancestor. But if Washoe, Koko, Kanzi, and other apes are really displaying some degree of linguistic competence or linguistic performance, then language, at least in the broadest sense of that concept, might no longer be qualitatively considered the exclusive domain of humans. Recent studies suggest that song birds and some nonhuman primates might be able to learn some minimal grammatical rules.[26]

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[25]Cantalupo and Hopkins, "Asymmetric Broca's Area in Great Apes."

[26]See Bruce Bower, "Message Songs: Wild Gibbons Warble with a Simple Syntax," *Science News* 171 (January 6, 2007), 5; Susan Milius, "Grammars for the Birds: Human-Only Language Rule? Tell Starlings," *Science News* 169 (April 26, 2006), 26; and Michael Hopkins "Shouting Monkeys Show Surprising Eloquence," *Nature* (May 15, 2006).

Language may simply not be an all-or-nothing phenomenon. Instead, language can be viewed as many-faceted. We do not have to consider language to be a yes-or-no potential. Apes' communicative abilities, especially in controlled situations, may simply come closer to human language-like abilities than the abilities of other animals. This would be expected because modern apes and modern humans shared a common ancestor. Abilities of the common ancestor that evolved into language in the human line might have evolved into the fluid and sometimes creative nonlinguistic communication we see in apes in the wild. It may also have provided apes in captivity with the ability to learn some aspects of language (see Box 1-1). Unfortunately, for several reasons ape-language studies have slowed down recently as funding has been difficult to find. Irene Pepperberg wrote an overview of animal-language studies from her point of view that provides a history of those studies and a review of what was learned and what could be learned from additional studies.[27] (For a fieldwork exercise in observing and comparing human and nonhuman communication, see Exercise 2, Appendix C.)

Summary

All animals convey information to members of their own species, and often to members of other species. Nonhuman animal communication can be extremely elaborate. Yet what strikes us the most in comparing nonhuman and human communication is the scope of human communication. As complex as bee and bird communications are, these systems are strictly limited as to the number and type of messages that they can produce. Human language is open. We are not limited to a small number of calls or songs about a restricted number of events.

Nonhuman communication is in large part stimulus-bound. A signal is emitted by virtue of exposure to some stimulus. Human language is stimulus-free. We respond to mental categorization of the world. The only factor limiting what we can communicate about is the capabilities of our minds. Although the external environment may be the basis for some of these categorizations, different humans will develop their own reality based on their cultural values and knowledge. There is basically only one way to behave as an American white-crowned sparrow because all such birds are genetically programmed to react similarly to the same stimulus. There are billions of ways to be human. Generally, we are not genetically programmed to react in highly specific ways to specific stimuli.

Can our closest relatives in the animal kingdom, the apes, learn language? Some researchers are convinced that they can, that Washoe, Koko, and other apes have learned language and used various non-oral systems to display their linguistic competence. Others say that this conclusion is unjustified. They believe that the research designs and conclusions of the ape-language researchers are not valid. Some of the detractors conclude that the apes are just displaying sophisticated conditioned behavior that outwardly looks like language but is not. Others, who previously dismissed the work of the ape-language researchers, now concede that apes and other animals may be able to learn to communicate using some of the features of language. Language may not be all or nothing. It might not be reasonable for us to expect an ape to learn and use all of the features of a human communication system. And it might be equally unreasonable to expect animals closely related to us biologically to be totally different from us in their communicative potentials.

Suggested reading

Bonvillain, Nancy, *Language, Culture, and Communication: The Meaning of Messages*, 7th ed., Upper Saddle River, NJ: Pearson, 2014. This book is an excellent introduction to anthropological linguistics.

[27]See Irene M. Pepperberg, "Animal Language Studies: What Happened?," *Psychonomic Bulletin and Review* 24 (February 2017), 181–185 (also available at http://alexfoundation.org/wp-content/uploads/2016/07/animal-language-Studies-Opinon.pdf).

Burling, Robbins, *The Talking Ape: How Language Evolved*, New York: Oxford University Press, 2007. Anthropologist and linguist Burling writes about his ideas on the nature of language and how it evolved.

Chomsky, Noam, *On Language*, New York: New Press, 1998. This volume includes two of Chomsky's classic works: *Language and Responsibility* and *Reflections on Language*. Chomsky is an MIT linguist who, more than anyone else in the twentieth century, changed the way linguists and other scientists view language.

Friederici, A.D., "Evolution of the Neural Language Network," *Psychonomic Bulletin and Review* 24 (February 2017), 41–47. This is a somewhat technical article on language areas of the brain and neural networks that might differentiate humans from other species.

Lieberman, Philip, "On the Nature and Evolution of the Neural Bases of Human Language," *Yearbook of Physical Anthropology* 45 (2002), 36–62. This is an excellent article that summarizes ideas on the evolution of language.

Pinker, Steven, *Words and Rules: The Ingredients of Language*, New York: Basic Books, 1999. Pinker is an MIT cognitive scientist who primarily studies language acquisition in children. He has written several popular books on human communication.

Websites

English Language and Linguistics Online: www.ello.uos.de/field.php/. This website includes a forum for academics to discuss linguistic issues and exchange information; offers fellowships for graduate students to act as editors of the list; and has hundreds of links to sites dealing with linguistic research, education, and technology.

The Linguist List: http://linguistlist.org. This online international community of linguists offers the "Ask a Linguist" service to answer general questions about language. The website presents text, videos, and exercises on numerous topics relevant to a course in introductory linguistics.

Organizations

There are hundreds of other excellent websites that have information on linguistic topics. Those listed below represent organizations that deal with relevant topics. Many of these sites have links to other sites. Each subsequent chapter will list a few sites for the topic of that chapter. There are also websites included in the body of the text for some topics.

American Anthropological Association: www.aaanet.org
American Psychological Association: www.apa.org
American Sociological Association: www.asanet.org
American Speech-Language-Hearing Association: www.asha.org
Linguistic Society of America: www.lsadc.org
Linguistics Society of Great Britain: www.lagb.org.uk/
Semiotic Society of America: https://semioticsocietyofamerica.org/

Review of terms and concepts: the nature of communication

1. Communication is _____.

2. The consequence of communication is _____.

3. Language is one form of _____.

4. Language is a code made up of a _____and a _____.

5. All codes have _____.

6. A grammar refers to the rules for combining various types of linguistic elements. There are also rules for combining units of sound. The study of these rules is called _____. _____ deals with how words are constructed. How these words are combined into larger units is called _____. And the study of meaning is called _____.

7. Most of the rules of a language are known _____.
8. A person's internalized knowledge of a language's grammar and lexicon is called _____.
9. The way we actually speak is called our _____.
10. Language resides in the _____.
11. The three ways in which humans can communicate linguistically are _____, _____, and _____.
12. Language is not dependent on _____ or _____.
13. Nonverbal communication appears to be like a "dance" that includes spatial arrangement, physical appearance, facial expressions, and touching behavior, which appear to be coordinated. This "dance" involves _____.
14. Bees do not learn any aspects of their "dance." This statement is _____ (true or false).
15. Bees communicate the _____, _____, and _____ of a food source to members of their hive through elaborate dances.
16. In addition to the visual channel of communication, bees use the _____ channel of communication by leaving _____ at the source of the food supply.
17. Multiple channels of information or multiple messages over the same channel of communication that indicate the same information are called _____.
18. Bird calls, as compared to bird songs, are generally _____ and _____. Songs, on the other hand, are _____ and _____.
19. Bird songs of different species are often the same or similar. This statement is _____ (true or false).
20. Language is impressive for its _____.
21. The ability to coin new words is called _____, and the related ability to create new combinations of words (sentences) and to understand sentences that you have never heard before is called _____.
22. The number of messages that humans can generate by using language is potentially _____. This _____ (is or is not) true of most nonhuman communication systems.
23. One word is independent of another. Therefore, words are _____ units.
24. The units of language are _____ in that they have no direct relationship to what they refer to.
25. Displacement is _____.
26. The ability to say false or fictional things is called _____.
27. The fact that most nonhuman communication is initiated by something that occurs in the environment led to the characterization of nonhuman communication as being primarily _____, whereas most human communication is _____.

28. Washoe was a _____ who learned to use _____.
29. Koko, a _____, has learned _____ (more or fewer) signs than Washoe.
30. Everyone believes that apes have really learned to use a human linguistic system in the same way that humans use language. This statement is _____ (true or false).
31. _____ is an ape-language researcher mentioned in the text who does not believe that the apes are really learning language.
32. Some of the criticisms of the conclusion that apes are communicating linguistically (in the narrow sense as described in Box 1-1) are

_____

_____

_____

_____

33. Most ape-language researchers believe that their critics have unfairly assessed them. This statement is _____ (true or false).
34. The area of the brain that is involved in the production of speech is called _____, whereas the area of the brain that is involved with the comprehension of speech is called _____.
35. In general, the _____ (right or left) hemisphere of the brain "houses" the main language processing areas.
36. Language may not be an all-or-nothing phenomenon. What are some evolutionary explanations for this statement?

_____

_____

_____

_____

End-of-chapter exercises

1. What are some of the functions of communication?

_____

_____

_____

_____

2. What elements do all communicative systems have in common?

_____

_____

3. What is the relationship of language to communication?

4. What is the difference between linguistic competence and linguistic performance?

5. What is meant by the terms *sender*, *receiver*, *message*, *channel of communication*, *code*, *encode*, and *decode*? Although these terms are useful in the discussion of communication, why is communication not simply a linear process of a sender transmitting a message to a receiver? What additional elements factor into human communication?

6. In general, what do the terms *lexicon* and *grammar* mean?

7. Are the terms *language* and *speech* synonymous? Explain.

8. What are three main ways in which humans can communicate linguistically?

9. Are the terms *verbal*, as in *verbal communication*, and *vocal*, as in *vocal communication*, synonymous? Explain.

10. A mynah bird or parrot can be taught to "talk." Why is this not really language?

11. In what way does the bee's waggle dance display productivity? How is the bee's productivity different from that of human language?

12. Make up a chart comparing bee dancing, bird sounds, and human language. Compare these systems in terms of openness, productivity, arbitrariness, displacement, prevarication, how acquired, and relationship to external stimuli.

13. What are the differences between bird calls and bird songs?

14. What is the Clever Hans effect?

15. Apes can learn language. Do you think this statement is correct? Construct a chart showing the pros and cons of this statement.

CHAPTER 2

Phonetics: the sounds used in languages

LEARNING OBJECTIVES

- **Name and explain what parts of the respiratory and digestive systems double as speech organs.**
- **Discuss the ways that consonants and vowels differ from each other.**
- **Describe how one consonant is differentiated from another consonant.**
- **Describe how one vowel is differentiated from another vowel.**
- **Explain what is meant by the term *suprasegmental*.**
- **Explain why linguists use a phonetic alphabet to represent speech sounds instead of regular spelling.**

Millions of years of evolution have resulted in an amazing instrument: the human voice. The voice can be used to inform, persuade, trick, console, and change emotional states—as evidenced by skillful orators, actors, and singers. To the linguist Benjamin Lee Whorf (1897–1941), speech was "the best show man puts on."[1] Phonetician Dennis Fry has argued that the designation *Homo loquens* (Man, the Talker) is a better label for modern humans than *Homo sapiens*.[2] **Phonetics** is the study of sounds used in speech.

Phonetics is the study of speech sounds: their physical properties, the way they are received and decoded by the brain, and the way they are produced.

The process of speech communication is, in part, dependent on the nature of sound. Our understanding of the physics of speech sounds has become so sophisticated in recent decades that we can create synthetic (electronic) speech that is almost indistinguishable from naturally produced speech. This technology has been applied to the development of talking machines (such as computers) for business, educational, military, scientific, medical, and household uses, as well as to aid the blind. The study of the physical properties of sound is called **acoustic phonetics**.

Acoustic phonetics is the study of the physical properties of sound.

Auditory phonetics is the study of how sounds are received by the ear and decoded by the brain. Auditory phonetics focuses on the listener rather than the producer of speech. The study of auditory phonetics relies heavily on knowledge that comes from the study of anatomy and physiology. This text does not cover acoustic and auditory phonetics. These areas of phonetics can be explored further in the suggested reading and websites at the end of the chapter.

Auditory phonetics is the study of how sounds are received by the ear and decoded by the brain.

[1]Benjamin Lee Whorf, *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf*, ed. John B. Carroll (Cambridge, MA and New York: Technology Press and Wiley, 1956), 249.
[2]Dennis Fry, *Homo loquens: Man as a Talking Animal* (Cambridge: Cambridge University Press, 1977), 1–3.

Articulatory phonetics

Articulatory phonetics is the study of the production of speech sounds.

The type of phonetics that we will discuss is called **articulatory phonetics**, which is the study of the production of speech sounds. Unlike auditory phonetics, articulatory phonetics deals with the sender rather than the receiver of the message.

The apparatus of speech

For some animals, evolution has resulted in specific organs that function only for communication. For instance, among primates the siamang (*Hylobates syndactylus*), a small-bodied ape from Asia, has an air sac under the chin; the air sac inflates during vocalization and is probably used to magnify the animal's howls. A male ring-tailed lemur (*Lemur catta*), a primate from Madagascar, possesses a specialized gland on his forearm which is used to rub scent on tree branches to mark his territory. Although there are many other examples of specialized structures used only for communication, most animals communicate with anatomical structures that are used for other activities. In humans, the respiratory and digestive tracts produce speech as the brain directs them. For example, movements of the tongue and air from the lungs are important in the production of speech sounds. The respiratory and digestive tracts have been significantly altered throughout evolution to allow for speech.

Ingressive sounds are speech sounds that are produced by sucking air into the mouth.

Egressive sounds are produced by expelling air from the lungs.

The **articulators** are the organs of speech.

Altering the characteristics of a stream of air produces speech. The airstream used in speech can originate at different locations, but the lungs are the usual initiators. The lungs act as bellows, pushing air through the throat, nose, and mouth. Although it is possible to produce speech sounds while inhaling (**ingressive sounds**), most sounds in all languages are produced by expelling air (**egressive sounds**). The air is modified by the structures of the respiratory and digestive systems before it is released. These structures are referred to as the organs of speech or **articulators**.

The **trachea (windpipe)** is a tube that extends from the voice box to the lungs.

The **larynx (voice box)** is the uppermost part of the trachea that contains the vocal cords or folds and is one of the main sound-producing organs.

Vocal folds (vocal cords) are a muscular pair of elastic folds, which can be moved into various degrees of openness.

Air from the lungs travels up the **trachea** (windpipe) and into the **larynx** (voice box). The larynx contains two small, tough membranes that evolved primarily as a valve to protect the airway and lungs from food and fluids. With respect to speech, these membranes are called **vocal folds**. Vocal folds is the current term for what were called vocal cords in the past. The term vocal folds is used because they are not cords in the sense of a string or rope, but are a muscular pair of elastic folds, which can be moved into various degrees of openness to control the flow of air (see Figure 2-1).

The **glottis** is the space (opening) between the vocal folds.

The **epiglottis** is a membranous flap that covers the glottis during swallowing and prevents anything that is swallowed from entering the lungs.

The space between the vocal folds is called the **glottis**. A membranous flap, the **epiglottis**, covers the glottis during swallowing. Thus, food does not enter the trachea but is routed through the esophagus into the stomach.

The **pharyngeal cavity** is the space or passageway in the throat.

The **nasal cavity** is the passageway in the nose.

The **oral cavity** is the space or passageway in the mouth.

The **uvula** is the fleshy lobe at the back of the roof of the mouth.

The **alveolar ridge** is the hard ridge behind the upper front teeth.

The **hard palate** is the bony section of the roof of the mouth.

The **soft palate (velum)** is the back, fleshy section of the roof of the mouth that is movable and closes off the nasal cavity during swallowing.

After passing through the larynx, the air can be altered in a variety of ways by the continuously changing shape of the **pharyngeal** (throat), **nasal** (nose), and **oral** (mouth) **cavities**. However, the greatest variety of possible alterations of the airstream occurs by the action of the structures in the oral cavity. Here, the position of the tongue can change the quality of the sound by moving up and down, or back and forth. In addition, the position of the teeth, lips, and **uvula** (the fleshy lobe at the back of the roof of the mouth), and the way in which these articulators move in relationship to each other, will all create a vast array of different sounds. The tongue can also move toward and touch the **alveolar ridge** (the ridge behind the upper teeth), the **hard palate** (the bony part of the roof of the mouth), or the **soft palate** or **velum** (the back, fleshy section of the roof of the mouth). (See Figure 2-1.)

Breathing and speech

We can maintain a continuous flow of conversation only when exhaling air from the lungs. All speech sounds in English are egressive and pulmonic (produced by air originating in the lungs). A resting adult breathes in and out about sixteen times each minute (once every 3.75 seconds), and the time spent inhaling and exhaling is almost equally divided (1.876 seconds each

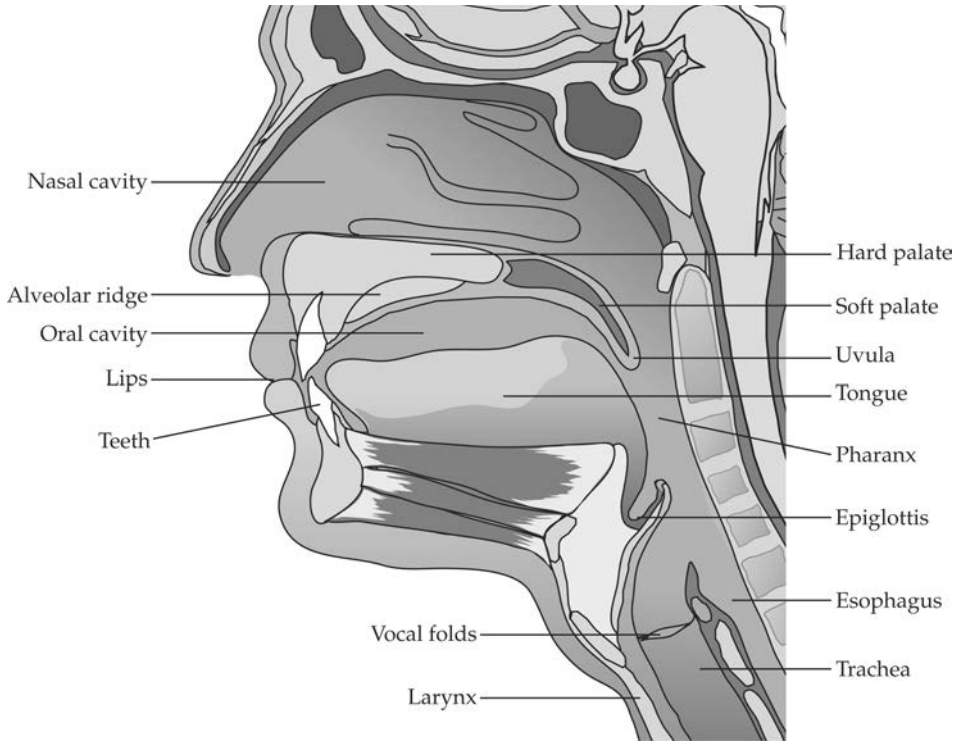


FIGURE 2-1 The vocal apparatus

per cycle). If this breathing rhythm were maintained while talking, a speaker would produce 1.875-second utterances followed by 1.875-second pauses. Speech would be painfully slow.

This drawn-out speech is avoided because the brain can regulate the rhythm of breathing so that the exhalation part of the breathing cycle can be greatly extended. This allows time to complete even "long-winded" statements before taking another breath. In fact, you may have noted that an excited person who is talking rapidly and in long utterances quickly becomes winded and must pause to take a deep breath. During speech, the brain regulates breathing by automatically creating pauses at grammatically convenient places in an utterance, such as at the end of a phrase, clause, or sentence.

Voiced and voiceless sounds

The larynx gives "vitality" to speech. The air exhaled from the lungs does not in itself produce speech sounds. To create such sounds, the flow of air must be altered into sound waves of varying qualities and characteristics. This begins in the larynx with the degree of opening of the vocal folds. The folds are in a constant state of flux. When they are together, a narrow pathway is created for the air to flow through, setting the folds into oscillation or vibration. The resultant sounds are called **voiced sounds**. When the vocal folds are apart and the airstream flows smoothly through, **voiceless sounds** are produced. The difference in these sounds is easy to feel. If you gently place a finger on the front of your neck at the level of the larynx, and in a normal voice say a long *v* sound (which can be written as [vvvvvv]), you will notice vibrations coming from your larynx. Now, do the same thing with the *f* sound, [ffffff], and notice the lack of vibrations. That is because [v] is a voiced sound and [f] is voiceless (see Figure 2-2).

Voiced sounds are produced, in part, by the vibrations of the vocal folds.

Voiceless sounds are produced when the vocal folds are apart and the airstream flows from the larynx with minimal or no vibrations.

You will notice that we used brackets to enclose the symbols for the [f] and [v] sounds. Brackets signify that this is phonetic transcription, indicating how it is pronounced. As you know, the way a word is represented by **orthography**, or spelling, does not always mirror the way it is pronounced. In phonetics, for instance, the *ng* sound in *wing* or *going* is one sound, although two letters represent it in spelling. The *ng* sound is represented phonetically by a

Orthography refers to spelling and to the writing system of a language.

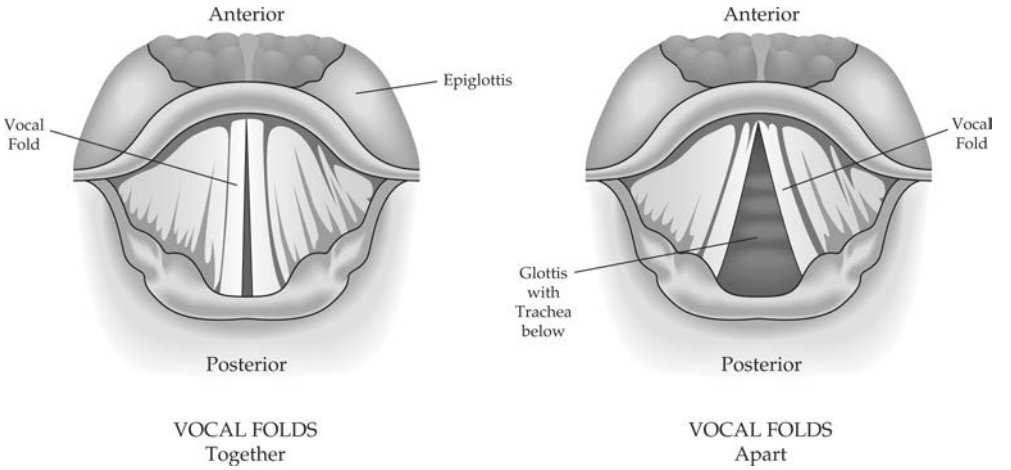


FIGURE 2-2 The vocal folds
When vocal folds are together, a voiced sound results, as in the initial sound in *vine*. When the vocal folds are apart, a voiceless sound results, as in the initial sound in *fine*.

TABLE 2–1 English consonants

		Place of articulation							
Manner of articulation		**Bilabial**	**Labiodental**	**Dental**	**Alveolar**	**Palatal**	**Velar**	**Labiovelar**	**Glottal**
Stop	vl vd	p b			t d		k g		ʔ
Fricative	vl vd		f v	θ ð	s z	š ž			h
Affricate	vl vd					č ǰ			
Nasal	vl vd	m			n		ŋ		
Lateral	vl vd				l				
Retroflex	vl vd				r				
Glide	vl vd					y		ʍ w	

- This table is a simplification; finer distinctions can be made. Also, different linguists may use different terms for the places of articulation.
- In the production of nasal sounds, the airstream is, momentarily, completely obstructed in the oral cavity, so nasals can be considered to be stops.
- The [l] and [r] are also classified together as liquid sounds (see text).
- Some of the symbols used in this table and for the vowels later in the chapter are symbols used by many North American linguists and differ from the symbols used by linguists in other parts of the world. See Box 2-1 for an explanation of this.

special symbol [ŋ]. As we proceed in this chapter, we will introduce other phonetic symbols (see Table 2-1).

Voiced sounds are more numerous in English than voiceless sounds. Only about ten sounds used in English are voiceless. However, dividing natural events, like the production of speech sounds, into a limited number of categories is a convenience. In the real world there are differing degrees of voicing, with some sounds being voiced more than others. Also, voicing

depends in some instances on context; that is, surrounding sounds. For instance, the normally voiceless consonant [h] becomes partially voiced in the word *behind* and in other instances when [h] appears between two voiced sounds, such as vowels.

The brain controls the larynx with remarkable speed and accuracy, putting the larynx back and forth from the voiced to voiceless configuration, often within 10 milliseconds or less. In addition to [v], the English sounds that are voiced include the [b] in *bat*, the [d] in *dime*, the [g] in *goat*, and the [z] in *zoo*. Joining [f] and [h] as voiceless sounds are the [p] in *pat*, the [t] in *tad*, the [k] in *coat*, and the [s] in *Sue*. Table 2-1 lists voiced and voiceless sounds in English.

All sounds can be classified as either voiced or voiceless. Some sounds differ only in this one characteristic. For instance, [z] and [s] are produced in the same way and at the same location in the mouth, the only difference being that [z] is voiced and [s] is not.

Consonants and vowels

An airstream, usually from the lungs, supplies the energy for speech. The degree of openness of the vocal folds sets up an alternation between oscillating and non-oscillating pulses of air. Yet this is not speech. The airstream must be altered in still other ways before speech will be intelligible. Speech sounds are divided into two major classes, consonants and vowels.

Consonants

A **consonant** is produced when the pulses from the larynx, either voiced or voiceless, are impeded by a part of the vocal tract. The airstream can be immediately blocked by the momentary closure of the glottis (the gap between the vocal folds) followed by a sudden opening. Such a sound is called a *glottal stop*, for the location of the interruption of the airstream (the glottis) and the manner in which the stream is interrupted (momentarily stopped). When you cough, even though a cough is not a speech sound, you are creating this type of sound. When you respond with surprise by saying what might be represented in spelling as *uh-oh*, you are also making this kind of sound. In both cases you should be able to sense the vocal folds being pressed together.

A **consonant** is a speech sound that is produced when the airstream is constricted or stopped (and then released) at some place along its path before it escapes from the body.

The glottis is at one end of the vocal tract above the larynx. The lips are at the other end. In the initial sound of *pat*, the lips touch each other in a momentary obstruction of the airstream. This type of obstruction is called a *bilabial stop*. The obstructions that occur to create different types of consonant can take place at many locations between the glottis and the lips. Later, we will discuss these different places of articulation as well as the various manners of articulation, stops being only one.

Vowels

Vowels are sounds that are produced with no closure or obstruction of the airstream. The differences between various vowel sounds depend on which cavity (oral, nasal, or pharyngeal) is employed and on what shape is formed in that resonance chamber. The shape of the oral cavity is primarily affected by the position of the lips and the placement of the tongue. For instance, the vowel sound in the word *to* is produced with the high point of the tongue in the back of the mouth, the oral cavity relatively closed, and the lips rounded. The vowel sound in *cat* is produced with the high point of the tongue toward the front of the mouth, the oral cavity relatively open, and the lips spread. These differences will be explained and diagrammed later in the chapter.

A **vowel** is a speech sound produced without constriction or stoppage.

Consonants: place of articulation

Articulation is the production of speech sounds by the movement of the speech organs. We have noted that once out of the glottis, the airstream may or may not be obstructed in the cavity above the glottis. If it is not obstructed, we have a vowel; if it is obstructed, then we have

Articulation is the production of speech sounds by the movement of the speech organs.

a consonant. The following paragraphs list some of the "landmark" areas used in English to differentiate sound based on the place of articulation. We use the word "landmark" because various sounds can usually be produced in more than one way. The exact place of articulation for a specific sound will vary from person to person, and even from time to time for an individual. Furthermore, sounds that we perceive as being the same often are not the same in acoustic terms. In the listing of places of articulation, English consonants are used as examples. Speakers of other languages may form sounds at articulatory locations not used in English.

Bilabials are produced by bringing the lips together. This place of articulation can easily be illustrated by noting the position of the lips for the initial sounds in such words as *pool*, *boot*, and *money*. These sounds are phonetically represented by [p], [b], and [m], respectively.

Labiodentals, the initial sounds in *five*, *fine*, *vim*, and *vine*, are produced by raising the lower lip until it comes near the upper front teeth. The three bilabials, [p], [b], and [m], and the two labiodentals, [f] and [v], are sometimes grouped together under the general designation of labials.

Dentals are articulated by the tongue and teeth, in contrast to the labiodentals, which involve the articulation of the lower lip and teeth. The two dentals in English are found in the initial sounds in *think* and *then*. When you make one of these *th* sounds, your tongue may go either between the top and bottom teeth or behind the top front teeth. Because both ways are the usual place for producing these sounds, the term *dental* would seem better than the alternative term, *interdental*, sometimes used to describe the *th* sounds. *Interdental* implies only one of the two possible modes of production.

If you put your finger to your larynx, you will note that the *th* in *then* is voiced. Because the spelling *th* represents two different sounds, the English alphabetic representation is not adequate. In phonetic transcription, we represent the voiceless dental *th* sound with the symbol [θ] and the voiced dental *th* sound with the symbol [ð]. Some other words that include these two sounds in various positions are *thigh*, *ether*, *wreath*, *the*, *mother*, and *wreathe*. When written phonetically, the *th* sound in the first three would be represented by [θ], and in the second three by [ð].

Alveolar sounds are produced by raising the tip or blade of the tongue to the alveolar ridge, the bony ridge behind the upper teeth. The initial sounds in *time*, *dime*, *nine*, *sigh*, *zeal*, *lie*, and *reef* are all alveolar sounds. These sounds are represented phonetically by [t], [d], [n], [s], [z], [l], and [r].

Palatal sounds are formed when the blade of the tongue articulates with the back of the alveolar ridge or palate. The initial sounds in *shed* and *cheap* represent voiceless palatal sounds. These sounds are phonetically represented by the symbols [š] and [č], respectively. There are also voiced palatal sounds represented by [ž], [ǰ], and [y], found in medial positions in *pleasure* and *midget* and the initial position in *you*.

Velar sounds are created when the back of the tongue articulates with the soft palate. The final sounds in *hack*, *hag*, and *hang* are velar sounds and would be phonetically represented as [k], [g], and [ŋ], respectively.

Labiovelar sounds are created by rounding the lips while the back of the tongue is raised in the velar region. The initial sound in *witch* is a labiovelar sound, phonetically represented by [w]. It is voiced. In some dialects of English, *which* and *witch* are pronounced differently. When they are, the initial sound in *which* is a voiceless labiovelar sound represented as [ʍ].

Glottal sounds are articulated by the glottis. We already mentioned a glottal stop, in which there is a closure of the glottis followed by its sudden release. This sound is sometimes used in place of a [t] sound as in *button* and *mountain* and is represented as [ʔ]. The glottal stop often occurs between vowels, as well as in many other positions within utterances. If the glottis is only partially closed, the result will be the initial sound in *hem* or *hop*. This is represented phonetically by [h].

There are other places of articulation along the vocal tract that are not used in English. Some produce sounds by bringing the back part of the tongue into contact with the uvula. *Uvular* sounds are found in Hebrew, Arabic, southern Arabian, some Native American, and other

languages. The initial sound in the French word *rue* (street) is uvular. In many of the languages in which uvular sounds are found (as well as other languages), speech sounds can also be articulated in the pharynx, producing what is called a *pharyngeal sound*. These are just some of the many additional possibilities for places of articulation.

Consonants: manner of articulation

The airstream can be obstructed at any place along the vocal tract. However, you will note that many sounds can be articulated at about the same location. For instance, there are five egressive voiced alveolar sounds in English. They must differ in some other characteristic. The additional difference is the manner in which the airstream is constricted or released within the vocal tract.

Nasals are produced in both the nasal and oral cavities. Most sounds in English are produced through the oral (mouth) cavity. This occurs because during speech the velum (soft palate) is usually in a raised position, blocking the airstream's passage into the nasal cavity. The resultant sounds are called oral because the oral cavity is used as the sole resonating chamber. However, if the velum is lowered, air can escape through both the oral and nasal cavities. The sound that results is called nasal. There are only three nasal consonants in English: the initial sound in *mad* [m] (bilabial) and *nose* [n] (alveolar), and the final sound in *sing* [ŋ] (velar).

When you have a cold, people may comment that you sound nasal. However, if your nose is completely blocked, then you cannot produce nasal sounds. All of your sounds would be oral, and it would be more accurate to label your speech as oral, not nasal. For instance, when your nose is blocked, the utterance "How come I sound so funny?" becomes "How cub I soud so fuddy?" The oral [b] sound is substituted for the nasal [m], and the oral [d] sound is substituted for the nasal [n] sound. The only difference between [b] and [m], as well as [d] and [n], is that the first sound is oral and the second is nasal.

Stops are sounds created by momentarily cutting off the airstream. These sounds are called stops or plosives. Closing off the airstream creates pressure behind the point of articulation. In English, stops are bilabial [p] and [b], alveolar [t] and [d], velar [k] and [g], and glottal [ʔ]. The first of each pair is voiceless, as is the glottal stop. The second of each pair is voiced. The built-up pressure is released in a burst of sound. A stop cannot be prolonged. Once the air has escaped, the sound cannot be maintained.

Aspiration is the amount of air that is produced upon the release of a stop.

A feature called **aspiration** can further distinguish stops. Aspiration is the amount of air that is produced upon the release of a stop. If we compare the sounds in the words *pin* and *spin*, we note a minor difference in the production of the *p* sound. If you put the corner of a piece of paper near your mouth and say *pin*, the paper will move. However, it will not move in response to the *p* sound in *spin*. Generally, voiceless stop consonants in the initial position, preceding a stressed vowel, are accompanied by varied strengths of released air, and are said to be aspirated. Voiceless stops occurring after [s] or followed by [r] or [l] are unaspirated; that is, the consonant is released so that the next sound can be produced, but no aspiration occurs. Some English speakers do not release all voiceless stops in the final position. For instance, in the production of the word *write*, an individual may keep the tongue touching the alveolar ridge, resulting in an unreleased [*t*] sound. Aspiration is phonetically indicated by a superscript [ʰ] and the lack of release by a [˺]. So [p], [t], and [k] represent unaspirated but released stops; [pʰ], [tʰ], and [kʰ] represent aspirated stops, and [p˺], [t˺], and [k˺] represent unreleased stops. Voiced stops in English are not aspirated. The [˺] and the superscript [ʰ] are two of many **diacritics** or **diacritic marks** added to the main phonetic symbol for a sound to clarify details of pronunciation.

Diacritics or **diacritic marks** are notations added to the main phonetic symbol to clarify details of pronunciation.

Fricatives are produced by an incomplete obstruction of the airstream. Instead of the completed obstruction that produces the stops, the airstream is only partially obstructed, creating turbulence (friction) beyond the constriction. The result is a hissing sound similar to the first sound you hear coming from a whistling tea kettle. In English, fricatives are produced in the following positions: labiodental [f] and [v], dental [θ] and [ð], alveolar [s] and [z], and palatal [š] and [ž]. The first of each set of sounds is voiceless, the second voiced. Unlike stops, it is possible to prolong a fricative sound for as long as you can exhale.

Affricates are each, in a sense, two sounds. The affricate starts out as a stop but ends up as a fricative. Notice that in forming the initial and final sound in *church*, there is a momentary stop followed by a hissing (fricative) sound. The sound is phonetically represented as [č]. The only other affricate in English is [j], the initial sound in *Jell-O* and *gin*.

Liquids are distinguished from the other classes of sounds in that they involve only minimal obstruction of the airstream and friction is not produced. As with affricates, only two liquids, [l] and [r], exist in English. The [l] and [r] are produced in significantly different ways. Articulating the tip of the tongue with the central portion of the alveolar ridge forms the [l] as in *limb*. This articulation occurs so as not to stop the airstream completely and allows the air to pass along one or both sides of the tongue. Because of this lateral (side) movement of air, the [l] is called a lateral liquid.

The [r] sound in English is usually formed by curling the tip of the tongue up behind the alveolar ridge and by bringing the tongue forward and upward toward the alveolar ridge without touching the ridge. Because of the curling of the tongue, such sounds are often called *retroflex* (*retro* = back or behind, *flex* = to bend). The initial sound in *Ralph* is a liquid retroflex sound.

Glides are what most elementary school children are taught to label as semi-vowels. Both terms are quite descriptive of the characteristics of these sounds. They are called semi-vowels because they display elements of both vowels and consonants. The obstruction of the airstream is less than in other consonants, making semi-vowels similar in this respect to vowels. However, the airstream usually does not flow as freely as in vowels. Therefore, semi-vowels are intermediate between consonants and vowels.

The sounds represented by the phonetic symbols [y], [w], and [ʍ] are the glides found in English. Glides must be either preceded or followed by a vowel sound. The term glide is descriptive because in the production of a glide, the tongue passes rapidly (glides) to or from the adjacent vowel. See Table 2-2 for examples of how each consonant symbol is pronounced.

Some consonants not used in English

Table 2-1 lists English consonants. Not all of these consonants are used in all languages; conversely, there are consonants used in other languages that are not used in English. Some examples include the following:

- The sound represented phonetically as [x] is pronounced as a "raspy" [h], as is the letter *j* in the Spanish word *baja* or the *ch* in the German name Bach. [x] is also used in non-European languages such as Inezeño Chumash, a Native American language of California, in such words as [xus] *bears* and [taxama] *skunk*. [x] is a voiceless velar fricative.
- [q] represents a voiceless uvular stop. There are no uvular speech sounds in English. A uvular sound is produced when the back of the tongue is raised to the uvula, the small fleshy projection hanging from the soft palate in the midline of the throat. The [q] sound, like [x], is a common sound in Inezeño Chumash. It is found in such words as [qsi], *sun* or *day*, [qap], *leaf* or *feather*, and [itaq], *to hear* or *listen*. The sound [q] is also found in Quechua (an indigenous language of the Andean region of South America) and in Inuktitut (a language of the Inuit people living in the far northern areas of North America).

There are many other consonants and classes of consonants not produced in English, including the *pharyngeal* (throat) *sounds* found in Arabic, various northwest Native American languages, and some of the languages of Eastern Europe and western Asia (Caucasus region). *Trills* are sounds that involve the vibration of the lips, the tip of the tongue, or the uvula. Trills are found in Spanish, Kele (an African language spoken in Gabon and Congo), Swedish, and other languages. In some languages, such as Spanish, French, and Korean (and in some dialects of English), an articulator (usually the tongue) makes a single flap against another articulator (such as the alveolar ridge) and then returns to its resting position. Conveniently, such sounds are called *flaps* or *taps*.

Perhaps the most foreign speech sounds to an English speaker are *clicks*. Clicks are ingressive sounds produced by the sucking action of the tongue. Air is sucked into the mouth and altered by the position of the tongue and how the air is released. Clicks can be labial, dental, alveolar, palatal, or glottal. They can be nasal or oral, voiced or voiceless, and can be distinguished in other ways. English speakers do not use clicks as a regular part of English, but might pronounce one interjection as a click, represented in spelling as *tsktsk*. As a regular part of currently spoken languages, clicks are used exclusively by people in southern Africa. You can hear clicks and other sounds at www.phonetics.ucla.edu/index/sounds.html.

TABLE 2-2 Examples of how each consonant symbol of the phonetic alphabet is pronounced* (Note: Some of the examples can be pronounced in more than one way.)

Consonants

Symbols	Examples
p	pat, spat, apply, lap, hiccough
b	bat, table, bubble, lab
m	mat, came, comma, lamb
f	fat, left, tough, photo, coffee
v	vat, driving, Stephen, move
t	tap, rats, tapped, mitt
d	dip, tending, buddy, rid
n	gnat, noise, pneumonia, mnemonic, running, tan, knowledge
s	sat, scent, psychology, city, history, fasten, mats
z	zip, Xerox, razor, physics, bags, haze, jazz
θ	thin, ether, Matthew, teeth
ð	that, either, teethe
š (ʃ)**	shed, sure, mission, facial, nation, fish, ash
ž (ʒ)**	pleasure, vision, casual, azure, rouge (for some speakers)
č (tʃ)**	church, situation, match, righteous, each
ǰ (dʒ)**	judge, genius, midget, enjoy, region, residual, gage
k	kit, kick, cap, clique, chlorine, exceed, uncle, tack
g	grow, hugged, bag, Pittsburgh
ŋ	anger, think, wrong
l	lot, place, spill
r	rat, run, merry, far
y(j)**	you, use, feud, few
w	witch, wet, twin, quit, mowing
ʍ	which, what (for speakers who do not pronounce *which* and *witch* the same)
h	hat, hem, who, inhale
ʔ	for some speakers: bottle, Latin, rattle (see text on glottal stops)

*This is not meant to be an exhaustive list.
**The first symbol is the symbol used by many American linguists (the American Phonetic Alphabet or APA); the symbol in parentheses is the symbol of the International Phonetic Alphabet (IPA).

EXERCISE 1 Consonants I

1. Listed below are definitions of sounds in terms of manner and place of articulation, as well as voicing. Give the phonetic symbol for each sound defined, and an example of a word in which each sound is used.

	Phonetic Symbol	Example of Word
a. Voiced bilabial stop	_____	_____
b. Voiced bilabial nasal	_____	_____
c. Voiceless glottal stop	_____	_____
d. Voiced labiodental fricative	_____	_____
e. Voiced alveolar stop	_____	_____
f. Voiceless palatal affricate	_____	_____
g. Voiced alveolar lateral	_____	_____
h. Voiced velar stop	_____	_____
i. Voiceless velar stop	_____	_____
j. Voiced dental fricative	_____	_____

2. This exercise deals with the relationship of the phonetic alphabet to the English alphabet.

a. List the phonetic symbols for consonants that are usually pronounced essentially the same as they are in orthography (spelling).

_____

_____

_____

b. What English alphabetic symbols for consonants are used in the phonetic alphabet but are used differently in the English alphabet?

_____

_____

_____

c. What symbols used in the phonetic alphabet for consonants are not equivalent to any of the symbols in the English alphabet?

_____

_____

_____

3. Explain the statement, "The description of a specific sound in terms of a specific manner and place of articulation is an approximation."

_____

_____

_____

4. Transcribe into phonetic symbols the initial consonant sound in:

a. grow	i. thing	q. kick
b. vow	j. zoo	r. judge
c. hem	k. you	s. let
d. run	l. pleasure	t. nose
e. paper	m. men	u. toe
f. shed	n. beg	v. then
g. send	o. fan	w. wet
h. cheap	p. due	x. sheep

(Note: In all transcription exercises, transcribe words as you say them. Different people may pronounce some of the words differently.)

5. Transcribe into phonetic symbols the final sounds in:

a. ooze	h. gain	o. tooth
b. have	i. wrong	p. pail
c. sand	j. kick	q. each
d. top	k. scarf	r. ask
e. plant	l. breathe	s. tub
f. bag	m. us	t. far
g. arm	n. zoos	u. batch

6. Transcribe into phonetic symbols the underlined sections of the following words:

a. enjoy	g. motion
b. inhale	h. ink
c. vision	i. birth
d. rather	j. throng
e. twin	k. speech
f. anger	l. paths

7. Write an English word that contains each of the following consonants:

a. [ǰ]	g. [z]
b. [θ]	h. [s]
c. [ŋ]	i. [š]
d. [č]	j. [ð]
e. [p]	k. [k]
f. [ž]	l. [w]

Some other terms relating to consonants

Several other terms used to classify consonants will be mentioned briefly here. Because the fricatives [s], [z], [š], and [ž] and both affricates [č] and [ǰ] are accompanied by a "hissing" noise, they are sometimes grouped together as *sibilants* (Latin *sibilare* = to hiss). In Chapter 3 we will see the functional significance of this grouping.

Stops are often contrasted to other sounds, which are called *continuants*. In continuants, the airstream continues to flow past the constriction, whereas in stops the airstream is blocked. Sounds produced in the oral and pharyngeal cavities that are articulated with enough constriction to cause a buildup of pressure (greater pressure than outside the body; that is, atmospheric pressure) are called *obstruents*. They include non-nasal stops, fricatives, and affricates. All other sounds are called *sonorants*. Sonorants are frictionless continuants. They are intermediate between obstruents and vowel sounds. Sonorants include the nasal, liquid, and glide sounds.

In discussing consonants, and in the description of vowels to follow, we have almost exclusively restricted the coverage to English. English uses only a portion of possible speech sounds.

EXERCISE 2 Consonants II

1. For the following words, identify which letters are silent and mark all combinations that represent only one sound.

Example: Au~~t~~um~~n~~

(Circled letters represent one sound. A slash through a letter means that it is silent.)

a. listen
b. anger
c. passed
d. who
e. critique
f. philosophy
g. bride
h. teethe
i. mechanic
j. comb
k. hiccough
l. knight

2. Why do linguists use a phonetic alphabet as opposed to standard orthography?

3. Are there some English consonant sounds that never occur in the initial position? If so, which ones?

4. Are there some English consonant sounds that never occur in the final position? If so, which ones?

The nature of vowels

The articulation of vowels is more difficult to describe because, unlike consonants, vowels involve no obstruction of the airstream. Therefore, it is more difficult to tell what configurations the speech organs are in when producing vowels. The vibration of the air caused by the vibration of the vocal folds, along with the factors listed below, creates the vowel sounds. Because a main mechanism of vowel production for most vowel sounds is vibrating vocal folds, most vowels are voiced. Voiceless vowels do occur in English, but only under special circumstances. Some languages have voiceless vowels as a regular part of their sound systems.

The other factors involved in vowel production are:

- Which resonance chamber is used—the oral cavity, or both the oral and nasal cavities.
- The shape of the resonance chamber, which is affected by tongue height, tongue advancement (front to back), and lip rounding or spreading.

The oral and nasal cavities

We can divide vowels into oral vowels and nasalized vowels. Oral vowels occur when the velum is raised, cutting off the entry of the airstream into the nasal cavity. Nasalized vowels are created when the velum lowers, permitting the airstream to flow through both the oral and nasal cavities. In English, vowels are almost always oral. However, nasalization of vowels occurs before nasal consonants. Can you hear the difference in the vowel sound (phonetically symbolized as [æ]) in *hat* [hæt] and *ham* [hæ̃m]? The [æ̃] in *ham* employs the nasal cavity in its production. Can you hear this contrast in the vowels in *seat* [sit] and *seam* [sĩm]? The diacritic mark [˜] indicates nasalization.

Vowels and the shape of the resonance cavity

Figure 2-3 schematically represents a fixed shape for the oral cavity. Traditionally, vowels have been partially defined in relation to the two dimensions shown on the diagram: tongue height and degree to which the front or the back of the tongue is used. Each vowel is given a phonetic symbol. For example, the vowel [i] is a high front vowel.

When asked how many vowels there are, most English-speaking people will answer five or seven: a, e, i, o, u, and sometimes y and w. Notice that this refers to spelling, and is not phonetically accurate. The number of vowels that occur varies with different English dialects. Table 2-3 and Figure 2-3 list twelve vowels. The y and w are semi-vowels or glides.

Vowels are also defined in terms of lip rounding. When we produce the vowel sounds [u], [ʊ], [o], and [ɔ], the lips are rounded to varying degrees. Notice that these are all back vowels, which are also either high or mid vowels. Rounding is a relative matter; its degree varies from person to person. However, front vowels are never rounded in Standard English. They may be rounded in other languages (see the section "Some Vowels Not Used in English or in Standard English" later in this chapter).

Figure 2-3 is somewhat misleading. It conveys the idea that the shape of the oral cavity remains the same while the tongue simply moves from one position to the next. Figure 2-4 gives a more accurate idea of the dynamics of vowel production. Notice that with different positions of the tongue, the shape of the oral cavity changes. For instance, frontness, highness, and nonrounding (spreading) tend to decrease the volume of the oral cavity relative to backness, lowness, and rounding. Of course, each different combination of these features will shape the oral cavity differently, resulting in different vowel sounds.

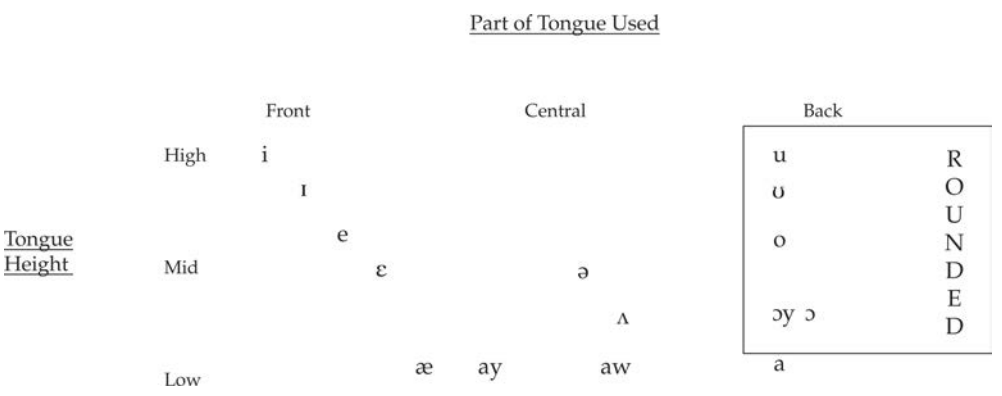


FIGURE 2-3 Traditional representation of English vowels

TABLE 2-3 Examples of how each vowel symbol of the phonetic alphabet is pronounced* (Note: Some of the examples can be pronounced in more than one way.)

	Vowels
Monophthongs	
i	east, eat, secret, Caesar, receive, believe, fatigue, people, amoeba, money, bee, lovely
ɪ	it, in, since, been, business, foreign
e	aid, eight, freight, reign, profane, fate, lay, prey, sleigh
ɛ	wet, dress, bell, guest, ready, says, said
æ	attic, sat, calf, bank
u	moon, suit, gnu, flue, through, sewer, duty, to, two, too
ʊ	put, stood, cook, would
ʌ	under, but, love, dull, blood, some, touch
o	old, oh, toe, boat, blow, though, knoll, plateau
ɔ	always, often, awe, applauded, song, bought, caught, crawl
a(ɑ)**	ah, cot, knock, hot, honor
ə	about, alone, suppose, animal, improvise, the
Diphthongs	
ay(aɪ)**	fight, buy, my, high, lied, choir, eye
aw(aʊ)**	how, cow, plough, ow (as an interjection indicating pain)
ɔy(ɔɪ)**	coy, voice, moist, rejoice, oil

*This is not meant to be an exhaustive list.
**The first symbol is the symbol used by many American linguists (the American Phonetic Alphabet or APA); the symbol in parentheses is the symbol of the International Phonetic Alphabet (IPA).

Some other terms relating to vowels

Tense vowels are produced with more tension and more constriction of the vocal tract than lax vowels; they are usually of longer duration.

Lax vowels show less tension and constriction; they are usually shorter in duration than tense vowels.

Schwa is an unstressed mid-central vowel that is a shorter version of a similar sounding but longer vowel. In the word *rumba* [rʌmbə], the [ə] can be seen as a reduced variant of the full vowel [ʌ]. Schwa is also called a reduced vowel.

A **reduced vowel** is an unstressed and often central vowel that is a shorter version of a similar sounding but longer vowel.

The phenomenon of **r-coloring of a vowel** means that a vowel partially takes on the sound qualities of an *r* sound that follows it, and the vowel frequency is lowered.

Vowels can be divided into two categories, depending on the degree of tension of the tongue muscle and the degree of vocal tract constriction. The vowels produced with more tension and more constriction of the vocal tract are called **tense vowels**, and those with less tension and constriction are **lax vowels**. Tense vowels are also usually produced for a slightly longer duration than lax vowels. Therefore, lax vowels show less tension and constriction, and are shorter in duration than tense vowels. Tense vowels in English are [i], [e], [u], and [o]; all others are lax. The vowel called **schwa** [ə] is lax and is characterized by a briefer duration than any other English vowel. It is also an example of a **reduced vowel**. Reduced vowels are not stressed because they are produced with a weak airflow.

The sounds that surround another sound effect how that sound is produced. This will be discussed in more detail in the next chapter. Here, we will mention one of these effects, called **r-coloring of a vowel**. In English and a few other languages, this means that a vowel partially takes on the sound qualities of an *r* sound that follows it, and the vowel frequency is lowered. The words *person* and *nurse* show the effect of the sound *r*. The International Phonetic Alphabet (IPA) symbol for the r-colored vowel in this instance is [ɚ], and *person* and *nurse* would be transcribed by linguists using this symbol as [pɚrsin] and [nɚs], respectively. The concepts of frequency, stress, and duration mentioned in this section will be discussed in more detail later in this chapter.

In English, one-syllable words spoken individually never end in lax vowels. So, in English, you will find words such as [bi] (*bee*) but not *[bɪ], [se] (*say*) but not *[sɛ], and so on. See Figure 2-5.

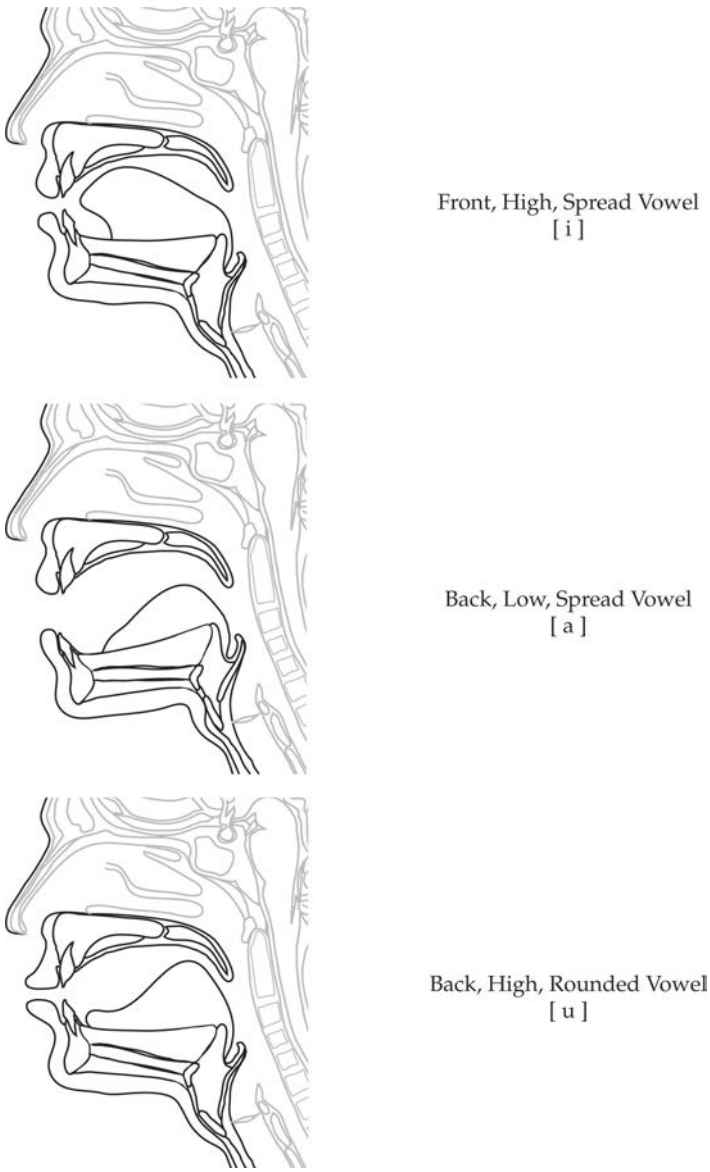


FIGURE 2-4 **The dynamics of vowel production**

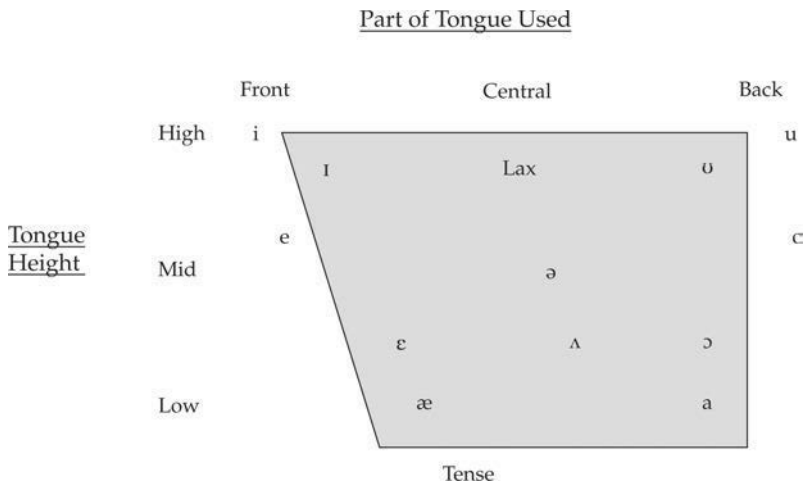


FIGURE 2-5 **Tense and lax English vowels (lax vowels are in shaded area)**

Some vowels not used in English or in Standard English

Many languages have vowels that are not present in English. One example of this involves lip rounding. Front vowels are never rounded in Standard English. However, German has both a front rounded high vowel, represented as [y] in the IPA but as [ü] by most American linguists ([müss] *must*), and a front rounded mid vowel represented as [ø] in the IPA and as [ö] by American linguists ([šön] *beautiful*). Rounded front vowels are found in other languages including French, Turkish, Danish, and Norwegian. Back high and mid vowels are always rounded in English. However, in some languages, such as Vietnamese, Korean, and Japanese, vowels in these positions might be unrounded.

The designation of a vowel as high, mid, low, front, central, and back is somewhat misleading. Although there is some variation in the way a consonant with a specific phonetic symbol might be pronounced, there is more variation with vowels. However, when a vowel is pronounced outside of the range of its variation it might be detected as being different, but still not different enough to be mistaken for one of the other vowels. For instance, the vowel in the word *toot* [tut] is a high back rounded vowel in most dialects of American English. But in some dialects of American English and in Australian English, [u] is produced in a more central location. The sum of small differences in pronunciation is one factor in accounting for **accents**. An accent is a way of pronouncing words that identifies one speaker of a language as speaking differently from another speaker of the same language. It might be because of regional variations (different dialects) of a language or because of the influence of other languages that the speaker knows. Of course, the linguist can use diacritic marks to show variations in details of pronunciation.

An **accent** is a way of pronouncing words that identifies one speaker of a language as speaking differently from another speaker of the same language.

Diphthongs

There are other features that can distinguish vowel sounds in addition to tongue height, tongue advancement, and lip rounding. For example, vowels are made up of either a single sound or two sounds in sequence. Vowels composed of one sound are called **monophthongs** (*mono* = one, *phthong* = sound), whereas vowels made of two sounds are called **diphthongs** (*di* = two). Table 2-3 lists English monophthongs and diphthongs. There are three common English diphthongs:

A **monophthong** is a single vowel sound.

A **diphthong** is a double vowel sound that begins with one vowel sound and gradually moves into another vowel sound or glide.

- [ay] as in f<u>i</u>ght
- [aw] as in h<u>ow</u>
- [ɔy] as in c<u>oy</u>

Notice that each of these sounds is made up of a monophthong and a glide. In addition to these three diphthongs, some English speakers also add glides to some of the tense vowels and pronounce them as diphthongs. For these people, the vowels [i] and [e] become [iy] and [ey], respectively. The vowels [u] and [o] are replaced by [uw] and [ow].

A note on [a] and [ɔ]

Table 2-3 represents an idealized version of English. In reality, not all speakers pronounce all of the words listed in the chart using the indicated vowels. For instance, many American West Coast speakers only use the vowel [ɔ] in the diphthong [ɔy] and in the combination [ɔr] (*or*). These speakers use [a] instead of [ɔ] in other words. For these speakers, *cot* and *caught* both would be transcribed as [kat]. That is, *cot* and *caught* would be **homophones**, words that sound the same but differ in meaning and spelling. To other English speakers, *cot* would be transcribed as [kat] and *caught* as [kɔt]. In this case *cot* and *caught* would not be homophones.

Homophones are words that sound the same but differ in meaning and spelling.

There are numerous other variations in the way words are pronounced by different speakers. We will discuss these variations in Chapter 8 on sociolinguistics.

EXERCISE 3 Vowels

1. Which English vowels are referred to in the following descriptions? Write their phonetic symbol.

a. The highest front vowel _____

b. The most central vowel _____

c. The lowest back vowel _____

d. The lowest front vowel _____

e. Vowels that are never rounded in English _____

2. Transcribe into phonetic symbols the vowel sounds in:

a. hot	e. love	i. boot
b. cat	f. all	j. bet
c. hope	g. we	k. it
d. bait	h. foot	l. meat

3. List five English words that contain each of the following vowels. (Do not use words given as examples in the book.)

[i] _____ _____ _____ _____ _____

[ɪ] _____ _____ _____ _____ _____

[ɛ] _____ _____ _____ _____ _____

[e] _____ _____ _____ _____ _____

[æ]_____ _____ _____ _____ _____

[a] _____ _____ _____ _____ _____

[ʌ] _____ _____ _____ _____ _____

[ə] _____ _____ _____ _____ _____

[o] _____ _____ _____ _____ _____

[u] _____ _____ _____ _____ _____

[ʊ] _____ _____ _____ _____ _____

[ɔ] _____ _____ _____ _____ _____

4. The words listed below contain diphthongs. How would you transcribe the diphthongs in the phonetic alphabet?

a. oil	e. owl	i. by
b. sigh	f. toy	j. doily
c. now	g. plough	k. sign
d. cow	h. aisle	l. brown

5. Write a word orthographically that contains each of the following vowels:

a. [a]	e. [ʌ]	i. [ɛ]
b. [i]	f. [ɔ]	j. [ə]
c. [æ]	g. [ʊ]	k. [ɪ]
d. [o]	h. [u]	l. [e]

6. What is the difference between tense and lax vowels?

7. Some English speakers add glides to some of the tense vowels and pronounce them as diphthongs. For these people, the vowels [i] and [e] become [iy] and [ey], respectively. The vowels [u] and [o] are replaced by [uw] and [ow]. Why is the glide [y] added to [i] and [e] to create a diphthong, but the glide [w] is added to [u] and [o]? (Hint: Look for a feature that is similar for [i], [e], and [y], and one that is similar for [u], [o], and [w].)

Syllables and syllabic consonants

Although most adult speakers can easily determine how many syllables there are in most words, linguists have had a hard time defining exactly what a syllable is. In general, a syllable consists of a nucleus or peak that can carry such information as stress, loudness, and pitch, and the elements associated with that nucleus. Usually a syllable includes a vowel (monophthong or diphthong), but in some instances a consonant can act as a syllable by itself or as a nucleus for a syllable. In English, liquid and nasal sounds can sometimes act as a syllable or the nucleus of a syllable, and when they do, they are called **syllabic consonants**. When [l], [r], [m], and [n] act as syllabic consonants, they are written with a diacritical mark shown as a small line under the symbol—[l̩], [r̩], [m̩], and [n̩]—or with the reduced vowel called schwa [ə] as [əl], [ər], [əm], and [ən]. Examples of words that can be pronounced with these syllabic consonants are *hassle* [hæsl̩], *brother* [brʌðr̩], *possum* [pasm̩], and *sadden* [sædn̩]. Most languages do not have syllabic consonants.

Syllabic consonants are nasal or liquid consonants that can take the place of vowels as the nucleus of a syllable in certain words.

The phonetic environment

The description of the sounds we have discussed is highly idealized. The production of each sound will be affected by adjacent sounds. Consider the [k] in the words *key* [ki] and *caw* [kɔ]. The [i] in [ki] is a high front vowel. The tongue will begin to approach this position while the speaker is still producing the [k]. [ɔ] is produced low and in the back of the oral cavity. The speaker's tongue moves toward this position while producing the [k] sound in [kɔ]. Consequently, the closure involved in the [k], which is a stop, is further forward in the production of a [k] sound followed by an [i] than when it is followed by an [ɔ].

The effect of one sound on another is not limited to place of articulation, but also applies to such factors as nasality. For instance, as already mentioned, nasal consonants influence adjacent vowels. The lowering of the velum during the production of the nasal consonant allows for surrounding vowels to be somewhat nasalized. The effect of place of articulation and the nasalization of vowels are only two instances of how the phonetic environment of a sound influences its production. Generally speaking, adjacent sounds will always have some effect on each other. We will explore this in more detail in the next chapter. Part of our

understanding of our own language is a subconscious knowledge (competence) of how one sound affects others.

A **phonetic segment** or **phone** is a speech sound that is perceived as an individual and unique sound, different from other such sounds.

Suprasegmentals or **prosodic features** are characteristics of speech that can distinguish words, phrases, or sentences that are otherwise identical in their phonetic segments. Suprasegmentals are associated with stretches of speech larger than an individual phonetic segment.

Suprasegmentals

In the preceding sections, we defined sounds in terms of the criteria listed in Table 2-1 and Figure 2-3. These criteria allow us to produce a phonetic alphabet of speech sounds. Each symbol in that alphabet represents a **phonetic segment** or **phone**. But the acoustics of a phonetic unit or string of phonetic units also can be altered in terms of fundamental frequency, duration (speed and length), and stress. Such alterations are said to be above and beyond the phonetic segmental level, and are therefore called **suprasegmentals** or **prosodic features**.

BOX 2-1

The International Phonetic Alphabet

English spelling is notoriously imprecise. Often the same letter can represent different sounds. For instance, the letter *a* in *attic* is the sound [æ], but it is the sound [ɔ] in the first syllable of the word *always* and the sound [ə] in *about*. Conversely, the same sound can be represented by different letters or combinations of letters, for example, the [u] sound in *through*, *threw*, and *thru*. In addition, it is not possible for the alphabet of any one language to represent the sound of all of the words in all languages. Also, some languages include sounds not found in English, and none of the letters of the alphabet used to spell English words could represent these sounds. English alphabetic symbols could not represent the click sounds found in some southern African languages as well as numerous other non-English speech sounds found in other languages.

To overcome these problems, an organization founded in France in 1886, with a membership mostly of language teachers, devised an alphabet that would eliminate the ambiguities and inconsistencies of spelling. The organization was called the Phonetic Teachers' Association until 1897, when its name was changed to the International Phonetic Association (IPA). In 1888, the association published the first version of the International Phonetic Alphabet, which is also abbreviated as IPA. The main principle of the system is very simple: one symbol represents only one sound, and each individual sound is represented by only one symbol. In reality, humans produce an enormous variety of speech sounds, so the symbols represent the average way a sound is produced.

In addition to the major symbols of the alphabet, there are numerous diacritical symbols. These symbols refine the description of sounds. Diacritic marks are symbols added to conventional graphic signs, and supply additional information. They can be added above, below, or after the conventional symbol. There are many diacritics used to phonetically transcribe sound. Three diacritics are used with the following graphic signs: [ɻ], [æ̃], and [i:]. The [̩] under the [r] indicates that [ɻ] is acting as a syllabic consonant, the [˜] above the [æ] indicates that [æ] has been nasalized, and the [:] following the [i] means that [i] is produced longer than usual. The complete phonetic alphabet and its diacritics could hypothetically describe the sounds of all languages. Since 1888, languages have been discovered that contain sounds not covered by the original IPA, so occasionally the alphabet is revised. The last major revision was in 1993, with some additional changes made in 1996, 2005, and 2015. In the 1990s, extensions to the IPA, a series of main symbols and diacritics, were added mainly to describe sounds of individuals with speech disorders resulting from a cleft palate or a lisp for example.

The IPA uses Roman alphabet symbols when possible. However, because there are not enough Roman symbols, other symbols are also used. Some of the symbols are Roman symbols that have been changed in some way, such as written backward or upside down, for example [ɔ] and [ə]. Others are Greek symbols such as the letters [θ] called *theta* and [ε] called *epsilon*. The symbol [ð], called *eth*, which was used in Old English, is still used in Icelandic. Some symbols were simply created anew. The basic principle of the IPA, that one symbol represents only one sound, holds true. However, North American linguists often use some symbols that are different than those that make up the IPA. For instance, North Americans generally

use [s] instead of the IPA symbol [ʃ], [ž] in place of [ʒ], and [y] where the IPA uses [j]. There are other substitutions as well. We use the North American symbols in this book.

The IPA is not only used by linguists and academics in related disciplines. Some actors learn the IPA to be able to produce an accent or a language foreign to them in a more convincing and consistent manner. Classical and opera singers might learn the IPA so that they can accurately pronounce lyrics of songs from a language in which they are not fluent; and some people who know the IPA, including students, might take notes in the IPA or at least use it occasionally as a short-hand system or to transcribe words phonetically that they cannot spell.

More information on the International Phonetic Alphabet and the International Phonetic Association is available at www.internationalphoneticassociation.org.

Differences in pitch

Fundamental frequency is the rate at which the vocal folds (cords) vibrate in speech.

Pitch is the perception of fundamental frequency evaluated on a scale from high to low.

In speech, **fundamental frequency** is the rate at which the vocal folds (cords) vibrate. Fundamental frequency is perceived as **pitch**, which is judged by the listener on a scale from high to low. Pitch is often as significant a phonetic feature as the difference between one phone and another. That is, pitch alone can change the meaning or syntactic function of a sentence or the meaning of a word. Pitch allows us to place sound on a scale that goes from low to high; the faster the vocal folds vibrate, the higher the perceived pitch of a sound. One way to indicate a change in pitch is with lines over an utterance that indicate the shape of the pitch of that utterance. For instance, the sentence *His name is Harry* can be represented as:

1. His name is Harry?

2. His name is Harry.

3. His name is Harry?

4. His name is Harry.

An **intonation contour** is the overall pitch of an utterance, sometimes represented by a line drawn over the utterance that traces the change in pitch.

In an **intonation language (intonational language)**, different intonation contours change the syntactic function of sentences that are otherwise the same.

In a **tone language (tonal language)**, pitch difference in the same string of phones will change the meaning of that string.

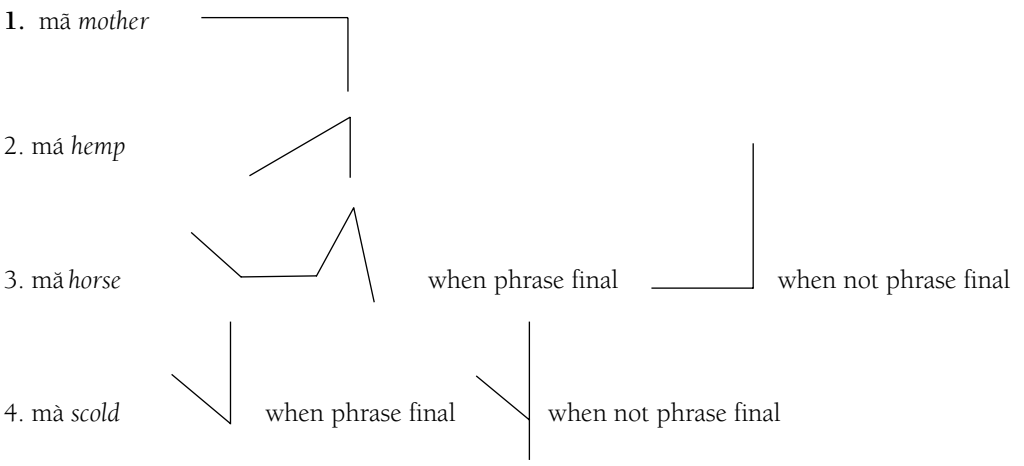
Tone is a specific change in pitch that functions in tonal languages to distinguish words that are made up of the same segments.

The overall pitch of an utterance is called its **intonation contour**. Although pitch variation in a limited number of single words (such as *yes* and *no*) can change meaning in English, it usually does not. English is called an **intonation (intonational) language** because pitch contours extend over entire phrases. In English, a change in a pitch contour of a sentence has a syntactic function and semantic function. The sentence *His name is Harry* can be a question (number 1), a declarative statement (number 2), an expression of surprise (number 3), or an expression of doubt (number 4).[3]

There are numerous languages where the pitch placed on individual segmental strings (a linear sequence of symbols, such as individual words) consistently and systematically changes meaning. These languages are called **tone** or **tonal languages** and include Mandarin and other Chinese languages, Thai, Zulu, and Navajo. **Tone** is a specific pitch or a specific change in pitch that functions in tonal languages to distinguish words that are made up of the same segments.

[3]For a more detailed discussion of intonational contours see Peter Ladefoged and Keith Johnson, *A Course in Phonetics*, 7th ed. (Stamford, CT: Cengage Learning, 2015), 129–135.

Mandarin is a classic example of a tonal language. For example, in this language, the segmental string [ma] can carry four different tones, as follows:[4]



The diacritics over the vowel indicate which of the four tones apply. The notation to the right of the English translation of the word is a way of pictorially representing the level, contour, and duration of the tone. The vertical line on the right is the pitch scale, with the top being high and the bottom low. The line that goes from the left and intersects with the vertical line indicates the shape of the pitch. Therefore, in the tone labeled as number 1, the pitch starts out high and stays high; in number 2, the pitch starts out low and evenly rises until it is high, and so on.

Duration

The length of a sound is its **duration**. It can be a very brief sound or a comparatively long sound. There is a continuum of duration. Some speech sounds are generally longer or shorter than other sounds because of the way they are usually produced by the vocal apparatus. For example, high vowels generally have shorter duration than low vowels. However, the phonetic environment will also influence the length of a sound. For example, in English a vowel that comes before a voiced consonant has a duration about one and a half times longer than a vowel that precedes a voiceless consonant. You might be able to detect that the [i] sound in *need* is longer than the [i] sound in *neat*. However, extending the [i] in *neat* beyond its normal duration would not change the meaning of the word. In English, length does not act to change the meaning of a pair of words that are otherwise phonetically the same. (An exception is when duration is used for emphasis to differentiate different levels of stress and different locations of perceived juncture, as mentioned below.)

The **duration** of a phone is how long it lasts.

However, in some languages the duration of a sound is the dominant cue in a contrast between lexical items. For example, in Hindi [paka] means *ripe*, whereas [pakka] means *firm*. Doubling a consonant or vowel (the consonant [k] in this example) is one way that increased length is indicated in a phonetic transcription. This is because the lengthened sound, called a **geminate**, usually has about twice the duration of the individual sound, called a **singleton**. However, the diacritic [:] (a colon) is also used to indicate the same thing. So, you might see [pakka] written as [pak:a].

A **geminate** is a phone with duration about twice that of the same phone pronounced with a short duration: a long consonant or vowel.

A **singleton** is an individual phone with a duration about half as long as a geminate.

[4]James D. McCawley, "What Is a Tone Language?" in Victoria A. Fromkin, ed. *Tone: A Linguistic Survey* (New York: Academic Press, 1978), 119–120.

Some other examples:

- In Italian the word for *house* is [kasa] and the word for *box* is [kassa].
- In Finnish the word for *I kill* is [tapan] and the word for *I meet* is [tapaan].

Contrasts in meaning are made in many languages based on the length of a sound.

Differences in stress

Stress means to make emphatic or more prominent.

The word **stress**, as used in linguistics, means the same thing as one general use of the word—to make emphatic or more prominent. Stress can be accomplished by changing the pitch (usually raising it), increasing the length, or increasing the relative loudness of any part of an utterance.

Syllables seem to be the smallest speech unit that can contain stress. In some languages, the stress pattern is completely predictable and invariable. For instance, in Finnish and Hungarian, stress is always applied to the first syllable of a word. In French and the Mayan language of Mexico, words are automatically stressed on the final syllable; however, in Polish and the African language Swahili, the next to last syllable of a word is always the one stressed. In other languages, the stress pattern is variable and unpredictable. In such languages, including English, a difference in the placement of stress in a multisyllabic word can signal a difference in the meaning of the word.

The English speaker intuitively recognizes at least three possible levels of stress: primary (also called accent or main stress), secondary, and unstressed. An unstressed syllable is often not marked with a diacritic, although some linguists use [ˇ] over the syllable. Primary stress is marked with a [ˊ] over the vowel, and secondary stress (if any) is marked with an [ˋ] over the vowel. A word can carry only one primary stress. In the word *phonetic*, the primary stress is on the second syllable. There is a secondary stress on the first syllable, and the third syllable is unstressed. The word would be transcribed phonetically as [fə̀nɛ́tɪk].

The stress pattern of a word can have grammatical significance. For example, the change of stress from the first syllable in the word *subject* to the second changes the word's part of speech.

- *Súbject* is a noun: "The subject of his discussion was commas."
- *Subjéct* is a verb: "He will subject us all to that talk again."

Table 2-4 gives additional examples of stress shifts of this type.

Connected speech

Speech is usually continuous, and we can generally process between ten and twenty speech sounds per second. When we talk, we produce a stream of speech that the listener segments into meaningful units, such as words, based on that listener's linguistic competence in the language. Also, as we produce speech sounds, they are "blurred," that is, packed together. But they are blurred in such a way that we perceive that we are hearing more distinct sounds than are actually being produced. In this section, we will discuss how the native speaker of a language determines where word boundaries are located. We will also discuss how the speaker packages an utterance by adding, deleting, and combining sounds that make connected speech different than if each word were pronounced separately.

Throughout your elementary school career you probably had spelling tests. Perhaps one of your teachers in elementary school read off words such as *dog*, *big*, *house*, *good*, *toy*, and so on. You then wrote those words on a piece of paper. Later, when you used those words in written sentences, you put a space between them. Yet when you spoke these words you generally did not put that space or pause in the sentence. Human speech is for the most part continuous, with true pauses being taken after rather long streams of speech. These pauses are often taken

TABLE 2-4 Suprasegmentals: stress

Examples of changes in stress with accompanying changes in meaning:

cónvict	noun	person found guilty
convíct	verb	to prove guilty
cóntent	noun	all that is contained within something
contént	adj.	satisfied with what one has
dígest	noun	a book; a periodical
digést	verb	to break down into component parts
súspect	noun	one who is suspected
suspéct	verb	to believe someone to be guilty
récord	noun	anything that is preserved as evidence; a disk with music imprinted into it
recórd	verb	to write down, tape, or otherwise preserve for future use
ínvalid	adj.	weak; not well; infirm
inválid	adj.	null or void
rébel	noun	a person who revolts
rebél	verb	to revolt

The placement of stress within words and phrases is, in large part, regular and predictable. We will discuss some of the rules dealing with the stress pattern of English in Chapter 3.

at grammatically significant places. But if speech is generally continuous, then how do we know when one word ends and another one starts?

For instance, in the Mohawk utterance [yakonʌ̃yohlũkwʌ̃hákye?] could you guess where one word ends and another starts? This is a trick question because the Mohawk utterance is only one word. One way that we segment continuous speech into meaningful words is by our knowledge of the language. If you were not familiar with Mohawk, you would have no knowledge of Mohawk words and would not be able to use this knowledge as a cue to the boundaries between words. However, if you speak English and you hear a stream of speech such as [fɪlagrinbʌkət] you most likely will hear "fill a green bucket" not "filigree'n bucket." *Filigree* is a word, but *n* is not a word. A native speaker's linguistic competence would tell him or her that the first word boundary must be after the [ɪ], not after the [i]. Of course, the context in which the sentence was spoken will also provide information about the meaning of the stream of sound.

There are other cues that help to correctly segment speech. Different languages allow different sound combinations to occur in different positions in a word. In Dutch, the [kn] combination can be at the start of a word. In English, that combination never begins a word. Remember that the English word *know* is transcribed as [no], not *[kno]. So if there were a [kn] combination in a stream of speech, then the English speaker would know that there is a word boundary between them, as in [aylayknet]. An English speaker would put a word boundary between the [k] and [n] and decode the utterance as *I like Nate*.

Another cue to word boundaries is the fluent speaker's subconscious knowledge that the same general sound can be pronounced differently in different positions in a word. For instance, the *p* sound is pronounced somewhat differently when it occurs in the initial position of a word than in other positions. In the initial position in a word, the *p* sound is released with a little puff of air called aspiration, which is noted with a superscript [ʰ]. So if an English speaker hears the utterance [hipʰed], it would be decoded *he paid*, not *heap aid*. The aspiration of [pʰ] tells you that it begins a word. The [p] in *heap* is not aspirated, and so the listener not hearing the aspiration will decode the *p* sound as not being the beginning sound of a word. This will be discussed further in Chapter 3.

In many cases, a stream of speech might have more than one permissible interpretation. For instance, the utterance [naytret] can be interpreted in three ways: [naytret] *nitrate*, [nayt+ret] *night rate*, and [nay+tret] *nye trait* (a *nye* is a flock of pheasant). See Table 2-5 for additional

TABLE 2-5 Suprasegmentals: perceived juncture

Examples of perceived juncture changes and how they affect meaning:

[gredet]	gradate
[gre + det]	gray date
[gred + et]	grade eight
[ilɛktrɪk]	electric
[ilɛkt + rɪk]	elect Rick
[ɪts + lɪd]	its lid
[ɪt + slɪd]	it slid
[ðæt + stʌf]	that stuff
[ðæts + tʌf]	that's tough
[ɪt + swɪŋz]	it swings
[ɪts + wɪŋz]	its wings
[ðə + sændwɪč+ ɪz + wɛt]	The sandwich is wet.
[ðə + sænd + wɪč+ ɪz + wɛt]	the sand, which is wet

Juncture is a real or perceived pause within a series of phones.

examples. The + represents a pause sometimes called a **juncture**. Yet in continuous speech the pause is only perceived; it is usually not physically real. So how does the listener know whether the speaker has said *nitrate*, *night rate*, or *nye trait*? Of course, the main cue is the context in which the utterance was spoken; that is, what the conversation was about.

In case context alone is not sufficient to decode the message, redundancy is built into the interpretation. Depending on the example of perceived juncture, redundancy can involve cues based on slight differences in hesitation, insertion of a glottal stop, an aspiration/no aspiration contrast, a rising or falling pitch, a contrast in duration, or an actual pause at the syllable boundary.

Connected speech differs in other ways from producing individual words separately. For instance, you probably would not produce the following sentence by speaking each word, as it would be written:

"When is he coming to your house?" [wɛn ɪz hi kʌmɪŋ tʊ yʊr haws]

Instead, you might actually say:

[wɛnzikʌmɪn̩təyʊrhaws↑]

The [↑] indicates a juncture characterized by a rise in pitch before a pause; the diacritic [̩] under the [n] indicates that the [n̩] is acting as a syllable without a vowel. Note that in the second sentence:

- Each word is not separated by a space.
- The only pause would be at the end of the sentence (pauses in connected speech may occur between syllables in a word).
- Numerous sounds from the "idealized" transcription have been left out. For instance, [ɪz] becomes [z], [hi] is reduced to [i], [ɪŋ] becomes [n̩], and so forth.

EXERCISE 4 Suprasegmentals

1. On a separate sheet of paper, draw intonational contours for the sentence below as if it were spoken as a:
   a. command
   b. question
   c. confirmation of something someone just said.

"You will be there at five o'clock."

Are there other meanings that could be derived from other intonational contours of this sentence? If you can think of them, diagram their contours and explain what the sentences mean.

2. Table 2-4 lists word pairs that differ primarily in where stress is applied. The difference in stress leads to differences in meaning.

A. Provide ten more examples of this stress/meaning variation.

a. _____ f. _____

b. _____ g. _____

c. _____ h. _____

d. _____ i. _____

e. _____ j. _____

B. Can you detect any systematic principles involved in these examples?

3. Provide five more examples of juncture, similar to those in Table 2-5.

Phonetic spelling	**Meaning**
a. _____	_____
b. _____	_____
c. _____	_____
d. _____	_____
e. _____	_____

4. In the following sentences, mark an acute accent [ˊ] over the one word that receives primary stress.

a. Mary had a little lamb.	(Surprise over the prospect that Mary gave birth to a lamb.)
b. Mary had a little lamb.	(Mary owned a lamb.)
c. The man picked up a hot rod.	(A hot stick or bar.)
d. The man drove a hot rod.	(A car.)
e. I saw a blackbird.	(A specific type of bird.)
f. I saw a black bird.	(A bird that was black.)
g. The plants are in a greenhouse.	(A special house for growing plants.)
h. The Joneses live in a green house.	(A house painted green.)

Summary

Phonetics can be divided into three semi-interdependent areas: acoustic phonetics, auditory phonetics, and the subject of this chapter—articulatory phonetics. Articulatory phonetics is the study of the production of speech sounds. Many natural events are basically continuous; speech is one of these events. The sounds of an utterance are strung together with minimal gaps. Yet we perceive the utterance to be made up of individual words, phrases, and sentences, each separated by various boundaries.

The articulatory phonetician segments speech into units called phones. Even though a phone can be described in isolation, in actual speech the ideal "shape" of the phone will vary due to its phonetic environment.

Speech sounds are initiated by an airstream. The airstream can then be altered when the vocal folds set it into vibration. This results in a voiced sound. Parted vocal folds cause a lack of vibration and a voiceless sound. The airstream can flow through the oral cavity exclusively, creating an oral sound. Or the airstream can pass through the oral and nasal cavity, resulting in a nasal sound.

If the airstream is impeded when one speech organ touches another, we say that a consonant has been produced. The momentary impediment can occur at any location from the glottis to the lips. The manner of impediment can vary from a momentary, complete blockage of the airstream (a stop), to the minimal obstruction found in the production of liquid sounds.

Vowels are produced when the airstream is shaped rather than obstructed. Differences in vowel sounds depend on the resonance chamber used to produce the particular vowel, either the oral cavity or the oral and nasal cavities. The vowel sound is also affected by the shape of the oral chamber as modified by tongue height, tongue advancement, and lip rounding or spreading.

Categories used in phonetics are ideal types. There are some consonants, such as stops, that come closer to the ideal definition of a consonant than do other consonants. For instance, the liquids have both vowel-like and consonant-like characteristics. Also, the places and manners of articulation, as shown in Table 2-1, can vary. Sounds can be produced anywhere along the vocal tract, not just at the landmark locations.

In addition to the phones or phonetic segments listed in Table 2-1 and Figure 2-3, there are important suprasegmental aspects of speech. Differences in pitch, duration, and stress can affect the meaning of an utterance. In addition, people do not usually pronounce individual words in connected speech. Connected speech is continuous, and the listener decodes the speech by knowing where words begin and end and by knowing the rules of packaging utterances.

Suggested reading

Johnson, K., *Acoustic and Auditory Phonetics*, 3rd ed., Oxford: Wiley-Blackwell, 2012.
Ladefoged, P. and K. Johnson, *A Course in Phonetics*, 7th ed., Stamford, CT: Cengage Learning, 2015.
Pullum, G.K. and W.A. Ladusau, *Phonetic Symbol Guide*, 2nd ed., Chicago: University of Chicago Press, 1997.
Small, L.H., *Fundamentals of Phonetics: A Practical Guide for Students*, 3rd ed., Boston: Pearson, 2012.
Van Ripen, C.G., *An Introduction to General American Phonetics*, Prospect Heights, IL: Waveland, 1992.

Websites

Also see the suggestions for Chapter 3.

International Phonetic Association: www.internationalphoneticassociation.org
Journal of Phonetics: www.journals.elsevier.com/journal-of-phonetics
Omniglot: www.omniglot.com/writing/ipa.htm. This online encyclopedia of writing systems and languages of the world includes links to numerous other sites dealing with phonetics.
Phonetic Resources: www.unc.edu/~jlsmith/pht-url.html. This site, which is maintained by Jennifer L. Smith of the University of North Carolina, contains hundreds of resources for the study of phonetics.
Phonological Atlas of North America: www.ling.upenn.edu/phono_atlas
University of California (UCLA) Phonetics Lab: http://phonetics.linguistics.ucla.edu; www.phonetics.ucla.edu/index/sounds.html
University of London (SOAS): www.soas.ac.uk/linguistics/links/phonetics: Links to numerous phonetic websites
University of London (UCL) Resources and Tools in Speech, Hearing and Phonetics: www.phon.ucl.ac.uk
Websites on Acoustic Phonetics and General Acoustics: www.chass.utoronto.ca/~danhall/lin228/acoustics.html

For an easy way to write the phonetic symbols on your computer see "The Easy Way to Type Phonetic Symbols, Too, in MS Word" by John Wells: www.phon.ucl.ac.uk/home/wells/eureka-ipa.doc.

Apps

Note that some apps may not be available for both iOS and Android devices.

English Phonetic Symbols: Lin Simu, Version 2.5, 2016. This uses IPA symbols. When you tap a symbol, you can opt to hear the sound only or a continuous reading of words that contain that sound.

Phonemic Chart: Unik Edu Solution, Version 1.7.0, 2016. This uses IPA symbols. You can tap a symbol to hear the sound and then tap words that contain that sound.

Sounds: The Pronunciation App, Macmillan, 2015. This uses IPA symbols. Tap a symbol and hear the sound. You can also practice reading and writing phonetics.

Review of terms and concepts: phonetics

1. _____ phonetics deals with the study of the physical properties of sound.

   _____ phonetics is the study of the perception of speech sounds. And

   _____ phonetics is the study of the actual production of speech sounds.

2. Speech is basically produced by the _____ and _____.

3. Vibrating vocal folds result in _____ sounds. When vocal folds are apart and the airstream flows smoothly through,

   _____ sounds are produced.

4. A consonant is produced when the airstream is _____ by a part of the vocal tract.

5. Vowels are sounds that are produced with no _____ of the airstream.

6. [b] can be described in terms of the following articulatory features: _____.

7. Label the drawing:

   a. _____

   b. _____

   c. _____

   d. _____

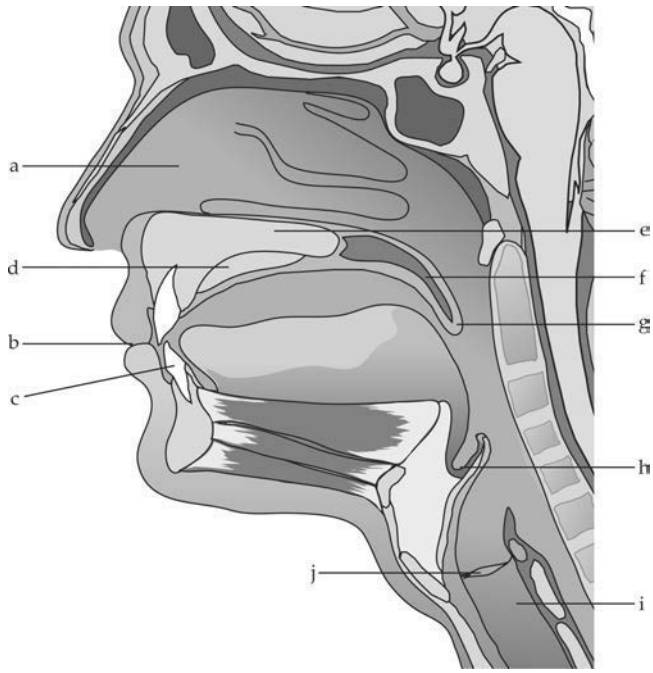
   e. _____

   f. _____

   g. _____

   h. _____

   i. _____



8. The three nasal consonants in English are _____, _____, and _____.

9. In the production of nasal consonants, the _____ is _____, allowing air to escape through both the oral and nasal cavities.
10. A small raised [ʰ] next to a phonetic symbol means that the sound is _____.
11. What is the place and manner of articulation of the following sounds?

    a. [č] _____ b. [θ] _____

    c. [n] _____ d. [l] _____

    e. [f] _____ f. [y] _____
12. Fricatives and affricates are sometimes grouped together and called _____ after the Latin word which means "to _____."
13. Sounds that are not stops are called _____.
14. Vowels are almost always _____.
15. Vowel sounds differ on the basis of _____.
16. The shape of the oral cavity in the production of vowels is affected by the height and advancement of the _____.
17. In English, vowels are nasalized before _____.
18. There are five vowels in English. This statement is _____ (true or false).
19. What features do [u], [ʊ], [o], and [ɔ] have in common? _____.
20. A diphthong is _____.
21. Phonetic features that depend on differences in pitch, stress, and juncture are called _____.
22. With respect to pitch, English is a _____ language, whereas Chinese is a _____ language.
23. A word can only have _____ primary stress.
24. Stress differences between two words that contain the same segmental phones can change _____ and/or _____.
25. The difference between [ays+krim] and [ay+skrim] is a difference in _____.

End-of-chapter exercises

1. In the construction of the phonetic alphabet, what aspects of articulation are included in the description of each consonant? Each vowel?

_____

_____

_____

2. Transcribe into phonetic symbols each word listed below:

a. act _____	f. mask _____	k. siege _____
b. Roy _____	g. vacillate _____	l. motion _____
c. fatigue _____	h. now _____	m. die _____
d. mouse _____	i. pawn _____	n. delicate _____
e. retreat _____	j. put _____	o. eye _____

3. The transcription exercises you have done so far ask you to transcribe words (or individual sounds within words) as these words are produced in isolation. However, in connected speech we seldom produce words in this idealized way. Transcribe the phrases below as if each word was produced in isolation, and then as they may be said in a conversation. (See the example "What will you do?")

	Ideal Transcription	**Connected Speech**
What will you do?	[wʌt+wɪl+yu+du]	[wʌtlyə+du]
Don't you know that?	_____	_____
An apple is good to eat	_____	_____
Here's mud in your eye.	_____	_____
Will he kiss her?	_____	_____
Where is he?	_____	_____

4. Using your transcriptions in Exercise 3 as your data, what types of deviations from ideal pronunciations of individual words occur when words are strung together?

_____

_____

_____

5. Write the following familiar phrases in English orthography.

a. [gɪv mi lɪbr̩ti ɔr gɪv mi dɛθ]

b. [ple ɪt əgɛn sæm]

c. [frɛndz romənz kʌntrimən]

d. [o se kɛn yu si]

e. [astʌ lə vistʌ bebi]

f. [ðɛrz no ples layk hom]

g. [fɔr skɔr ɛnd sɛvən yirz əgo]

6. Adult speakers of one language usually find it difficult to produce the sounds of a foreign language that are not present in their native language. There are numerous reasons for this, including the fact that adults lose articulatory flexibility after long years of producing only the speech sounds of their own language. A classic example of this is the general difficulty that native Japanese speakers have in producing many English sounds.

Here is a list of some difficulties:

- No [æ] sound is found in Japanese and [a] is often substituted for [æ].
- No [f] sound exists in Japanese. The distinction between [f] and [h] is often lost.
- There is no [v] in Japanese and [v] is often confused with [b].
- There are no [θ] or [ð] sounds in Japanese; [s] is substituted for [θ] and [z] for [ð].
- [l] and [r] are used interchangeably.

Instructions:

A. Transcribe the words listed below as a native Japanese person might produce them.

a. lice _____ j. hive _____

b. shack _____ k. vale _____

c. car _____ l. sink _____

d. five _____ m. breathe _____

e. vest _____ n. fold _____

f. play _____ o. best _____

g. hold _____ p. breeze _____

h. bale _____ q. pray _____

i. think _____ r. rice _____

B. What sets of words might be confused?

Example: *pat* and *pot* would both be heard as [pat] by most Japanese speakers.

_____

_____

_____

C. What systematic features of phonetics can account for the various substitutions?

Example: The voiceless fricative [s] is used in place of the voiceless fricative [θ], and the voiced fricative [z] is used in place of the voiced fricative [ð]. Only the place of articulation differs.

_____

_____

_____

D. Do you know any other features of Japanese that make English pronunciation difficult for Japanese speakers? What are they?

_____

_____

_____

CHAPTER 3

Phonology: the sound patterns used in languages

LEARNING OBJECTIVES

- **Explain the difference in the meaning of the terms *phonetics* and *phonology*.**
- **Define the term *phoneme*. Define the term *allophones*.**
- **Analyze the statement: "Phonemes and allophones are considered mental constructs rather than being defined in terms of their specific physical properties."**
- **Describe how a language's phonemes are determined.**
- **Define the term *distinctive feature*. Explain how distinctive feature analysis helps us understand the systematic aspects of language.**
- **List the two major classes of phonological processes, and explain how they differ from each other.**
- **Analyze the statement: "Speech includes redundant features."**
- **Discuss the meaning of the term *markedness*.**

One lesson gained from phonetics is that humans can produce a considerable variety of speech sounds. Yet each language limits the number of speech sounds that it uses. The sounds are organized into sound systems. Although the sound system of each language differs, some interesting general patterns are found in languages throughout the world. These sound system universals will be discussed later in this chapter.

Phonetics, the subject of Chapter 2, deals with the nature of speech sounds. **Phonology** is concerned with the factors that make language a system; that is, with the systems used to organize speech sounds. We will begin this chapter with a look at the concept of the phoneme.

Phonology is the study of the sound system of a language; that is, what sounds are in a language and what the rules are for combining those sounds into larger units. Phonology can also refer to the study of the sound systems of all languages, including universal rules of sound.

The phoneme and the concept of significant differences in sounds

Any sound used in speech can be called a **phone** or **phonetic unit** or **segment**. A phone is a unit of sound that can be mentally distinguished from other sounds in what is actually the continuous flow of sound that makes up speech. A phone can be described based on its articulatory, auditory, and acoustic characteristics. For example, [p^h] is a phone that can be said to be a bilabial, a stop, and a consonant, and it is oral and aspirated. A somewhat different type of unit, called a phoneme, is the major unit of phonology.

A **phone** or **phonetic unit** or **segment** is an actual speech sound produced by the vocal tract that is perceived as an individual and unique sound, different from other such sounds.

The **phoneme** is a more abstract unit than the phone. The phoneme is a mental construct rather than a physical unit. For instance, we have seen that the *p* sound can be unaspirated [p] or aspirated [p^h]. The [p] and [p^h] are physically two different sounds (phones) that are produced in different ways. We can tell this because a thin piece of paper held in front of the lips moves when the aspirated *p* sound is made as in [p^hɪt], but does not move for the unaspirated *p* as in [spɪt]. Yet even if we aspirated the *p* in *spit* or did not aspirate the *p* in *pit*, we would

A **phoneme** is a perceived unit of language that signals a difference in meaning when contrasted to another phoneme.

still recognize the same words. The words might sound a little different than expected, but the meaning of each word would not change. In English, there is a grammatical rule that subconsciously directs a native speaker to aspirate the *p* sound when it is the first sound in a word or begins a stressed syllable, and not to aspirate when it is not the first sound or the beginning of a stressed syllable. In other words, which *p* sound a native speaker of English uses is predictable because there is a rule governing its use; [p] and [p^h] are two different phones, but their difference is not significant in English.

In linguistics, a significant difference between sounds means that by substituting one sound for the other, the meaning of the words will change. If we substitute the *b* sound for the *p* sound in *pit*, we get the word *bit*. Because *pit* and *bit* have different meanings, they are said to contrast. Therefore, *p* and *b* sounds are perceptually significant. In English, in most environments, /p/ and /b/ when substituted for each other change the meaning of a word. We therefore say that /p/ and /b/ are different phonemes, whereas [p] and [p^h] are two different forms, called **allophones** (*allo* = other), of the phoneme /p/. Notice that allophones are placed inside brackets, but phonemes are placed between slashes.

An **allophone** is a variation of a phoneme. Different allophones of a phoneme occur in different and predictable phonetic environments.

A phoneme is a perceived unit of language that functions to signal a difference in meaning when contrasted to another phoneme. In reality, in spoken language, a phoneme is a class of sounds or phones that speakers and listeners perceive as being one sound. The phonemes /b/ and /p/ have no meaning in themselves. Yet words that are the same except for a difference of one phoneme (in the same position in each word) contrast. That is, they have different meanings (*bit* and *pit*, for example). The word *perceived* is used earlier in this paragraph because, as mentioned previously, a phoneme is a mental construct that tells a listener that two or more sounds function as the same sound or different sounds, regardless of the acoustic properties of the sound. For example, [p] and [p^h] are acoustically (physically) somewhat different sounds, yet native English speakers (who have not taken a linguistics class) perceive them as being the same sound. Therefore, native speakers would call them both the *p* sound.

The word *phoneme* comes from the Greek root meaning *sound*. Yet phonemes are not sounds. A phoneme is a mental construct. No one has ever heard a phoneme. In the case of /p/, the listener hears either [p] or [p^h], or various other allophones of /p/ that we have not discussed. The unit /p/ exists in the mind of the speaker and listener. The /p/ and all other phonemes are organizational and functional units with no physical properties of their own. Not only is a phoneme not a sound, it also does not have to refer to sound. Phonemes exist in soundless languages such as American Sign Language (ASL). We will discuss the phonemes of ASL in Chapter 11.

Sounds such as [p] and [p^h], which are allophones of the same phoneme /p/ in English, might be different (separate) phonemes in another language. For example, in Hindi the aspirated [p^h] sound and the unaspirated [p] sound are different phonemes. In Hindi, [kapi] means *copy*, whereas [kap^{h}i] means *ample*. This difference in meaning between words that are identical except for aspiration is consistent in Hindi. Aspiration differences between otherwise identical sounds are never significant in English; that is, aspiration by itself never changes meaning. So the mental construct of an English speaker classes the two *p* sounds together, whereas in Hindi the two *p* sounds are seen to be as different as /b/ and /p/ are in English. In Hindi /p/ and /p^h/ are different phonemes (see Box 3-1).

BOX 3-1

The number of phonemes in different languages

Most linguists put the number of phonemes for Standard American English at about 44. The language spoken by the Pirahã, who live in Brazil along a tributary of the Amazon River, has the fewest number of phonemes, with a total of ten for men and nine for women. As in some other cultures, men and women speak somewhat differently. Among the Pirahã, women do not use the /s/ phoneme, but men do. Rotokas, a language spoken on an island east of Papua New Guinea, has 11 phonemes, and Hawaiian has 12.

On the other side of the scale, the language of the !Xu (!Kung), who live in the Kalahari Desert of Africa, has the most, with as many as 141 phonemes. (Linguists disagree on the exact number.)

Abkhaz—a language spoken in Turkey, Georgia, and the Republic of Abkhazia—has the fewest number of vowels, with only two in some dialects. On the other hand, Punjabi, the native language of the Punjab of Pakistan, has more than 25 vowels.

Phonetics and phonemics

Armed with a phonetic alphabet to help organize information on sound, linguists attempt to describe all the speech sounds of a previously unstudied language. Because linguists do not yet know which sounds are significant or **distinctive** (systematically used to make distinctions in words), they attempt to record every slight detail. Linguists at this point are doing a phonetic analysis. A phonetic analysis of a heretofore unstudied language is an "outside" view, sometimes called an **etic** view or approach. In a sense, the linguist is sitting on a hill, looking down at a speech community, and describing a language without reference to the speakers' own subconscious concepts of what is significant or distinctive. A phonetic approach is a first step.

In linguistics, the term **distinctive** refers to units that contrast; that is, change meaning when substituted for each other. Phonemes are distinctive; allophones are not.

Etic refers to a study done by a cultural outsider using categories and concepts that might not have meaning to the people being studied.

One goal of the linguist is to determine what categories of sound are significant to native speakers. Once the raw data are collected, the linguist can begin the phonemic study. The researcher attempts to discover the shared understanding of phonology that native speakers possess. The linguist is now taking an "inside" or **emic** approach, and attempting to derive the speaker's linguistic competence. The reason one cannot proceed directly to the phonemic level of analysis is that the native speaker's competence is mostly subconscious. Therefore, the investigator cannot just ask a speaker to report on what categories are significant, and what the rules to combine categories are. These principles must be discovered. One way to do this is to know of all the possible categories, and then to discover regularities in the data. Questioning native speakers can check the validity and significance of these regularities (see Box 3-2).

Emic refers to a study done by a cultural outsider using categories and concepts that have meaning to the people being studied.

For instance, at the phonetic level, a non-English-speaking linguist, with no previous knowledge of English, might discover two *p* phones: [p] and [p^h]. The linguist would have been compiling written texts of the native speakers' utterances (stretches of speech between two periods of silence or potential silence). This yet-to-be organized collection of data gathered in the field is called a **corpus**.

A **corpus** (plural *corpora*) is a collection of linguistic information used to discover linguistic rules and principles.

Minimal pairs and sets

The linguist can use the corpus to discover regularities in the language. One way of doing this is by finding **minimal pairs** and **minimal sets**. A minimal pair is made up of two forms (such as words, phrases, sentences) that contain the same number of sound segments,

A **minimal pair** is two forms (words, phrases, sentences) that differ in meaning, contain the same number of sound segments, and display only one phonetic difference, which occurs at the same place in the form.

A **minimal set** is more than two forms (words, phrases, sentences) that differ in meaning, contain the same number of sound segments, and display only one phonetic difference, which occurs at the same place in the form.

BOX 3-2

Etic and emic

Etic and *emic* are terms derived from *phonetic* and *phonemic* and first used by linguistic anthropologist Kenneth Pike (1912–2000). In anthropology, linguistics, and other fields of study, *etic* refers to concepts and categories that have meaning to a scientist but may have little or no meaning to the people being studied. For example, the category *bilabial stop* would not have meaning to most people, but it would to a linguist. Bilabial stop has no intrinsic meaning to a speaker. Instead, bilabial stop is an extrinsic category used by the linguist for analytic purposes. *Emic* refers to distinctions that are meaningful (intrinsic) to the members of a society, such as the distinction between the sounds /b/ and /m/ in the words *bat* and *mat*. The /b/ and /m/ change the meaning of words if they are substituted for each other. See "K. L. Pike on Etic vs Emic: A Review and Interview" at www-01.sil.org/klp/karlintv.htm for more detail on the distinction between etic and emic.

display only one phonetic difference that occurs at the same place in the form, and differ in meaning. If more than two forms are being compared, then we speak of sets instead of pairs. For example:

/kæt/ *cat* and /pæt/ *pat*

is a minimal pair. These words both have three sound segments, differ only in the initial consonant, and mean different things.

/kæt/, /pæt/, /ræt/, /bæt/, /fæt/

and so on, represent a minimal set. Linguists studying English for the first time would not know that this sequence was a minimal set until they had definitions for each phonetic sequence in the corpus.

Now let's return to the original question involving [p] and [p^h]. The linguist might search the corpus in an attempt to find minimal pairs for these phones. The researcher would find that these phones do not occur in the same locations within words. That is, the phones might be in **complementary distribution**. Complementary distribution means that each of the sounds occurs in a different phonetic context. These sounds never contrast; changing [p] for [p^h] (and vice versa) will never change meaning. Minimal pairs cannot be found for the two *p* sounds. The position and/or the surrounding sounds will determine which of the *p* sounds will be used. For this reason, the *p* sound chosen by a native English speaker will be predictable. The choice of which *p* sound to use is not optional, but obligatory. The speaker will choose [p^h] only for words with the *p* sound in the initial position followed by a stressed vowel, and will choose [p] for most other contexts. (There are other allophones of the phoneme /p/. See this chapter's section on free variation.) Because the linguist would not find minimal pairs involving the *p* sounds, these sounds are not distinctive or significant in English. They do not signal differences in meaning. Therefore, the two *p* sounds are not two different phonemes, but allophones (varieties) of the same phoneme /p/. A phoneme such as /p/ is a group or class of sounds that are perceived by a native speaker as the same sound. The actual sounds that make up the class ([p] and [p^h] in this case) are the allophones.

Complementary distribution means that each of a series of sounds occurs in different phonetic contexts and these sounds never contrast with each other. Phones that are in complementary distribution with each other are allophones of the same phoneme.

On the other hand, /p/ and /k/, as well as the other initial consonants that occur before /æt/ in the minimal set above, are all different phonemes. The /p/ and /k/ phonemes are not in complementary distribution, but show an **overlapping distribution**. Phones are characterized by an overlapping distribution if they can occur in all or most of the same phonetic environments.

Overlapping distribution is characteristic of different phones that appear in most of the same phonetic environments. Unlike complementary distribution, phones in overlapping distribution are different phonemes (not allophones), and therefore substituting one for the other changes the meaning of an utterance.

TABLE 3-1 Minimal set for the substitution frame /_æt/

bat /bæt/	*mat* /mæt/	*tat* /tæt/[1]
fat /fæt/	*Nat* /næt/	*that* /ðæt/
hat /hæt/	*pat* /pæt	*vat* /væt/
cat /kæt/	*rat* /ræt/	*dat* dæt/[2]
sat /sæt/	*gat* /gæt/[2]	

[1]*Tat* has several meanings, including to crochet, to entangle, to confuse, and it is a type of cloth.
[2]*Dat* and *gat* are not words in English, in that they have no meaning. However, they do conform to all the phonological rules of English. They could be English words if they had meaning. Such linguistic forms are referred to as accidental gaps. When new words are created, these accidental gaps may be used. In fact, *dat* is used by audiophiles as an acronym for digital audiotape. The word *Bic* /bɪk], referring to a pen, was an accidental gap in the substitution frame /_ɪk/, until it was used as a brand name.

A form that has a "slot" that can be filled in with different items, such as /_æt/, is called a **substitution frame**. Can you determine all of the English sounds that can be placed in this substitution frame that will yield meaningful units? Table 3-1 lists the results that you should get. Each sound that can be substituted for the blank and that changes the meaning of /_æt/ is a different phoneme. Notice that we cannot predict what sound will go into the slot in the substitution frame. Unlike allophones of the same phoneme, the environment does not tell us what phoneme to choose.

A **substitution frame** is a form that has a "slot" that can be filled in with different items, and is used to identify different phonemes.

The non-English-speaking linguist now has established that the two *p* sounds in English are phonetically distinct, but they are not phonemically distinct. (They sound different, but they are not different phonemes.) Researchers also have discovered that /p/ is phonemically distinct from some sounds not listed in Table 3-1, when they apply other substitution frames to the corpus. For instance, /ŋ/ cannot be found to substitute for /p/ in the initial position. This does not mean that the ŋ sound is an allophone of /p/; /p/ will form minimal pairs with the *ŋ* sound in other positions. For example, both the *p* and *ŋ* sounds fit into the substitution frame: /sɪ_/. The *p* forms the word *sip* /sɪp/, and the *ŋ* forms the word *sing* /sɪŋ/. The /ŋ/ sound is never in the initial position in an English word.

We have shown how minimal pairs and sets are used as one tool to discover the contrastive sound units of a language (phonemes). Yet this method is not always sufficient to establish all of the phonemes of a language. Some languages have few minimal pairs. In these cases, phonemes are established based on other criteria, some of which are discussed later in this chapter. In any case, when linguists begin to discover phonemic features of a language, they are exploring the native speakers' competence, and are therefore involved in an emic or "inside" study.

Free variation

In addition to [p] and [p^h], our non-English-speaking linguist may have found a third variation of /p/. [pˀ] is used in some dialects of English. [pˀ] is an unreleased sound. This occurs when the phone is released without sound; that is, closure occurs and outward pressure ceases. In English, the [pˀ] or the [p] can occur in a word's final position; however, the difference in pronunciation does not change the meaning of the word. Minimal pairs do not occur between [pˀ] and [p]. The sounds are not in complementary distribution, but in **free variation**. Free variation is a condition in which phonetically different sounds may occur in the same environment without changing meaning. [pˀ] is an allophone of /p/. But, unlike the complementary relationship of [p^h] and [p], [pˀ] may be in overlapping distribution with [p]. /t/ and /k/ also have the allophones [t], [t^h], [tˀ] and [k], [k^h], and [kˀ].

Free variation is a condition in which phonetically different sounds (phonemes or allophones) may occur in the same environment without changing meaning.

Sometimes two phonemes may alternate, more or less freely, with each other without changing the meaning of a word. In fact, there is a song that illustrates this point, saying that some people pronounce the word *potato* as /pəteto/ and some as /pətato/. For these varieties of English, the word *tomato* is /təmeto/ and/təmato/, respectively.

But a tomato is a tomato is a tomato. That is, no matter which way you pronounce this word, the meaning remains the same. Does this mean that /e/ and /a/ are not distinct, that they are not two different phonemes? /pəteto/–/pətato/ and /təmeto/–/təmato/ are not minimal pairs. Each pair has the same number of segments, and each item of each pair differs from the other item of its pair by only one sound; but the items of each pair do not differ in meaning. Yet, /e/ and /a/ form minimal pairs for other groups of words, such as:

/het/ *hate* and /hat/ *hot*

/kep/ *cape* and /kap/ *cop*

When one meaning (like *potato* or *tomato*) is represented by more than one phonemic form, the different pronunciations are free variations of the word in question. Another example of this type of free variation is that the word *pretty* might be pronounced as [prɪti] or as [prɪDi] ([D] is a voiced retroflex flap produced by a single strike of the tongue against the alveolar ridge as the

tongue returns to its resting position). In any case of free variation, the different pronunciations do not signal a difference in meaning. The pronunciation chosen is optional, not obligatory as with complementary distribution.

In summary, the fact that two sounds form minimal pairs is sufficient proof that the two sounds are two different phonemes. The converse is not true. Two sounds that do not form a minimal pair in a particular context may still be separate phonemes. The corpus must be studied carefully to discover if the sounds under investigation (such as the /e/ and /a/ of our example) are found in minimal pairs anywhere in the language. Even if this search fails, it does not necessarily mean that the sounds are not different phonemes.

Naming the phoneme

Why is the *p* sound phoneme called /p/ and not /pʰ/ or /p˺/? The criterion for naming the phoneme is which allophone is the most common. Of the three *p* sounds listed in the preceding sentence, /p/ is the most frequent. It occurs more often than either /pʰ/ or /p˺/. So we would notate this relationship in the following way: /p/ → [p], [pʰ], and [p˺].

It might be relatively easy for an English speaker to understand the relationship between [p], [pʰ], and [p˺] because they are all based on a sound notated with the same symbol, *p*. But allophones of the same phoneme can be based on sounds that in English and the phonetic alphabet are written with different symbols. For instance, in the Native American language Mohawk, /t/ → [t] and [d]. The [t] occurs at the end of the word [salá:dat] *pick it up!* and before another consonant, as in [ohyótsa] *chin*. The [d] only occurs preceding a vowel, as in [odáhsa] *tail*. The phoneme in this Mohawk example is called /t/, not /d/, because [t] is more frequent than [d]. The physical feature that differentiates [p] from [pʰ] is aspiration; the difference between [t] and [d] is voicing. In English, the voicing distinction leads to different phonemes: /t/ and /d/ are different phonemes in English. In Mohawk, voicing distinctions can lead to different allophones of the same phoneme: [t] and [d] are in complementary distribution, and are therefore allophones of the same phoneme in Mohawk.

Broad and narrow transcriptions

In the first stage of a linguistic study done in the field, the linguist writes down each utterance in as much phonetic detail as can be perceived. At this stage, as many symbols (such as diacritics and special letters) will be used as needed to transcribe the linguist's perceptions of the language. Such a recording system is called a **narrow transcription** or a **phonetic transcription**. The narrow transcription will show both distinctive and nondistinctive features.

A **narrow transcription (phonetic transcription)** represents the actual sounds that a person utters in as much detail as possible.

A **broad transcription (phonemic transcription)** represents the idealized sounds, called phonemes, which are actually classes of sounds (the class being made up of allophones) rather than physically real speech sounds.

A **broad transcription** or a **phonemic transcription** does not include nondistinctive features. Many details of pronunciation are left out of a broad transcription. For instance, the word *pit* would be written as /pɪt/ in broad transcription and [pʰɪt] in narrow transcription. The narrow transcription of *pit* indicates the nondistinctive feature (in English) of aspiration. The broad transcription is restricted to sound distinctions that are meaningful to native speakers. The linguist cannot write a broad transcription until the phonemes of the language have been discovered.

EXERCISE 1 Phonemes, allophones, complementary distribution, and free variation

1. Below is a list of words that contain aspirated and unaspirated velar oral stops. Are the aspirated and unaspirated stops different phonemes or allophones of the same phoneme? If they are allophones, state the nature of their complementary distribution.

   Hint: First see if there are minimal pairs.

a.	skill [skɪl]	g.	school [skul]
b.	ask [æsk]	h.	skull [skʌl]
c.	kill [k^hɪl]	i.	cool [k^hul]
d.	Cass [k^hæs]	j.	key [k^hi]
e.	king [k^hɪŋ]	k.	cull [k^h ʌl]
f.	ski [ski]	l.	ink [ɪŋk]

2. In English, the lateral sound *l* is articulated in either the alveolar position [l] or the velar position [ɬ]. (The [~] through the center of the *l* is a diacritic that indicates it is pronounced with the tongue in the velar position.) After examining the list below, answer the following questions:
   a. Are the two *l* sounds different phonemes or allophones of the same phoneme?
   b. What data do you have to back up your conclusion?

lit [lɪt]	lull [ɬʌɬ]	leak [lik]
lame [lem]	lea [li]	lap [læp]
all [ɔɬ]	low [ɬo]	lop [ɬap]
let [lɛt]	loot [ɬut]	Luke [ɬuk]
late [let]	lay [le]	law [ɬɔ]
lick [lɪk]	feel [fiɬ]	

3. Write the broad transcription for the following words. (The diacritical mark [:] means that the vowel is long.)
   a. [t^hap]
   b. [p^hæ̃m]
   c. [k^ho:d]

4. Some people pronounce *difficult* as /dɪfɪkəlt/, while others say /dɪfəkəlt/. /ɪ/ and /ə/are distinctive elsewhere. (They form minimal pairs.) What is the phenomenon illustrated by the multiple pronunciations of *difficult*? Give three other examples of this phonological phenomenon.

A comparative example: Russian and English

We can further refine our understanding of the distinction between the phonetic and phonemic aspects of language with a comparative example. We will compare how various *t* sounds function in two languages.

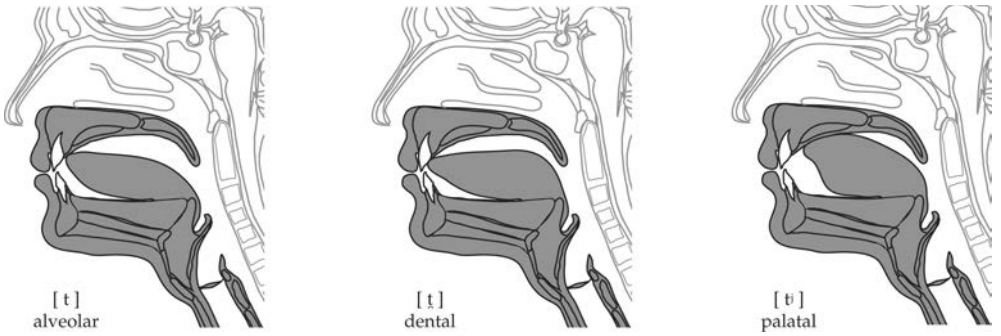


FIGURE 3-1 Three *t* sounds

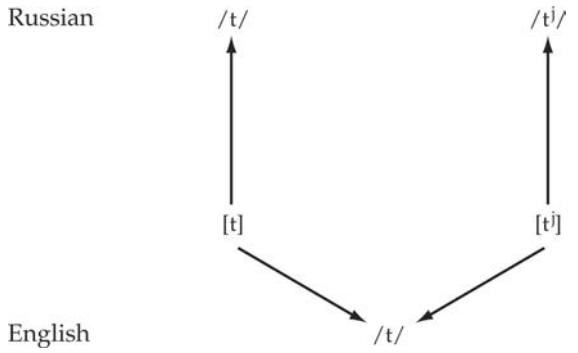


FIGURE 3-2 In English, [t] and [tʲ] do not contrast and are allophones of the phoneme /t/. In Russian, [t] and [tʲ] do contrast and are therefore two different phonemes, /t/ and /tʲ/.

Say the word *brat*, pronouncing the /t/ with the tip of the tongue against the upper teeth. Now say the same word with the /t/ formed by touching the tip of the tongue to the alveolar ridge. Follow this by saying *brat* with the /t/ formed even further back in the mouth, at the palate. In this last position, some people use more than the tip of the tongue, placing a greater surface of the tongue against the palate (see Figure 3-1). You should notice the difference in pronunciation of these three variants of the *t* sound. However, you will perceive that you have said the same word. The variations in these sounds are clearly insignificant in English; they do not contrast. We can phonetically represent the three *t* sounds as [t], [t̪], and [tʲ]. The [t] without a diacritic is produced at the alveolar location. The diacritics [̪] and [ʲ] stand for dental and palatal, respectively. In English, these three sounds are allophones of the phoneme /t/. Let's look at two of these variants as they function in Russian.

In Russian, there is a significant difference between [t] and [tʲ]. The Russian word /mat/ (floor mat) differs in meaning from the word /matʲ/ (mother). These words form a minimal pair in Russian; they contrast. The difference between the two types of *t* sound is as significant to the Russian speaker as is the difference between the initial sounds in *cat* and *pat* to the English speaker. In Russian, therefore, /t/ and /tʲ/ are not allophones of a single phoneme, as they are in English, but are two different phonemes (see Figure 3-2).

Each language embodies different perceptions of speech sounds, which means that speakers of different languages mentally cut up (segment) the range of possible sounds in various ways. For each language, only a small number of possible sounds are used. Even when there is an overlap in the sounds used in different languages, the functional significance of these sounds might differ. A series of sounds might be allophonic in one language (the *t*'s of English in our example) and phonemic in another (the *t*'s of Russian). (See Box 3-3.)

BOX 3-3

Why foreign speakers have trouble with English

People who are learning a second language have the easiest time with sounds and sound combinations that are the same or similar to their native language. A native speaker of Japanese would have little trouble pronouncing the English word *potato* because it contains sounds pronounced in a similar manner in Japanese, and the arrangement of the sounds conforms to the Japanese phonological pattern. In Japanese, a syllable must be a vowel or end with a vowel, with one exception: words can end with an /n/ as in *Pokémon* [pokiman]. When Japanese speakers first try to pronounce a word that does not conform to the Japanese pattern, they will force that pattern on the word. For instance, the English word *drink* /drɪŋk/ will be pronounced as *dorinku* /dorɪŋku/. Notice that a vowel is placed between most consonants, such as /d/ and /r/.

Another problem that a Japanese speaker might have is with the *r* and *l* sounds in English. In English /r/ and /l/ are separate phonemes. In Japanese, there is an /r/ phoneme, but no /l/ phoneme. The Japanese /r/ does have allophones that sound similar to the *l* and *d* sounds in English, but Japanese speakers tend to substitute the *r* sound for the *l* sound in English words. So the English word *lucky* will be pronounced as /raki/.

Some examples of difficulties foreign speakers other than Japanese might have learning English as a second language are as follows:

- Sounds /z/ and /s/ are distinct phonemes in English, but allophones of the same phoneme in Spanish.
- /ž/ and /ǰ/ are distinct phonemes in English, but allophones in Italian ([ž] and [ǰ]).
- /l/ and /n/ are distinct phonemes in English, but allophones in Cantonese ([l] and [n]).
- In Finnish, the first syllable of a multisyllabic word is always stressed; so English multisyllabic words that do not carry stress on the first syllable are often mispronounced.
- The English /θ/ and /ð/ are pronounced as /t/ and /d/ by Serbo-Croatian speakers.
- Hebrew has only five vowels and, except for borrowed words, does not have diphthongs. Therefore, English words containing diphthongs are often mispronounced.
- The French do not aspirate voiceless stops in the initial position, but English speakers do.
- The Hawaiian language lacks the /t/ phoneme.
- The Mohawk language lacks the /p/ phoneme.

These are just a few examples of phonetic and phonological differences between English and other languages. There are also suprasegmental differences in pitch, stress, and duration that create problems for adults learning a new language. All of these sound differences make it hard for a nonnative speaker of English to pronounce English like a native speaker would. Of course, the reverse is also true; English speakers have a difficult time pronouncing sounds or reproducing sound patterns not used in English. When we say a person has a foreign accent, that accent is partially due to the interference of the phonological rules of the native language while speaking English.

For an extensive list of examples of why speakers of different languages have trouble with English, see www.fact-index.com/n/no/non_native_pronunciations_of_english.html.

Distinctive feature analysis

The phoneme can be thought of as a "bundle" or set of distinctive features. In turn, each **distinctive feature** can be thought of as a basic building block of the phoneme or, more specifically, any trait that distinguishes one phoneme from another. For instance, in English, /p/ can be phonemically distinguished from /b/ by the single feature called voicing: /b/ is voiced and /p/ is not. In English, changing a /p/ for a /b/ in a minimal pair is distinctive; it changes meaning. The child learning English learns subconsciously to distinguish between /b/ and /p/ on the basis of voicing. However, /p/ can also be thought of as resulting from a whole series of traits, not

A **distinctive feature** is a basic building block of the phoneme or, more specifically, any trait that distinguishes one phoneme from another.

just the fact that it is voiceless. The child subconsciously learns to contrast all phonemes in a number of ways: /p/ is a consonant as opposed to a vowel; it is oral, not nasal; it is a stop, not a fricative; and so on. Therefore, /p/ is the sum of all its features. Note that aspiration is not a distinctive feature in English. It is an acoustic feature, but is not distinctive because a contrast in aspiration, between [p] and [p^h] for example, does not change meaning. Aspiration is a distinctive feature in other languages, such as Hindi. Distinctive features distinguish between different phonemes, not allophones of the same phoneme.

Distinctive features

Voice (voicing) is just one of many distinctive features. Different linguists use somewhat different lists of features. The most commonly used lists are based on articulatory features of sound, but some distinctive feature lists use acoustic and/or auditory features as well. New insights into how the mind perceives distinctions between sounds could lead to the discovery of new distinctive features.

Each distinctive feature in the list of features used in this book is established on the basis of articulatory criteria. For instance, the feature [voice] is an articulatory feature because it involves movement (or the lack of it) of the vocal cords in the production of a sound. You are already familiar with some distinctive features because they were used to construct the consonant and vowel charts shown in Table 2-1 and Figure 2-3. In fact, the names of two distinctive features are [consonantal] (most consonants) and [syllabic] (vowels and syllabic consonants). This discussion includes only distinctive features that are used in examples and exercises in this book. There are additional features not discussed here.

- Another distinctive feature is [sonorant] (frictionless continuants, including vowels, glides, liquids, and nasals).
- Some distinctive features are based on the manner of articulation. The ones we already have discussed in Chapter 2 are [nasal], [lateral], and [continuant].
- Some distinctive features are based on place of articulation. Again, we have discussed some of these, such as [tense] (versus lax) and [reduced] (exceptionally brief duration).
- Other place-of-articulation features are based on what the lips are doing. The feature called [round] refers to when the lips are made to protrude.
- Other sounds are dependent on what part of the tongue is involved. Sounds in which the tongue tip or blade is raised in the front part of the mouth are called [coronal]. If the body of the tongue is above the central location in the mouth, they are called [high]. Sounds produced with the tongue body lower than the central position in the mouth are called [low]. Speech sounds produced with the tongue body behind the hard palate are called [back] sounds.
- English sibilants (Chapter 2) are also called stridents. However, the feature [strident] also includes some English nonsibilants such as (/f/ and /v/). The feature [strident] refers to sounds (only fricatives and affricates) produced with constriction that forces the air stream to hit two surfaces, resulting in high-intensity noise.

The feature matrix

The distinctive features mentioned in the preceding section are voice, consonantal, syllabic, sonorant, nasal, lateral, continuant, tense, reduced, round, anterior, high, low, back, and strident. Voiced sounds contrast with voiceless sounds, nasal sounds with nonnasal (oral) sounds, and so on. Linguists might indicate each distinctive feature with a + or a –. This is a **binary system** of classification. The feature is either present or absent. If a sound is voiced, it will be denoted as [+voice]. A voiceless sound is shown as [–voice]. From our discussion of phonetics, it is clear that a binary phonetic system of classification is simplified and highly idealized. That is, from acoustic studies, we know that some sounds are voiced more than others; some sounds

A **binary system** is a classification system in which a feature is either present or absent.

are more nasalized than others; and so on. An all-or-none feature analysis ignores these possible variations. Table 3-2 is a **feature matrix**. A feature matrix lists sound segments along the horizontal axis and features on the vertical axis.

A **feature matrix** lists sound segments (or other phenomena) along the horizontal axis and features on the vertical axis.

If the feature is present at all, it is marked with a +. From an analytical point of view, this is not necessarily a weakness of the system. More information may be unnecessary and obscure the analysis. Consider the following analogy. If you were putting an object together from instructions (a piece of furniture, for instance), you would not expect the instructions to tell you exactly how to hold a screwdriver, how many times to turn it, and how to remove it from the notch in the screw. The instructions might simply say, "Put screw B into hole B and tighten." In most cases, this should be sufficient.

In describing sounds, it may be sufficient to know that /n/ is nasalized and /p/ is not. We do not necessarily have to know the degree to which /n/ is nasalized. However, if a linguist finds that a + or – designation is not sufficient for the specific research problem being tackled, a feature can always be ranked. For instance, in the word *pant* ([pæ̃nt]), the vowel [æ] is nasalized somewhat as a result of the nasal consonant /n/ that follows it. Yet /æ/ is not nasalized to the same degree as /n/. The linguist may show this in a distinctive feature analysis, and can do so by using numbers preceding the symbol for the sound in question: [æ̃] may be designated as [2 nasal] and /n/ as [1 nasal]. The numbers refer to the degree of nasalization, with 1 being first-degree nasalization and 2 being second-degree nasalization. These numbers represent relative values.

Some linguists use a combination of binary and nonbinary distinctive features. Peter Ladefoged (1925–2006), a phonetician, used a binary classification for the feature labial ([+labial/–labial]). However, in his distinctive features analysis, he included the feature [glottalic], which has to do with the movement of the glottis. This feature has three values: [ejective] when the glottis is moving upward; [pulmonic] when there is no movement of the glottis; and [implosive] when the glottis is moving downward. Still other features are binary for some languages but have multiple values for other languages. For instance, in most languages, a binary designation for [voice] as plus or minus is sufficient. However, in the language Beja, spoken in Sudan, Ladefoged saw five values for voicing that he called [glottal stop], [laryngealized], [voice], [murmur], and [voiceless].[1]

Natural classes

If you examine Table 3-2, you will see that some sounds share features. For instance, [p, t, k, b, d, g] all share the following traits:

+consonantal
–sonorant
–continuant
–strident
–nasal

The consonants /p, t, k, b, d, g/ form a **natural class** called oral stops. A natural class is a subset of the total set of phonemes. The subset shares a small number of phonetic (distinctive) features, which distinguishes the class from other classes. Natural classes play a significant role in phonological regularities (rules).

A **natural class** is a subset of the total set of phonemes that shares a small number of phonetic (distinctive) features, which distinguishes the class from other natural classes. Natural classes play a significant role in phonological regularities (rules).

One significant characteristic of a natural class is that the members of the class will appear in about the same context (phonetic surrounding) within words. Each member of a class will behave in approximately the same manner throughout the language. Because of

[1]Peter Ladefoged, "The Features of the Larynx," *Journal of Phonetics* 1 (1973), 73–83.

TABLE 3-2 Feature matrix for some English phonemes

Vowels

Except for situations in which the phonetic environment might alter the usual way in which a vowel is produced, all vowels are [+voice], [+syllabic], [–consonantal], [+continuant], and [+sonorant].

	i	ɪ	u	ʊ	e	ɛ	ʌ	o	ɔ	æ	a	ə
High	+	+	+	+	–	–	–	–	–	–	–	–
Low	–	–	–	–	–	–	–	–	–	+	+	–
Back	–	–	+	+	–	–	+	+	+	–	+	+
Tense	+	–	+	–	+	–	–	+	–	–	–	–
Reduced	–	–	–	–	–	–	–	–	–	–	–	+
Rounded	–	–	+	+	–	–	–	+	+	–	–	–

Consonants

The features low, tense, and reduced are not used for English consonants. All consonants are [–syllabic] except for m, n, ŋ, l, and r, which can act as syllabic consonants (marked ±) in some contexts. See Chapter 2 for a discussion of syllabic consonants.

	p	b	f	v	t	d	θ	ð	s	z	š	ž	č	ǰ	k	g	m	n	ŋ	l	r	y	w	h	?
Consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	±	±	±	±	±	-	-	-	+
Sonorant	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+	+	+	+	+	+	+	–
Nasal	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+	+	–	–	–	–	–	–
Continuant	–	–	+	+	–	–	+	+	+	+	+	+	–	–	–	–	–	–	–	+	+	+	+	+	–
Lateral	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–
Voice	–	+	–	+	–	+	–	+	–	+	–	+	–	+	–	+	+	+	+	+	+	+	+	–	–
Anterior	+	+	+	+	+	+	+	+	+	+	–	–	–	–	–	–	+	+	–	+	+	–	–	–	–
Strident	–	–	+	+	–	–	–	–	+	+	+	+	+	+	–	–	–	–	–	–	–	–	–	–	–
High	–	–	–	–	–	–	–	–	–	–	+	+	+	+	+	+	–	–	+	–	–	+	+	–	–

these regularities, rules do not need to be written for each sound. Instead, we can postulate the rules for the entire natural class. What applies to one oral stop, for instance, often applies to all oral stops.

EXERCISE 2 Distinctive features and natural classes

1. Determine which of the lettered entries below constitute natural classes. In each case that a natural class exists, name the features that define that class.

a. /k, g, ŋ/

_____

b. /n, l, r/

_____

c. /p, r, θ, g/

_____

d. /p, b, m/

e. /i, æ, e, ɛ/

2. In each of the lettered entries below, one sound does not fit. Circle it. Give the features of the natural class of the remaining sounds.

a. /u, o, ʊ, i/

b. /r, p, w, y, l/

c. /g, n, v, p, d, m/

Combining phonemes

In the popular word game *Scrabble*, players make words from seven letters, which they have picked at random. They attach these letters to existing words on the game board. Often when players cannot come up with a word, they try to bluff. That is, players make up words and gamble that they will not be discovered. Hopefully, players would not bluff with a sequence such as **mbgo*. They would certainly be challenged, and their competence in the English language would become questionable. However, if they formed either the sequence *bloop* or *kloop*, the other players might hesitate to challenge. Either of these sequences could be an English word. The bluffer would have triumphed if the made-up word was *bloop*; he or she would not have been so lucky with *kloop*.

In bluffing with either *bloop* or **kloop*, the player would have been modeling a potential word based on rules about the combination of sounds in English. These rules are part of every speaker's competence in English. The player did not attempt to bluff with **mbgo* because, in English, words /m/ and /b/ never occur adjacent to each other in the initial position. Another rule, subconsciously known, specifies that only a limited number of three-consonant clusters are permitted in the initial position in English words; *mbg* is not one of these clusters. However, *mbg* is a permissible combination in Igbo, one of many languages of Nigeria.

Every native speaker of a language subconsciously knows the rules of sound combination. However, it would be improbable that any of these speakers could write down all of the rules of their language. That is, they could not make these rules explicit. The phonologist attempts to make as many rules of the sound system of language as explicit as possible. The area of phonology that studies what sound combinations are allowed in different languages is called **phonotactics**.

Phonotactics is an area of phonology that studies the combinations of phonemes that are allowed (or restricted) in the formation of syllables, consonant clusters, and sequences of vowels.

Phonological processes

Because no one formally teaches us how to speak, it is perhaps less obvious (than with math, for instance) that language is rule-governed. A person untrained in linguistics might not see any rule involved in the formation of words like *stick*, *spoke*, and *skid*. Of course, the nonlinguist would not be looking for such a rule. However, the linguist could specify that based on these and similar words: In English, any fricative at the beginning of a word, followed by a voiceless stop, must be voiceless.

Other phonological rules specify the system governing the combination of other sound sequences. They specify whether to add, delete, or change elements in an idealized form to a form that is easier to pronounce or perceive. For instance, we say [hæ̃m] instead of [hæm] because [hæ̃m] is easier to pronounce. Vowels are usually not nasalized in English. However, because the [m] in *ham* is nasalized, the speaker subconsciously begins to lower the velum, opening the nasal cavity, before the [m] is produced. The result is that the preceding vowel [æ̃] is nasalized in the process. This process of nasalizing a vowel before a nasal consonant is an example of an **obligatory phonological process**. Obligatory phonological processes are usually done subconsciously and generally involve a single feature of a single phonetic segment. They contrast with **optional phonological processes**, which usually involve more radical changes from the idealized form.

An **obligatory phonological process** is a rule that most native speakers of a specific language apply to make a string of phonetic units easier to pronounce and perceive.

An **optional phonological process** is a pattern that is applied by individuals or groups of individuals and is not necessarily characteristic of most native speakers of a language; it is stylistic.

Obligatory phonological processes

Assimilation is the obligatory phonological process that makes it easier to pronounce combinations of sounds by giving those sounds a shared distinctive feature that, in other environments, one or more of them would not have. The reason it is easier to say [hæ̃m] than to say [hæm] is that it takes fewer articulatory movements. Because the [m] is nasalized, it is easier to move directly to that nasalized configuration of the vocal tract toward the end of the production of the vowel. Such a process is called **manner assimilation** and involves a change in a single feature, oral/nasal. In the example given, the [æ], which usually is not nasalized, comes to agree in manner of articulation with the nasal [m]. The same process is working in the following pairs:

Assimilation is the obligatory phonological process that makes it easier to pronounce combinations of sounds by making those sounds share a distinctive feature that in other environments one of the sounds would not have.

Manner assimilation involves making a string of sounds easier to pronounce by making one of them conform to the manner of articulation of the other.

1. cat [kæt] but can [kæ̃n]
2. cut [kʌt] but come [kʌ̃m]
3. boat [bot] but bone [bõn]

In English, nasalized vowels occur only because of assimilation. In other languages, such as French and Polish, nasalized vowels may occur without an adjacent nasal consonant. Another type of assimilation is **voice assimilation**. As the term suggests, sounds often come to agree in the feature voiced/voiceless (voicing). Sounds such as the liquids [l], [r], and the glide [w], which are usually voiced in English, may be **devoiced** in certain phonetic contexts. Those contexts occur when the liquid or glide follows a voiceless stop or fricative in the same syllable. A [p] added to *lay* [le] is pronounced as [pl̥e] *play*. The diacritic [$_{\text{o}}$] indicates devoicing. The following examples also show this principle:

Voice assimilation occurs when a sound comes to agree with a surrounding sound in its voicing.

A sound is said to be **devoiced** if it loses its voiced feature because of a voiceless sound or sounds in its phonetic environment.

1. ray [re] but pray [pr̥e]
2. win [w̥ɪn] but twin [tw̥ɪn]
3. right [rayt] but fright [fr̥ayt]

The opposite of devoicing also can occur. That is, in certain contexts, a speaker may automatically choose a voiced sound to follow another voiced sound, and vice versa. The English plural rule shows this. We would automatically pluralize the word *cap* [k$^{\text{h}}$æp] as *caps* [k$^{\text{h}}$æps]. The voiceless consonant [p] is followed by the voiceless consonant [s]. However, we would pluralize *cab* [k$^{\text{h}}$æb] as [k$^{\text{h}}$æbz], *bomb* [bam] as [bamz], and *zoo* [zu] as [zuz]. In these cases, a voiced sound is followed by a voiced variant of the plural.

Manner and voice assimilation are but two types of assimilation. Consider the following words:

1. *impatient* /ɪmpešənt/
2. *intangible* /ɪntænǰəbl/
3. *incomplete* /ɪŋkəmplit/

In these examples, the prefixes *im* and *in* translate to *not*. Yet these two spellings represent three pronunciations: /im/, /ɪn/, and /ɪŋ/. If we look at the phonetic segment that follows these prefixes in each word above, a pattern emerges.

1. The bilabial /m/ is followed by /p/, which is also a bilabial.
2. The alveolar /n/ is followed by an alveolar /t/.
3. The velar /ŋ/ is followed by the velar /k/.

The speaker, in pronouncing the *not* prefix in three different ways, is following a rule of **place assimilation**. In place assimilation, adjacent sounds are made to agree in their place of articulation.

In **place assimilation,** adjacent sounds are made to agree in their place of articulation.

Aspiration, which is discussed in Chapter 2, is another example of an obligatory phonological process in English. In this case, a sound does not come to be more like an adjacent sound as in assimilation. Aspiration involves the addition of a phonetic feature. The rule states that aspiration is added to an unaspirated voiceless stop when that stop occurs at the beginning of a word or the beginning of a stressed syllable (see number 5 below). Here are some examples that follow this rule:

1.	pie [p^{h}ay]	but	spy [spay]
2.	pin [p^{h}ɪn]	but	spin [spɪn]
3.	key [k^{h}i]	but	ski [ski]
4.	till [t^{h}ɪl]	but	still [stɪl]
5.	distāste [dɪst^{h}ēst]	but	dīstant [dīstænt] (In *distant* the first syllable is stressed and the *t* sound is not aspirated, but in *distaste* the second syllable is stressed and therefore the *t* sound is aspirated.)

There are more obligatory phonological processes than we have discussed. They generally involve a single phonetic segment, and usually must be made so that a sequence of sounds is more easily pronounced. Alternative pronunciations are generally not made.

Optional phonological processes

On the other hand, optional phonological processes simply create differences in speech styles. With optional processes, major changes may be made: /səmθɪŋ/ may become /səmp/m̩/. This contrast involves several differences.

Optional processes may involve **changes in syllabicity**. In the word *something*, the last syllable may be pronounced as /θɪŋ/ or /m̩/. The choice is optional, with the former usually being used in formal situations and the latter in casual situations. In casual speech, we might also delete sounds, such as the unstressed vowel /ɪ/ in *readily* /rɛdɪli/. The pronunciation becomes /rɛdli/. Or we might do the opposite, and insert a sound. A difficult consonant cluster such as the /θl/ in *athlete* may be made simpler to pronounce by adding a vowel. /æθlit/ becomes /æθəlit/.

A **change in syllabicity** involves an alternative pronunciation of a syllable from an idealized pronunciation.

As with obligatory phonological processes, only a small sample of optional rules has been presented here.

EXERCISE 3 Phonological processes

1. Consider the following: *immoral*, *inconclusive*, *indistinct*, *immodest*, *imbalance*, *inconclusive*, *inconceivable*, *indestructible*, *improbable*, and *insoluble*. Why are there three phonetic variations of the prefix meaning "not" in this list? Describe the phonological process involved.

_____

_____

2. Examine the following corpus of data from the Angas language of Nigeria.[2] How many nasal phonemes are there? Determine the allophones for each of the nasal phonemes. What phonological process is represented in this exercise?

a. [mut] *to die*
b. [ŋgak] *snake*
c. [ndarm̥] *bark*
d. [nuŋ̊] *to ripen*
e. [mbaŋga] *drum*
f. [dondon̥] *yesterday*
g. [dɛŋ̊] *to drag*
h. [pampam̥] *bread*
i. [nta zum̥] *wasp*
j. [nf^{w}arm̥] *head cold*
k. [mɓlm̥] *to lick*
l. [tam̥] *bench*
m. [poti] *sky*

Note: A raised diacritic [^{w}] means that the consonant is rounded. [ɓ] stands for a voiced implosive bilabial stop.

3. In the data from the Angas language, do you see any phonemes, positions of phonemes, and combinations of phonemes that would not occur in English? If so, list them.

4. Consider the following:

sign /sayn/	but	*signature* /sɪgnəčɹ/ and *signal* /sɪgnəl/
paradigm /pærədaym/	but	*paradigmatic* /pærədɪgmætɪk/
design /disayn/	but	*designate* /dɛsɪgnet/
resign /risayn/	but	*resignation* /rɛsɪgnešɪn/

Can you figure out what phonological process is occurring in the pairs of words above?

5. If English speakers are asked to pluralize the following made-up nouns, they would do so as shown (see Box 10-1, The Wug Test).

boo /bu/ as *boos* /buz/
hap /hæp/ as *haps* /hæps/
nurch /nərč/ as *nurches* /nərčəz/
glab /glæb/ as *glabs* /glæbz/
trut /trʌt/ as *truts* /trʌts/
pauk /pɔk/ as *pauks* /pɔks/
boag /bog/ as *boags* /bogz/
kunch/kʌnč/ as *kunches* /kʌnčəz/

What phonological process is involved in the distribution of the three variations of the plural?

[2]D. A. Burquest, *A Preliminary Study of Angas Phonology*, (Zaria, Nigeria: Institute of Linguistics, 1971).

6. English speakers might say the word *warmth* as /wɔrmpθ/, hamster as /hæmpstər/, and the last name of the linguist Noam Chomsky as /čampski/. What optional phonological process is involved and why does it occur in these situations?

The continuous and complex nature of speech, revised

In this chapter and Chapter 2, speech sounds have been placed in charts and tables, which might indicate that there is a finite and specific number of speech sounds. However, a specific sound or a series of sounds could be produced in a variety of ways. Because of assimilation, the pronunciation of a sound will differ because of its phonetic environment. Sounds blend into each other in a continuous way. A sound that is voiceless does not abruptly stop, followed by the immediate beginning of the voicing of a voiced sound. The sounds blend into each other. This is true for all distinctive features. Also, an idealized sound is a collective of various distinctive features. Each positive feature ([+consonantal], for example) might blend into its negative element ([–consonantal]) somewhat differently (with different timing, for instance) than might occur with another feature. Early computer speech synthesis sounded very unnatural because each sound was created in its idealized form with no attention to the continuous stream of speech. Today, synthetic speech is sounding more natural because of the attention given to how sounds represented by a specific symbol will sound different, depending on a complex set of phonetic facts.

Distinctiveness versus redundancy

If we asked an English speaker to fill in the vacant slot in the substitution frame /_ɪt/, we could not predict the results. The person might say /pɪt/, /bɪt/, /sɪt/, /lɪt/, /mɪt/, or any one of many other combinations that make up the minimal set for this substitution frame. However, if we asked this person to say *bit* and *pit*, we could predict that the initial sound in *pit* would be aspirated and that the initial sound in *bit* would not be. That is, if you produce a voiceless stop in the initial position and before a stressed vowel, it will be predictably aspirated. Therefore, aspiration is redundant in this situation; it is completely a result of the phonetic environment. Phonetic (narrow) transcriptions include redundant features (which are also nondistinctive). Phonemic (broad) transcriptions leave redundant features out.

Another example of **redundancy** in English is that a phonetic segment marked [–consonantal] will almost always be [+voice]. This simply means that all vowels in English are usually voiced. In addition, English vowels in a word's final position are always [–nasal], because [+nasal] nasalized vowels in English only occur when they come before a nasal consonant. (There are dialectic exceptions to this.) Actually, all obligatory phonological rules are also redundancy rules. That is, they say that if condition A exists, then condition B is predictable (redundant).

Redundancy serves an important function in language communication. By providing more information than is absolutely necessary, a message is much more likely to be understood

Redundancy occurs when more information than necessary under ideal conditions is present. For instance, when a vowel is nasalized in English, it indicates that it precedes a nasal consonant. If a person doesn't hear the nasal consonant clearly, he or she might be able to predict its presence from hearing the nasalization of the vowel.

accurately under difficult situations. For example, the words *bill* and *pill* are a minimal pair, which differ phonemically only in that the /p/ is unvoiced and the /b/ is voiced. This single difference might not be enough in a noisy restaurant to clearly distinguish between a person saying either "Please get me the bill" or "Please get me the pill." Of course, the context of the situation may clarify any confusion. But if the person in question is due to take a pill and is also at the end of a meal, there could be a chance of miscommunication. The fact that /p/ and /b/ also differ in a nondistinctive way may then clarify the situation. That is, /p/ in the word *pill* is not only voiceless, but also has the redundant characteristic of aspiration, whereas /b/ in *bill* is unaspirated. So if the voicing difference between /p/ and /b/ was not sufficient to distinguish the two possibilities, the redundant aspiration may have made the message clear. Redundancy (that is, predictability) differentiates language from many other communication systems. It was probably a highly adaptable trait of human evolution.

Markedness

In this chapter, we have discussed how sounds can be distinguished from one another on the phonetic level and on the phonemic level. We have seen that sounds can be defined in terms of bundles of distinctive features; sounds that share features can be grouped together into natural classes. There is another way in which we can distinguish sounds from each other.

Markedness is a contrast in complexity and rarity of sounds (and other phenomena).

Unmarked sounds are more basic, more common in the language, and learned by children earlier than marked sounds.

Marked sounds are more complex, less common in the language, and learned by children later than unmarked sounds.

Some linguists believe that sounds are best classified in terms of pairs that contrast in **markedness**. Markedness is a contrast in complexity and rarity of the sounds. One member of each pair would be designated as unmarked while the other is marked. The **unmarked** member of the pair would be considered more basic or natural than the other member. The **marked** member of the pair therefore would be thought of as more complicated, less expected to occur, and less plausible. For instance, in the pair composed of the bilabial stops /b/ and /p/, /p/ may be thought of as more basic than /b/. This is because /p/ is unvoiced ([–voice]) and /b/ is voiced ([+voice]). In consonants, voicing is taken as a complication to the more basic unvoiced configuration. Voicing is the addition of a feature to a consonant, and therefore a complication. That is, /b/ can be considered to be /p/ plus voice. (In a vowel sound, voicing ([+voice]) would be the expected condition, and therefore the unmarked condition.) A marked sound might also occur less frequently than the unmarked member of its pair. Of the two alveolar fricatives in English, /s/ and /z/, /s/ would be considered unmarked because it occurs more frequently than /z/ and is also voiceless.

There are several lines of evidence indicating that some sounds are indeed more basic (unmarked) than others. This evidence comes from the study of language universals, language change, and language acquisition. The concept of markedness will be discussed in the chapters on these topics, as well as in the chapters on syntax (Chapter 5) and on sign language (Chapter 11). Here, we will briefly mention one line of evidence that points to the validity of the marked/unmarked distinction.

The study of the way children acquire language strongly indicates that some sounds are more basic than others. We can predict with great accuracy that the first words that a child regularly makes will not be such things as *though* /ðo/, *shoe* /ʃu/, or *zip* /zɪp/. We can also predict with great confidence that the first vowel sound that a child will make regularly will be /a/, and that this will often be combined with the bilabial nasal /m/. This indicates that the vowel /a/ is unmarked, that it is more natural in comparison to other vowels, which are then said to be marked in relationship to /a/. It may also indicate that /m/, even though it is [+nasal], may be less marked in relationship to other bilabials. The first sounds that a child forms are often interpreted by adults as the word for "mother." The English-speaking child says /*mama*/, the Navajo-speaking child says /ma/, and the Ki-Hungan-speaking child (from Africa) says /maam/.

Summary

Phoneticians attempt to discover as much detail as possible about speech sounds. Phonetic transcriptions (narrow transcriptions) will record as much detail as can be perceived. We can produce the *t* sounds in the following ways: [t], [tʰ], [t̪], [t̪ʰ], [tʲ], [tʲʰ]. These represent narrow

transcriptions for the *t* sound. In English, none of these variations are distinctive because they do not signal a difference in meaning when substituted for each other. In Russian, some of these variants are significant. For example, /t/ and /tʲ/ are different phonemes (each with their own allophones), rather than allophones of the same phoneme as they are in English. A phoneme is a mental construct. Different physical sounds or signs of a sign language may be perceived as the same or different phonemes.

Significant differences (contrasts) in a language can be determined in a number of ways. The one that we have discussed is the use of minimal pairs and sets. Minimal pairs and sets are utterances in which:

1. There is the same number of sound segments.
2. There is only one phonetic difference.
3. This difference occurs at the same place in the forms.
4. There is a difference in meaning.

In English, minimal pairs or sets cannot be found for the *t* sounds listed earlier. Therefore, all of these *t* sounds would phonemically be written the same, as /t/. Here, all nondistinctive features have been eliminated. Such a phonemic transcription is also called a broad transcription.

Phonemes can be seen as the result of simultaneously produced features. The number and nature of these distinctive features is a debated issue. Ultimately, a list may be devised that could be used to describe all phonemes in all languages. Such a list of distinctive features might lead to an understanding of universal phonological principles. The list that we used included fifteen features. With this list, each English phoneme differs from every other phoneme by at least one feature. Phonemes that share a small number of features and can be shown to behave the same in similar phonetic contexts are called a natural class. We can write rules about natural classes of sound.

Language is rule-governed. Phonology is the study of the rules governing the combination of phonemes as well as the investigation of how phonemes function in language. These rules deal with the position of different natural classes of sound within words; which sounds can be strung together in various sequences; and when to add, delete, or change elements of the underlying representation in order to generate the utterance that is actually spoken (surface structure). Some of these rules *are* rules. That is, they are obligatory phonological processes. Others are not really rules, but optional phonological processes. Obligatory phonological processes usually involve alterations in one phonetic segment, whereas optional processes can be much more complicated.

Linguists use a number of notational conventions to display linguistic rules. These notational systems make it easier to write rules and to see patterns.

Some elements of language are predictable, such as the aspiration of an English voiceless stop before a stressed vowel. Predictable features of language are also called redundant features. Redundancy in most human activities is seen as inefficient. In language, redundancy is not inefficient. It allows a message to be understood, even under conditions of high "static."

Some sounds appear to be more natural (unmarked) than others. Not all sounds are produced with the same ease. Unmarked sounds tend to appear earlier in a child's speech and become more frequent than marked sounds do in adult speech.

In this chapter, we have examined some of the basic principles (rules) underlying the combination and function of phonemes. In Chapter 4, we will focus on how words are formed from their component sounds.

Suggested reading

Hayes, B., *Introductory Phonology*, Oxford: Blackwell, 2009.
Ladefoged, P., and S. F. Disner, *Vowels and Consonants*, 3rd ed., Oxford: Wiley-Blackwell, 2012.
Ladefoged, P. and K. Johnson, *A Course in Phonetics*, 7th ed., Stamford, CT: Cengage Learning, 2015.
Odden, D., *Introducing Phonology*, 2nd ed., Cambridge: Cambridge University Press, 2013.
Roca, I., W. Johnson, and A. Roca, *A Course in Phonology*, Oxford: Blackwell, 2000.

Websites

(Most of these websites contain information on both phonetics, the subject of Chapter 2, and phonology, the subject of this chapter.)

Berkeley Phonology Laboratory: http://trill.linguistics.berkeley.edu/phonlab
Phonological Atlas of North America: www.ling.upenn.edu/phono_atlas/home.html
Phonology: www.cambridge.org/core/journals/phonology. The only journal devoted exclusively to phonology.

Review of terms and concepts: phonology

1. Phonology is concerned with _____.
2. In English, [t] and [t^h] are _____.
3. In English, [t] and [b] are _____.
4. [bɔl] and [hɔl] is a _____.
5. The choice of which allophone of the phoneme /p/ to use in a specific phonetic environment is _____.
6. The fact that [k] and [k^h] do not occur in the same phonetic environment is an example of _____ and indicates that [k] and [k^h] are _____.
7. The fact that we could say *economics* as [ikə̄nāmɪks] or [ɪkə̄nāmɪks] is an example of _____.
8. What does the diacritic in number 7 indicate? What phonological process is operating on the vowels in this example? Is the process optional or obligatory? _____
9. If two sounds form minimal pairs, the two sounds are _____.
10. If two sounds cannot be found to form minimal pairs, they are not different phonemes. This statement is _____ (true or false).
11. A distinctive feature is _____.
12. A phoneme can be thought of as _____.
13. A _____ lists sound segments along the horizontal axis, and distinctive features are on the vertical axis.
14. Examine Table 3-2. Which sounds would be classified as:
    a. [+cons], [+nasal], [+high], [–ant]
    b. [+high], [+back], [+tense], [+rounded]
    c. [+voiced], [–son], [–nasal], [+cont], [+ant], [+strid]
15. [–continuant, –voice] describes a _____ of speech sounds called _____.
16. The concept of natural classes allows us to _____.

17. Aspiration of voiceless stops at the beginning of a syllable and before a stressed vowel is an example of what type of phonological process? _____

18. Processes, such as the one in number 17, usually modify a _____.

19. The three types of assimilation mentioned in the text are _____, _____, and _____.

20. Changes in syllabicity, deletion, and insertion are examples of _____

_____.

21. Such processes as those mentioned in number 20 differ from the processes in number 17 in that _____.

22. Sounds that are more frequently used in a language, acquired earlier, and are simpler to articulate are said to be _____.

23. Speech usually provides more information than is necessary to understand the meaning of an utterance. This characteristic is called _____.

End-of-chapter exercises

1. The data listed below is from Diegueño, a Native American language. There are many ways to form plural verbs in this language. This exercise only deals with the most common way of doing this. Determine the rules for forming plurals in Diegueño. Take into account that the final vowel of a verb is always stressed. Long vowels are indicated by the [:] symbol. As the label implies, long vowels are ones produced with longer duration than other vowels, including longer versions of the same sounding shorter vowel. (Data from: Douglas C. Walker, "Diegueño Plural Formation," Linguistic Notes from La Jolla 4, University of California San Diego, 1970, 1–16; www.pauldelacy.net/polarity/Walker-1970-Diegueno.pdf. You can see this paper for an answer to this exercise and a more complete explanation of Diegueño plural formation.)

Singular	Plural	Definition
a. /Lʸap/	/Lʸa:p/	(to burn)
b. /muL/	/mu:L/	(to gather)
c. /ču:puL/	/ču:pu:L/	(to boil)
d. /sa:w/	/saw/	(to eat)
e. /šu:pit/	/šu:pi:t/	(to close)
f. /si:/	/sič/	(to drink)*
g. /ma:/	/ma:č/	(to eat soft things)

*Disregard the /č/ in the last two examples in terms of your analysis.

2. The diacritic [:] after a vowel means that the vowel is long; that is, it is produced a little longer than other vowels. Describe the process occurring in the following set of English words. State the rule as generally as you can.

[næp]	[næ:b]
[kot]	[ko:d]
[bɪt]	[bɪ:d]
[lut]	[lu:d]/[lu:]
[mit]	[mi:d]
[sis]	[si:ʒ]

CHAPTER 4

Morphology: words and how they are formed

LEARNING OBJECTIVES

- **Explain how words are created from a language's basic units of meaning and name what those units are called.**
- **Discuss and name the different types of languages, based on the different ways of creating words from morphemes.**
- **Analyze this statement: "Language is an open system of communication."**
- **List the ways that new words are formed as described in this chapter.**
- **Explain some of the ways that word meanings change over time.**

Morphemes are the smallest units of meaning. This means that morphemes cannot be broken down further and remain meaningful.

Morphology is the study of the structure and classification of words and the units that make up words.

As discussed in the preceding chapter, phonology is the study of the sound system of language. The minimal unit of phonology is the phoneme. A phoneme conveys no meaning in itself. However, phonemes can be strung together in specific rule-governed ways to produce the meaningful units of language. These units are called **morphemes**. The study of the rules governing the formation and combination of morphemes is called **morphology**. Morphology is the study of how words are constructed out of morphemes. Or, put more formally, morphology is the study of the rules governing the internal structure of words.

The morpheme

Morphemes are the smallest recurrent meaningful units of a language. Here, *smallest* refers to the fact that a morpheme cannot be broken down further into other meaningful units. The word *cat* /kæt/ cannot be broken down further into other smaller meaningful units for which the separate parts equal the meaning of the original word (*cat*).

Cat does have the sound combination *at* in it. The meaning of the word *at* has nothing to do with the meaning of the word *cat*, and the leftover *c* has no meaning at all. So /k/ and /æt/ do not add up to the meaning *cat*. *Cat* is, therefore, a word made up of one morpheme. The word *cats* /kæts/ is different. This word can be broken down into two morphemes, *cat* and *-s*. *Cat* refers to a furry, four-legged feline animal, and *-s* means "more than one." The individual meanings of the two morphemes add up to the meaning of the word *cats* (more than one cat).

From this discussion you can see that *morpheme* and *word* are not equivalent terms. *Cat* is a word, and so is *cats*; yet *cat* is one morpheme, and *cats* is two morphemes. And *-s* is a morpheme, but it definitely is not a word.

Cat and *-s* are two different types of morpheme. *Cat* can stand by itself as a meaningful unit; *-s* cannot. Because *-s* cannot stand by itself, that is, it must be attached to another

BOX 4-1

Infixes and circumfixes

Different languages create words in different ways. Although it is relatively rare, some languages will alter meaning by inserting one morpheme into another. A morpheme inserted into a root is called an infix. Infixes are found in some languages of the Pacific Islands and parts of Asia. One of these languages is Tagalog, spoken in the Philippines. In Tagalog, the affix *-in-* can be added to a root morpheme to change it from present to past tense. A verb such as *sulat* (write) can be changed to *sinulat* (wrote). In another Philippine language, Bontoc, the infix *-um-* changes a noun or adjective into a verb. So, the adjective *fikas* (strong) changes to the verb *fumikas* ("he is becoming strong"). The use of infixes is common in Malayo-Polynesian languages such as Tagalog and Bontoc.

English generally does not use infixes. However, a process that leads to words with a morpheme or morphemes included within existing morphemes involves the formation of certain new obscenities. The words *damn, fuckin(g)*, and *bloody* have been used as internal elements like infixes to form such words as *fandamntastic, absofuckinlutely, infuckincredible*, and *inbloodycredible* (British English). Since *damn* is not a bound morpheme, and the other elements mentioned include both free and bound morphemes, they are not actually infixes.

In some languages, affixes can enter a root at different places, in some cases surrounding the root. These affixes are sometimes called circumfixes. For instance, in Semitic languages, including Hebrew and Arabic, the root of most words can be reduced to three consonants. Bound morphemes, usually composed of one vowel, surround the consonants to complete the meaning of the word. The Arabic combination of the three consonants *ktb* has a general meaning dealing with the act or process of writing: *katab* (write), *kutib* (have been writing), *uktab* (being written), *aktub* (be writing), *kutubii* (bookseller), *kataba* (he wrote), *yaktubu* (he writes), and so on. Some non-Semitic languages also use this principle. For instance, the root *latwy* in Polish means "easy." The word *ułatwić* means "to make easy."

Circumfixes are rare in English, but in early modern English the progressive could be formed by *a-* preceding the verb with *-ing* following it. So you have the familiar lines from the seventeenth-century "Wassail Song":

> Here we come a-wassailing
> Among the leaves so green,
> Here we come a-wand'ring
> So fair to be seen.

morpheme, it is called a **bound morpheme**. *Cat* and other morphemes that can stand alone are called **free morphemes**.

The word *cat*, in addition to being called a free morpheme, may also be called a **root**. A root is a morpheme, usually but not always a free morpheme, that serves as a building block for other words. Words can be built by adding morphemes to the root. Added bound morphemes are called **affixes**. More specifically, affixes added before a root are called **prefixes**; those added after a root are **suffixes**. The *-s* in *cats* is a suffix. Affixes can also be infixes and circumfixes (see Box 4-1). In the word *predated*, *date* is the root, *pre-* is the prefix, and *-ed* is the suffix. Words do not have to be built by adding affixes to roots. Two or more roots can be added together to form what is called a **compound**. In English, adding two nouns, an adjective and a noun, two prepositions, a noun and a verb, and other combinations can form compounds. Some compounds are *schoolhouse*, *evergreen*, *into*, and *textbook*. These examples of compounds are **closed-form compounds**, which means that the individual morphemes are fused together. The individual morphemes do not have to be fused for a combination of morphemes to be

A **bound morpheme** is a meaningful grammatical unit that cannot occur alone.

A **free morpheme** is a meaningful grammatical unit that can stand alone.

A **root** is a morpheme, usually but not always a free morpheme, that serves as a building block for other words and carries the main meaning of those words.

An **affix** is a bound morpheme that can be added to a root.

A **prefix** is an affix added to the beginning of a root.

A **suffix** is an affix added to the end of a root.

A **compound** is a word made up of two or more roots.

A **closed-form compound** is a compound word with no space or hyphen between the different roots.

A **hyphenated compound** has a hyphen or hyphens between the different roots of the compound.

An **open-form compound** has spaces between its roots.

The **head of a compound** is similar to its topic, that is, the main, most general, or core meaning of the compound. The head also determines the grammatical function of the compound.

considered a compound word. There are also **hyphenated compounds** such as *father-in-law* and *eight-year-old*. A third type of compound is the **open-form compound**, in which there are spaces between the morphemes, as in *real estate* and *half brother*.

A compound is categorized into a lexical category (part of speech) depending on its head. (See the "Lexical categories (parts of speech)" section at the end of this chapter.) The **head of a compound** is similar to its topic—that is, the main, most general, or core meaning of the compound. The head also determines the grammatical category of the compound. In English, the head is usually the morpheme that is to the right of all other morphemes in the word. So in *schoolhouse*, *evergreen*, and *spoon feed*, the heads are *house*, *green*, and *feed*, respectively. In *schoolhouse*, both free morphemes are nouns, so the compound is therefore a noun. In *evergreen*, *ever* is an adverb and *green* is an adjective. The compound is an adjective because the head, *green*, is an adjective. In *spoon feed*, *spoon* is a noun and *feed* is a verb, so the compound is a verb. Although most English compounds are right-headed, some are left-headed, such as *secretary general*. *Secretary* is the head of the compound: a *secretary general* is a subtype of *secretary*. It could be argued that *-in-law* is the head of *father-in-law* if it is a subtype of *in-law*. On the other hand, if the word is a subtype of *father*, then *father* is the head of the compound. In many languages, such as Swedish, compounds are usually left-headed.

Different types of morphemes

Morphemes were previously defined as the smallest recurrent meaningful units of a language. There are two ways that morphemes can be meaningful. The first and traditional understanding of the concept of meaningfulness is that morphemes can refer to things, actions, or qualities and quantities of things or actions. *Cat* refers to a thing. *Five* as in *five cats* refers to a quantity, as does *-s*. Morphemes may not have a meaning in this sense but may simply have a grammatical function. In the word *honorary*, *honor* is a free morpheme with a definable meaning, but *-ary* would be hard to define. Its function is clear, however. It changes the noun *honor* into the adjective *honorary*. Compare this example to the word *inaccessibility* in Exercise 1, Part A. What is the meaning or function of *-ity*?

EXERCISE 1 Morphemes, compound words, and parts of speech

Part A: free and bound morphemes

1. Place a plus sign (+) between morphemes in each word listed below.
2. Label each morpheme as bound (B) or free (F).
3. You may need to use a dictionary to figure out some divisions.
4. Don't be fooled by English spelling.

Example: Reading = Read + ing F + B

a. telephone _____

b. infirm _____

c. farm _____

d. reformers _____

e. ranchers _____

f. actor _____

g. inaccessibility _____

h. ducklings _____

i. countess _____

j. boysenberry _____

Part B: compound words and lexical categories

The major classes of grammatical categories into which words (not morphemes) can be divided are what most linguists call **lexical categories**. Many grammar teachers call these lexical categories the **parts of speech**. There are actually several different systems for classifying words. For the purposes of this exercise, we will use the traditional concept of parts of speech that classify each word into one of eight categories: noun, pronoun, adjective, verb, adverb, preposition, conjunction, and interjection. If you are unfamiliar with the traditional classification, see the "Lexical categories (parts of speech)" section later in this chapter.

Lexical categories are major grammatical classes into which words (not morphemes) can be divided.

The **parts of speech** are a system of grammatical categories for classifying words according to their usage or function.

Determine the lexical category of each root in each compound word listed. Then determine the lexical category of the entire compound.

Example:	greenhouse	adjective/noun	noun
1.	textbook	_____	_____
2.	hot dog	_____	_____
3.	beachcomber	_____	_____
4.	bunkhouse	_____	_____
5.	blacktop	_____	_____
6.	into	_____	_____
7.	forerunner	_____	_____
8.	takeover	_____	_____
9.	crybaby	_____	_____
10.	workman	_____	_____
11.	downshift	_____	_____
12.	empty-handed	_____	_____

Types of bound morphemes

A bound morpheme can be classified on the basis of the function it serves. The morpheme may change the word from one lexical category (part of speech) to another as with the *-ary* in *honorary*. Or it might change the meaning of the word altogether as with the *in-* in *infirm*. *Infirm* and *firm* are opposite in meaning. Morphemes that perform either of these functions (change the lexical category or the meaning of a form) are called **derivational morphemes**.

Derivational morphemes are bound morphemes that change the meaning or lexical category of a word.

In the word *cats*, the general meaning of the word *cat* is maintained; the words *cat* and *cats* are both nouns. Morphemes that serve only a grammatical function and do not change the essential meaning or lexical category of a word are called **inflectional morphemes**. The *-s* in *cats* changes the singular (*cat*) to plural (*cats*). The *-s* is an inflectional suffix called a plural marker.

Inflectional morphemes are bound morphemes that do not change the essential meaning or lexical category of a word. They change grammatical functions (other than lexical category).

In the word *dreamed*, the *-ed*, like the *-s* in *cats*, is an inflectional morpheme. *Dream* and *dreamed* are both verbs, and both refer to the same event. The *-ed* is an inflectional suffix called a tense marker.

In English, free morphemes greatly outnumber bound morphemes. This is not the case for all languages. Classical Greek, for instance, has few free morphemes. Of the bound morphemes that are found in English, most are derivational. In contrast, Latin, Russian, and Finnish are rich in inflectional forms.

There are only nine inflectional bound morphemes in English, and they are all suffixes, as listed below:

The plural marker *(-s)*	The pens are on the table.
The possessive *(-'s and -s')*	It was Andrew's car.
	They are the boys' toys.
The third person, present singular *(-s)*	He always comes home late.
The comparative *(-er)*	This milk is fresher than that.
The superlative *(-est)*	This is the freshest milk.
The progressive *(-ing)*	He is walking down the street.
The past tense *(-ed)*	She arrived late.
The past participle *(-en)*	Jim has beaten his opponents.

EXERCISE 2 Derivational and inflectional morphemes

1. Place a plus sign (+) between each morpheme boundary and label each morpheme as free (F) or bound (B).
2. Label each bound morpheme as derivational (D) or inflectional (I).

Example: Deepen deep + en F + BI

a. Bill's _____

b. running _____

c. player _____

d. action _____

e. roughest _____

f. comes (as in *Here he comes*.) _____

g. friendly _____

h. unfriendly _____

i. longer _____

j. lovable _____

k. judgment _____

l. banana _____

m. slowest _____

n. quicker _____

o. unhappy _____

p. semicircle _____

q. nobody _____

r. Aaron's (as in *It is Aaron's toy*.) _____

s. broken _____

t. happily _____

Allomorphs

An **allomorph** is a variation of a morpheme.

Just as a set of allophones is the variations of a phoneme, a set of **allomorphs** is the variations of a morpheme. Allomorphs of a morpheme are different phonetic forms for the same meaning. For instance, the meaning "more than one," which is usually expressed as the suffix *-s* in English, can actually be pronounced three different ways: /s/ as in *mats* /mæts/, /z/ as in *zoos* /zuz/, or /əz/ as in *churches* /čʌrčəz/. /s/, /z/, and /əz/ are said to be allomorphs of the plural morpheme *-s*.

Attaching one of the three allomorphs of the plural *-s* to a root is not a random process. Instead, it is rule governed. The rule, which follows the rule of the obligatory phonological process voice assimilation (see Chapter 3), is as follows:

- /s/ is used after a voiceless sound, except /s, š, č/.
- /z/ is used after voiced sounds, except /z, ž, ǰ/.
- /əz/ is used after a sibilant (/s, z, š, ž, č, or ǰ/).

Morphophonemic rules are rules that specify which allomorph of a morpheme will be used in a specific phonetic environment.

The rules that specify which allomorph of a morpheme will be used in a specific phonetic environment are called **morphophonemic rules**. The term is used to show the interrelationship between phonology and morphology.

Other allomorphs are based on other ways in which the same morpheme can be expressed differently. For instance, the morpheme spelled *-ing* can be pronounced /ɪn/ or /ɪŋ/. In this case, the choice of which allomorph to use is optional and indicates the speaker's level of formality.

EXERCISE 3 Allomorphs

1. Why are the sounds [p] and [pʰ] called allophones of the phoneme /p/, but /s/, /z/, and /əz/ are not called allophones, but allomorphs of the plural morpheme?

2. Not taking into account irregular forms, the English past tense marker has three allomorphic shapes. From the list below, determine these three forms of the past tense marker and explain how they are distributed.

bagged	hugged	fished	roughed
crammed	moved	regarded	budged
dined	buzzed	pitched	unearthed
rapped	wanted	rowed	rated
piked	clouded	relied	belonged

3. Question 1 of Exercise 3 in Chapter 3 introduced the idea of allomorphs without actually labeling it as such. In that exercise, the prefix meaning *not* was shown to occur in at least three allophonic forms: /ɪn/, /ɪm/, and /ɪŋ/ (which are spelled as the allomorphs *in-* and *im-*). In Chapter 3 this was used as an example of an obligatory phonological process based on place assimilation. There are other allomorphs of the prefix meaning *not*. List them with examples and give a reason for why they are used instead of *in-* and *im-*.

4. Languages that have gendered nouns have bound inflectional morphemes for each gender. Spanish nouns that refer to both males and females are an example of this. Examine the

list of Spanish words below and state the simple rule that governs the distribution of the bound morphemes that indicate gender.

niño	"boy"	esposo	"husband"	doctor	"male doctor"
hija	"daughter"	niña	"girl"	professor	"male professor"
doctora	"female doctor"	esposa	"wife"	hijo	"son"
señora	polite form of address for a woman	profesora	"female professor"	señor	polite form of address for a man

Morphological typology

Typology is a branch of linguistics that studies the structural similarities of languages.

Typology is a branch of linguistics that studies the structural similarities of languages. Languages are placed in the same type if the features of that type characterize them. Sometimes languages that are not related historically or geographically can be placed in the same type.

Morphological typology is the study and classification of language based on how morphemes create words.

Morphological typology is the study and classification of language based on how morphemes create words. Classifying a natural phenomenon into a limited number of types is always artificial. The types we will discuss are ideals. In reality, most languages, English being a good example, combine two or more of the principles that we will discuss in the typology. Although different linguists derive slightly different classifications, we will describe a system based on two main types, with the second type having three subtypes.

An **analytic (**or **isolating) language** is a language in which most words are single morphemes.

One type of language is called **analytic (**or **isolating**). In a pure or ideal analytic language, every word would be a single free (or root) morpheme, and there would be no bound morphemes. In reality, languages classified as analytic might have low but varying numbers of bound morphemes. In an analytic language, the meaning that would be conveyed in other languages by bound morphemes is usually carried by free morphemes. The order of morphemes (word order) alone conveys the grammatical function of the word—that is, whether the word is the subject, object, modifier, verb, and so on. Mandarin and Vietnamese are examples of languages that come close to the ideal analytic principle. An example from Mandarin is as follows:

Ta	chi	fan	le.	/ta či fan lə/
He	eat	meal	Aspect[1]	

He ate the meal. (This action is complete.)

In this example, each morpheme represents one meaning. There are no inflectional or derivational bound morphemes.

A **synthetic language** uses bound morphemes to affect the meaning or mark the grammatical function of a free morpheme.

The second type of language based on the types and ways morphemes are used is called a **synthetic language**. A synthetic language uses bound morphemes to affect the meaning or mark the grammatical function of a free morpheme.

A **fusional language (**also called **inflectional language)** is one type of synthetic language in which one bound morpheme may convey several bits of information.

There are three synthetic language types. One is called a **fusional** or **inflectional language**. In a fusional language, one bound morpheme may convey several bits of information. For instance, in the Russian word *komnatu* (room) the *-u* is a bound morpheme (suffix) that conveys the meaning as feminine and singular, and identifies the word grammatically as a direct object (accusative case).

[1]Aspect indicates whether an action is complete or not, continuous, a one-time action, ongoing, etc. Aspect and tense are distinctive linguistic concepts. See Chapter 8 for more on aspect.

The second type of synthetic language type is called an **agglutinating language**. In an agglutinating language, each bound morpheme adds only one specific meaning to the root morpheme. For instance, in Hungarian, the word for *man* is *ember*. To express the possessive *my man*, the suffix *-em* is added. Unlike the suffix *-u* in Russian that added several bits of information, the suffix *-em* adds only the concept of possession to the root word. Because most bound morphemes in Hungarian add only one specific bit of information to the root word, Hungarian is classified as an agglutinating language.

An **agglutinating language** is a type of synthetic language in which each bound morpheme adds only one specific meaning to the root morpheme.

In the third type of synthetic language, a **polysynthetic language**, each word is the equivalent of a whole sentence in other languages. In these languages, one word can be very long and made up of numerous morphemes. Inuktitut is a Native American polysynthetic language spoken in northern Canada. In Inuktitut, *qasuirrsarvigssarsingitluinarnarpuq* is one word! It means, "someone did not find a completely suitable resting place." The morphemes are as follows: *qasu* (tired), *-irr* (not), *-sar* (cause to be), *-vig* (place), *-ssar* (for suitable), *-si* (find), *-ngit* (not), *-luninar* (completely), *-nar* (someone), *-puq* (third person singular).[2]

A **polysynthetic language** is a synthetic language in which each word is the equivalent of a whole sentence in other languages.

In reality, most languages combine the morphological principles mentioned earlier. They can be seen as occupying a place on a scale from mostly analytic to mostly synthetic. Some linguists suggest that each morphological structure within a language could be individually classified as analytic, fusional, agglutinating, or polysynthetic, as opposed to classifying the entire language by these terms.

EXERCISE 4 Morphological typology

1. Internet exercise: Using a search engine such as Google, explore the concept of "morphological typology."
   a. Construct a list of languages based on the morphological typology discussed earlier.
   b. What are some problems with classifying language into four types based on the criteria discussed in this section?
   c. Has English changed over the years (from Old English to modern English) in the way it uses bound morphemes?
2. English has been classified as an analytic (isolating) language. English displays the analytic pattern for some words, but also shows many characteristics of other language types.
   a. The word *reformer* in "The reformer seemed to be winning support" falls into which typological pattern?
   b. The word *her* in "Her grades were excellent" falls into which typological pattern?
   c. The English word *pneumonoultramicroscopicsilicovolcanoconiosis* (a disease of the lungs) as in "Pneumonoultramicroscopicsilicovolcanoconiosis is a bad disease" falls into which morphological pattern?
   d. The word *will* as in "I will go to the store" falls into which typological pattern?

How new words are formed

The concepts of openness and productivity, revisited

Certain categories of words show greater openness than others. That is, the numbers of words in **open classes of words** (also called **content words**) grow, whereas the number of words in **closed classes of words** (also called **function words**) does not usually grow. In English, new nouns, verbs, adjectives, and adverbs are always being formed. Yet new conjunctions, pronouns, or prepositions are rare.

Open classes of words (or **content words**) are types of words (such as nouns, adjectives, verbs, and adverbs) that grow in number in a language.

Closed classes of words (or **function words**) are types of words (such as prepositions and pronouns) the growth of which is very limited.

[2]Nancy Bonvillain, *Language, Culture, and Communication*, 4th ed. (Upper Saddle River, NJ: Prentice Hall, 2003), 21.

Similarly, some morphemes are very productive and others are not. Bound morphemes such as *-ly*, *-able*, *-s*, *-ment*, *pre-*, and *in-* can be added to thousands of words, including new words. On the other hand, some forms are not productive. *Boysen-* is used in only one word in English and is unlikely to be used in many more. The inflectional morpheme *-en* as in *oxen* is also nonproductive. It is a historical oddity; new nouns formed in English would most likely be pluralized by *-s*, not *-en*.

Neologisms are newly formed words.

Neologisms (new words) are constantly being added to languages. A major principle of anthropology is that there are no inferior languages. For instance, a culture with less complex technology than another culture does not have a language with less complex grammar. However, it is true that technologically more complex cultures with high rates of technological innovation will generate more neologisms. They have more things to name. In the United States, there were 629,647 applications for patents in 2015. Each of those new things had to have a name (or some type of label). It is not just new material things that lead to neologisms. According to the American Dialect Society, the verbal form of the search engine Google, *to google*—meaning to search the Internet—was the 2001–2010 word of the decade. Like many neologisms, this word might not stand the test of time. You can check out what the word of each year is according to *Oxford Living Dictionaries* at: https://en.oxforddictionaries.com/word-of-the-year. Nine processes used to form new words are described in the following paragraphs.

Compounding

Compounding is creating a word with more than one root.

We have already discussed this process that involves combining roots. A *bunk* is a type of bed. When many bunks were put into one place with the primary function of providing a place to sleep, the word *bunkhouse* was formed. **Compounding** is a common way to label a new thing or activity. Other examples of compounding include *cross-trainer* (a sports shoe used for a wide range of athletic activities); *veggie burger*, which is also written as *veggieburger* (a vegetarian patty that can be substituted for the meat in a hamburger sandwich); and *mallrat* (a young person who hangs out at shopping malls).

Acronym formation

Acronyms are words that are formed from the first letter or letters of more than one word.

Acronyms are words formed from the first letter or letters of more than one word. Unlike initialisms, in which each letter is simply named (FBI is /ɛf bi ay/), acronyms are pronounced, as any word would be. Both acronyms and initialisms are abbreviations. So, since *NASA* (National Aeronautics and Space Administration) is pronounced as /næsə/, it is an acronym. Acronyms are popular because they can be said faster, and remembered more easily, than the whole phrase they represent. Sometimes they represent the sentiment (or a characteristic) of a group or movement. This last fact is exemplified by an acronym such as *MADD* (Mothers Against Drunk Driving). These people are mad or angry. *Backronyms* are "after the fact" acronyms (see Box 4-2).

BOX 4-2

Backronyms

The website Wordsmith.org e-mails to its subscribers "A.Word.A.Day". The website defines the word *backronym* as a word that is reinterpreted as an acronym. That is, a word that was not originally formed as an acronym is then made into an acronym. The word *backronym* itself is a blending of *back* and *acronym* (see http://wordsmith.org/words/backronym.html).

Examples of backronyms include:

- PERL is a programming language. The letters of its name are now interpreted as Practical Extraction and Report Language.

- The USA PATRIOT Act has been "retrofitted" to be interpreted as Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism.
- The Apgar test is a five-faceted test for evaluating the health of newborns. It was originally an eponym, the test being named for its developer, Dr. Virginia Apgar. It has been rethought of as an acronym, with APGAR meaning Appearance, Pulse, Grimace, Activity, and Respiration (see http://wordsmith.org/words/apgar_score.html).
- A backronym can even be formed for the word *acronym*. Wordsmith.org suggests that ACRONYM could stand for A Contrived Result Of Nomenclature Yielding Mechanism.

As with all acronyms, backronyms are essentially mnemonic devices. In this case, a word made up to represent a word that was not an acronym reminds the user of what the word means or implies.

Foreign word borrowing

A cosmopolitan culture like ours is always coming into contact with other cultures. Through trade, travel, and conflict, words from one language enter other languages. Some of these words, such as the French *chauffeur*, are spelled the same in English as they are in the original language. Most have undergone some change, as exemplified by the Spanish *estampida*, which becomes *stampede* in English. Here is a small sample of words that English has borrowed from other languages.

- French: *recipe, route, gopher, dime, camouflage, chowder, menu, boulevard*
- Italian: *solo, piano, balcony, costume, infantry, captain, pastel, allegro, casino*
- Spanish: *fiesta, pueblo, taco, plaza, guitar, bonanza, corral, pronto, rodeo, lasso, mosquito*
- Native American languages: *Massachusetts, Mississippi, Tallahassee, hickory, sequoia, succotash, caucus, totem, igloo, chipmunk, opossum*
- German: *sauerkraut, noodle, pretzel, dunk, kindergarten, waltz, loafer*
- Dutch: *yacht, coleslaw, cookie, waffle, freight, sloop, Yankee, Santa Claus*
- Yiddish: *schnook, klutz, oy vey, schlep*
- Arabic: *sofa, magazine, alcohol, mattress, algebra*
- Turkish: *yogurt, tulip, jackal*
- African languages: *tote, gorilla, zebra, gumbo, okra*
- Miscellaneous: *caravan* (Persian), *kimono* (Japanese), *tea* (Chinese), *dungarees* (Hindu), *ski* (Norwegian), *borscht* (Russian), *whiskey* (Gaelic), *trek* (Afrikaans)

Spanish has borrowed many words from Nahuatl, the language of the Aztecs. *Nopalli* has become *nopal* (cactus); *tecolotl* is *tecolote* (owl); *pozolli* is *pozole* (hominy), and *tzictli* is *chicle* (chewing gum). Still other Nahuatl words melded into Spanish have in turn been melded into English. So *xocolatl* is *chocolate* in both Spanish and English; *coyotl* is *coyote* in both. *Tomatl* is *tomate* and *tomato*; *ahuactl* is *aguacate* and *avocado*. Spanish also borrowed many words from Arabic during the Middle Ages when the Moors ruled Spain; for instance, *alcalde* (mayor), *aceite* (oil), *arroz* (rice), and *arancel* (fee).

Modern Japanese has borrowed many English words in recent years, modifying them to fit the Japanese phonological system: *gorin-pisu* (green peas), *kissu* (kiss), *no-komento* (no comment), and *sarariman* (salaried man).

Arabic has borrowed from a variety of languages: *djeb* (pocket) from Turkish; *bortoqan* (orange) from Italian; *metro* (metro) and *madam* (madam) from French; and *dish* (satellite) from English.[3]

[3]John T. Elkholy and Francine Hallcom, *A Teacher's Guide to Linguistics* (Dubuque, IA: Kendall Hunt Publishing, 2005), 4, 120.

Clipping

Clipping is deleting a section of a word to create a shortened form.

As the word implies, **clipping** is snipping a section of a word to form a shortened form. *Gas* is clipped from *gasoline*, *phone* is clipped from *telephone*, and *gym* is clipped from *gymnasium*. A more recent example would be *app* for *application*. Some other examples of clipping are:

stat	from	*statistics*
fan	from	*fanatic*
perm	from	*permanent wave*
exam	from	*examination*
dorm	from	*dormitory*
bus	from	*omnibus*
nark	from	*narcotics agent*
cords	from	*corduroy* + *s*
detox	from	*detoxification*
blog	from	*weblog*

Blending

Blending is the process of taking two or more words (compounding), clipping parts off one or more of the words, and then combining them.

A **blend** is a word that is the result of the process of blending.

Words can also be formed from various combinations of the principles described earlier. **Blending** is the process of taking two or more words (compounding), clipping parts off one or more of the words, and then combining them. The new word is a **blend** carrying a bit of meaning from each of its parts. Blends are often used for results of technology, such as the words *nylon* and *betatron*. *Nylon* is formed by combining *vinyl* and *rayon*. *Betatron* is a combination of *beta ray* and *electron*. Blends can be a type of abbreviation, as illustrated by the word *Amerind* (*American Indian*). It can be a playful way to form words, as exemplified by *mimsy*, which Lewis Carroll, author of the poem "Jabberwocky," created from *miserable* and *flimsy*. Blends can be echoic, associating types of sounds as with *blurt* (*blow* and *spurt*). They can label things that are intermediate between two other things, such as the word *brunch* (*breakfast* and *lunch*). Other examples of blends are *sitcom* (*situation comedy*), *motel* (*motor hotel*), *telethon* (*television* and *marathon*), *Eurasia* (*Europe* and *Asia*), *carjacking* (*car* and *hijacking*), and *e-mail* (*electronic* and *mail*). Notice that in the last example *electronic* is clipped back to just *e*.

Derivation

Derivation is the process of forming a new word by adding a derivational affix to a word.

We say that a word has been formed by **derivation** if that word has been formed by adding a derivational affix. The word *plane* serves as the root for *deplane*. The derivational affix *de-* is added to create this new word. Numerous affixes in English can be used in this productive way. Some of them are as follows: *re-*, *un-*, *dis-*, *in-*, *pre-*, *anti-*, *sub-*, *-ly*, *-ness*, *-er*, *-ity*, *-ation*, *-able*, *-ful*.

New affixes are rare, but occasionally a new affix is formed and then can be used to derive a new set of words. For instance, the prefix *cyber-* has become common. *Cyber-* has been combined with such words as *space*, *punk*, and *theft* to derive *cyberspace*, *cyberpunk*, and *cyber-theft*. The suffix *-gate* entered the language as a result of the Watergate scandal of 1972. The *-gate* was clipped off the word *Watergate*, the name of a hotel in Washington, DC, where burglars broke into the Democratic Party's National Committee offices. Since 1972, *-gate* has been used to label government scandals: for example, *Irangate* (in the Reagan administration), *Travelgate* and *Monicagate* (in the Clinton administration), and *Attorneygate*, referring to the questionable firing of eight federal prosecutors in the Bush administration in 2006. There is even a word *gategate*. It refers to a minor 2012 scandal in the United Kingdom. Andrew Mitchell, a senior Member of Parliament, got into an argument with a police officer when Mitchell tried to leave the British prime minister's residence by bike through the main gate. He was asked to use the

pedestrian exit. He allegedly said "f***ing plebs" and other obscenities to the police officer, and this caused a scandal over class snobbery. The suffix has also been used for hundreds of scandals in areas other than politics. For example, in 2015 in the world of entertainment there was *Donutgate*; journalism had its *Mediagate* in 2012; for sports there was *Deflategate* in 2015; and for technology and business *Emissionsgate* occurred in 2015.[4]

Back-formation

The word *revise* can be used as the root to form the word *revision*. This is a derivational process. But sometimes an invented word looks like a derivational process even though the new word was not directly derived from any existing root. For instance, the word *television* was formed by combining *tele* (at a distance) and *vision* (something seen). *Television* was not derived from *televise*. However, *televise* was based on the fact that words like *revision* are formed from *revise*. An imitative process like this is called **analogy**; the words formed are analogous to those formed by following appropriate established rules. The term **back-formation** refers to the fact that *televise* was actually clipped from *television* rather than being the root for it. The word *televise* did not exist before the word *television*, and therefore could not be the root for *television*.

Analogy is a process by which one form of a word (or other linguistic phenomenon) is used as the model for constructing another word or structure.

Back-formation is used to form a new word through the process of analogy by removing an affix or what appears to be an affix from that word.

Other examples of back-formation are as follows:

donate	from	*donation*
edit	from	*editor*
enthuse	from	*enthusiasm*
automate	from	*automation*

In each of these cases, the word on the right existed before the word on the left.

Eponyms: people's names

Eponyms are words formed from people's names.

People like to be remembered. One way to increase the likelihood of being remembered is to have something named after you. Proper names are used to label animals and plants *(Darwin's finches)*; inventions (the *saxophone*, named for Antoine-Joseph "Adolphe" Sax); places (*Washington*, for George Washington, and *District of Columbia*, for Christopher Columbus); activities (*boycott* from Captain Charles Cunningham Boycott); and other people (see Box 4-3). Some other common words based on people's names are as follows:

- *Ponzi scheme* from Charles Ponzi (1882–1949), who created a fraudulent investment scheme.
- *Braille* from Louis Braille (1809–1852), who developed a system of printing for the blind.
- *Erotic* from Eros (Greek god).
- *Sadism* from Count Donatien Alphonse François de Sade (1740–1814), who wrote books describing sexual pleasure derived from inflicting physical or mental pain.
- *Sandwich* from John Montagu, the fourth Earl of Sandwich (1718–1792), who invented the sandwich when he insisted that roast beef between two pieces of bread be brought to him while he was gambling.
- *Guillotine* from Joseph-Ignace Guillotin (1738–1814), who invented the device for beheading convicted felons.
- *Kanye'd* from Kanye West (b. 1977), meaning to have a speech interrupted.
- *Mesmerize* from Franz Mesmer (1734–1815), a doctor who practiced hypnotism.
- *Dunce* from John Duns Scotus (1265–1308), a brilliant thinker whose followers revolted against Renaissance ideas. These "duns men" darkened Duns Scotus's reputation.
- *Lynch* from Charles Lynch (1736–1796), a Virginia Justice of the Peace who condemned criminals to hang.

[4]See https://en.wikipedia.org/wiki/List_of_scandals_with_%22-gate%22_suffix for an extensive list of the use of *-gate*.

BOX 4-3

The etymology of given names

One of the things that parents-to-be are often concerned with is the names of their children. Sometimes a child is named for one of the parents or for a deceased relative. Often a child is named for a famous person or fictional character. In other cases, the parents choose the name on the basis of what the name means. Many books that list prospective names for children give a brief history of the meaning of a name.

For instance, the name *Aaron* comes from the biblical name *Aharon*. Its origin is either Hebrew or Egyptian. If its origin is Hebrew, then it means either *exalted* or *high mountain*. Aaron was the older brother of Moses.

The name *Andrew* is from the Greek name *Andreas*, which derives from *aner*, which means *man* (possessive form: *andros,* "of a man"). *Andrea* and *Andriana* are feminine names derived from *Andrew*.

Sometimes the popular media turns one variant of a name into the most common version of that given name. *Heidi*, the nickname for *Adelheide* (from the German word for *noble*), was popularized by the book of the same name. *Lucy* (from the Latin word for *light*), a variant of *Lucille*, was made popular in the 1950s by the television show *I Love Lucy*.

You can look up the history and meaning of your name on the website "Behind the Name" at www.behindthename.com.

Trade names

New words are invented to label new products. Sometimes the word is formed based on processes we have already discussed. A *Ford* is a car named after Henry Ford. Other times, brand names are invented without reference to existing words. *Xerox* is a good example of this.

Trade names sometimes become so widely used that they become the generally used term for the product. This happened to the word *Xerox* for several decades. *Aspirin* was originally the trade name for the Bayer Company's brand of acetylsalicylic acid. *Jell-O* was the trade name for General Foods' brand of gelatin dessert. *Kleenex* was the trade name for Kimberly-Clark's facial tissue. These trade names came to mean the products themselves. So, even today, what you call your *aspirin* might be manufactured by Johnson & Johnson, your *jell-o* by Royal Foods, and your *kleenex* by Scott Paper. Also, *Google*, mentioned earlier, used as a noun can refer to any Internet search engine, and used as a verb it can refer to doing an Internet search. The same is true of the word *Mapquest*.

There are additional processes by which words are formed. However, this listing should give you a good feel for the numerous ways new words enter a language. This openness makes language a flexible tool. Without openness, it would be hard to imagine how human culture could exist.

EXERCISE 5 Word openness

1. Find ten additional examples of words formed by each of the processes described in this chapter.

_____

_____

_____

_____

2. Examine each of these foreign words and try to determine what English word was formed from them. Take a guess and then check your guess in Appendix B.
   a. squunck
   b. taifung
   c. sonare

3. There are thousands of acronyms used in English, and acronym formation is one of the most productive processes generating new words. Why do you think acronyms are so popular?

4. What do the following words have in common: *knockout, weekend, supermarket, jeep, nylon*, and *Ford* (the car)?

5. *Swindle* came into the English language as a back-formation from *swindler*. Explain this process, using *swindle/swindler* as your example.

6. In the discussion of the use of proper names to form new words, we said that it was common to label plants, animals, inventions, places, and activities in this way. What other things are commonly named for people?

7. List five acronyms that express the sentiment or represent a characteristic of a group of people.

The meaning of words can change

In Middle English, spoken between about 1100 and 1500 CE,[5] the word *butcher* meant one who slaughters goats. In modern English, this word has been generalized (broadened) to mean "one who slaughters and/or prepares any type of meat." At one time, the word *girl* meant a young person of either sex. The meaning of girl has become more specific (narrowed), and now is used to label a young human female. The meaning of some words has totally changed. The word *silly* used to mean happy; however, its meaning has degenerated (become negative instead of positive). The word *nice* used to mean ignorant; however, its meaning has been elevated (become positive instead of negative). In some English varieties, the word *bad* can mean good. This represents a reversal in meaning.

Etymology is the study of the history of words.

The study of the history of words is called **etymology**. An etymology dictionary lists words and gives their history. Below is an entry from an online etymology dictionary.

> **accomplish**—c. 1380, from O.Fr. *acompliss-*, stem of *acomplir* "to fulfill," from V.L. *accomplere*, from L. *ad-* "to" + *complere* "fill up." (see *complete*.) *Accomplished* "fully versed" is 16c.[6]

This entry gives the history of the word *accomplish*. It says that the first use of the word was about (*c*. means *circa* or about) 1380 CE. It was taken from Old French elements, which in turn came from Vulgar Latin (V.L.), the everyday Latin of Rome. This word has a relatively simple history. Many words have gone through numerous transformations over time in both form and meaning. We will return to this topic in Chapter 14.

EXERCISE 6 Etymology

1. Words are not only formed anew, but existing words also change in meaning. Words can become more generalized, more specialized, take on negative connotations (degenerate), take on positive connotations (elevate), or reverse in meaning. Consult an etymological dictionary and determine what types of changes have occurred to the words listed below.

   Example: *ghetto* is from the Italian word *ghetto*, which was the name of the Jewish area of ancient Venice (originally *getto*). There are different ideas on its pre-Italian origin. One of those is that it comes from the Yiddish word *get*, meaning a divorce or "deed of separation" (see www.etymonline.com for other information). Another possible origin is from Hebrew (see Matityahu Clark, *Etymological Dictionary of Biblical Hebrew*, New York: Feldheim, 1999, 36). It has been generalized to mean the area of a city in which the population is predominantly one minority group (most often African American).

   royalty _____

   _____

   _____

   wife _____

   _____

   _____

[5] CE, an abbreviation for Common Era, is used in place of AD; and BCE, an abbreviation for Before the Common Era, is used in place of BC.

[6] From www.etymonline.com.

bird _____

potluck _____

testimony _____

crude _____

knave _____

hussy _____

liquor _____

botulism _____

pleasant _____

pen _____

queen _____

_____

_____

2. Using an etymological dictionary, give a detailed history of the changes that have taken place in three of the words listed in Part 1 of this exercise.

_____

_____

Lexical categories (parts of speech)

There are several ways to classify words. Traditionally, English teachers divide words into eight parts of speech or lexical categories. However, the eight parts of speech are arbitrary categories that are not relevant to many languages or do not adequately represent the lexical differences of morphological units found in many languages. Although there are problems with this system (see Ben Yagoda's book on the subject, which is listed under "Suggested reading"), it is a good jumping-off point to introduce students to the primary functions of words within sentences. Table 4-1 summarizes the traditional parts of speech and adds the lexical category determiner, which is not one of the traditional categories. (A more detailed discussion of dividing words into word types can be found at: www.polysyllabic.com/?q=book/export/html/56.)

TABLE 4-1 Lexical categories

Noun (N)	**Nouns are the names of persons, places, attitudes, ideas, things, qualities, or conditions. They can be used as the subject of sentences, the object of the verb, or the object of a preposition. In English they can occur after articles *a, an,* and *the*. Many can be inflected to show number (-*s*) or to show possession (-*'s*).**	
Subtypes		**Examples**
Proper nouns	Named person, place, activity, idea, or thing	*John Smith, California, Pico Boulevard*
Common nouns	Unlike proper nouns, these refer to a class of persons, ideas, or things.	*man, state, street*
Common nouns can further be classified in the categories below.		
Concrete noun	tangible object	*cow, tree, noise*
Abstract noun	intangible thing, idea, concept	*love, liberty, admiration*
Count nouns	can be pluralized, can be modified by a numeral, and can have certain relevant determiners before it such as *each* and *several*	*dog, car, house*
Mass nouns	refer to substances of which any quantity is not differentiable and generally cannot be pluralized	*butter, water, flour, gravel*
Collective nouns	refers to a group of things	*mob, flock, herd*
Pronouns (Pro) Subtypes	**Pronouns replace a noun or another pronoun**	**Examples**
Indefinite	no specific reference	*any, anybody, anyone, all, each, everyone, everybody, either, neither, none, no one, some, someone, etc.*
Reflexive	object pronouns that refer back to the subject	*myself, yourself, himself, herself, itself, ourselves, yourselves, themselves*
Intensive	used for emphasis and have same form as reflexive pronouns	"I *myself* helped *myself* to dinner." The first myself is intensive and second is reflexive.

TABLE 4-1 Lexical categories (*continued*)

Personal	refers to a specific person or thing	*I, you, she, he, it, we, you, they, me, him, us, them, mine, yours, hers, his, its, theirs, ours*
Demonstrative	indicates which one (of a group of items) is being referred to	*this, that, these, those*
Interrogative	used to ask a question	*who, whom, which, what*
Relative	links one phrase or clause to another phrase or clause	*who, whom, which, whoever, whomever, whichever, whatever* The students, *who* attended all of the classes, did well on the test.
Adjective (Adj)	**Adjectives modify a noun or pronoun; they identify a characteristic or a quality of a noun or pronoun. In English, they occur before the noun or after verbs like *is*. They can be inflected for degrees such as comparative (*faster*) and superlative (*fastest*). Traditionally, English teachers place adjectives into two categories: descriptive and limiting. As we will see, linguists usually do it a little differently.**	
Subtypes		**Examples**
Descriptive	qualifies or modifies a noun or pronoun	*good, happy, wonderful, ugly*
Limiting (also called articles)	Linguists place articles into the next category discussed below called determiners. They will be described in that category.	
Determiner (Det)	**The lexical category determiner is not one of the traditional parts of speech. Generally, what linguists call determiners are called adjectives by English teachers. There are differences between "common adjectives" and determiners; determiners cannot take the comparative ending *-er* as in *faster*, or the superlative ending *-est* as in *fastest*. Linguists use the category determiner for words (or affixes) that specify something about a noun.**	
Subtypes		**Examples**
Articles	The indefinite articles (*a, an*) indicate that the noun they refer to has not been identified previously; the definite article (*the*) refers to a previously referred to noun. See Chapter 6 for more discussion of this concept.	*a, an, the*
Demonstrative pronouns		*this, that, these, those*
Qualifiers		*all, three, many,* and *some*
Verbs (V)	**Verbs express an action, an occurrence, a condition, or a state of being. They can be a single word or a group of words and, in English, they can be inflected for tense, person, number, voice, and aspect.**	
Subtypes		**Examples**
Transitive	takes an object	Bruce *built* a house.
Intransitive	does not require a direct object	Diane *retired*.
Ditransitive	It takes more than one object, i.e., a direct object and an indirect object.	Netta *gave* Kassem a present.
Linking or copulative verbs	They cannot form a complete assertion (predication) by themselves and do not take a direct object. They link the subject to a noun (predicate noun) or an adjective (predicate adjective).	My mother *is* an artist. He *remains* a good person. That pie *smells* good. (Other linking verbs are *be*, *become*, *look*, *appear*, and verbs of the senses such as *taste*, *feel*, and *sound*.)
Auxiliary verbs	Also simply called auxiliaries, or helping verbs, there are several subtypes of auxiliary verbs. Some are used to form various tenses.	Jamie *is* working very hard.

(*Continued*)

TABLE 4-1 Lexical categories (*continued*)

	Modals are auxiliary verbs that express mood or attitude.	*may, can, should, must*
	Auxiliaries my also express the duration of an action, state, or event.	I *have* always helped him.
	Auxiliaries are also used to express voice (see Chapter 5)	He *was* missed.
Phrasal verbs	They are compound verbs; a base verb is combined with a particle and/or a preposition.	He *stood by* his statement. (prepositional phrase verb)
		She *brought* that *up* again. (particle phrase verb—*up* is the particle) Can you *put up with* this behavior? (particle–prepositional phrase verb)
Adverb (Adv)	**Adverbs modify verbs, adjectives, or other adverbs. Like adjectives, certain adverbs can have positive, comparative, and superlative degree (*fast, faster, fastest*).**	
Subtypes		**Examples**
Manner adverb		*carefully, helpfully, noisily, well*
Time adverb		*today, tomorrow, yesterday, soon, now, later*
Place adverb		*here, inside, there, somewhere*
Frequency adverb		*often, usually, sometimes, absolutely, rarely, never*
Direction adverb		*away, towards, forward*
Degree adverb		*absolutely, rarely, never*
Preposition (Prep)	**Prepositions usually introduce a phrase that ends in a noun or pronoun (called the object of the preposition). They show a relationship between the object and another word or words in the sentence.**	
Subtypes		**Examples**
Normal word order	used in declarative sentences	Jack went to the store *for* Sue.
Modified word order	used in *wh-* question formation	Who did Jack go to the store *for*?
Single word prepositions		*for, on, up, about, at, below, by, in*
Complex prepositions		*according to, because of, in front of, on account of, instead of*
Conjunction (Conj)	**Conjunctions connect words or groups of words.**	
Subtypes		**Examples**
Coordinating conjunctions	connect equal elements	*and, or, nor, but, for, and, so*
		It is Bill *and* Mary's savings account.
Correlative conjunctions	connect equal elements, but occur in pairs	*either . . . or, neither . . . nor, etc. Either* I will have to go to the store, *or* you will have to go.
Subordinating conjunctions	connect unequal elements; for example, a dependent and independent clause	*Because* you didn't study, you flunked the test.
Interjection (Interj)	**Interjections are not a vital part of the sentence grammatically. They can be removed and not alter the grammatical structure of the sentence. They are used to express feelings.**	
		Examples
		Oh, do you really mean that?
		well, goodness sakes, heavens, good heavens, many swear words, etc.

(Note: A word's lexical category depends on its function in a sentence. So, a word such as *round* can function as any one of six lexical categories. See http://dictionary.reference.com/browse/round.) Also, note that this table is not meant to be a comprehensive list of all subtypes of the main lexical categories, and that there are alternative ways of dividing these main lexical categories into their subtypes as well as other variations in defining and categorizing word types.

EXERCISE 7 Lexical categories

1. Determine the lexical category of the underlined words as well as the subtype of the lexical category.

Example: Honesty is the best policy.
a **b**

a. **abstract noun** b. **descriptive adjective**

A. Some of the boats sank.
a **b**

a. _____ b. _____

B. Some people never learn.
a **b**

a. _____ b. _____

C. According to Steve, the road ends one mile down the highway.
a **b** **c**

a. _____ b. _____

c. _____

D. The boxer won that round.
a **b**

a. _____ b. _____

E. The round house looked strange.
a **b**

a. _____ b. _____

F. He rounded the piece of wood.
a **b**

a. _____ b. _____

G. The piece of wood will become round.
a

a. _____

H. He turned round.
a

a._____

I. He went round the river.
a

a. _____

J. The crowd became noisy, and the police surrounded them.
a **b** **c**

a. _____ b. _____

c. _____

K. Who said that you could appoint yourself?
a **b** **c** **d**

a. _____ b. _____

c. _____ d. _____

L. That speech would touch anyone who heard it.
a **b**

a. _____ b. _____

M. Jack will either go to the party or stay home.
a **b** **c**

a. _____ b. _____

c. _____

N. Oh no, the guests are already arriving.
a **b**

a. _____ b. _____

O. The sand at the beach is contaminated.
a **b** **c**

a. _____ b. _____

c. _____

2. Examine the uses of the word round in D through I. What can be concluded from these examples?

_____

_____

_____

Summary

Morphology is the study of the rules governing the internal structure of words and the interrelationships that exist among words. The basic unit of morphology is the morpheme, of which there are two main types, bound and free. Bound morphemes can be derivational or inflectional. Derivational morphemes, when added to a word, change the meaning or part of speech of the word. Inflectional morphemes serve grammatical functions, such as changing a singular noun to a plural.

Languages can be classified on the basis of how they use morphemes. In analytic languages, words are single morphemes. In synthetic languages, bound morphemes are attached to root morphemes to change meaning or mark grammatical function.

Three kinds of synthetic language types were discussed: inflectional, agglutinating, and polysynthetic. In reality, most languages mix the typological principles to various degrees.

Morphemes may have different phonemic shapes. The phonemic shape that is used depends on the sound characteristics of the morphemes being combined. Because both morphology and phonology are involved in these subconscious decisions, the study of them is called morphophonemics.

New words are constantly entering languages. The processes of compounding, blending, acronym formation, foreign word borrowing, clipping, derivation, back-formation, using proper names, and using trade names are some of the more common ways that new words are formed.

Words can be divided into types and subtypes depending on their meaning, how they function in a sentence, how they are inflected, and other criteria. One system of doing this, dividing words into the lexical categories, is described in Table 4-1.

Suggested reading

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Websites

Cambridge Dictionary: http://dictionary.cambridge.org. This is an online dictionary that also gives the meaning of idioms.
Dictionary.com: http:// dictionary.reference.com. This is an online dictionary and thesaurus, with other reference resources.
Morphology: http://link.springer.com/journal/11525. This is a journal on morphology.
Online Etymology Dictionary www.etymonline.com. This site provides an online etymology dictionary.
Oxford Dictionaries: www.askoxford.com. This is an online dictionary that also features word games and sections on global English, the world of words, and word origins.
Wordsmith: http://wordsmith.org. This site sends its subscribers a word a day with interesting definitions and trivia about the word's origin.

Review of terms and concepts: morphology

1. The meaningful units of language are called _____.
2. The unit /k/ in *cat* is a _____.
3. How many morphemes are in the word *schoolhouses*? _____
4. In *schoolhouses*, *school* is a _____; *house* is a _____; and *-s* is a _____.
5. Derivational morphemes can serve two functions. What are they? _____
6. What do inflectional morphemes do? _____
7. There are _____ inflectional morphemes in English.
8. English would be characterized as a highly inflected language. This statement is _____ (true or false).
9. Variations of a morpheme are called _____.
10. Different allomorphs are used for strictly stylistic reasons. This statement is _____ (true or false).
11. To say that an affix is productive means that _____.
12. Are pronouns an open or closed class of words? _____

13. Based on morphological typology, what are the two general types of language? _____ and _____

14. What are the names of the three types of synthetic language and how do they differ from each other?

15. What are the nine ways, mentioned in the text, of forming new words and how do they differ from each other?

16. What are the lexical categories listed in the text? Give a definition of each.

End-of-chapter exercises

1. *The* and *an* are called articles. Each has two common allomorphic forms. What are these forms and how are they distributed? Is there any relationship between the allomorphs and how they are spelled?

2. The following data are from Cebuano, a Philippine language. How is the name of a language derived from the name of an ethnic group?[7]

1a. [bisaya]	"a Visayan"	b. [binisaya]	"the Visayan language"
2a. [iŋlis]	"an Englishman"	b. [iniŋlis]	"the English language"
3a. [tagalog]	"a Tagalog person"	b. [tinagalog]	"the Tagalog language"
4a. [ilokano]	"an Ilocano"	b. [inilokano]	"the Ilocano language"
5a. [sibwano]	"a Cebuano"	b. [sinibwano]	"the Cebuano language"

3. What process was used to create each of the following words?

   a. photo _____

   b. remake _____

   c. scuba _____

   d. blackbird _____

   e. radar _____

   f. pizza _____

   g. Pyrex _____

   h. sideburns _____

   i. sculpt _____

   j. coke _____

   k. mishap _____

4. In the following sentences, identify the lexical category and subtype of each lettered word.

   a. The boy went to the market.

      A B C D E F

   b. He will not be able to go to the party next year.

      G H I J K L M N O P Q R

   c. Several friends of mine like this book.

      S T U

   d. Several of my friends like this.

      V W X

[7]Maria Victoria R. Bunye and Elsa Paula Yap, *Cebuano Grammar Notes* (Honolulu: University of Hawaii Press, 1971).

CHAPTER 5

Syntax: the larger patterns of language

LEARNING OBJECTIVES

- **Define the term *syntax*.**
- **Analyze the statement: "Syntax is basically subconscious knowledge."**
- **List the names of the units that are larger than words and that make up sentences.**
- **List the names of different sentence types based on the types of clauses that construct each sentence type.**
- **Explain what types of sentences there are based on their meaning, function, or voice.**
- **Language is rule-governed. Discuss some of the general syntactic rules that a native speaker of a language knows.**
- **Word order is very important in some languages and less important in others. Explain why this is so.**
- **Report on who Noam Chomsky is and include what some of his contributions to linguistics are.**
- **Explain what phrase structure rules and phrase markers are.**
- **Discuss what is meant by saying that language has a hierarchical structure.**
- **Explain what is meant by the recursive property of language.**
- **Define transformational rules. List and explain the four basic types of transformations.**
- **Define grammaticality judgment.**
- **List the three types of ambiguity discussed in this chapter and provide at least one example of each.**
- **Explain how ambiguous and synonymous utterances can be seen in terms of deep and surface structure.**

Syntax is a level of grammar that specifically refers to the arrangement of words and morphemes in the construction of sentences.

The word *syntax* is derived from the Greek elements *syn*, meaning *together*, and *tax*, which means *arranging*. **Syntax** is a level of grammar that specifically refers to the arrangement of words and morphemes (the lexicon) in the construction of structures such as phrases, clauses, and sentences. Syntax also deals with how these combined structures interface with external behaviors such as speech (sound), sign language (gestures), and writing to make the combined structures useful in communication. Lexical categories discussed in Chapter 4 are syntactic categories for elements of language at the level of words.

Syntax can also be seen as the way in which the basically subconscious rules (tacit rules or knowledge) and categories that are part of each person's linguistic competence are used to construct sentences. Syntax deals with the interrelationship of the elements that make up sentences, and how different rules of arrangement are used to construct statements, questions, commands, and other types of utterances. In English, a native speaker will know without having to consciously think about it that "*A to going minutes I be few in will store the" is not a grammatical sentence. However, "I will be going to the store in a few minutes" is a grammatical

sentence and would be recognized as such by a native speaker of English. Words are not put together randomly to create phrases, clauses, and sentences.

When we say that syntactic rules are basically subconscious, we mean several things. First, people apply the rules of their language automatically and without noticing that they are doing anything special. Second, using the syntax of language is usually obligatory. Unless you make the grammar explicit (that is, you are consciously aware of it), you can't change it. Of course, under certain circumstances you might do just that. For example, if you are trying to imitate a dialect different from your own, you might study the grammar of your way of speaking and compare it to another.

When linguists and anthropologists study syntax, they are interested in describing the subconscious knowledge that people possess about the syntax of their language, not prescribing how they *should* construct sentences. What linguists and anthropologists are discovering is **descriptive syntax** or **descriptive grammar**. They listen to what people actually say and then attempt to discover the rules used. What a language teacher does in a grammar class by telling you that there is a correct or incorrect way to write or speak is **prescriptive syntax** or **prescriptive grammar**.

Descriptive syntax or **descriptive grammar** refers to the mostly subconscious rules of a language that speakers use to combine smaller units into sentences. The term also refers to the study of these rules.

Prescriptive syntax or **prescriptive grammar** (as the term implies) refers to the concept that there is a correct and an incorrect way to speak, write, or sign.

There are many approaches to the study of syntax. Some are mostly descriptive and attempt to discover the rules of the syntax of a language and describe them; some are based on the analysis of the function of syntactic forms, while others are based on complex mathematical models. We will deal mostly with a model of syntax called **transformational** or **generative grammar** that incorporates descriptive and mathematical concepts but primarily is based on the assumption that many elements of syntax cannot be discovered just by studying linguistic performance. They are instead a reflection of how the human mind (the brain) works to form syntactic structures such as sentences.

Transformational or **generative grammar** is a model of syntax that includes a finite set of rules that could hypothetically produce (generate) an infinite number of utterances.

Generative grammar (discussed further in the "Phrase structure rules" section later in this chapter) assumes that the general similarities found in all languages are a result of the prewired way in which the human brain must process linguistic input. What a person says, writes, or signs is the result of the complex processing of learned information in a partially innate way. This processing system is the result of human and prehuman evolution. It is, in part, what allows children to naturally, efficiently, and subconsciously learn language with relatively limited input from their social environment (see "poverty of the stimulus" in Chapter 10). In fact, in recent years some researchers have hypothesized that the ability of the human mind to automatically arrange certain types of information in a particular rule-governed way is also present in some of our closest living nonhuman relatives; that is, other primates, as well as some other animals, may have computational abilities.[1]

In this chapter we are going to analyze syntactic structures in terms of traditionally defined units such as sentences. However, it should be pointed out that people often speak, sign, or write in utterances or texts that a language teacher might say are incomplete or not grammatical (see Chapter 3 for a definition of utterance). This is obvious in such written forms as text messaging, tweets, and so on. When linguists analyze speech or sign language, they often also find this clipped or otherwise informal form of communication (see "Situational dialects or registers" in Chapter 8).

Syntactic construction

Types of syntactic structures

We will discuss syntax starting with larger syntactic structures, breaking them down into their smaller constituents. So, we with start with sentences, proceed to clauses, move on to phrases, and end up with words.

[1]Sylvia Bongard and Andreas Nieder, "Basic Mathematical Rules Are Encoded by Primate Prefrontal Cortex Neurons," *Proceedings of the National Academy of Sciences* 107 (January 19, 2010), 2277–2282.

A **sentence** is a string of words that is grammatically complete with at least two components, a subject and a predicate.

A **sentence** begins as a mental construction job. Sentences are not randomly combined morphemes but structures built on the basis of rules of combination. The units being combined are called **constituents**. In traditional approaches to grammar, a sentence is seen as having at least two main constituents; one is called a **subject**, and the other is called a **predicate**. In these traditional approaches the subject is the topic of the sentence and the predicate is a comment or assertion made about the topic.

Constituents are the units being combined to create larger syntactic constructions.

The **subject** of a sentence is the topic of the sentence.

The **predicate** of a sentence in traditional grammar is a comment or assertion made about the topic. In most modern grammars, the predicate is seen as an element that assigns a property to another element in a sentence or helps to relate other elements to each other, thereby completing the meaning of the predicate.

In the sentence below, if analyzed by a traditional approach, *The student* is the subject of the sentence and *looked at a painting* is the predicate.

The student looked at a painting.

In most modern syntactic analyses, the predicate is seen as an element that assigns a property to another element or elements in a sentence, or helps to relate those other elements to each other, thereby completing the meaning of the predicate. Using this rationale, the sentence above might be analyzed as: *looked* (*the student, at a painting*). *Looked* is the predicate and the expressions in parentheses—*the student* and *at a painting*—complete the meaning of the predicate. The expressions *the student* and *at a painting* are called **arguments**. Arguments are necessary to complete the meaning of the predicate. *Looked* by itself is not a complete thought; nor is *the student looked*, or *looked at a painting*. The predicate in this case needs two arguments to complete it, a subject argument and prepositional phrase argument. Depending on the type of verb, one or more argument might be needed (obligatory). In addition to arguments that are obligatory, a predicate may be completed by elements, called **adjuncts**, which are optional. For instance, in the sentence *The art student looked at a very beautiful painting*, the elements *art*, *very*, and *beautiful* are adjuncts. Adjuncts add information that is not essential to the meaning of the predicate.

Arguments are necessary elements of a sentence used to complete the meaning of the predicate.

Adjuncts are optional elements of a sentence. They add information that is not essential to the meaning of the predicate.

Types of sentences and clauses

Using a traditional approach, sentences can be classified on the basis of how many subjects (topics) and how many predicates they contain and the types of clauses they possess. When a sentence consists of only one subject and one predicate, it is called a **simple sentence**. An example of a simple sentence is:

A **simple sentence** is a sentence with one subject and one predicate.

The dog ran away.

Simple sentences can be combined to form **compound sentences**, such as: *The dog and the cat ran away*.

A **compound sentence** is made up of at least two simple sentences joined by a coordinating conjunction; in writing, punctuation can substitute for the conjunction.

In this case, two sentences are combined using the coordinating conjunction *and*. The compound sentence tells us that *The dog ran away* and *The cat ran away*. Redundant elements are eliminated in forming this compound sentence. Compound sentences can be formed without a coordinating conjunction, as in the following sentence:

We studied all day for the test; now it is time to rest.

In this case, the semicolon takes the place of the conjunction. The two simple sentences in a compound sentence are said to be **independent clauses**.

An **independent clause** is a simple sentence.

A second type of clause used to construct sentences is the **dependent clause**. A dependent clause cannot stand alone as a simple sentence, but must be attached to an independent clause. A dependent clause often begins with a relative pronoun or a subordinating conjunction. Some examples of dependent clauses are the following:

A **dependent clause** has a subject and predicate but cannot stand alone as a simple sentence. It depends on an independent clause to make it complete.

although it is tempting

who would be traveling with us

if I come late

A sentence that contains a simple sentence and one or more dependent clauses is called a **complex sentence**. The following are complex sentences:

A **complex sentence** contains a simple sentence and one or more dependent clauses.

Although it is tempting, I will not be going to Las Vegas.

These are the people who would be traveling with us.

If I come late, start without me.

Sentences that have two or more independent clauses and at least one dependent clause are called **compound-complex sentences**. For example:

A **compound-complex sentence** has two or more independent clauses and at least one dependent clause.

When the teacher assigned the reading for the exam, many students were stunned, but they agreed to study.

When the teacher assigned the reading for the exam is a dependent clause; *many students were stunned* could stand alone as a simple sentence and is, therefore, an independent clause of the larger sentence. The same is true of *they agreed to study*. This independent clause is attached to the rest of the sentence by the coordinating conjunction *but*.

The terms *simple sentence*, *compound sentence*, *complex sentence*, and *compound-complex sentence* refer to the grammatical construction of a sentence. Sentences can also be classified on the basis of their meaning, purpose (function), or voice. The following are some of the most common sentence types classified in these ways:

Declarative—Sentences that make a statement. *Christine just arrived.*

Interrogative—Sentences that ask a question. *Has Andrew just arrived?*

Imperative—Sentences that express a command or make a request. *Aaron, come here.*

Exclamatory—Sentences that show strong or sudden feeling. *Oh, if Jan were only here!*

Active or passive voice—Voice is the relationship of the grammatical subject of a verb to the action conveyed by that verb. In most English sentences, the grammatical subject precedes the verb. In an active sentence, the grammatical subject of the verb carries out an activity or purpose, as in the sentence *Mark hit the ball*. In the passive version of this sentence, the subject is receiving the action of the verb. So, in the above example, what was the direct object becomes the grammatical subject and what was the grammatical subject is moved to the position of the object. The result is *The ball was hit by Mark*. Note that the word *by* and an auxiliary verb *was* are added in this passive construction. Although the word *by* often indicates a passive construction, it does not have to be present in a passive sentence. The sentence *The computer was purchased yesterday* is also passive. In this sentence the subject (*I*, *we*, a person's name, etc.) is missing altogether. A possible active version of the sentence would be *I purchased the computer yesterday*. In these two examples, the verbs *hit* and *purchased* are in the passive voice (see Box 5-1).

In addition to these types of sentences, various combinations of types can be formed. *Don't be hit by a ball* is a passive, imperative sentence.

BOX 5-1

The passive voice

English teachers often tell students to avoid using the passive voice that is formed in the ways described in the text and by some uses of *to be* words, including *am*, *is*, *are*, and *were*. There is good reason for this. The passive voice can obscure who is doing what to whom or who is responsible for what. In some cases, *to be* words can be used to eliminate the person responsible for the action completely, as in: *The credit card*

*payment will be made on the 15*th *day of the month*. This sentence does not state who is to make the payment. The reader or listener might assume that the person whose name is on the credit card is responsible for the payment. However, if this sentence were part of a legal document with several parties, someone other than the cardholder might be responsible for the payment, such as the company that employs the card owner. The sentence *The card owner will make a credit card payment on the 15th day of the month* clarifies who is to make the payment.

The passive voice is also wordier, using more nouns and prepositional phrases. The following is a passive sentence:

Analysis and assessment of the quality of instruction by college presidents and deans is required so that suggestions for changes and improvements in instruction can be made.

The active version of the sentence is less wordy and less ambiguous:

College presidents and deans must analyze and assess the quality of instruction so that they can make suggestions for improving instruction.

The passive voice does have a place in writing and speech. It can be used to add variety to an utterance as long as it does not obscure meaning.

Phrases

A **phrase** is any constituent of a clause.

A **phrase** is any constituent of a clause. Phrases are commonly named for one of their main elements, so we speak of noun phrases, verb phrases, adjective phrases, adverb phrases, and prepositional phrases. A phrase may be a string of words or just one word. In the following sentence there are several phrases: *Jack went to the store*. *Jack* is a phrase, and so are *went to the store*, *to the store*, and *the store*. Notice that not only can a phrase be one word or a string of words, but that one phrase also can be embedded within another phrase.

The **head of a phrase** is the word that determines the syntactic or phrasal category of that phrase.

The **head of a phrase** is the word that determines the syntactic or phrasal category of that phrase—whether the phrase functions as a noun phrase, verb phrase, prepositional phrase, and so on. (Remember that in Chapter 4 we discussed the head of a compound word, which is the morpheme that determines the lexical category of the word; for example, whether the compound word is a noun or a verb.) The head of a noun phrase is a noun, the head of a verb phrase is a verb, and the head of a prepositional phrase is a preposition. If the phrase is made up of one word, then that word is the head of the phrase. If a phrase has two or more words in the lexical category that the phrase is named for, then the one that carries the central meaning of the phrase is the head of the phrase. In the noun phrase *the boat*, it is clear that *boat* is the head of the phrase. However, in the noun phrase *the title of the new movie*, there are two nouns, *title* and *movie*. Because the phrase is about the *title* of the movie and not about the *movie* itself, the head of the phrase is *title*.

The **dependent** or **dependents of a phrase** are all parts of a phrase that are not its head.

A **specifier** makes the meaning of the head more precise.

Complements provide further information about the head.

A **determiner** is a word used before a noun to indicate whether the noun refers to something that is specific or general.

All parts of a phrase that are not the head are called the phrase's **dependents**. In some approaches to syntax, these dependents are further broken down into **specifiers** and **complements**. In *the boat*, *the* is the specifier. In *the title of the new movie*, *the* is the specifier and *of the new movie* is the complement. The specifier makes the meaning of the head more precise. **Determiners** are specifiers for nouns, adverbs are specifiers for verbs, and degree words such as *very* and *more* are used as specifiers of adjectives and prepositions. Complements provide further information about the head. The phrase *the new movie* indicates the title is that of a movie as opposed to a book, a magazine, or play.

Some languages, including Spanish, French, Tiwi (an indigenous Australian language), and English, tend to place complements to the right of the head (head-first or right-branching languages). Other languages, such as Turkish, Korean, and Japanese, tend to put complements to the left of the head (head-last or left-branching languages), with Japanese doing this almost exclusively.

A **noun phrase** (often called a **nominal phrase**) does the work of a noun.

Noun phrases Among other functions, a **noun phrase** (often called a **nominal phrase**) can function in a sentence as the subject, direct object, and indirect object. A noun phrase could be a single noun or pronoun or a variety of longer forms:

1. Julian mailed a letter.
   (*Julian* is a noun phrase and the subject of the sentence; *a letter* is also a noun phrase and the direct object.)
2. Mary ate the hamburger.
   (*Mary* and *the hamburger* are noun phrases. *Mary* is the subject of the sentence; *the hamburger* is the direct object.)
3. Three people came late.
   (*Three people* is the noun phrase and the subject of the sentence.)
4. The girl went into the house.
   (*The girl* and *the house* are noun phrases; *the house* is an indirect object.)
5. He gave the card to me.
   (*He* is a noun phrase, as is *me* and *the card*; *me* is an indirect object; *the card* is a direct object.)

Noun phrases can be abbreviated as NP. A noun might be preceded by an adjective or adjective phrase. The adjective phrase might include an adverb (*very* fast horse) or a subtype of adjective called a determiner (abbreviated as Det). In English, determiners fall into the following categories: definite and indefinite articles, demonstratives, possessives, and interrogatives. Determiners function to limit what the noun is referring to, such as to specify whether the referent is a specific thing or a general thing. Articles—*a(n)* and *the* (abbreviated as Art)—tell whether a noun refers to a definite (specific) thing, as in *the art student*, or something that is not specified (a general thing), as in *a very beautiful painting*. In the phrase *the art student*, *the* is a definite article. *The art student* refers to a specific student to whom we might give a name. In the phrase *a very beautiful painting*, *a(n)* is an indefinite article because the phrase does not specify exactly what painting is being described. In English, articles are placed before the noun that they modify. They share this characteristic with demonstratives (*this* boy), possessives (*my* car), and interrogatives (*which* house).

Some possible noun phrases are as follows:

a.	Jim	NP → N (N is the abbreviation for noun if it cannot be broken down further.)
b.	he	NP → Pro (Pro = pronoun)
c.	the dog	NP → Det N (Det = determiner, which in this case is an article.)
d.	six dogs	NP → Num Noun (Num = numeral)
e.	the six dogs	NP → Det Num Noun
f.	my dog	NP → Det N (This determiner is a possessive.)
g.	what dog	NP → Det N (This determiner is an interrogative.)
h.	that dog	NP → Det N (This determiner is a demonstrative.)

The → in the formulas above means *can be rewritten as* or *can be expanded as* or *is made up of*. So in example (e), the formula reads that the noun phrase can be rewritten as a determiner plus a numeral and a noun.

Verb phrases All English sentences (sentence is abbreviated as S) contain a noun phrase (NP) and a **verb phrase** (VP); that is, an English sentence is minimally as follows:

A **verb phrase** tells you something about the subject. It includes a verb and can include an auxiliary verb, a direct or indirect object, and modifiers.

$$S \rightarrow NP + VP$$

Intransitive verbs can form a verb phrase by themselves. In the simple sentence,

Fish swim,

swim is a verb phrase composed of just a verb (VP → V).

Verb phrases often include a noun phrase. Verbs that combine with a noun phrase are called transitive verbs. In the sentence

Mary ate the hamburger,

ate the hamburger is the verb phrase. It can be written as VP → V NP; *the hamburger* is the noun phrase within the verb phrase. All of the categories of verbs described in Table 4-1 (Lexical Categories) can form verb phrases.

An **adjective phrase** is headed by an adjective, but might also include an adjective **modifier** (an element that adds a property to another lexical item). Adjective phrases modify nouns.

An **adverb phrase** is a modifier of a verb.

A **prepositional phrase** is a phrase headed by a preposition. It can function to modify a noun phrase or a verb phrase.

Other types of phrases In addition to noun phrases and verb phrases, other important phrasal categories are **adjective phrases** (AdjP), **adverb phrases** (AdvP), and **prepositional phrases** (PP). Adjective phrases are headed by an adjective, but might also include adjective **modifiers** (elements that add a property to another lexical item). Adjective phrases in turn modify nouns. Adverb phrases are headed by an adverb and might also include other adverbs and an adjective phrase or phrases. Adverb phrases modify verbs in the following ways:

1. frequency (They came *every* day.)
2. duration (The students have been coming *for the past five days*.)
3. time (Tim will be here *at 3 o'clock*.)
4. manner (You should do it *this way*.)
5. purpose (Christopher brought his report card home *to show it to his father*.)

Prepositional phrases are headed by a preposition and include a noun phrase. Both adjective and adverb phrases can use prepositions. The question becomes should the phrase with the preposition be called a prepositional phrase or an adverb or adjective phrase? Consider the following sentence:

The farmer from Iowa is going into the store.

There are two prepositional phrases in this sentence: *from Iowa* and *into the store*. The function of *from Iowa* is to modify *the farmer*; it tells you where he is from. It is an adjective phrase, but because it is also a prepositional phrase some linguists and grammar teachers would call it an adjectival prepositional phrase. The phrase *into the store* is an adverb phrase (or an adverbial prepositional phrase). It modifies the verb by telling us where the farmer went.

EXERCISE 1 Syntactic construction

1. Label the subject and predicate of the following sentences.

***Example*:** The black cat/ate all of the cat food.
subject predicate

a. I am going to the store.

b. The clown amused us.

c. Is this the place?

d. Come here.

e. We were amused by the clown.

2. Did you have any problems with d. and e. of Question 1? Explain.

_____

_____

_____

3. Is there an analogous relationship between the concept of free and bound morphemes and independent and dependent clauses? Explain.

_____

_____

_____

4. Determine which of the sentences listed below is simple, compound, complex, or compound-complex.

   a. Who is at the door? _____

   b. We will be at the restaurant in twenty minutes.

   _____

   c. The children who came to the party are all from the same school.

   _____

   d. I have eaten two pies, yet my desire for sweets has not been satisfied.

   _____

   e. He walked as if someone was following him. _____

   f. We must find a teacher who understands our needs.

   _____

   g. The score was thirty-six to nothing; obviously there was little hope that the home team would win. _____

   h. All of the people enjoyed the concert and the dinner that followed it.

   _____

5. Rewrite the following noun phrases in terms of abbreviations and arrows.

   Example: a bright color NP → Det Adj N

   a. the beautiful furniture _____

   b. a cow _____

   c. the most educated people _____

   d. six pens _____

   e. those pens _____

6. Mark all of the noun phrases in each of the following sentences and determine their function in the sentence.

   Example: A few people came into the movie studio.
   NP—subject **Indirect object**

   a. Jill's house went on the market today.

   b. All guns are bad.

c. It was a good thing that Shane came for dinner.

d. Go home.

e. Large cars require more gas.

7. Formulas such as NP → Det N express rules. This one simply says that a noun phrase can be a determiner plus a noun. However, this rule is somewhat too general; not all nouns can follow a determiner. Can you determine which type or types of nouns do not fit this rule?

_____

_____

_____

8. Mark all of the verb phrases in the following sentences.

***Example*:** He photographed the flowers.
VP

a. The dog ran after the car.

b. Jack died.

c. He has taken five tests.

9. Describe each of the verb phrases in Question 8 in terms of a formula.

***Example*:** He photographed the flower. VP → V NP

10. Underline all of the adjective phrases in the following sentences.

a. The blue ball rolled away.

b. That is a really fat yellow cat.

c. The candidate was quite upset at the reception he received.

11. Underline all of the adverb phrases in the following sentences.

a. He arrived at noon.

b. She usually gets up early.

c. The farmer harvested the corn with a machine.

d. We are going to take a vacation before the prices go up.

e. The teachers all showed up to support the students.

12. In the previous question, identify the adjectival and adverbial prepositional phrases.

The constituent structure of sentences

Using an analogy, we can say that, similar to a sentence, a car is made up of constituents or parts. The largest part is the car itself, and can be compared to a sentence. The smallest parts

of the car are individual pieces of metal, rubber, glass, and plastic, and for the purposes of this comparison could be compared to individual words (words of course are made of even smaller units—morphemes and phonemes). The small parts make up the whole but function differently than any of the parts alone. Between the whole and the individual parts are various assemblies of parts that go together. There is the brake assembly, which we could say is comparable to the subject noun phrase of a sentence; the front windshield assembly is comparable to the verb phrase; the steering wheel assembly is comparable to the object noun phrase; the engine assembly is comparable to a prepositional phrase, and so on. Each of these assemblies has a specific function, and the proper combination of individual parts makes the function possible. Furthermore, an individual part from the brake assembly coupled with a part from the engine assembly would have no function and would not be a part (constituent) of the car, just as an individual part from a subject noun phrase and an individual part from the prepositional phrase would have no function and would not be a constituent of the sentence.

So, we can see a sentence as made up of small meaningful units (words). These units combine to make large units, and then these larger units combine into even larger ones until we have the entire sentence as the largest constituent of itself. Consider the following sentence:

The art student will look at a very beautiful painting.

Each word has meaning and a specific function in the sentence. So do the groupings:

- art student
- beautiful painting
- very beautiful painting
- at a very beautiful painting

Note that other groupings do not have a coherent meaning or function relative to the entire sentence. Groups like

- the art
- a very
- will look at a
- at a very

do not function as meaningful units for the sentence.

Why is *a very beautiful painting* a constituent of the sentence and *at a very* is not? The segment *a very beautiful painting* makes sense on its own as well as having meaning in the sentence. We can ask the question

What did the art student look at?

And we could answer

. . . a very beautiful painting.

There is no question that we can pose that will have the answer *at a very*. This is because *at a very* has no meaning in itself and is not a proper "assembly" relevant to the sentence under examination. Another way of saying this is that *a very beautiful painting* could be given a label as to its function in the sentence and *at a very* could not.

The manner in which constituents of a sentence are arranged is related to the meaning of the sentence. However, constituents can be arranged ungrammatically and the sentence might still have the same meaning as it would have had if the constituents had been arranged

grammatically. A native speaker of English will recognize that the following sentence is ungrammatical, but might still understand what it means:

Will look the student at paintings very beautiful.

Also, a sentence might be well-formed (grammatical) but not have any meaning, as exemplified by the "Jabberwocky" example on page 128.

Labeling the constituents of a sentence

The words The smallest constituents of a sentence are the morphemes that make it up. Morphemes make up words. Each word can be labeled as to its part of speech or the subtype of its part of speech (lexical category) (see Table 4-1, Lexical Categories). For an example, examine the sentence we have been considering:

The	art	student	will	look	at	a	very	beautiful	painting.
Det	**Adj**	**N**	**Aux**	**Verb**	**Prep**	**Det**	**Adv**	**Adj**	**N**

A **lexicon** for a specific language is a list of all the morphemes that are used in that language to form words.

The lexicon A **lexicon** for a specific language is a list of all of the morphemes that are used in that language to form words. A dictionary often lists only the words. Each morpheme in a lexicon is accompanied by a set of specifications. These specifications include information on the meaning, pronunciation, and various other grammatical features of each morpheme. The lexicon specifies whether each lexical entry (each morpheme in the lexicon) is a prefix, suffix, or root. If it is a root, then the lexical category is also included. Any **co-occurrence restrictions** are also mentioned by labeling each root as to the subtype of the category, such as whether a verb is transitive or intransitive. A co-occurrence restriction is a limitation on the use of a morpheme. For instance, a transitive verb is limited to sentences that have a direct object.

A **co-occurrence restriction** is a limitation on the use of a morpheme.

**The boy threw.*

This sentence is ungrammatical because *threw* must co-occur with an object, as in *The boy threw the ball.*

Labeling phrases

We have already discussed the labeling of phrases. A phrase can be labeled as a noun phrase, verb phrase, adjective phrase, adverb phrase, prepositional phrase, and others. Consider the sentence under question in Figure 5-1.

The phrase constituent structure, along with labels of each word, can also be represented in a **tree diagram**. A tree diagram that specifies the function of each constituent is called a **phrase marker** or a **phrase structure tree**. Examine the phrase marker produced in Figure 5-2.

A **tree diagram** is an illustration in the form of an upside-down tree shape that shows the constituents of an utterance, with the most general at the top and more specific constituents at the bottom of the tree.

A **phrase marker** or a **phrase structure tree** is a tree diagram that specifies the function of each constituent of an utterance.

Each point at which branching occurs is called a **node**. Notice that tree diagrams are upside down. What should be the root is at the top, and what would be the top is represented by the most specific constituents (the individual words).

A **node** is a point in a tree diagram where branching occurs.

Figure 5-1 and the tree diagram in Figure 5-2 represent the hierarchical structure of language. That is, one constituent is often a constituent of a higher level or is a dominant constituent; and all constituents are part of the highest-level or most dominant constituent, the sentence itself.

We said earlier in the chapter that an English sentence must contain a NP and a VP. You will see in Figure 5-2 that there are three primary constituents or heads of the sentence being diagramed, not two; a noun phrase, a verb phrase, and an auxiliary. Although in traditional grammars auxiliaries are seen simply as part of the verb, most contemporary syntacticians see auxiliaries as one of the heads of a sentence. Auxiliaries are seen as a separate mental construct. The auxiliary says something about the time frame (that is, tense) of the action or state of the subject noun phrase; for instance, the auxiliary *will* indicates future tense. The auxiliary *might*

The art student / will look at a very beautiful painting.
noun phrase verb phrase

/at a very beautiful painting.
prepositional phrase

/a very beautiful painting.
noun phrase

FIGURE 5-1 The constituent structure of a sentence

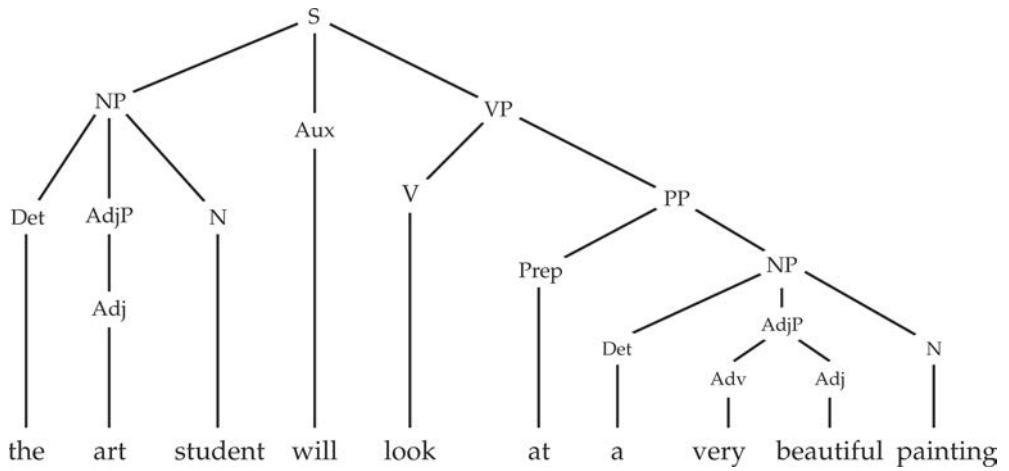


FIGURE 5-2 Phrase marker

indicates a possibility of an action or state, exemplified by the word *may* (see Table 4-1 under verbs for a further explanation of auxiliaries and their many functions).

Notice that the auxiliary verb *will* indicates the future tense. However, tense is indicated by an inflectional bound morpheme for some past tense verbs, such as in the sentence: *The art student looked at some very beautiful paintings.* In this case, the auxiliary is considered part of the form of the main verb, but Aux is often still put in the phrase marker even though there is no separate word. The inflectional morpheme *-ed* converts the verb to the past tense. This also applies to irregular verbal forms such as *went*. Even though there is no physical inflectional morpheme indicating past and no physical auxiliary verb, the concept *past* is included in the word to the same extent as if there was an *-ed* added to the verb or an auxiliary separate from the verb. Some linguists use the symbol I for inflection, instead of Aux to represent tense in a phrase marker, but we will continue to use Aux. See page 119 for an example of a phrase marker with the past tense marker *-ed*. Auxiliaries can indicate things other than tense, such as aspect, modality, or voice.

EXERCISE 2 Constituents and phrase markers

1. The smallest constituents of a sentence are individual words. Label the word type of each word in the following sentences:

   a. Fluent speakers have an enormous subconscious knowledge of their language.

   b. The rabbit quickly jumped into the big hole.

c. We may visit our good friend.

d. The boy will do the homework.

2. Draw a phrase marker for each of the sentences above. (See phrase marker on page 119 to see how you should handle the past tense.)

Phrase structure rules

Phrase structure rules specify how constituents of an utterance are arranged and what constituents can occur as parts of other constituents (the hierarchical structure of a sentence).

We have already said that statements such as S → NP Aux VP are rules. Because these rules have to do with how constituents are arranged and what constituents can occur as parts of other constituents (the hierarchical structure of a sentence), they are called **phrase structure rules**. A sentence can be described by listing a series of phrase structure rules starting with the most general (the top of a phrase marker) and ending with the most specific rules (the bottom of the phrase marker). The sentence

The art student will look at a very beautiful painting

can be represented in phrase structure rules as follows (see the phrase markers in Figure 5-2):

Sentence A: *The art student will look at a very beautiful painting.*
S → NP Aux VP
NP → Det AdjP N
AdjP → (Adv) Adj
Aux → Tense
VP → V PP
PP → Prep NP

Other sentences may fit these same set of phrase structure rules or may be described by other rules. For instance, the following phrase structure rules describe this sentence:

Sentence B: *He will look at some beautiful paintings.*
S → NP Aux VP
NP → { Pro / AdjP Noun }
AdjP → Adj Adj
Noun → N pl
Aux → Tense
VP → V PP
PP → Prep NP

In the phrase structure rules here, *Noun* is abbreviated as N in some places and spelled out in others. It is spelled out as *Noun* when the noun can be broken down further. In the example above, the word *paintings* can be broken down into Noun → N pl. The pl stands for *plural*. In general, if a component of a phrase can be broken down further, a longer representation of the component is used. When the component cannot be broken down further, we use a shorter representation.

Sentence B differs from sentence A in the first noun phrase. In sentence B, *the art student* is replaced by the pronoun *he*. In the phrase structure rules for sentence B, braces are used for the NP.

Braces mean *either-or*. A noun phrase in sentence B can be a pronoun or an adjective phrase and a noun; in this case, two adjectives plus a noun. An individual noun phrase cannot include both a pronoun and two adjectives and a noun. The parentheses around a constituent mean that it is optional. For example, the line AdjP → (Adv) Adj in the phrase structure rules for sentence A means that of the two adjective phrases in the sentence, one includes an adverb and the other does not.

We can now combine the rules for sentences A and B. The combined rules will describe both sentences. These are the combined rules:

S → NP Aux VP

NP → { Pro / (Det) AdjP Noun }

AdjP → (Adv) (Adj) Adj

Noun → N (pl)

Aux → Tense

VP → V PP

PP → Prep NP

We could write the rules for a third, fourth, fifth sentence, and so on and each time incorporate the individual rules of each sentence into a more general set of rules. If, at the end of this procedure, we combined the rules of every type of English sentence into a general set of rules, we would have a complete grammar of the syntactic component of English. Such a grammar would be called a generative grammar. A generative grammar is a finite set of rules that could hypothetically produce an infinite number of utterances. It would enable us to generate all sentences an English speaker could produce. And it would never produce an ungrammatical sentence. The production of infinite utterances is made possible by the recursive property of language. Recursion allows one type of syntactic structure to be included inside another structure of the same type (such as a noun phrase) to create infinitely long sentences or an infinite number of different sentences (see Box 5-2).

BOX 5-2

Recursion in language

The behavioralists believed that a child acquires language by learning a limited number of representative sentences and then producing new sentences based on the pattern of the representative sentences. But this does not account for productivity in everyday language, let alone poetry and other creative speech and writing. Noam Chomsky and his colleagues have demonstrated one process that generates productivity; it is called *recursion*. Recursive rules allow, for instance, a noun phrase to be made up of other noun phrases with connecting elements. So we can say in this utterance:

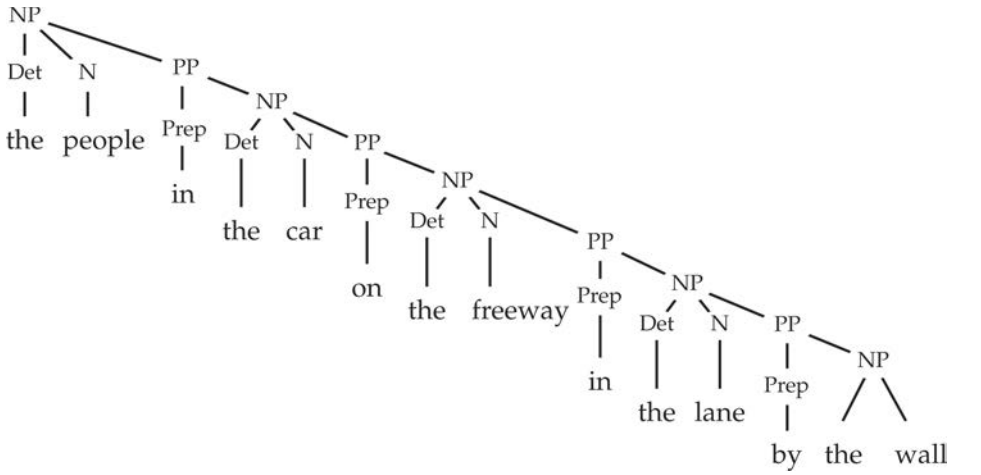
the boy that chased the dog that chased the cat that chased the squirrel that chased the bird that chased the bug.

In this way we can create an "infinitely" long sentence.

Phrase structure rules are recursive rules. For instance, the phrase structure rule PP → Prep NP is recursive in that it can generate all the prepositional phrases in the sentence:

The people in the car on the freeway in the lane by the wall drove home.

The rule PP → Prep NP can be applied over and over again in the same sentence, leading to a more and more complex sentence, as illustrated in the diagram below that provides a phrase marker only for the application of the rule PP → Prep NP, and does not diagram the entire sentence (the VP is not included).



There are several different approaches to generative grammar. Depending on the approach, phrase structure rules might be written quite differently. In addition, we have only written rules for simple declarative sentences (S → NP Aux VP). The sentence below is a yes/no interrogative sentence:

Will you come here?

The general rule for this type of sentences would be S → Aux NP VP.

We have not covered phrase structure rules or phrase markers for compound, complex, or compound-complex sentences or for other classes of sentences. We leave that and the various notational systems used to represent sentences as well as other syntactic structures, and the concepts behind these notational systems, to a course specifically on the topic of syntax.

Noam Chomsky and generative grammar and beyond

Noam Chomsky, born in 1928, has been perhaps the best-known linguist in the world for more than 50 years, and his influence goes well beyond linguistics. In 1957, he began to revolutionize the study of language with his book *Syntactic Structures*. His ideas were highly influenced by his interest in logic and mathematics. In the 1950s, Chomsky broke with the dominant school of thought in linguistics, the structural approach. Leonard Bloomfield (1887–1949) and others championed the structural approach in linguistics. Bloomfield was one of the best-known American linguists of the first part of the twentieth century; the type of structuralism he developed was descriptive and is often referred to as Bloomfieldian linguistics. His approach started with describing and classifying sounds and then morphemes in terms of their function. From principles developed from the study of phonology and morphology, more abstract units would be studied, with syntax the ending point of the analysis. Bloomfield studied meaning (semantics), but most other Bloomfieldians thought that semantics was too abstract to be studied in any verifiable (empirical) way, and therefore ignored it.

Noam Chomsky. dpa picture alliance/Alamy Stock Photo

With *Syntactic Structures*, Chomsky began to change the Bloomfieldian consensus. In Chomsky's view, language learning is motivated by an internal capacity to acquire language. This capacity evolved, as hominins evolved, into a universal innate human ability to learn and analyze linguistic information. (Some anthropologists use the term

hominids instead of *hominins*.) This universal grammar provides the general rules that allow us, at least as children, to learn any language, even with minimum input from the environment. **Universal grammar (UG)** is a general blueprint that permits the child to proceed from the general rules of all languages to the rules specific to his or her own language. Chomsky believes that language learning is guided by an innate language acquisition device that is a result of human evolution. We will discuss this idea further in Chapter 10 along with alternative ideas.

Universal grammar (UG) is the system involving phonemic differences, word order, and phrase recognition that is the basis for the theory of the innateness of language acquisition.

Surface structure refers to an actual utterance that can be broken down by conventional methods of syntactic analysis.

Deep structure refers to a highly abstract level of language that represents the basic meaning of a sentence.

Bloomfieldian linguistics emphasized linguistic performance, what the speaker actually says, and what some linguists called the **surface structure**. At first, Chomsky emphasized linguistic competence, what the speaker subconsciously knows about his or her language, and what might be called the **deep structure**. Early Chomskian linguistics dealt with how the deep structure is transformed into the surface structure and how an infinite number of utterances can be generated from a finite number of rules and lexical items. For this reason, the Chomskian approach has been called a mentalist approach in which the subconscious knowledge of the native speakers of a language is emphasized. This is in contrast to the Bloomfieldian school, which emphasizes what is called the mechanistic approach; a rigid set of learned rules is used to form grammatical utterances. The mechanistic approach cannot explain many things that are explained by the mentalist approach. One of these things is productivity. The Bloomfieldian idea that language is learned by mimicry does not account for the fact that young children can produce utterances that they have never produced or heard before from a finite number of words. The mentalists' approach postulates that the human mind is like a software program designed to generate new sentences on demand.

In the 1980s, Chomsky introduced the principles and parameters theory. One problem with the concept of universal grammar is that languages vary so much in their surface structure. Or do they? The principles and parameters theory postulates that even though there is variation in languages, these differences have specific principles and parameters (limitations). For instance, modifiers, such as adjectives and adverbs, can come before or after the thing that they modify, but not several words away from what is being modified. So the language acquisition device is "programmed" to allow certain possibilities and not others. Children have to learn from the speaking environment which possibility fits their language.

In 1995, Chomsky further modified his concepts with the formulation of what is called minimalism (or the minimalist program). In minimalism, Chomsky maintains the concept that there is one single grammatical system for all languages, but eliminates the concepts of deep and surface structure as well as other features of earlier conceptualizations of syntax. Explanations of the details of this are beyond the scope of this text. There have always been competing theories of syntax; minimalism is quite controversial. See Chomsky's 1995 book to learn more; and Pieter A.M. Seuren's book offers critical analysis (see "Suggested reading" at the end of this chapter).

Although there are competing theories of syntax, Chomsky's ideas have been and continue to be very influential. One point of disagreement is that not all linguists, psychologists, or biologists believe that there is a language acquisition device in a physical sense (see Chapter 10). However, the discovery of the FoxP2 gene, which, if "defective," causes problems with the acquisition of language, points toward a genetic potential for the acquisition of language (see Chapter 1).

EXERCISE 3 Phrase structure rules

1. What are phrase structure rules?

_____

_____

_____

2. Write the phrase structure rules for all of the sentences in Exercise 1, Question 8.

   ***Example*:** He photographed the flowers.

   S → NP Aux VP

   NP → $\left\{\begin{matrix}\text{Pro}\\ \text{Det Noun}\end{matrix}\right\}$

   Noun → N pl

   Aux → Tense

   VP → V NP

3. Write the phrase structure rules for the following sentences, and then draw the phrase markers (tree diagrams) for each.

   a. You may sit on the fence.

   b. Six boys are playing quietly.

   c. The bad dog will bite the man.

4. Now combine the rules of individual sentences a., b., and c. into one set of general rules.

Transformational rules

Consider the following sets of sentences:

A1 The boy passed out the candy.
A2 The boy passed the candy out.

B1 Linguists often use large words.
B2 Large words are often used by linguists.

Each of the sets contains synonymous sentences. Yet the forms of sentences 1 and 2 of each set are different. The phrase markers used to represent these synonymous sentences would be different.

Transformational rules (T-rules) relate the spoken form of sentences (surface structure) to their underlying meaning (deep structure).

Transformational rules (T-rules) relate the spoken form of sentences to their underlying meaning. More technically, transformational rules relate the surface structure of sentences to their deep structure. There are many hypotheses about the importance or even the existence of deep and surface structure, as well as the importance and types of transformations. This section is included to provide background into how these ideas were originally used. For detailed discussions of the various concepts of syntax, see Andrew Carnie's book, listed in "Suggested reading."

Surface structure refers to an actual utterance that can be understood and broken down by traditional syntactic analysis. The deep structure was proposed in early generative hypotheses as a highly abstract level that represents the basic meaning of an utterance. Different surface structures may have the same deep structure, or different deep structures may have the same surface structure.

We intuitively judge sentences A1 and A2 to have the same deep structure. Yet the sentences take slightly different forms.

Passed out is an example of certain types of verbal expressions, called **phrasal verbs**, that include a **verbal base**, the main part of the verb, and a **verbal particle** (Prt), in this case a preposition. In the sentence

The boy passed out the candy,

passed out is the verb, *passed* is the verbal base, and *out* is the verbal particle. Verbal particles are part of the verb, yet they can be separated from the verbal base. Sentences A1 and A2 show that the preposition can occur on either side of the direct object noun phrase. However, in other sentences the preposition can be restricted to one side of the direct object noun phrase. In the following example, the verbal particle is restricted to the left side of the direct object:

A **phrasal verb** is a verb phrase consisting of a verbal base and a verbal particle. It can have an idiomatic or special meaning.

The **verbal base** is the main part of the verb.

Verbal particles are prepositions that co-occur with some verbs and can appear to the left or right of the direct object noun phrase.

C1 Please go over your homework tonight.

C2 *Please go your homework over tonight.

Of the two sentences listed in A, A1 might be judged to be more basic, since the verbal base and verbal particle are together. If we take this as our assumption, then sentence A2 is a transformed version of A1. The rule that relates sentences A1 and A2 to each other is the particle movement transformation. The rule takes this form:

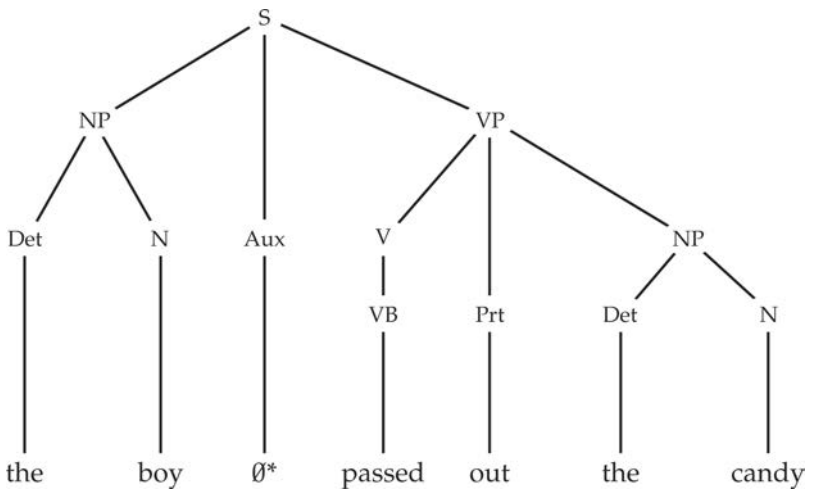
$$X_1 + VB + Prt + NP + X_2 \rightarrow X_1 + VB + NP + Prt + X_2.$$

In this notational system, X_1 is any element to the left of the verbal base (VB) and X_2 is any element to the right of the direct object noun phrase.

We can show the particle movement transformation with phrase markers.

Basic phrase marker

The diagram below shows a basic phrase marker.

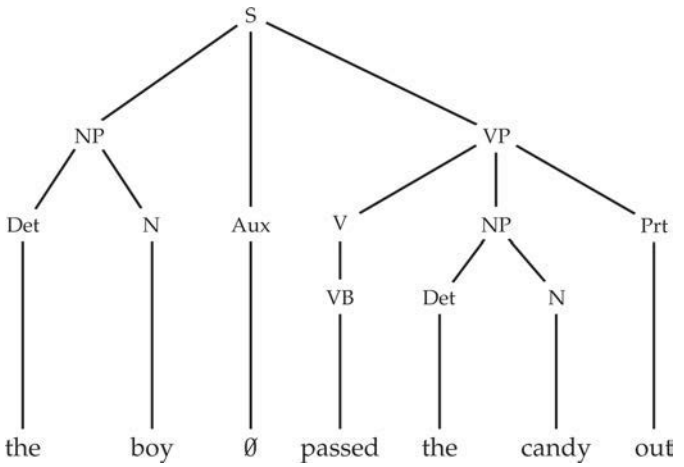


* The Ø means that the auxiliary is not represented by a word such as *will*. Instead the inflectional bound morpheme *-ed* takes the place of a word and indicates the concept *past tense*, just as the word *will* indicates future tense.

Derived phrase marker

A **derived phrase marker** is a phrase marker after transformational rules have been applied.

The phrase marker after the transformational rule has been applied is called the **derived phrase marker**.



Movement transformations The particle movement transformation not only explains the relationship between sentences A1 and A2, but also explains all similar sets. Some other examples of sentences related in this way are the following:

Anthony took off his shoes.
Anthony took his shoes off.

The students passed in their tests.
The students passed their tests in.

The particle movement transformation is only one of many movement transformations in which an element of the deep structure is moved from its position in the deep structure to another location.

Topicalization is another kind of movement transformation. The topicalization transformation creates a derived sentence with a different focus or emphasis than the basic sentence. The basic sentence

Topicalization is another kind of movement transformation. The topicalization transformation creates a derived sentence with a different focus or emphasis than the basic sentence.

I love Christine

can be transformed to

Christine, I love.

It would be written in abstract as:

$$X_1 + V + X_2 \rightarrow X_2 + X_1 + V$$

Other types of transformations

We have seen that transformational rules relate to sets of sentences that have the same element in different places within the sentences. Transformations explain three other processes in addition to movement rules:

- Deletion
- Insertion
- Substitution.

Deletion transformations A sentence that undergoes transformation must have the same meaning as the sentence from which it was derived. Transformations never change meaning. In the imperative sentence

You come here

the pronoun may be deleted. The derived sentence

Come here

has the same meaning as the basic sentence. This transformation is the imperative transformation.

Redundant elements in the deep structure of the basic sentence may also be deleted. For instance, in the sentence

If Stephen says he will study for the test, he will study for the test

all but the auxiliary of the second verb phrase can be deleted. The result is:

If Stephen says he will study for the test, he will.

This transformation is called the verb phrase deletion rule.

Insertion transformations Words inserted into a basic sentence may not add meaning to the basic sentence. In the sentences

A1 He knew she was here

A2 He knew that she was here

that is inserted in the second sentence. But *that* has no meaning. In this case, the addition of *that* is optional. However, consider the following:

B1 *He won the race is history.

B2 That he won the race is history.

Even though the meaning might be clear, B1 is not a grammatical English sentence. The *that* in B2 is a word inserted to introduce the noun phrase *he won*. Although *he won* is a grammatical sentence, here it is a part of the larger sentence. In sentence B2, *he won* is a NP that is the subject of the sentence. A sentence that is part of another sentence is called an *embedded sentence*. So *he won* is an embedded sentence, acting as a noun phrase in the larger sentence. The insertion of *that* to form a surface structure sentence is, not surprisingly, called the *that* insertion transformation.

Substitution transformations The only substitution transformations are those that substitute a pronoun for some other part of speech or syntactic category. For instance,

Anthony thought that Anthony was the best

becomes

Anthony thought that he was the best.

This substitution of a pronoun is a pronominalization transformation. Like all transformations, it does not change meaning.

Optional and obligatory transformations

As with phonological rules, transformations can be optional (stylistic) or obligatory. The particle movement transformation, topicalization rule, imperative transformation, verb phrase deletion rule, and pronominalization are all optional rules in English. They may or may not be applied.

In American Sign Language (ASL), the topicalization transformation is obligatory; the object is always signed first. In English, the *that* insertion rule as it applies to embedded sentences is obligatory. It must be applied to the deep structure to render a grammatical surface structure.

Another rule that is obligatory in English is yes/no question formation. Transformational grammarians assume that the deep structure of a yes/no question is similar to that of a declarative sentence, but with an abstract element labeled Q at the beginning of the sentence, as shown below. (The symbol # marks the beginning or end of a sentence.)

Q Aaron will eat his lunch

The form shown here is a deep structure that must undergo transformations to become a question at the surface structure. The transformation simply involves moving the first auxiliary verb to the left of the subject NP (NP + Aux + V + X ⇒ Aux + NP + V + X). The result would be the following:

Will Aaron eat his lunch?

In Japanese, a yes/no question is formed not by a movement transformation as it is in English, but by an insertion transformation. The suffix *-ka* is inserted on the end of a verb to form a question from a statement, but the order of the words is not changed:

Kyou (watashi wa) gakkou ni ikimashita.—(I) went to school today.

Kyou gakkou ni ikimashita *ka*?—Did you go to school today?

Sequences of transformations

So far, we have discussed deep structures that have undergone only one transformation to derive a surface structure. A deep structure may undergo many transformations. Consider the following two sentences:

Did the dog chase the cat?

The dog was blind.

A child may say these sentences separately, but most adults would say

Did the blind dog chase the cat?

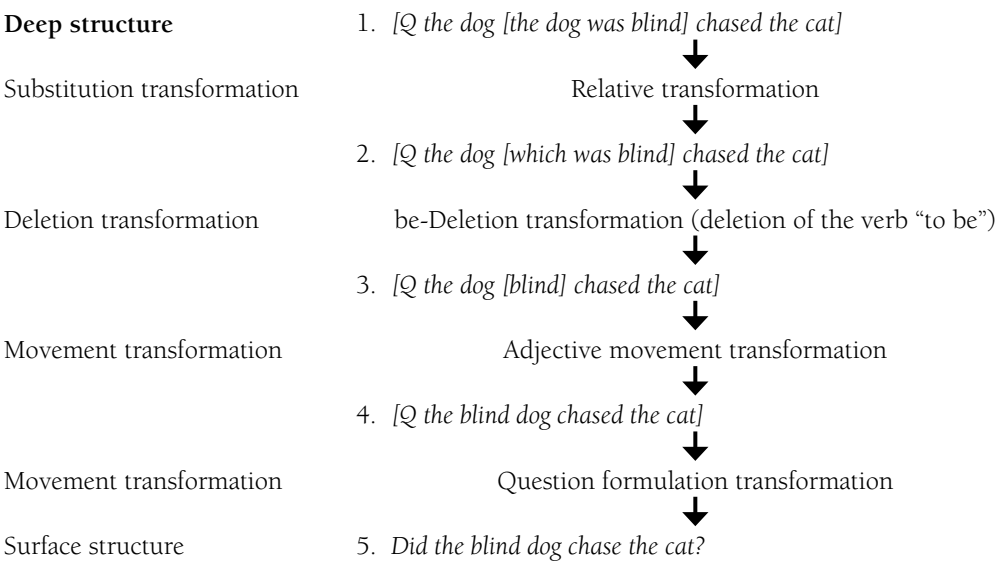


FIGURE 5-3 Transformation from deep to surface structure

Many transformationalists hypothesize that the deep structure of the adult utterance is similar to the child's use of two sentences. However, one sentence would be embedded in the next as:

[Q the dog [the dog was blind] chased the cat]

Then it could be proposed that a series of transformations would apply to change this deep structure into a surface structure, as shown in Figure 5-3.

EXERCISE 4 Transformations

1. Examine each of the following sets of sentences and determine whether a movement, deletion, insertion, or substitution transformation has occurred. The symbol ⇒ means a transformation has been applied.

a. # a girl was on a swing # ⇒ There was a girl on a swing.

b. # NEG Jessica will have gone to bed # ⇒ Jessica will not have gone to bed. (Negation is considered by some linguists to be the first thought that occurs in the formation of what will become a negative sentence. NEG symbolizes this negative thought.)

c. # Alma went to school early and Juan went to school early, too # ⇒ Alma went to school early and Juan did so, too.

d. # you will leave my house # ⇒ Leave my house!

e. # the fish, who is fat, swims slowly # ⇒ The fat fish swims slowly.

2. The names of transformations are relatively descriptive. First, can you guess the names of the transformations in Question 1, parts a. through c.? What are the names of the transformations in Question 1, parts d. and e.? (Check the text.) Second, describe what each transformation does.

a. _____

_____

_____

b. _____

_____

_____

c. _____

_____

_____

d. _____

_____

_____

e. _____

_____

_____

3. Label a. through e. as being either optional or obligatory.

a. _____

b. _____

c. _____

d. _____

e. _____

Grammaticality judgments and ambiguity

As with all levels of language—phonetic, phonological, morphological, and semantic—the syntactic level is rule-governed. The rules that govern each of these levels or systems are often subconsciously known.

Fluent speakers of a language possess enormous subconscious knowledge, known as linguistic competence, of the rules of their own language. There is more knowledge of language in the mind of a fluent speaker than in all the grammar texts combined. On the other hand, we know nothing about the rules of a language we do not understand. A foreign language, although governed by rules just as our language is, may sound like gibberish to us. We do not know where one word ends and another starts, let alone anything more complex. In other words, we have an enormous competence for languages in which we are fluent and none for languages we have not learned. Even universal features of language will not be recognized in a language that we do not understand.

What subconscious knowledge do we have about the syntax of our own language and languages we have learned? A fluent speaker of a language knows whether or not an utterance is complete; that is, whether or not it is missing an obligatory component or not. A fluent speaker will also know about proper word order, the proper relationship of words, and will often recognize ambiguous utterances.

A **grammatical (well-formed)** sentence is one in which the sequence of words conforms to the syntactic knowledge (rules) of native speakers of a language.

If you are a fluent speaker of a language, your subconscious knowledge allows you to produce **grammatical** or **well-formed** sentences. A sentence is grammatical if the sequence of words and the relationship between words conform to the syntactic knowledge (rules) of fluent speakers of a language and if the sentence contains all of its required components.

An **ungrammatical (ill-formed)** sentence is one in which the sequence of words does not conform to the syntactic knowledge (rules) of fluent speakers of a language.

A fluent speaker also will immediately recognize that certain sentences are **ungrammatical** or **ill-formed**. A sentence is ungrammatical if the sequence of words and the relationship between words do not conform to the syntactic knowledge (rules) of native speakers of a language or if the sentence does not contain all of its required components. You cannot just randomly arrange lexical items to create a sentence.

Grammaticality judgments about completeness

*That house not pretty.

Any fluent speaker of English would recognize this sentence as being incomplete. Furthermore, a fluent speaker could easily say why it is incomplete. There is no verb. The corrected sentence might read

That house is not pretty.

All English sentences include a verb. The necessity for a verb is one of the more consciously known rules of English syntax.

Although all languages have nouns and verbs, not every language requires a verb in every sentence.

[gwa? a kari kaa tutu?uli]

is a Yaqui (Native American language) sentence that loosely translates to *that house not pretty*. There is no verb in the Yaqui sentence, yet it is a grammatical sentence in Yaqui. *That house* is the subject of this simple sentence, and *not pretty* is an adjective phrase that acts as a comment (predicate) about the subject of the sentence.

Some words must occur with another word. For instance, the verb *holds* in some contexts needs another word to complete its meaning. The following is not a grammatical sentence:

*The boy holds.

The word *holds* is a transitive verb. Transitive verbs require a direct object. Thus, the following sentence would be complete:

The boy holds a ball.

Intransitive verbs do not take direct objects.

Grammaticality judgments about word order

Just as English speakers would recognize

*That house not pretty

as an incomplete sentence, they would recognize

*You had early get up wanted

as not being the correct English word order. Yet, that is the word-to-word translation of the German sentence

Du hattest früh aufstehen wollen.

Word-order rules are relative to each language. In English, looking at just the verb, we can see that in a complex construction like

had wanted to get up early

the word order can be analyzed as follows: helping or auxiliary verb (*had*), verb (*wanted*), verb complement (*to get up*), adverb (*early*). In German, the word order is: helping or auxiliary verb (*hattest*), adverb (*früh*), main verb (*aufstehen*), modal verb (*wollen*).

In a simpler sentence, such as

He sees a man

Er sieht einen Mann,

English and German display the same word order. Both languages in this case display the word order subject-verb-object (S-V-O). French, Thai, Swahili, and many other languages display this general S-V-O word order. Others may usually have an S-O-V word order, as in Bengali, Turkish, Persian, Japanese, and Navajo. Still other languages may display V-S-O (Tagalog, Irish, and Welsh), V-O-S (Fijian and Malagasy), O-V-S (Carib, a language from Brazil), or O-S-V (Xavante of Brazil) word orders. Also, a few languages, such as some indigenous languages of Australia, allow the speaker flexibility in the choice of word order.

Linear word order is the specific sequence that different types of words follow.

S-V-O refers to a sentence's **linear word order**, the specific sequence that different types of words (lexical categories) follow. Linear word order is often specific for the type of sentence. For instance, the S-V-O word order of English describes declarative sentences, but not interrogative (question) sentences. In the interrogative sentence

Did he see a man?

the helping (auxiliary) verb is at the beginning of the sentence.

Case indicates the function of nouns, pronouns, and adjectives within a sentence and the relationship of these words to verbs and other words within the sentence.

Case indicates the function of nouns, pronouns, and adjectives within a sentence and the relationship of those words to verbs and other words within the sentence. In English and other analytic languages, linear word order alone usually indicates the grammatical function of a word (its case). In the sentence

Dogs chase cats

dogs is the subject of the sentence (nominative case) by virtue of its placement before the verb. If the sentence was

Cats chase dogs

cats are doing the chasing and the word *cats* is the subject of the sentence. In addition to placement in the sentence, the form of the word or an inflectional morpheme might indicate its case. In English, *I*, *me*, and *my* have the same meaning; that is, "the person speaking or writing." The form *I* indicates that the person is the subject of the utterance (nominative case); the word *me* indicates that the person is the object of the verb or preposition (accusative case), and the word *my* indicates the possessive or genitive case. With a word such as *Jack's*, as in

This is Jack's coat

the insertion of the inflectional bound morpheme *-'s* indicates the possessive case. The word *Jack's* means "belonging to Jack." For a plural noun such as *boys* the possessive is indicated by *-s'*; *boys' toys*.

Old English (449–1100 CE), Latin, and many modern languages have many more inflectional bound morphemes to indicate case. Modern English has just two, *-'s* and *-s'*. In fact, in languages that have many case endings, linear word order is not always important to indicate case. The inflectional morpheme alone tells what the function of the word is in the sentence. For example, the Latin word *domus* means *house*. The *-us* marks the word as being the nominative case (singular), meaning that it is the subject of the verb. If the word ends in the bound

morpheme *-i* (*domi*), it is in the singular genitive case (*of the house*). An *-o* bound morpheme marks the word as being singular and in the dative case (indirect object). So *domo* could mean *to the house*. The morpheme *-um*, as in *domum*, marks the singular accusative case (direct object); so *domum* would mean *house* in the sentence *He bought the house*. (Each case also has a distinct ending for the plural.) The word *domus* would be the subject of the sentence regardless of its position in a sentence. The word *domo* would be the indirect object whether or not it was at the beginning, middle, or end of the sentence. And the word *domum* would be the direct object no matter the word order of the sentence.

Grammaticality judgments about word combinations

Some lexical categories of words can occur together and others cannot. For instance, "the looked" is not a possible combination of words in English. The articles *a*, *an*, and *the* do not occur before verbs. Articles occur before many types of nouns or a gerund. A gerund is a verbal form ending in *-ing* and it acts as a noun. An example would be "the *running* of the Kentucky Derby."

Adverbs are not used to modify nouns. So, a fluent speaker of English would find the following sentence ungrammatical: **The quickly person is home.* Other classes of words only co-occur with other specific categories of words. For instance, *will* or *may* only occur with certain types of verbs.

Whereas transitive verbs require a direct object, intransitive verbs such as *to fall* never take a direct object. (See the discussion on co-occurrence restrictions in the "Labeling the constituents of a sentence" section earlier in this chapter). Thus, the following sentence is grammatical:

Jack fell.

However, this following sentence is ungrammatical:

*Jack fell the stairs.

Intransitive verbs either end a sentence or combine with (are modified by) a prepositional phrase, an adverb, or an adverb phrase. So the following sentences would be grammatical:

Jack fell down the stairs.

Jack fell quickly.

Jack fell very quickly.

Some verbs may or may not take a direct object. The verb *to drink* is an example of a verb for which a direct object is optional. Both of the following sentences are grammatical.

Annie drank.

Annie drank milk.

Grammaticality judgments: several nonfactors

Grammaticality of an utterance is not based on whether or not you have heard that utterance before. Language is productive (Chapter 1), so that most of the sentences you create and hear or see (if written or signed) you have not experienced before. Also, the grammaticality of an utterance does not depend on whether you understand the words in the utterance or not. You might not understand the sentence *Polystyrene microbeads can be coated with a specified sensing ligand.* However, this sentence is grammatical and would be understandable to a person who knew the meaning of all of the words. The opposite is also true. You might understand the

meaning of a sentence that you judge not to be grammatical. Consider the sentence *The people is in the room.* This sentence is understandable but ungrammatical. Grammaticality does not depend on factualness. The sentence *The president of the United States is a three-year-old cat* is grammatical, but not factual.

The grammaticality of an utterance is not based on whether or not the utterance makes sense. A fluent speaker might even judge a sentence or longer utterance as being grammatical if it contained nonsense words. Lewis Carroll was famous for his nonsense language poem "Jabberwocky." The following well-known passage from Carroll's *Through the Looking-Glass and What Alice Found There* (1872) illustrates his ability to create an utterance that would be judged as grammatical by many English speakers (and probably Jabberwocky speakers, too), even though it is built in large part on nonsense words.

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

Ambiguous sentences

In addition to making grammaticality judgments, fluent speakers usually can detect ambiguity in a sentence. A sentence is ambiguous if it has more than one meaning. Can you see why the following sentence is ambiguous?

The women appealed to all men.

Lexical ambiguity or **polysemantic ambiguity** refers to the situation in which a word or phrase can refer to more than one meaning.

Here, *appealed* is the problem: Does it mean *were desirable* or *pleaded*? Such ambiguity, which involves a word that has more than one meaning, is called **lexical ambiguity** or **polysemantic ambiguity**. Lexical ambiguity is often consciously used to form puns, such as

Fish are really smart. They always are found in schools.

Lexical ambiguity is a semantic problem, and we will discuss it further in Chapter 6. When the constituents of a sentence can be organized in more than one way, we refer to **structural ambiguity** or **syntactic ambiguity**. The following sentence can be organized in two ways:

Structural ambiguity (or **syntactic ambiguity)** exists when the constituents of an utterance can be arranged in more than one way, yielding more than one meaning.

Chris owns large dogs and cats.

This is ambiguous because it can mean

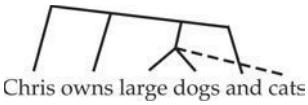
Chris owns large dogs and cats (of any size).

Here, *large* is linked to *dogs* but not to *cats*.

Or it can mean

Chris owns large dogs and large cats.

Here, *large* is linked to both *dogs* (solid line) and *cats* (broken line). This kind of ambiguity involves structural semantics, which we will discuss in Chapter 6.

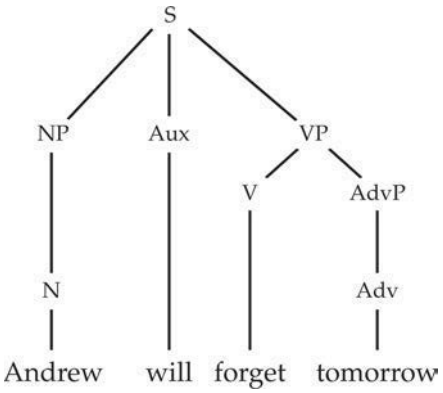


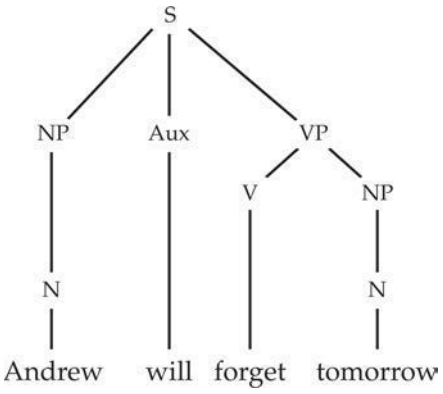
Still another type of ambiguity occurs when neither words nor structure are ambiguous, but various constituents can be labeled as different parts of speech or lexical categories. This is called **part-of-speech ambiguity**. Examine the following sentence:

Part-of-speech ambiguity exists when a word in an utterance could be interpreted as belonging to different lexical categories; for instance, the word could function as either a noun or a verb.

Andrew will forget tomorrow.

The sentence can mean that by tomorrow Andrew will forget something, or that Andrew will forget a specific day or event that is here labeled as *tomorrow*. Note that *tomorrow* has the same basic meaning in each interpretation and that the constituents of the sentence cannot be organized in more than one way. The ambiguity stems from the fact that *tomorrow* can be an adverb modifying *will forget*. It answers *when* Andrew will forget. Or it can be a noun. In this case, it is the object of the verb *forget*, and tells what is going to be forgotten. It is easier to see the possible arrangement of constituents in a phrase marker. The sentence could generate the following two phrase markers.





Notice that these diagrams are the same except for the function that *tomorrow* serves in the two sentences.

In addition to usually being able to detect when an utterance might be interpreted in more than one way (be ambiguous), native speakers of a language also know when words or sentences of the languages that they know mean the same or different things. No one will confuse

I am going to the ball game

with

Your house is on fire.

EXERCISE 5 What we know about our language

1. What is wrong with each of the English sentences below? Are there word order, word relationship, incompleteness, or ambiguity problems, or a combination of problems? Correct each sentence.

***Example*:** He had too much work had.

The linear word order is incorrect. The sentence should read: He had had too much work.

a. The cat a jumped over the highly fence.

_____

_____

b. You can't put too much water on those plants.

_____

_____

c. Not that is dog.

_____

_____

d. The jail was near the bank.

_____

_____

e. He saw the light.

_____

_____

f. Steve Tom at looked.

_____

_____

g. They intend to buy.

_____

_____

h. Into he house ran.

_____

_____

2. What type of ambiguity is involved in the following sentences? In some cases, there will be more than one type of ambiguity in a sentence.

a. One morning I shot an elephant in my pajamas. How he got into my pajamas I'll never know. (This is a joke told by Groucho Marx.)

_____

_____

b. She cannot bear children.

_____

_____

c. He liked hot beef and turkey.

_____

_____

d. He has polished shoes.

_____

_____

e. The panda eats shoots and leaves. (This is the source of the title of a popular book.)

_____

_____

f. Fruit flies like bananas.

_____

_____

3. Fully explain why the following sentences are ambiguous.

a. The biology student drew blood.

_____

_____

b. There is a big earring sale today.

_____

_____

c. You can freeze chicken for a year, but when you defrost it, it will be /fawl/.

_____

_____

d. He likes to eat raw vegetables and meat.

_____

_____

e. Want Ad: We need a violinist and pianist, male or female. Response: Hear you need a violinist and pianist, male or female; being both, I offer my services.

4. For each of the following, provide two additional examples.

a. Lexically ambiguous sentences

_____

_____

b. Structurally ambiguous sentences

_____

_____

c. Sentences that are structurally ambiguous because a constituent can function as different parts of speech

_____

_____

Synonymous sentences

We can also distinguish when two sentences have the same meaning. This can simply be due to the sentences using two different words for the same thing. For example,

Felines are more fastidious than canines

should be interpreted as meaning the same as

Cats are cleaner than dogs.

These sentences are synonymous because of word synonymy; *feline* and *cat* are generally synonymous, as are the word pairs *cleaner* and *more fastidious* and *canine* and *dog*. (They can carry some different connotations.) You will also know that the following sentences are synonymous:

Linguists often use large words.

Large words are often used by linguists.

Although it seems like a simple matter to recognize this synonymy, it is a complex mental skill. Here, we have two sentences that you may have never read or heard before. The first sentence is in the active voice and the second one is in the corresponding passive voice. Yet you understand that both are synonymous. This illustrates the productive feature of language.

Other sentences for which words have been reorganized turn out not to be synonymous for various reasons. A sentence used earlier

Andrew will forget tomorrow

loses one of its possible meanings if reorganized to its passive form:

Tomorrow will be forgotten by Andrew.

And a sentence such as

The dog ate a biscuit

becomes nonsense if rearranged as

A biscuit ate the dog.

Note that from a structural point of view, *A biscuit ate the dog* is a sentence. Sentences do not have to be true or logical to be sentences.

Also, a component of a sentence might lead to more than one type of ambiguity. The sentence

The French student was late to class

is generally ambiguous for structural reasons. The sentence could be restructured as

The student taking French was late to class

or

The student from France was late to class.

But the word *French* also has two slightly different meanings. In one case, it refers to the French language; in the other it refers to the people from France. So the original sentence is characterized by both structure and lexical ambiguity.

Both ambiguous utterances and synonymous utterances can be explained in terms of the concept of deep and surface structure. With ambiguous utterances, the same surface structure is being derived from different deep structures. Synonymous utterances are derived when a specific same deep structure can result in two or more surface structures because of different transformations that took place to get to the surface structure.

EXERCISE 6 Synonymous sentences

Below are two pairs of synonymous sentences. Why are the sentences in each pair synonymous (or nearly so)? And in what way do the pairs differ from each other in the way they create synonymy?

Pair 1

1a. My psychiatrist thinks that I am mentally ill.

1b. My shrink thinks that I am nuts.

_____

_____

_____

Pair 2

2a. The will mentioned seven heirs.

2b. Seven heirs were mentioned in the will.

_____

_____

_____

Summary

The study of grammar is the study of the rules of language. Language is a system of symbols that is rule-governed. Language is also a multilevel system of rules. Although most people see grammar as synonymous with the study of sentence structure and other forms larger than words, this is only one level of grammar, called syntax. Syntax is the study of the rules to combine morphemes and words into linguistic units larger than words; morphology is the grammar of words; phonology is the grammar of speech sounds.

A sentence can be defined by its structure (the number of independent and dependent clauses it contains) or by its function (declarative versus imperative, for example). A sentence can also be either active or passive. A clause has both a subject and a predicate; a clause that cannot stand by itself as a sentence is called a dependent clause. A phrase is any constituent of a sentence that does not have both a subject and a predicate. Phrases are named after their main constituent, the head of the phrase, such as a noun. Phrases serve various functions in a sentence. For instance, a noun phrase may be the subject of the sentence, the object of a verb, and so on.

In the 1950s, Noam Chomsky revolutionized the study of syntax with his concept of transformational-generative grammar. This idea states that before we speak we have formulated an idea of what we are going to say. Universal grammar, a basic prewiring of the brain that predisposes all people to encode experiences linguistically in a specific way, converts those ideas into phrase structure rules. The universal phrase structure rules lead to the deep structure. To be understandable to others, the deep structure must be encoded into the specific grammar of the language that one speaks. Once the experience is encoded in the deep structure, it is transformed by moving, deleting, substituting, or inserting various elements until a grammatical utterance is formed (surface structure). The same deep structure will therefore have different surface structures in different languages, or even within the same language, depending on the style of the speaker or the circumstance under which the utterance is spoken.

There have been numerous offshoots of Chomskian linguistics, and Chomsky himself made alterations to his earlier ideas, including substituting other concepts for deep and surface structure. In 1995, he published *The Minimalist Program*, in which he made additional changes to his previous hypotheses about language, including dropping the concept of deep and surface structure. His ideas about language continue to evolve, as do nongenerative alternative hypotheses such as cognitive-functional linguistics that is discussed in Chapter 10, and challenges some of the most basic hypotheses of generative grammarians.

Fluent speakers of a language possess a linguistic competence that usually lets them make grammatical judgments about whether or not the rules of the language are being followed when a person is speaking to them. This is how we detect a person as being a foreign speaker. Sometimes foreign speakers will not use a complete sentence. They may leave out a verb or a preposition, for instance. In these cases, they are often using second-language words combined with the grammar of their first or native language. They may also use the wrong word order because word order differs in different languages. They may not understand idioms or why something that they said is ambiguous. The fact that fluent speakers of a language can usually detect deviations from grammatical rules is proof of the rule-governed nature of language.

Suggested reading

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Guide to Grammar and Writing: http://grammar.ccc.commnet.edu/grammar. This popular site is a tutorial on English grammar.
Noam Chomsky Archive: www.zmag.org/chomsky. This is a site that provides links to articles, interviews, books, and other information on Noam Chomsky and his hypotheses.

Review of terms and concepts: syntax

1. Syntax is the study of _____.

   _____.

2. A constituent is _____

   _____.

3. The two main constituents of a sentence are called the _____ and the

   _____.

4. A sentence that consists of only one subject and one predicate is called a _____

   _____.

5. A compound sentence is made up of _____.

6. A simple sentence that is part of a compound sentence is also called _____

   _____.

7. It takes at least _____ (number) of Question 6 to make a compound sentence.

8. In the sentence *Since it is noon, we will have lunch*, the first clause is called _____ and the second clause is _____.

9. A sentence that contains two or more independent clauses and at least one dependent clause is called a _____.

10. Label each of the following sentences as to whether they are active (A) or passive (P), and whether they are simple (S), compound (C), complex (X), or compound-complex (C-X). Also, label the sentences as to whether they are declarative (D), interrogative (I), imperative (IM), or exclamatory (E).

***Example*:** Did the cat jump over the fence?

Answer: A, S, I.

a. Bill is here. _____

b. The ball was caught. _____

c. Jack and Jill went up the hill. _____

d. Oh no, Jack and Jill went up the hill! _____

e. Did Jack come tumbling down? _____

f. Wow, I got an A and now I will be able to go to Harvard, if my parents come up with the money! _____

g. The pilot looked at the new plane. _____

h. The new plane was looked at by the pilot. _____

i. Did the pilot look at the new plane and was he satisfied with it? _____

11. A phrase is _____.

12. List the five types of phrases discussed in the text and give three examples of each.

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

e. _____

_____

13. Define the following:

a. linear word order _____

b. tree diagram _____

c. word synonymy _____

d. lexical ambiguity _____

e. structural ambiguity _____

14. A co-occurrence restriction is _____.

15. What does the term *hierarchical structure of language* mean? _____

16. Explain the terms *linear word order* and *hierarchical structure* using the following sentence: *The big car turned the corner*.

_____

_____

_____

17. What are phrase structure rules?

_____

_____

_____

18. Define *generative grammar*.

_____

_____

_____

19. What is the recursive property of language?

_____

_____

_____

20. What is a transformational rule?

_____

_____

_____

21. Define *deep structure* and *surface structure*.

_____

_____

_____

22. What are the four basic types of transformations?

a. _____

b. _____

c. _____

d. _____

23. A sentence is grammatical if

_____

_____

_____

24. Grammatical judgments are not based on

_____

_____

_____

End-of-chapter exercises

1. Draw a phrase marker for the following two simple sentences:

   a. The dog with big teeth bit the ball.

   b. The dog ran into the house.

2. How would you combine the two simple sentences above into one compound (cojoined) sentence?

   a. Would you eliminate anything?

   b. Would you add anything?

   c. Write the combined sentence.

3. Write phrase structure rules that will generate the two sentences above.

4. Since the 1950s, the concept of generative grammar has gone through a number of stages and has spawned numerous competing concepts, many of which reject some or all of the basic hypotheses proposed by generative grammarians. Do library and Internet research to create an outline of the different concepts that have arisen in the past sixty years in the area of syntax.

CHAPTER 6

Semantics: the study of meaning

LEARNING OBJECTIVES

- **Explain what it means to mean something.**
- **Explain the basic difference between the related fields of semantics and pragmatics.**
- **Explain what is meant when we say that a language is a code and a symbol system.**
- **Define lexical semantics.**
- **Explain the concept of semantic properties as they relate to words.**
- **Describe how the components of meaning are analyzed.**
- **Name words that mean the same or sound the same.**
- **Name what it is called when rules regarding the meanings of words are broken.**
- **Explain the difference between lexical and structural semantics.**
- **Explain the difference between entailment and presupposition and give examples of each.**

Semantics within the field of linguistics is the study of the meaning of linguistic expressions, such as morphemes, words, phrases, clauses, and sentences.

Pragmatics is the study of the effect of context on meaning.

A **symbol** is something, a word, a gesture, or other representation that signifies or represents something else that is not intrinsically (causally) related to the symbol. In other words, the symbol is an arbitrary representation of what it represents.

Semiotics is the study of signs and symbols as they function in communicative behavior. Studies in semiotics are undertaken in many fields of study—including semantics, pragmatics, syntax, computer science, art—as well as in any other field that studies human behavior.

Semantics within the field of linguistics is the empirical study of the meaning of linguistic expressions, such as morphemes, words, phrases, clauses, and sentences. Elements of nonverbal communication can also be studied for their semantic properties (see Chapter 13). Meaning in semantics includes but is not limited to dictionary-type meaning. For instance, if a student talking to a friend says "I failed the test, great!", *great* almost certainly does not mean any of the definitions listed in the dictionary. The student is using irony to convey the opposite meaning of the word *great*. The dictionary meaning of the word is not the same as the speaker's meaning of the word in this utterance. There are many other ways the dictionary meaning or meanings of a word might not match the speaker, signer, or writer's meaning of that word. We will discuss some of these later in this chapter.

Often semantics is narrowly defined as the meaning of expressions divorced from the context in which these utterances are produced, and from various characteristics of the sender or receiver of the message. The study of meaning derived from context and features of the communicators is called **pragmatics**. Although the line between semantics and pragmatics is often blurred and often they cannot be separated, this chapter deals with basic concepts of semantics, and the next chapter will cover basic concepts of pragmatics.

Language is a system of symbols

A language is a code (see Chapter 1). Codes are made up of individual units arranged into a hierarchy of larger units. In terms of oral language, sounds make up morphemes, which make up words, which make up phrases, which make up clauses, which make up sentences, and so on. The same is true for sign language and writing, except for the element of sound.

There are many definitions of the words *sign* and *symbol* and many ways to classify symbols and related concepts. The study of signs and **symbols** is called **semiotics** and it is well beyond

the scope of this text to discuss this field in any detail. (For that detail, see the references to semiotics in the suggested readings and websites at the end of this chapter.) Here we will define a symbol as something, a word, a gesture, or other representation that signifies or represents something else that is not intrinsically (causally) related to the symbol. The symbol could signify a person, place, or object or it could represent something more abstract such as an idea, a value, a belief, or a relationship. The symbol is not the thing that it represents. The thing signified by the symbol can be distant in time and place from the symbol. For instance, we can use symbols to discuss a vacation we took five years ago.

Because there is no causal relationship between the symbol and what it represents (means), the symbol is free to be anything. The meaning of the symbol and what it signifies must be learned. The concept "stop" can be represented by the oral word for the concept *stop*, a sign language symbol for *stop*, a written word that signifies *stop*, a graphic symbol used in a traffic sign, and so forth. Because the symbol is not the thing that it signifies and has no direct relationship to it, the symbol can be used to create real or prevaricated concepts (see Chapter 1). For instance, symbols can represent abstractions, such as various concepts of *love*, or things that do not exist in the real world, such as *unicorns*.

Most nonhumans do not use symbols to communicate, or when they do, they are highly limited in the number of symbols they use and the way in which they use them. An example is apes in experimental situations, as discussed in Chapter 1. Put another way, a nonhuman is most likely to react to an **index** (signal) rather than a symbol. An index has a causal relationship to what it indicates. For instance, a male baboon is attracted to a female baboon because of certain visual changes in her body when she is ovulating or about to ovulate. The visual changes in her body are indices that she is sexually receptive based on what is happening in her body. The male baboon does not have to learn the meaning of the indices; nor does the female have to learn how to make them happen. The signals are produced biologically and the reaction to them is innate.

An **index** (plural: indices) is a signal (signifier) that is in some way directly connected to what it signifies. It might be causally connected or physically connected to what it signifies.

Humans also react to some innately produced signals (indices), but the vast majority of human communication is symbolic and is learned. All words and larger linguistic constructions are symbolic.

There are two general ways in which linguistic symbols are studied in semantics. **Lexical semantics** deals with the meaning of words and **structural semantics** deals with the meaning of utterances larger than words. We will start with lexical semantics.

Lexical semantics is the branch of semantics that deals with the meaning of words.

Structural semantics is the branch of semantics that deals with the meaning of utterances larger than words.

EXERCISE 1 Linguistic symbols

1. Answer these questions about the graphic symbol ❤.
   a. What is the concept that it represents _____?
   b. How is it represented in sound _____? (You should speak it out loud.)
   c. How can you represent these sounds in the phonetic alphabet _____?
   d. How would you represent this concept in standard orthography _____?
2. Answer these questions about the word represented in standard orthography by the letters WALK.
   a. Draw the graphic symbol used in traffic signs for this concept _____.
   b. Explain how it is represented in sign language _____.
   c. How can you represent this word in the phonetic alphabet _____?
   d. How is it represented in sound _____? (You should speak it out loud.)

3. Answer these questions about the word represented in sound by the phones /kæt/.
   a. How is it represented in sound _____? (You should speak it out loud.)
   b. Draw a picture that represents this concept _____.
   c. How would you represent this concept in standard orthography _____?
4. Think of a person, place, object, or concept. Say the oral symbol (word) that represents it out loud; write it in standard orthography; draw a visual symbol to represent it; create a gesture or describe the ASL sign to represent it.
5. You notice smoke coming from under a door in a house. You immediately react to the sight of the smoke by leaving the house or taking some other action. Is the smoke in this example a symbol or index of fire? Explain your answer and give at least two other examples of the type of relationship exemplified by the relationship of smoke to fire.

The meaning of words: lexical semantics

The **lexicon** is the mental dictionary each person has that contains the definitions of all the words that person knows.

We can imagine that in each person's brain there is a **lexicon** or dictionary containing the definitions of all the words that person knows. When a person hears an utterance, he or she quickly scans their mental lexicon for the meaning of those words, and then interprets them. Similarly, when a person has a concept to express in an utterance, that person scans their lexicon for the appropriate words to use in the utterance. But there are different types of meaning that words can have.

A **referent** is the actual concrete item or concept to which the word refers.

First, some words have an actual concrete item or concept (idea, action, or state of being) that the word refers to in the real world—its **referent**. Consider the sentence:

Bill studied.

In this sentence, *Bill* is a person in the real world and *studied* is a real action. The referent for *Bill* is the specific person who is being referred to in the sentence. The referent of *studied* is the act of studying.

The **referential meaning** of an utterance describes the referent, an action, or a state of being.

The **referential meaning** describes the referent. The referential meaning of a word is its definition. Sometimes the word *dog* means a particular canine that the speaker has in mind, as in the sentence:

Your dog is barking.

In this sentence, the referent is a particular dog (*your* dog), and the referent of *your* is a particular person whose dog is being referenced. However, consider the sentence:

A dog is a good pet for a family with children.

In this sentence, the referent for *dog* is the concept of a typical dog, the mental image that the typical English speaker has in mind when the word *dog* is spoken.

Words can also refer to such prevaricated things as Santa Claus, mermaids, or Mickey Mouse, which do not exist in the real world but which exist as a mental image for English speakers because of their cultural symbolic representation.

Sense is the extended meaning of a word or phrase that, in context, clarifies the referent.

And of course there are abstract concepts such as *love*, *truth*, and *justice* that do not have concrete referents. However, they are meaningful to English speakers because we understand their **sense**, which is an additional meaning beyond referential meaning. We may debate their fine points, but we all have a feeling that we know what they mean. They conjure up a mental image in the mind of the typical English speaker. English speakers understand the meaning

of these abstract terms just as they understand terms with concrete referents. Sense allows us to understand words that have no concrete referent. We learn the referential meaning of words, the meaning of words without a concrete referent, and any extensions of those meanings through language socialization—our exposure to the people using language around us.

Sense also allows us to understand the distinction between two phrases that have the same concrete referent. In the statement

Dr. Eisenlauer is our resident archaeologist

both the phrase *Dr. Eisenlauer* and the phrase *our resident archaeologist* refer to the same person; therefore, they have the same concrete referent. But the sense of each phrase is different; therefore, it is not like saying

Dr. Eisenlauer is Dr. Eisenlauer

or

Our resident archeologist is our resident archaeologist.

Sentences like these also illustrate another distinction in semantics, which occurs between reference and meaning. While both of the phrases above have the same referent, they do not have the same meaning. In fact, English proper names refer to a person, but their meanings are obscured in history and tradition. It is not uncommon for individuals to be unaware (or only vaguely aware) of the historical meaning of the words that make up their proper name. (See Chapter 4, Box 4-3, "The Etymology of Given Names.")

Second, there are words that do not have a referent, but instead express relationships or characteristics, as in the following sentence:

He is the teacher of the class.

The words *he*, *teacher*, and *class* in this sentence have concrete referents. But what about the words *is*, *the*, and *of*? These are words that have no referent and conjure up no mental image. Their meaning, or rather their usage, tells us about the relationship of one word to another. (Foreign language students often have difficulty in learning these small words.) Consider how the meaning of the sentence changes when the small words change.

He is a teacher of class.

He was the teacher of a class.

He is the teacher of a class.

*He teacher of class.

Additionally, what is the meaning of the word *he*? The personal pronouns—such as *I, you, he, she, it*, and *they*—have concrete referents when they are used in a sentence. But those referents are **shifting referents**, which are different for each speaker and each sentence. The word *he* in the preceding example has a concrete referent. But without more information, we don't know what that referent is. Usually that information is supplied in the sentence uttered or written before the one containing the pronoun. For example, one student might say to another before the semester begins:

Shifting referents are referents that are different for each speaker and each sentence. Pronouns have shifting referents.

Are you taking anthropology with Mr. Stein? He is the teacher of the class.

Now we know that *Mr. Stein* is the concrete referent for the word *he* in this sentence. However, in other sentences the referent for the word *he* will not be Mr. Stein, but another man or boy. (We will discuss this in the next chapter—"Pragmatics.")

EXERCISE 2 The referents of pronouns

1. Which words in the following sentences have concrete but shifting referents?

   a. I am going to eat lunch.

   _____

   b. You look nice today.

   _____

   c. He was late for class.

   _____

   d. We are busy tonight.

   _____

   e. They have a new car.

   _____

2. Now write an introductory sentence for each of the sentences above that makes the referent clear.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

Semantic properties of words

Semantic properties are the elements of meaning that make up the lexical entry of the word in the speaker's mind.

One of the ways in which the meaning of a word can be analyzed is by determining its **semantic properties**. These properties are the elements of meaning that make up the mental image of the word in the mind of the speaker. In fact, in the previous paragraph the words *man* and *boy* can be the referent for the pronoun *he* because all of those words have semantic properties in common. Those semantic properties are "maleness" and "humanness."

Consider the other semantic properties of each word:

man—male, human, adult

boy—male, human, child.

By analyzing their semantic properties, it becomes clear that the difference between the meanings of the two words is the individual's age or stage of life. The same person will, at different times of his life, be a boy and a man.

The semantic properties of a word are often analyzed by using a system of + and –, in a similar way to distinctive feature analysis discussed in Chapter 3. In the field of semantics, it is called semantic property analysis. So this example could be written:

	Man	Boy
[adult]	+	–
[male]	+	+
[human]	+	+

Of course, there is more to the meaning of words than simply the sum of their semantic properties. In the sections that follow in this chapter, we will discuss various facets of meaning, such as denotation, connotation, affective meaning, and social meaning.

EXERCISE 3 The semantic properties of words

1. What are the semantic properties of the following words?

a. woman—girl

_____

b. mother—father

_____

c. sister—brother

_____

d. car—bicycle—motorcycle—bus—truck

_____

e. cat—dog—goldfish—parakeet—hamster

_____

2. Write a chart using the + and – system to show the semantic properties of each set of words in a. through e.

Words that have shared semantic properties

Consider the semantic properties of the word *tree*. It is a plant that is tall (in comparison to other plants), has a trunk, and is long-lived (also in comparison to other plants).

Words that share semantic properties can be considered a **semantic domain**. The domain of "trees" includes such words as *oak, maple, ash,* and *birch*. But it also includes such words as *pine* and *palm*.

A **semantic domain** is a set of words that share semantic properties.

Semantic property analysis is the process of breaking down the domain into its component parts. By using the + and – system again, we can determine other words that may belong in this domain.

Semantic property analysis is the process of analyzing and breaking down the semantic properties of a word.

	Oak	Maple	Ash	Birch	Pine	Palm
plant	+	+	+	+	+	+
has trunk	+	+	+	+	+	+
tall	+	+	+	+	+	+
long-lived	+	+	+	+	+	+
has broad leaves	+	+	+	+	–	–

As we look at this analysis, we see that the semantic property that distinguishes pines and palms from the rest of the trees is that they don't have broad leaves. Of course, botanists would find other characteristics that distinguish each variety of tree from the larger domain of trees. But most people distinguish mainly between those with leaves that fall at one time of year (deciduous trees) and those whose leaves don't fall at one time of year (evergreen).

Markedness in semantics

Markedness, as it relates to semantics, is the concept that some words or morphemes are more common or usual than others.

Markedness is the concept that some members of a semantic domain are more common or usual than others. The members of a semantic domain that are more common are considered less marked. The more uncommon or unusual members of a domain are considered more marked. When you first read the word *tree* in the previous paragraph, what kind of tree did you picture in your mind? Most people in North America picture a generic shade tree like the one shown in Figure 6-1.

Because this is the most common, usual type of tree for North Americans, we can say that it is the most unmarked meaning of the word *tree*. If North Americans want to designate a tree with needles or fronds, they have to use more marked, specific terms—*pine tree* or *palm tree*.

Markedness gives us an idea of how the native speakers of a language think about their world. Since the deciduous shade tree is the most common type of tree in England and North America, it is the kind of tree designated by the unmarked word *tree*. Among the Tiwi, a native Australian ethnic group, the northern cypress pine or Australian blue cypress (*Callitris intratropica*) is so abundant in their traditional homeland and so important in their everyday life that their word for it, *karntirrikani*, is not only the unmarked word for "tree" but also the unmarked word for "plant."

For many Americans, the word *slave* is unmarked when it means African or black slaves. When the slave is another ethnicity, that ethnicity has to be specified, as in *Hebrew slave* or *white slavery*. Additionally, English has a bias toward males that is demonstrated by the fact that

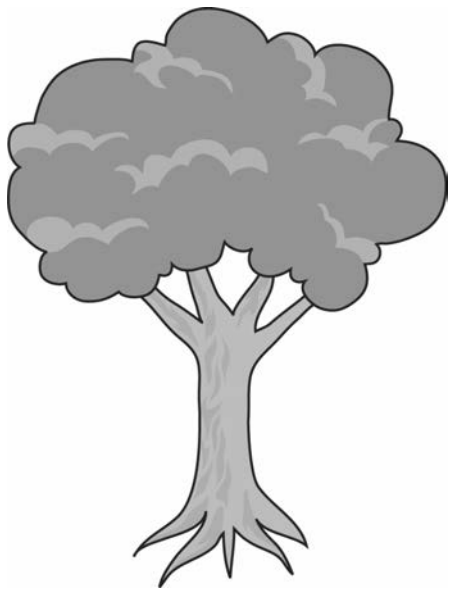


FIGURE 6-1 Generic tree
This is the most common, usual type of tree for North Americans.

most often the unmarked, simple version of a word has the semantic property of maleness. To designate a female, the word has to be altered. Look at the following words:

Male	Female
lion	lioness
prince	princess
actor	actress
poet	poetess
god	goddess
hero	heroine

EXERCISE 4 Markedness and gender

1. Markedness gives us an idea of how we view our own world. Consider your own cultural expectations. What is the most likely gender of the person referred to in the following unmarked English terms? Do you think that the likelihood for the gender of some of these terms has changed over time?

   a. Doctor _____

   b. Nurse _____

   c. Kindergarten teacher _____

   d. Professor _____

   e. Lawyer _____

   f. Secretary _____

   g. CEO _____

   h. Construction worker _____

   i. Farmer _____

   j. Firefighter _____

2. How can you change these terms to indicate the opposite gender?

   _____

   _____

Markedness within a domain

Another way of showing markedness within a domain is with a chart that places the more unmarked terms at the top and the more marked terms at the bottom. This kind of chart allows us to include various distinctions among terms. In the domain of trees, there are trees with broad leaves, needles, or fronds. But there are also fruit trees and flowering trees; trees with brown bark and those with white bark; those with medicinal properties and those with other useful materials (like maple sap). Furthermore, these trees can be broken down into categories that are recognized by scientists as species and subspecies. Notice as you read the chart in Figure 6-2

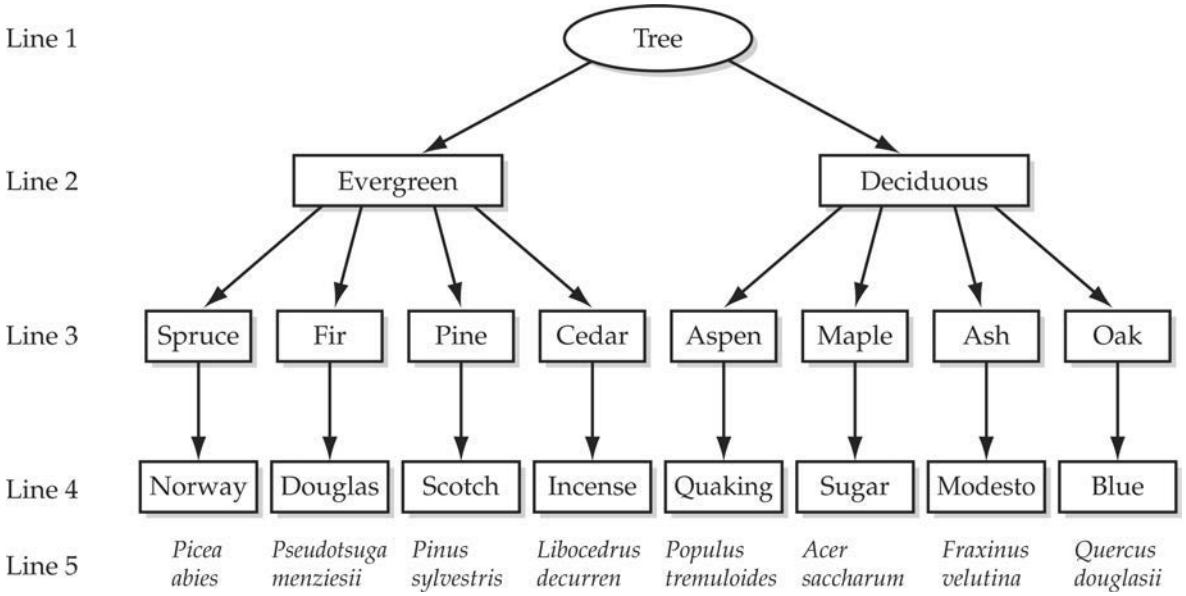


FIGURE 6-2 Domain of trees

Note that this illustration is not exhaustive. For example, there are more evergreen and deciduous trees than represented here, and each type of tree on Line 3 has many varieties.

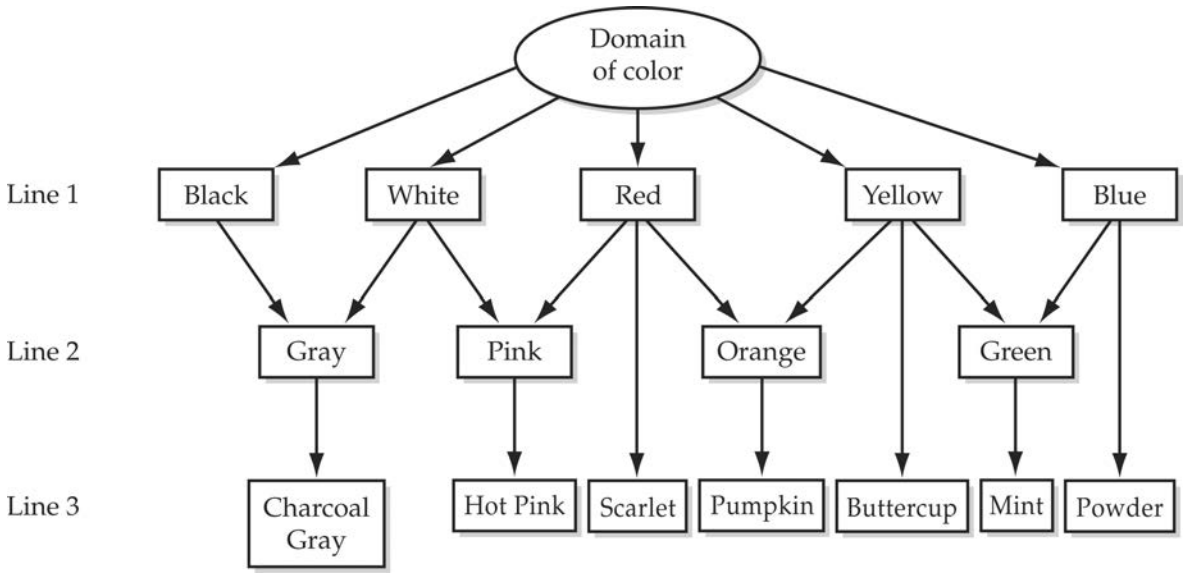


FIGURE 6-3 Domain of color

from top to bottom that the terms become more marked the farther down you go. The most marked term is the scientific name (Line 5), which only refers to one species or subspecies.

Another example of markedness within a domain

In the domain of color, the most common, most unmarked colors are black, white, and the primary colors (red, blue, and yellow). But there are also secondary colors (green, orange, and purple); and there are many shades of these colors (powder blue, mint green, hot pink). The more specific terms are the more marked terms. In fact, you can imagine the domain of color to be a chart, as shown in Figure 6-3.

The words in Line 1 are the most unmarked, most general, and most common. The words in Line 2 are more marked, more specific, and more uncommon. And the words in Line 3 are the most marked, most specific, and most uncommon in this representation.

EXERCISE 5 Domains

1. What words would you include in the domain of pets?

   _____

   a. What words are the most unmarked?

   _____

   b. What words are the most marked?

   _____

   c. Draw a chart like the ones shown in Figures 6-2 and 6-3 to describe the domain of pets.

2. What words would you include in the domain of birds?

   _____

   a. What words are the most unmarked?

   _____

   b. What words are the most marked?

   _____

   c. Draw a chart like the ones shown in Figures 6-2 and 6-3 to describe the domain of birds.

3. What words would you include in the domain of foods?

   _____

   a. What words are the most unmarked?

   _____

   b. What words are the most marked?

   _____

   c. Draw a chart like the ones shown in Figures 6-2 and 6-3 to describe the domain of foods.

The -nyms

There are many words that are similar or relate to each other in meaning or in sound. They are **hyponyms**, **synonyms**, **homonyms**, and **antonyms**.

Hyponyms

First let us consider words that have a similar meaning because they belong to the same segment of a domain. For instance, the words *pink, scarlet, orange, hot pink*, and *pumpkin* in Figure 6-3

Hyponyms are more specific words that constitute a subclass of a more general word.

are all more marked, specific terms for colors that derive from the color red. In fact, if we were to focus on the red section of the domain of color, we could name many shades and tones of this portion of the color spectrum. (Check the paint section of any hardware store to see the variety and creativity of names for specific colors.) These words share many of the semantic properties of the word *red*. Because these words form a subclass of the word *red*, they are referred to as **hyponyms** of *red*. Similarly, *maple, birch*, and *pine* are hyponyms of *tree*.

EXERCISE 6 Hyponyms

1. *Sedan*, *coupe*, *hatchback*, *convertible*, *hybrid*, and *minivan* are all hyponyms for the word _____.
2. *Daisy*, *primrose*, *carnation*, *rose*, and *dandelion* are all hyponyms for the word _____.
3. *Hammer*, *screwdriver*, *drill*, and *pliers* are all hyponyms for the word _____.
4. List some hyponyms for the word *appliances*: _____
5. List some hyponyms for the word *fruit*: _____
6. List some hyponyms for the word *furniture*: _____

Synonyms

Synonyms are words that have similar meanings and share the same semantic properties.

To **paraphrase** is to restate an utterance using synonyms for some of the original words.

Words that have similar meanings, that share the same semantic properties, are called **synonyms**. These are words that sound different but mean the same. When you **paraphrase** (restate) a sentence that you have read or heard, you are using synonyms for some of the original words. English has so many synonyms that the speaker must choose the word that suits the intended meaning best. In the following sentence the words in parentheses are synonyms for each other. Consider how the choice of one or the other affects the meaning of the sentence. What influences are at work when the speaker chooses one or the other?

A (woman or lady) always carries a (purse or pocketbook) with her.

The words *woman* and *lady* have the same semantic properties as shown below.

	Woman	**Lady**
[adult]	+	+
[female]	+	+
[human]	+	+

Denotation is the referential meaning of a word or morpheme, often the first meaning listed in a dictionary.

Connotation is a shade of meaning for a word or morpheme.

They may have the same referent. The same adult, female, human being may sometimes be referred to as a *woman* and sometimes as a *lady*. These synonyms have the same **denotation**. One of their definitions in the dictionary would be the same or similar.

However, they have different **connotations**; the shade of meaning for each word is different. The context in which you would use each word is different.

She is a real lady.

She is a real woman.

These two sentences mean very different things. The first sentence tells us that the referent is polite, kind, and perhaps elegant and proper. The second sentence implies that she is strong and determined; it may also have sexual overtones.

The words *purse* and *pocketbook* have the same denotative meaning because the same item, the same referent, can be designated by both words. The difference between these synonyms is the region of the United States that the speaker comes from. The same item that is a purse on the West Coast is called a pocketbook on the East Coast; national retailers avoid the regional differences by referring to it as a *handbag*.

Another reason that people choose one synonym rather than another is to indicate level of formality. (See the "Situational dialects or registers" section in Chapter 8.) Lakota Sioux, Native Americans of South Dakota, have formal "slow speech" with which they can "talk firm" and informal "fast speech" to "talk ordinary." In "slow speech," the word for tobacco is /zintkalatxačanli ičahiyɘ/, a term describing small birds perching on a river locust, a plant that was mixed with tobacco before smoking. The "fast speech" synonym for tobacco is /kʌnšaša/, which means "willow."[1]

The Tiwi need many synonyms in order to observe their ritual taboos. After a close relative dies, during the year of mourning that follows, it is taboo to mention that person's name or any word that might sound like it. Therefore they must have a variety of alternative synonyms from which to choose. When they want to say a word such as their word for "flower," they have two choices, *yilokwari* and *wurrinigari*. They choose the one that is least similar to the dead relative's name. When they need to mention turtle eggs they can choose between *karaka* or *pajipajuwu*. For mangrove worm, a good medicinal food, they can choose *mwarini* or *yuwurli*. They choose one synonym or another not based on shades of meaning, but based on the sound and its similarity to or difference from the name of their dead relatives.[2]

EXERCISE 7 Synonyms

Explain the difference between the synonyms in each set of parentheses. What is the connotation of each word? Why would you choose one or the other?

1. A (student or pupil) might (carry or tote) books in a (backpack, knapsack, or day pack).
   a. Student _____
   b. Pupil _____
   c. Carry _____
   d. Tote _____
   e. Backpack _____
   f. Knapsack _____
   g. Day pack _____
2. The (child or kid) (slept or napped) (deeply or soundly) on the (bed or cot).
   a. Child _____
   b. Kid _____
   c. Slept _____
   d. Napped _____
   e. Deeply _____

[1]Elizabeth S. Grobsmith, *Lakota of the Rosebud: A Contemporary Ethnography* (Belmont, CA: Wadsworth/Thomson Learning, 2001), 93.
[2]Teresa A. Ward, *Towards an Understanding of the Tiwi Language/Culture Context: A Handbook for Non-Tiwi Teachers* (Nguiu Bathurst Island, Australia: Nguiu Nginingawila Literature Production Centre, 1990), 26.

f. Soundly _____

g. Bed _____

h. Cot _____

Homonyms

Homonyms are words that have different meanings but sound the same. They might be spelled the same or differently.

In contrast to the synonyms, **homonyms** are words that sound the same, have different meanings, and might be spelled the same or differently. *To, too*, and *two* all sound the same, but each word means something completely different. *Tale* and *tail*, *but* and *butt, flower* and *flour*, *rose* (the flower) and *rose* (past tense of the verb *to rise*) are other examples of homonyms. The humor of puns is based on the similar pronunciation of words that mean very different things. Think of the children's riddle:

> What's black and white and /rɛd/ all over?
> An embarrassed zebra! (Not a newspaper!)

The correct answer depends upon interpreting /rɛd/ as the word *red*, and not as the word *read*.

Polysemous words have more than one meaning.

Polysemous words have more than one meaning. The word *school* can be "an institution for learning" or "a grouping of fish." This is the basis for the humor of the pun:

> Fish are really smart. They always are found in schools.

Polysemous words and homonyms are often the basis for jokes based on the different meanings possible for the same word. They are also the source of utterances that are misunderstood because of lexical ambiguity.

Japanese people consider the number four unlucky. In Japanese, /ši/ means both "four" and "death"; they are homonyms. In China, it is popular to give oranges for the New Year. In the Cantonese language of China, the word for orange (the fruit), /kam/, and the word for gold (the precious metal) are homonyms; they sound the same.

EXERCISE 8 Homonyms

1. Think of some other homonym pairs.

a. _____

b. _____

c. _____

d. _____

2. Make up a pun based on one of the homonym pairs.

_____

_____

3. Explain how homonyms are different from polysemous words.

_____

_____

Antonyms

Words that have the opposite meaning are called **antonyms**. They are words that share many of the same semantic properties but are opposite in at least one of them. There are three main kinds of antonyms.

Antonyms are words that are opposite in one of their semantic properties.

Complementary pairs are antonyms that express a binary relationship in which it is perceived that there is no middle ground, such as the words *male/female*. The word *male* can be defined as "not female" and female can be defined as "not male." Similarly, *dead* can be defined as "not alive," whereas *alive* can be defined as "not dead." Some other complementary pairs are *asleep/awake, present/absent, animal/plant*. A pair such as *conscious/unconscious* demonstrates one way in which complementary pairs can be formed in English: the use of the prefix *un-*. Other prefixes that can form complementary pairs are *non-* and *in-*.

Complementary pairs are antonyms that express a binary relationship, such as the words *male/female.*

The opposite of *old* is *young*. But *young* and *old* are relative to the speaker's point of view. From a child's point of view, people who are over 30 are *old*. To a senior citizen, people who are under 65 are *young*. So *old/young* are referred to as a **gradable pair**. In fact, *old* means *less young* and *young* means *less old*. They both have the semantic property of describing the age of a person or animal. But *young* refers to an earlier age and *old* refers to a later age. How much earlier, or how much later, depends on the context of the utterance and the point of view of the speaker. Other examples of gradable pairs are: *big/little*, *high/low*, *fast/slow*.

Gradable pairs are antonyms, such as *big/little*, that are part of a larger set of related words and express the concept that one of them is more, whereas the other is less.

A characteristic of gradable pairs of antonyms is that they are actually members of a larger set of related words:

humongous–gigantic–huge–big–large–medium–little–small–tiny–miniscule.

Relational opposites are antonyms that express a symmetrical relationship between two words. With the antonym pair *parent/child*, we can say that

Relational opposites are antonyms that express a symmetrical relationship between two words, such as *parent/child.*

Brian is the parent of Kevin.

From this we can infer that

Kevin is the child of Brian.

In the pair *teach/learn*, we can say that

John teaches the class.

Therefore,

The class learns from John.

Student/teacher, give/receive, and *doctor/patient* are all relational opposites. The pair *employer/employee* demonstrates that, in English, one way in which to form words that are relational opposites is to use the suffixes *-er* and *-ee*.

EXERCISE 9 Antonyms

1. Look at these antonym pairs. Determine what kind of antonyms they are—complementary pairs, gradable pairs, or relational opposites.

a. True/False _____

b. Bright/Dark _____

c. Over/Under _____

d. Married/Single _____

e. Doctor/Patient _____

f. Stop/Go _____

g. Tall/Short _____

h. Buy/Sell _____

2. Make up a complementary pair using each of the following prefixes:

a. Un- _____

b. Non- _____

c. In- _____

3. Look at the word pairs in 1. (above) that you identified as gradable pairs. What larger set of words do they belong to?

4. Look at the word pairs in 1. (above) that you identified as relational opposites. Write sentences to show their symmetrical relationship.

_____

_____

5. Make up a relational opposite pair using the suffixes *-er* and *-ee*. Use them in a sentence.

_____

_____

_____

EXERCISE 10 Other kinds of -nyms

There are other categories of words that are described with a word ending in -nym. Research these terms and explain what category of words they describe.

1. You know what a *homonym* is, but what is a *heteronym*?

_____

2. What is a *toponym*? Give an example from your own speech.

_____

3. In Chapter 4 we mentioned *eponyms*. What are they?

_____

4. What is a *tekonym*? How are they used in American culture? What about other cultures?

_____

5. What is a *retronym*? Give an example and explain what it tells us about culture change.

_____

6. What is a *paronym*? How are they related to derivation and foreign word borrowing?

7. What is a *metonym*? How are they used in the news media?

Other kinds of meaning: structural semantics

So far, this chapter has been about the meaning of words in the most common, unmarked sense of the word *meaning*. However, the meaning of a sentence is more than simply the sum of the meaning of its words. As outlined at the beginning of this chapter, structural semantics is the study of how the structure (syntax) of sentences contributes to meaning. Sometimes the meaning of a sentence cannot be explained by the meaning of the individual words that make up the sentences. Consider the meaning of the following two sentences:

1. The teacher taught the students.
2. The students taught the teacher.

Both sentences are composed of exactly the same words. In the first sentence, *the teacher* is the subject and is performing the action of teaching *the students*, the object of the sentence. In the second sentence, the only thing that has changed is that now *the teacher* is the object and *the students* is the subject. However, the change in the structure changes the meaning of the sentences such that sentence 1 describes a commonplace event, but sentence 2 describes a more unusual one.

In Chapter 5 we discussed structural ambiguity, in which a sentence can have more than one meaning. In one of the ambiguous sentences given as examples it was unclear whether the adjective applied to only one or both noun phrases. This is a question of the scope of the adjective. So in the sentence

Chris has large dogs and cats

is the scope of the adjective *large* limited to *dogs* or does it include *cats* also?

One of the reasons for the ambiguity is that, in English, the adjective comes before the noun, and so the scope of the adjective tends to extend to words that follow it. In fact, when we have a noun phrase that consists of a list of adjectives, the scope of each adjective includes the ones that follow it, but not the ones that precede it. So in the title of the film *My Big Fat Greek Wedding*, we can envision the scope of each adjective to include all of the words that follow it, as shown in Figure 6-4.

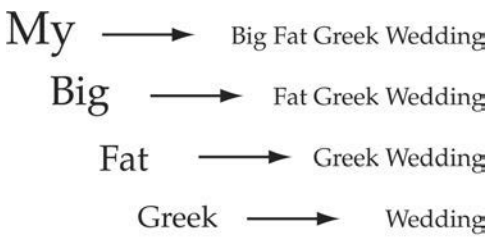


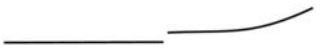
FIGURE 6-4 The scope of adjectives

Another way in which structure affects the meaning of the words in a sentence is by the use of focus constructions that serve to emphasize one word or another in a sentence. In Chapter 2, in the section on suprasegmentals, we showed how differences in pitch can change the meaning of an English sentence. These pitches are constructions that focus the listener's attention on one word or another in a sentence to affect the meaning of the sentence. Navajo, on the other hand, does not use intonation to focus the listener's attention; it uses a noun particle, a bound morpheme or suffix, *-ga*, to focus attention on a word.

So in English we would say

My little brother lives in Tucson.

to state the place where my brother lives. And we would say



My little brother lives in Tucson.

to mean it is my brother, not someone else, who lives in Tucson.

In Navajo they would say

sitsili	hoozdohdi	bighan
little.brother	Tucson	third-person lives

for the first sentence; and

sitsilí-gá	hoozdohdi	bighan
little.brother-Focus	Tucson	third-person lives

for the second sentence.

The particle *-ga* focuses the Navajo listener's attention on the word *brother* in the same way that intonation focuses the English listener's attention.[3] Intonational stress and noun particles are just two of many ways in which languages focus attention on the important part of a sentence.

Playing with meaning

Many times, the most interesting language includes the use of words in unexpected combinations. Writers, poets, comedians, and other people often use sentences with unexpected meanings, such as the sentence used previously stating that the students taught the teacher. Here are some other ways in which playing with the structure of sentences creates interesting language.

Anomalous utterances include words in which the semantic properties do not match.

An anomalous utterance is an utterance in which the semantic properties of one part of the utterance do not match those of another part. We expect the nouns that precede and follow the verb of being *is* to match in semantic properties. Consider the following sentences:

My car is hungry.
My toothbrush is pregnant.

The semantic properties here don't match because cars and toothbrushes are inanimate objects, whereas hunger and pregnancy are biological processes of living things.

[3] Joyce McDonough, "The Prosody of Interrogative and Focus Constructions in Navajo," in Andrew Carnie, Heidi Harley, and MaryAnn Willie, eds., *Formal Approaches to Function in Grammar: In Honor of Eloise Jelinek* (Amsterdam: John Benjamins, 2002), 191–206, http://hdl.handle.net/1802/2518.

Now consider these sentences:

My husband is a man.
My husband is a child.

Because in English, the concept labeled as *husband* includes the semantic property "adult +" and *child* includes the semantic property "adult –," the first sentence is correct but the second sentence is not. The words *husband* and *child* contradict each other. In some cultures, such as the Mbuti pygmies of Africa, it is common for children to be married (in name only). So the second sentence may not be a contradiction in their culture. But in Western culture, it's not possible for a married man to be a child. Therefore, the second sentence is a **contradiction**.

Contradictions are utterances in which the semantic properties of one word are in direct opposition to those of another.

However, some anomalous utterances or contradictions have symbolic meanings that are culturally specific. When an English-speaking woman says "My husband is a child," she is playing with meaning; by using this contradiction, she is telling us how she feels about her husband. The statement has affective meaning.

Although it's not a common way to express it, most English speakers would understand the statement "My car is hungry" to mean that the car needs gasoline. When anomalous utterances are used this way, they are called **metaphors**. Symbolically, two dissimilar items are considered to be similar. In the previous sentence, a car is implicitly compared to a living creature, and its need for gasoline is compared to the need for food. When Americans use the term "gas-guzzler" for a car that uses a lot of gasoline, they are comparing the car's need for gasoline to the living creature's need for drink.

Metaphors are anomalous utterances in which two dissimilar items are symbolically considered to be similar.

The Western Apache language from Arizona uses an extended set of anatomical metaphors in which the same word applies both to parts of the body and parts of a car. So the Western Apache would probably understand the sentence in the example because their word for the gas filler pipe opening is the same as the word for mouth, and their word for the car's gas tank is the same as for the stomach.[4]

Poets and writers use metaphors extensively to enhance their descriptions. It is very common for poets to use metaphors that compare flowers or other natural phenomena to a beloved person, such as the following:

You are my sunshine.
My love is a red rose.

People who support war or a specific war are sometimes referred to as *hawks*, and those who are against war or a specific war are called *doves*. Hawks, aggressive carnivorous birds, are used to symbolize war, whereas doves, passive vegetarians, are used to represent peace and love.

Oxymorons are phrases that combine contradictory words, such as the expressions listed below:

Oxymorons are phrases that combine contradictory words.

sweet sorrow
thunderous silence
sedentary activity.

Poets and writers often use oxymorons to achieve a special effect and evoke a range of emotions.

Idioms are utterances in which there is a contradiction between the meaning of the parts of the utterance and the entire utterance. Consider the two words that make up the word *sweetheart*. *Sweet* is a sugary food and *heart* is an organ of the body, the muscle responsible for pumping the blood. But when the two words are combined, they refer to a *beloved person*,

Idioms are utterances in which there is a contradiction between the meaning of the parts of the utterance and the entire utterance.

[4]Keith H. Basso, *Western Apache Language and Culture: Essays in Linguistic Anthropology* (Tucson: University of Arizona Press, 1990), 2–24.

BOX 6-1

Cross-cultural misunderstanding of idioms

Think about the idioms that are used for casual sexual relations, such as:

a roll in the hay
going all the way.

Ethnobotanist Mark Plotkin accidentally discovered the meaning of an idiomatic expression in the language of the Tirió Indians of Suriname in South America. He was studying the medicinal uses of plants and he writes:

> I asked the chief if I could go into the forest with Kykwe's grandmother to collect plants. [She was] an ancient crone who . . . supposedly knew more about medicine than any other woman in the village. There was a shocked silence, and the chief looked horrified by my request. What had I done? [My guide] leaned toward me and gently explained that I had asked the chief for permission to engage in sexual relations with the old woman. In a culture where most of the houses have no walls, all illicit couplings take place in the jungle. To proposition someone, you ask them to meet you in the forest. I nearly burst out laughing at the idea that I could not be trusted in the forest with someone's toothless, wrinkled grandmother, who though charming in her own way, was unlikely to incite the passions of even a lonely ethnobotanist.

Source: Mark J. Plotkin, *Tales of a Shaman's Apprentice* (New York: Penguin, 1993), 104–105.

which has nothing to do with what the morphemes of the word *sweetheart* mean individually. Idioms can pose difficulties for learners of a second language and for people who speak a different dialect of a language. Consider these common American English idiomatic expressions:

to kick the bucket
to buy the farm
to bite the big one
to sleep with the fishes.

There is no way that you can guess from analyzing the semantic properties of the individual words that these phrases all mean the same thing: *to die* (see Box 6-1).

EXERCISE 11 Metaphors

1. Explain the meaning of the following metaphors. What dissimilar things are being compared?

a. "Two roads diverged in a wood, and I—
I took the one less traveled by."—Robert Frost

_____

_____

b. "But always at my back I hear Time's wing'd chariot hurrying near."—Andrew Marvell

_____

_____

c. "The Lord is my shepherd, I shall not want."—Psalm 23

_____

_____

d. "She is the rose, the glory of the day."—Edmund Spenser

_____

_____

e. "O western orb sailing the heaven."—Walt Whitman

_____

_____

2. Explain the meaning of the following American idiomatic expressions.

a. To pay through the nose

_____

_____

b. To hit the hay

_____

_____

c. To leave someone high and dry

_____

_____

d. To stick your neck out for someone

_____

_____

e. To face the music

_____

_____

f. To bury the hatchet

_____

_____

3. List five idiomatic expressions based on sports terms and explain what they mean.

a. _____

b. _____

c. _____

d. _____

e. _____

4. List five idiomatic expressions based on military terms and explain what they mean.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

5. List five idiomatic expressions based on music, politics, or a domain of your own choosing, and explain what they mean.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

Entailment and presupposition

Two concepts that are important to both semantics and pragmatics are entailment and presupposition. Utterances can have different relationships to each other. For instance, as discussed above, one sentence in an utterance might contradict another sentence in the same utterance. Entailment and presupposition describe other types of relationships between utterances (see also Chapter 7).

Entailment is a relationship between utterances where if utterance A is true then utterance B is also true.

Entailment is a relationship between utterances where if one utterance is true, such as sentence A below, then a second utterance, such as sentence B, is also true. We would thus say that the meaning of sentence A entails sentence B.

A. There were at least thirty people at the party.
B. There were twenty people at the party.

If there were at least thirty people at the party, we can deduce that there must have been twenty people at the party. So, sentence B is an entailment of sentence A. Note that other combinations of sentence would not exemplify entailment. Such as:

C. There were at least thirty people at the party.
D. There were only two people at the party.

Here the relationship between C and D is contradiction, not entailment. A speaker might not be aware that they are producing a contradiction, or a speaker might use a sentence pair such as A and B to "play with meaning" in a way different than the ways we discussed in the previous section.

Also, entailment usually only goes in one direction. If we reverse the order of sentence A and B, making B the first sentence and making A the second sentence, then the new sentence A

A.' *There were twenty people at the party*

does not entail the sentence B

B'. *There were at least thirty people at the party.*

Entailment can describe relationships between linguistic units other than sentences, such as words and phrases. For instance, a *chair* is in the domain *furniture*. If this is true, then we would say *chair* entails *furniture*. We say, "if this is true" because the word *chair* is polysemous and also can refer to the head of a department, organization, or meeting. In this case, the word *chair* would not entail *furniture*. This is obvious to a native speaker of English, but is an important distinction that needs to be factored into such things as artificial intelligence (AI) programming (see Box 6-2).

Presupposition is the semantic aspect of an utterance which implies the existence of something. That something might or might not exist in the real world. Unlike entailment, in which if one utterance is true then the other is also true, with presupposition one utterance is taken for granted based on another utterance. "The Queen of England is nearly 100 years old" presupposes (takes for granted) that there is a Queen of England. Likewise, the sentence

Presupposition is the semantic aspect of an utterance which implies the existence of something that is either real or prevaricated. In a discourse it is the set of assumptions that the speaker makes about the listener's knowledge or circumstances. These assumptions are necessary in order to make an utterance meaningful.

BOX 6-2

Computational linguistics and artificial intelligence

Most or all of the students reading this book are accustomed to interacting with a computer by either text or voice. But one of the authors of this text remembers being amazed at a demonstration in 1970s of voice production by a computer program that was much more advanced than earlier simulations in which each word was individually pronounced, with no attention to how connected speech is produced and no attention to suprasegmental features such as pitch, stress, and duration (see Chapter 2). Of course, today, computers can recognize speech and also produce speech that is, to the human ear, indistinguishable from natural speech. Computers can also translate one language into numerous other languages quite accurately and quickly.

These feats are made possible in part due to advances in the field of computational linguistics. Computational linguistics is a field of research concerned with modeling language so that computers can recognize and produce language in as natural a way as possible. Natural language production is dependent on human cognitive abilities and, therefore, computational models of language are both modeled on and give insights into human cognitive processes. Computational linguistics is an interdisciplinary field in which contributors have come from the fields of linguistics, computer science, cognitive science, anthropology, psychology, mathematics, and virtually any other field that deals with language.

Today, many computers have functions that include voice recognition and production, converting speech to text, and parsing (syntactic analysis of a sentence to determine its individual components and the syntactic role of each of those components). One could debate whether any of these things could be labeled as "intelligence." However, computer programs have been created that attempt to model all aspects of human language and thought, including "understanding" and applying semantic and pragmatic features of human behavior (see Chapter 7). These programs bring us closer to what might be called artificial intelligence (AI), which would be the ability of a computer (including the computer brain of a robot) to reason, plan, learn, perceive, and react appropriately depending on context; to use language in a natural way; and to perform other human cognitive functions. Two areas of semantics that researchers in computational linguistics are attempting to model are the resolution of semantic ambiguities and understanding inferences.

For information on computational linguistics see the works by Jurafsky and Martin, Koller and Pinkal, and Schubert listed in "Suggested reading."

"Unicorns are wonderful animals" implies that there are unicorns. The communicator might know that unicorns do not actually exist in the real world, but the above sentence about unicorns implies or takes for granted that they do. Indeed, a young child may believe that unicorns do exist in the real world.

With presuppositions, such things as negating parts of the utterance will maintain the presupposition. So, if we say that "The Queen of England is not close to 100 years old," then the presupposition holds. We still presuppose that there is a Queen of England. The same is not true of entailments: if we negate a part of a sentence A above, the relationship of A to B is no longer an entailment. If we say that there were not thirty people at the party that does not make a statement that there were twenty people at the party automatically correct.

The statements about the Queen and the unicorn presuppose that there is a Queen of England and that there are unicorns. Because in both cases the communicator is making assumptions, some linguists consider presuppositions to be an area of pragmatics. This conclusion is based on the fact that, among other things, pragmatics deals with features of the speaker or speakers. A presupposition is something that is assumed by a speaker. We will return to presupposition in Chapter 7, which covers pragmatics.

EXERCISE 12 Entailment and presupposition

Differentiate between an entailment relationship and a presupposition relationship in the following pairs of sentences.

Set 1

A. The professor who teaches linguistics at Pierce College attended a linguistics convention.
B. Linguistics is taught at Pierce College.

Set 2

C. We are going to visit Santa Claus.
D. Santa Claus is real.

Set 3

E. Jake died of old age.
F. Jake is dead.

Set 4

G. Where is the girl wearing a red dress?
H. There is a girl wearing a red dress.

Set 5

I. Aaron and Ariela went to the zoo.
J. Ariela went to the zoo.

Set 6

K. Bill swims every day.
L. Bill knows how to swim.

Summary

Semantics is the study of meaning. All linguistic constructions are symbolic in nature. This means that words, phrases, clauses, sentences, and larger constructions are all composed of

symbols. A symbol, as we define the term here, represents such things as objects, concepts, idea, and actions. The symbol has no direct connection to the thing that it represents. The meaning of a symbol must be learned through the socialization process.

Lexical semantics deals with the meaning of words. There is a lexicon or dictionary in each person's brain that contains the definitions of all the words the person knows. The referent of each word is the concrete object or abstract concept to which the word refers. Semantic properties are the elements of meaning that make up the mental image of the word in the mind of the speaker. Semantic properties can be analyzed using the + and – system of semantic property analysis. Words that share semantic properties can be considered members of a semantic domain. Markedness, the concept that some members of a semantic domain are more common or usual than others, gives us an idea of how the native speakers of a language think about their world.

Words that are similar to each other in meaning or in sound are hyponyms, synonyms, homonyms, and antonyms. Hyponyms are words that form a subclass of another word. Words that have similar meanings, that share the same semantic properties, are called synonyms. These are words that sound different but mean the same. Synonyms have the same denotation, or dictionary definition, but different connotations, or shades of meaning. In contrast to synonyms, homonyms (or homophones) are words that sound the same but have very different meanings. Polysemous words have more than one meaning. Words that have the opposite meaning are called antonyms, which can be classified as complementary pairs, gradable pairs, and relational opposites.

Structural semantics is the study of how the structure of sentences contributes to meaning. Some special topics studied in structural semantics are contradictions, utterances in which the semantic properties of one word unexpectedly do not match with those of another; oxymorons, phrases that combine contradictory words; and anomalous utterances in which the semantic properties of the words involved don't match. Other topics are metaphors, in which two dissimilar items are symbolically considered to be similar to each other; and idioms, utterances in which there is a contradiction between the meaning of the parts of the utterance and the entire utterance.

Two other concepts of importance in semantics are entailment and presupposition. Entailment defines the situation in which if one utterance is correct, then another correct utterance can follow from it. Presupposition, a concept also important in pragmatics, deals with the condition that if one thing is uttered, then a second thing is assumed to be true or exist. The communicator might know that the thing, such as Santa Clause or a unicorn, does not actually exist in the real world—that it only exists in the imagination.

Suggested reading

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Websites

Korzybski's General Semantics: Applying Science-Mathematical Methods and Discoveries to Daily Living: www.stevenlewis.info/gs. An interesting, eclectic collection of essays and articles on a site developed by Steven Lewis.

Semiotics for Beginners: http://visual-memory.co.uk/daniel/Documents/S4B/

TeachIt: www.teachit.co.uk/armoore/lang/semantics.htm. Free resources from an English teaching website for semantics, etymology, and the lexicon, with links to much more.

Review of terms and concepts: semantics

1. Semantics is the study of _____.
2. A _____ is something, a word, a gesture, a sign, or other representation that signifies or represents something else that is not intrinsically (causally) related to it.
3. The meaning of the symbol and what it signifies must be _____.
4. Unlike a symbol, an _____ has a causal relationship to what it indicates.
5. Lexical semantics is the study of _____.
6. In the brain is a _____ containing the definitions of all the words that a person knows.
7. Some words have an actual concrete item or concept that the word refers to. That item is its _____.
8. Sometimes a word means a particular object that the speaker has in mind, but sometimes the referent is the mental _____ of the _____ object.
9. Words can also refer to _____ things, such as Santa Claus, mermaids, or Mickey Mouse, which do not exist in the real world.
10. Love, truth, and justice are _____ that do not have concrete referents.
11. The purpose of the words *is*, *the*, and *of* is to tell us about _____ of one word to another.
12. The personal pronouns, such as *I*, *you*, *he*, *she*, *it*, and *they*, have concrete referents, which can vary according to _____ and _____.
13. One of the ways in which the meaning of a word can be analyzed is to determine its _____.
14. The semantic properties of a word are often analyzed by using a system of _____.
15. This system is called _____.
16. This system is also used to analyze the features of _____.
17. Words that share semantic properties can be considered _____.
18. _____ is the concept that some members of a semantic domain are more common or usual than others.

19. The members of a semantic domain that are more common are considered _____ marked.
20. The more uncommon or unusual members of a domain are considered _____ marked.
21. English has a bias toward males that is demonstrated by the fact that _____.
22. The more specific terms are the _____ terms.
23. The *-nyms* are words that are similar to each other in meaning or in sound. They include _____, _____, _____, and _____.
24. Words that form a subclass of another word are _____.
25. Words that have similar meanings, that share the same semantic properties, are called _____.
26. When you _____ a sentence that you have read or heard, you are using synonyms.
27. The denotation of a word is the _____.
28. The connotation of a word is _____.
29. In contrast to the synonyms, _____ are words that sound the same but have different meanings.
30. _____ words have more than one meaning.
31. Words that have the opposite meaning are called _____.
32. _____ are antonyms that express a binary relationship in which there is no middle ground.
33. Since *old* means *less young* and *young* means *less old*, *young* and *old* are referred to as a _____.
34. _____ are antonyms that express a symmetrical relationship between two words.
35. Structural semantics is the study of how _____ contributes to meaning.
36. _____ are utterances in which the semantic properties of one word unexpectedly do not match with those of another.
37. _____ are phrases that combine contradictory words.
38. _____ are similar to contradictions in that the semantic properties of the words involved don't match.
39. When anomalous utterances are used symbolically, they are called _____.
40. _____ are utterances in which there is a contradiction between the meaning of the parts of the utterance and the entire utterance.
41. The semantic condition where if one utterance is true then another related utterance is also true is called _____ _____.
42. The semantic aspect of an utterance which implies the existence of something else that may or may not actually exist in the real world is called _____.

Fieldwork project: puns and riddles in school-age children

Talk with some school-age children in your family or your neighborhood. Ask them a riddle or tell them a pun. Then ask them to tell you some of the same kinds of jokes. Carefully record or write down the jokes that they tell you. Ask them to explain the jokes that they tell you. Also, be sure to note the age and gender of the child.

What homonyms or polysemous words are used in the puns?

What does the child think that the words mean? Is the child's definition correct?

How do the jokes differ by age of the child? By the gender of the child?

Do you think that children enjoy these jokes more than adults do? Why or why not?

CHAPTER 7

Pragmatics: how language is used and the effect of context on meaning

LEARNING OBJECTIVES

- **Explain the meaning of the term *pragmatics*.**
- **List and define the various kinds of speech acts.**
- **Discuss politeness theory and the concept of "face" as it relates to politeness theory.**
- **Expand on the statement: "Discourse analysis is the process of discovering the rules of communication events."**
- **Explain why presupposition is necessary in human communication.**
- **Explain the following statement and name the process being described: "Some words and expressions refer to their referents by 'pointing' to them as in an index."**
- **Describe the concept of the maxims of conversation.**
- **Analyze the relationship of implicature to maxims of conversation.**
- **Provide examples of how maxims of conversation differ cross-culturally.**

In the last chapter, we talked about the meaning of words and word combinations. But sometimes the meaning of a word is totally dependent upon the context in which it is used. **Pragmatics** is the study of the effect of context on meaning. In fact, as the name suggests, it is about the practical use of language. It includes the study of how people use language to perform speech acts with performative sentences, to establish their identities through social meaning, to express their emotions through affective meaning, and to carry on conversations with others. Linguistic anthropologist Alessandro Duranti described the use of language as a cultural force that "is crucial for the constitution of particular social activities and at the same time cannot be understood outside of those activities."[1]

Pragmatics is the study of the effect of context on meaning.

Speech acts

Sometimes the act of speaking is more important than the information the utterance conveys. In that case the speaker is performing a **speech act** and not simply communicating information. The following section will discuss different kinds of speech acts and what they accomplish.

Some sentences simply communicate information, but other sentences actually do something and in doing so exhibit **the force of language**; they are speech acts. By pronouncing these sentences the speaker is performing an action. Of course, for the action to take place, the sentences have to be said (or written or signed) in the correct context and by the correct person.

Speech acts are actions performed by an utterance, such as daring, questioning, or betting.

The force of language is the power of language to affect and create the social world of the speaker.

[1]Alessandro Duranti, "The Force of Language and Its Temporal Unfolding," in Bruce Fraser and Ken Turner, eds., *Language in Life and a Life in Language: Jacob Mey—A Festschrift* (Bingley, UK: Emerald, 2009), 64.

I now pronounce you husband and wife.
I hereby sentence you to ten years in jail.
I bet you a hundred dollars.
I warn you to stay away from the edge of the cliff.
I quit.
I promise to do it.

Performative sentences are utterances that perform speech acts.

These **performative sentences** do not only convey information; in the correct context, they also perform the act of pronouncing, sentencing, betting, warning, quitting, and promising. For instance, if a judge at the end of a trial says "I hereby sentence you to ten years in prison," the defendant will spend ten years in prison, unless the judge's statement is reversed or modified by someone who has the authority to do so. Not anyone can make the pronouncement "I hereby sentence you to ten years in prison" and be taken seriously. In societies with a judicial system which has the exclusive right to adjudicate crimes and disputes, a judge presiding over a particular trial is the only person that can sentence the defendant. So a speech act involves a "social contract" among the people in a society. This understanding of who can make a particular pronouncement resulting in the action uttered in that pronouncement can be established formally, by laws for instance, or it can be established by a less formal understanding passed down generationally through the socialization process within a particular culture.

Performative sentences can also perform the act of requesting information, as in the question

Are you ready?
I'm asking you if you are ready.

Or they can perform the act of ordering, as in

Do your homework!
I'm telling you to do your homework!

People of many cultures exhibit their awareness of the power of the spoken word to change the social environment when they warn their children to "mind their tongue" or "watch what they say."

EXERCISE 1 Performative sentences

Write a sentence in which you perform the act of:

1. Apologizing

_____

2. Firing

_____

3. Hiring

_____

4. Daring

_____

5. Challenging

_____

6. Promising

_____

7. Telling

_____

8. Requesting

_____

Social meaning

An utterance has **social meaning** if it tells us about the social identity of the speaker. It tells us more information about the speaker than about the referents. In fact, because the speaker has chosen to phrase it in this special way, it can be considered a speech act declaring the social identity of the speaker. Consider the following sentences:

Social meaning is the information in an utterance about the social identity of the speaker.

1. Y'all come back now, hear?
2. Hey, man! Can ya dig this?
3. I ain't gonna do nothin'.
4. Like, for sure, that's totally awesome!
5. Let's take this offline.

Although all of these sentences have referential meaning, they more importantly have social meaning because they tell the listener something about the speaker's regional origin, social class, or educational level. The first sentence tells us that the speaker might come from some part of the American South. The second suggests that the speaker is a jazz musician, a beatnik of the 1950s, or a hippie of the 1960s. The third sentence signifies an uneducated person, and the fourth is a teenage "Valley girl" of the 1980s. The fifth sentence is an example of what often is called "geek speak"; it means to talk about something later and indicates the person is into computer technology.

People often consciously and deliberately consider the social meaning of their speech when they change from one manner of speaking to another, according to their circumstances, in order to give an appropriate impression. This is called **code switching**. Many African Americans use the Standard American variety of English when conducting business outside of the African American community, but switch to African American English to show solidarity when speaking within the African American community. Americans wishing to sound more elegant or educated may use a British-sounding dialect. On the other hand, when educated people in a position of authority have to deny a request, they may use the working-class phrase

Code switching is deliberately changing from one manner or style of speaking to another.

Ain't gonna happen

to show that they are regular, down-to-earth folks.

An adult might code switch from an adult way of speaking to a way of speaking perceived as more appropriate or even beneficial for language development for a child when speaking to a young individual. For instance, a parent might say to a child

Eat your num nums.

This type of code switching to "baby talk" or parentese is common in cultures around the world.

Affective meaning

The **affective meaning** of an utterance conveys the emotions of the speaker.

A speech act that conveys the emotions of the speaker has **affective meaning**. By the choice of synonyms, the speaker describes an event while giving an emotional reaction to it. In the following sets of sentences, each sentence has approximately the same referential meaning but a different affective meaning.

1. The movie we saw had a runtime of 128 minutes.
2. We sat through a movie that was more than two hours long.
3. *La La Land* seemed to be over in a flash even though it was actually more than two hours long.

The first sentence is a statement that emphasizes the length of the movie in a neutral way. The second sentence suggests that the speaker was bored, tired, or in some way unhappy about the length of the movie. The third sentence implies that the viewer enjoyed the movie.

Consider the following sentences:

1. Person A killed person B.
2. The vicious murderer aimed the gun and shot the innocent victim.
3. The hero triumphed over the villain.

In this set of sentences, a statement of fact is modified to give more information, but also to express the attitude of the speaker about the incident. Mass media, particularly the tabloids, use sentences like the second and third ones to affect the reader's attitude about the story.

EXERCISE 2 Different meanings

1. Explain the social meaning of each of the following utterances:

   a. Howdy, Ma'am!

   _____

   b. And like this guy, like he's so like cute.

   _____

   c. Way cool!

   _____

   d. Chill out, dude.

   _____

   e. In my day, we didn't do things like that.

   _____

   f. So, he walks into the cube farm and tells me that I am uninstalled.

   _____

2. Write three pairs of sentences that have the same referential meaning but different affective meanings. Explain the difference in the affective meaning of the pairs of sentences.

   a. _____

   b. _____

   c. _____

3. A linguistics joke: In his English class, Professor Follett was lecturing to his students about grammar. He stated that a double negative really meant a positive. He went on to say, however, that a double positive never means a negative, to which a student in the back of the room muttered, "Yeah, right." (www.urbandictionary.com/define.php?term=yeah%20right).

   Explain how these two positive words can create a negative statement. In your answer, you might mention affective meaning, social meaning, nonverbal communication, pragmatics, and structural semantics.

Politeness theory

Politeness theory proposes that every speech act involves the concept of **face**. Face as it relates to politeness theory is a kind of self-esteem, as in the saying "to save face", meaning to avoid embarrassment or discomfort. Or *face* can be defined as a person's desire to maintain their prestige and positive standing in society as well as the prestige and positive standing of others. There are two types of face, negative and positive. **Positive face** is the act of seeking to be admired and approved of by the communicators. **Negative face** is the desire to not be distracted or imposed upon. The concept of politeness and face has a relatively long history, but, in the sense we are discussing, it was developed in the 1970s and 1980s, primarily by Penelope Brown and Stephen C. Levinson.[2]

Politeness theory proposes to explain how people deal with or remedy affronts or possible affronts to their dignity or "face."

Face, in the context of politeness theory, is one's sense of self-esteem and dignity in social contexts.

Positive face is the act of seeking to be admired and approved of by the communicators.

Negative face is the desire to not be distracted or imposed upon.

Face threatening acts are behaviors that encroach upon a person's need to maintain their self-esteem.

In every speech act there is a transaction of face, and the speaker must negotiate the politeness strategies for effecting maintenance of face and avoiding **face threatening acts**. Face threatening acts are behaviors that encroach upon a person's need to maintain self-esteem. In a face transaction, the communicators are often attempting not only to save their face—damage to self-esteem through social interaction—but also to save the face of the person or persons with whom they are communicating.

Just as there are two basic types of face, there are two basic types of politeness negotiations, which are also called positive and negative. The type of politeness negotiation used will depend on the perception of the context in which the communication is taking place and on the social status, the gender, the age, and other similar factors of the speaker and the listener. **Positive politeness** occurs when we engage people in a way that maintains the communicators' self-image and that lets them know that we enjoy being with them and feel comfortable with them. It emphasizes friendliness and emphasizes deference, and therefore is aimed at maintaining positive face. For instance, when the speaker wants to effect positive politeness with a member of the same social group, the speaker might use one of the phrases that establishes a common social identity, such as "Hey, Dude!" This turns any speech act such as a request, invitation, or a command into a transaction between equals. The listener's positive face is reinforced.

Positive politeness is an act that occurs when we engage people in a way that lets them know that we enjoy being with them and feel comfortable with them.

Negative politeness emphasizes the hearer's independence and freedom to act. Negative politeness is the act of avoiding intrusion into such things as a person's privacy or personal space. For instance, by not asking a person about a potentially embarrassing personal situation one would be employing negative politeness in order to save the listener's negative face. The term *negative* as in *negative face* and *negative politeness* is misleading. There is nothing negative

Negative politeness is the act of avoiding intrusion into such things as a person's privacy or personal space.

[2]Penelope Brown and Stephen C. Levinson, *Politeness, Some Universals in Language Usage* (Cambridge: Cambridge University Press, 1987).

about negative politeness in terms of being something bad. The communicators are using a strategy of avoiding what would be a face threatening act. The negative face is just what a person wants to avoid, such has having his or her time or privacy infringed upon.

The speech act of negative politeness may be stated as an indirect request (see "Indirect language" in Chapter 8) or the request may be downplayed or softened, such as in the statement

Would it be alright with you if you turned the volume of the music down?

as opposed to

Turn the volume of the music down.

Brown and Levinson and other researchers believe that politeness strategies are found in all societies, that is, that they are universal. Not everyone agrees with this, but we will not discuss that controversy here. However, we should make clear that politeness strategies, even if found universally, are not employed in all interactions. Obviously, anyone can sometimes be intentionally or unintentionally rude or insensitive. Other people might be that way most of the time. Some people might not employ politeness strategies because of the way they were socialized or because of cognitive problems.[3]

EXERCISE 3 Politeness theory and the concept of face

1. Read the following scenario and answer the question related to it.

   Joe and Shirley are painting a room in their house. Shirley likes to keep the house warm and has set the thermostat at 80 degrees. Joe is getting uncomfortably warm and would like the heat turned down but is up on a ladder.

   Determine which of the following utterances is positive politeness and which is negative politeness and why.

   A. I hate to bother you Shirley, but could you please turn the thermostat down. I am getting overheated.

   B. Joe, you are sweating. Should I turn the heat down?

2. Decide whether the following sentences represent positive or negative politeness or neither.

   A. You look starved. Could I get you something to eat?

   B. Put your jacket on now.

Discourse analysis

Discourse analysis is the process of discovering the rules of communication events.

A **discourse** is a series of connected utterances, such as a conversation, story, lecture, or any other communication event.

Discourse analysis is the process of discovering the rules that govern a series of connected utterances (a **discourse**), such as a conversation, story, lecture, or any other communication event.

One of the rules of English discourse governs the choice between the indefinite articles *a/an* and the definite article *the*, depending on what has been stated before in the discourse. For example, look at the use of the articles in the following:

> Once upon a time there was *a* princess, who was very sad. You see, when *the* princess was born, *an* evil witch cast *a* spell. *The* spell could only be broken by *the* evil witch, if *the* princess did as she was told.

[3]You can watch an animated lecture by experimental psychologist Steven Pinker on politeness theory and indirect requests called "Language as a Window to Human Nature" at www.youtube.com/watch?v=3-son3EJTrU&t=6s.

Within this little story fragment, there is **new information** and **old (or given) information**. The new information is information that the speaker believes is being introduced to the listener for the first time. It must be identified by the article *a* or *an*. Notice that the first time the princess, the evil witch, and the spell are mentioned, the words are preceded by the article *a* or *an*. However, the second time these items are mentioned, they are considered old (or given) information and must be preceded by the article *the*.

New information is information that the speaker believes is being introduced to the listener for the first time.

Old (given) information is information that the speaker has previously introduced or believes the listener knows.

Even in an informal discourse, such as a casual conversation, we distinguish between new information and old information. Imagine you have this conversation with a classmate:

YOU: I went to *a* party Saturday night at midnight.
CLASSMATE: Why so late?
YOU: I went to a movie first and then to *the* party.

When you first mentioned the party, it was new information, so you used *a*. The second time you mentioned it, you assumed that your classmate knew what party you were talking about; it was old information, so you used *the*. On the other hand, imagine you started the conversation with the following:

I went to *the* party Saturday night at midnight.

Your use of the article *the* indicates you are assuming that your classmate knew about the party, that it was old information. If you are wrong, the response might be:

What party? I didn't know about *a* party!

Indexicality (deixis)

English pronouns are also used according to the rules of discourse. Some words and expressions refer to their referents by "pointing" to them as in an index. This property, **indexicality**, is the way that these words derive their meaning. Pronouns are one of the categories of words that exhibit indexicality or **deixis** /dayksɪs/, a property of words that shift reference, that change meaning according to the context. Pronouns are deictic /dayktɪk/ in that they change meaning according to the rule of discourse. Look at the pronouns in the following conversation:

Indexicality The property of words and expressions that "point" to their referents as in an index. Deictic words derive their meaning by indexicality.

Deixis refers to words that shift reference, that change meaning according to the context and/or the speaker.

RICHARD: *I* have a lot of work to do. Do *you*?
ED: Yes, *I* do.
RICHARD: Does Phil have a lot to do?
ED: Yes, *he* does.

When Richard uses the word *I*, the meaning of the word is "Richard," but when Ed uses the same word, it means "Ed." On the other hand, Richard uses the word *you* to mean "Ed" and, as the conversation continues, Ed might use *you* to mean "Richard." They can both use *he* to refer to "Phil." In fact, *he* can refer to any man, boy, or male animal. So to make the referent clear, the first time Phil is mentioned in the discourse his name must be used (new information). The pronoun can only be used at the second mention because now the referent is clear; it is old information.

Other words can be deictic in regard to place: *this* or *that*, *here* or *there*, *go* or *come*. English distinguishes between two distances or positions in pairs such as these.

This house is brown, but *that* house is blue.

In the preceding sentence, the use of *this* and *that* indicates that the speaker is standing closer to the brown house than the blue house. But if he or she walks closer to the blue house, then the blue house becomes *this house* and the brown one becomes *that house*.

I live *here*. I'm going on vacation *there*.
While on vacation *here*, I send postcards to my neighbors *there*.

Here and *there* change meaning depending on where the speaker is at the time of the statement.

Coming and *going* are both verbs that have similar semantic properties in that they indicate movement. But they differ in the position of the speaker. If something is moving toward the speaker, it is *coming*; if it is moving away from the speaker, it is *going*.

Other languages, such as Spanish, Japanese, and Korean, have a three-way deictic system that distinguishes among "this," "that," and "that over there." The Tlingit language (a Native American group from southern Alaska) has a four-way deictic system with words that distinguish among "this one right here," "this one nearby," "that one over there," and "that one far off."[4]

Linguists have also noted that the order of an utterance is affected by whether or not the speaker is agreeing or disagreeing with the previous utterance. In English conversation, agreement will be stated immediately, but disagreement will be preceded by another statement.

CECILE: Would you like some tea?
MORGAN: Yes, that would be lovely.
MARIE: Are you coming home early?
ALEX: Well, I have a lot of work to do, so I may be a little later than usual.

In the English-speaking world, this would most likely be followed with a disappointed, "Oh. OK."

On the other hand, Alessandro Duranti, has described the use of silence in Samoan discourse when a request is denied. "When Samoans ask for a ride to town, a utensil, a loan . . . if their request is denied, they do not necessarily accept or protest. Instead, very typically they silently wait."[5] This gives the speaker a chance to reconsider and change to a positive response.

Presupposition

Presupposition, previously mentioned in Chapter 6, is the set of assumptions that the speaker makes about the listener's knowledge or circumstances. These assumptions are necessary in order to make an utterance meaningful. It is another way in which the context of the utterance, within the discourse, affects how it is stated and what words are chosen. If two people are speaking about a mutual acquaintance, they can simply use the friend's name with no further explanation:

Allan told a great joke today at lunch.

But if a person is speaking to someone who does not know Allan, further explanation is required:

Allan, a colleague of mine who has a great sense of humor, told a great joke at lunch today.

Of course, after that explanation, Allan's identification becomes old information, and in subsequent sentences in this conversation can be referred to simply as *Allan* or *he*.

Sometimes presuppositions are implied, as in the question

Have you stopped smoking?

The presupposition is that the person referred to by the word *you* smoked in the past, and the speaker of the sentence knew it. Furthermore, the question presupposes that the speaker does not know if the person referred to by the word *you* has continued to smoke.

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[4]William O'Grady, John Archibald, Mark Aronoff, and Janie Rees-Miller, *Contemporary Linguistics: An Introduction*, 5th ed. (Boston and New York: Bedford/St. Martins, 2005), 230.
[5]Duranti, "The Force of Language," 68.

On the other hand, the question

Have you tried smoking?

presupposes that the speaker does not believe that the person he is talking to is a regular smoker, and he does not know if that person has ever tried smoking.

Presupposition, deixis, and the distinction between old and new information are just some of many concepts that guide us in understanding utterances in the context of a discourse. See Box 7-1 on discourse markers.

EXERCISE 4 Discourse analysis

1. **Presupposition:** Explain the presuppositions demonstrated by each of these sentences.

   a. This is my friend Barbara; she's visiting from out of state.

   _____

   b. What are you doing this weekend?

   _____

   c. Can I get you something from the snack bar?

   _____

   d. Max will be leaving tomorrow.

   _____

2. **Deixis:** Fill in the blank with the name of the person the pronoun represents.

   a. Jane: I ___ know we ___ will have cream cake for dessert this evening. I ___ will save you ___ a piece if you ___ want, John.

   b. John: I ___ always love cake, so please save me ___ a piece. Thanks, Jane.

   c. Jane: How about you ___, Alex? A piece of cake for you ____ too?

   d. Alex: You ___ know I ___ will say yes to a piece of your ____ mother's cream cake any day.

   e. Jane: OK, I ____ will save two pieces of cream cake for both of you ____ tonight. We _____ can meet at the cafeteria at lunch time tomorrow and I ____ will give them to you ____.

3. **Old and new information: articles**

   Fill in the correct article *a(n)* or *the*.

   a. Max is going on ___ trip; ___ trip will be on ___ train.

   b. Avi is ___ teacher; he is _____ only art teacher in his school.

   c. You need ___ house. ____ house at ____ end of _____ block is for sale so you should look at it.

   d. There was ___ phone on ___ desk in ___ classroom. Do you know who left ___ phone? Who was sitting at ____ desk in ____ classroom?

Source: Easy Pace Learning Conversations, www.easypacelearning.com/all-lessons/english-lessons-level-3/1189-conversation-about-3-people-going-to-a-concert.

BOX 7-1

Discourse markers

Discourse markers are words that are not a grammatical part of the sentence, but are used by speakers for multiple reasons, such as to begin a conversational turn, to indicate their attitude, or to indicate a need for a moment to think about what was said and how to respond. In this last case, the speaker is subtly showing politeness by letting the listener know that they are thinking about what was said, and the speaker is also giving themselves time to cognitively process the information. Some common (less marked) discourse markers are *oh*, *well*, *now*, *then*, and *you know*. However, more distinctive discourse markers can vary by the speaker's age, gender, education, and geographic region.

- American teenage girls often start a turn with *like*:

  "Like this is so embarrassing."
  "Like they're staring right at us."[6]

- Scientists interviewed in the US on *Science Friday* (PRI, Public Radio International) often start a turn with *so*.

  Q: "What gave you the idea to look at objects to see if we leave a bacterial fingerprint?"
  A: "So your body is coated with bacteria inside and out . . ."[7]
  Q: "Tell us about this special image [from the Hubble telescope] that was released this week."
  A: "So, well, of course it's also an image of something that is right up there in the heavens."[8]

- Australians interviewed on Australian Broadcasting Corporation radio often start a turn with *look*. In British English, *look* would signal a rather aggressive message rebuking someone, such as "Look, you can't just throw stuff on the floor like that," but in the Australian interview it seems to mean the same as *you know*.[9]

  Q: "Why do you divide yourself between writing and the practice of medicine?
  A: "Look, writing is very lonely."
  Q: "Why do you think this novel stands the test of time?"
  A: "Look, I don't know; well, I think they are universal stories."[10]

- In conversation, Australians often use the discourse marker *yeah, no*. The *yeah* says, "I heard and understood your question and I agree you were right to ask it and the answer might be yes in some circumstances." The *no* functions as a qualifier, such as *but*.

  Q: "Did you enjoy staying at Peter and Daniel's?"
  A: "Yeah, no, unfortunately I'm allergic to cats so while their house is very comfortable, I had to take allergy medicine the whole time."[11]

For more information see *Discourse Markers*, by Deborah Schiffrin, and *Approaches to Discourse Particles*, edited by Kerstin Fischer, cited in this chapter's "Suggested reading" section.

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[6]*Valley Girl*, 1983, Martha Coolidge, director; Wayne Crawford and Andrew Lane, writers; Thomas Coleman, executive producer; MGM Home Entertainment DVD (2003).
[7]*Science Friday*, "Bacterial Forensics," March 19, 2010, Science Friday Initiative, www.sciencefriday.com/program/archives/201003193.
[8]*Science Friday*, "The Hubble at 20," April 23, 2010, Science Friday Initiative, www.sciencefriday.com/program/archives/201004232.
[9]Anthea Fraser Gupta, School of English, University of Leeds, personal communication, March 31, 2010.
[10]*Saturday Extra*, interview with Peter Goldsworthy, April 3, 2010, Australian Broadcasting Corporation, www.abc.net.au/rn/saturdayextra/stories/2010/2861233.htm.
[11]Peter Chalk, personal communication, April 3, 2010.

EXERCISE 5 Discourse markers

Listen to radio or television conversations from different parts of the English-speaking world to see the discourse markers that they use to begin their conversational turns. In each case, (1) name the geographical area or social identity of the group that is speaking; (2) state the discourse marker; and (3) give an example of the entire utterance.

a. (1) _____

(2) _____

(3) _____

b. (1) _____

(2) _____

(3) _____

c. (1) _____

(2) _____

(3) _____

d. (1) _____

(2) _____

(3) _____

Greeting rituals

Greeting rituals are a special kind of discourse that are not at all important for the information they convey, but are important for their social function. In this way they are, in effect, a speech act that performs the activity of establishing social ties between individuals. The words that are used vary from one culture to another, but are not to be interpreted literally. They are simply the formula for the greeting ritual. Furthermore, the cultural expectations surrounding that ritual vary from one society to another.

Greeting rituals are a special kind of discourse that are not at all important for the information they convey, but are important for their social function.

English speakers greet each other with such exchanges as:

Hello. How are you?
Fine. How about you?
Hi. How's it going?
Not bad. How about you?

Hebrew and Arabic speakers greet each other with:

Peace to you.
And to you peace.

Chinese speakers greet each other with:

Have you eaten (dinner) yet?

And in each culture, greeting rituals are accompanied by specific nonverbal behaviors, such as shaking right hands, bowing, patting the shoulder, hugging, kissing, smiling, making eye contact, or averting the gaze.

But in many cultures, a simple two-utterance exchange is not sufficient to complete the ritual. In Senegal, greetings must include an introduction, such as *bonjour*, *good afternoon*, or *salaam aleikum*, and a recitation of each person's full name several times. The family name is repeated over and over to acknowledge that person's entire family, including the ancestors. This lengthy greeting, accompanied by handshaking, is repeated every time the individual is encountered, even if it is several times a day. Elders are greeted first with special deference; the younger person must avoid making eye contact. Foreigners doing business in Senegal find that they cannot walk into the office of Senegalese co-workers or call them on the phone and simply "state their business." They must begin each conversation with the greeting ritual. This is a practice that emphasizes the African cultural values of harmony within the community and respect for the extended family and ancestors.[12]

The Western Apache greet each other with silence. In their culture, people meeting for the first time or reuniting after a period of separation remain silent—sometimes for minutes, sometimes for days or months—until they are sufficiently comfortable with each other to talk. They use this silent time to assess the other person in order to make an enduring connection.

English speakers would find the Apache greeting of silence to be rude, but the Apache find the English greetings to be rude and offensive. They do joking parodies of "whiteman" who comes into the room, loudly asking personal questions, such as "How are you?" and "How you feeling?" and arrogantly ordering people around saying, "Come in!" and "Sit down."[13]

Despite the different referential meanings of these greeting sentences and the different forms of the greeting rituals, they all serve the same function—social interaction. There are also leaving rituals which vary greatly from culture to culture; they are normative ways to leave a social interaction, such as leaving a person's house.

Maxims of conversation: cooperative principle and implicature

Maxims of conversation are the cultural expectations that guide people when they are conversing.

The **cooperative principle** is the basis for the maxims of conversation, and assumes that each person is trying in good faith to communicate and understand.

Implicature is a meaning that is implied or implicated, rather than stated directly.

The **maxims of conversation** are the cultural expectations that guide people when they are conversing. They are based on the **cooperative principle**, which assumes that each person is trying in good faith to communicate and understand. They also involve **implicature**, a meaning that is implied or implicated, rather than stated directly.

The following are some of the conversational maxims in English.

Quantity—Say neither more nor less than is required.
Quality—Say only what you believe to be the truth.
Relevance—Say only what is appropriate for the topic.
Manner—Be brief, concise, and clear.

When English speakers exchange greetings, the content of the greeting doesn't change, even if one of the speakers is sick or upset.

Hi. How are you?
Fine. How are you? Fine.

This is because most speakers of English perceive the question "How are you?" to be part of a greeting ritual, not an actual request for a detailed description of your condition. They are observing the maxims of quantity (saying just the right amount) and relevance (saying what is

[12]http://guide.culturecrossing.net/basics_business_student.php?id=179.
[13]Basso, *Western Apache Language and Culture*, 81–98.

appropriate). So they respond to the greeting with the appropriate greeting response. If you are not feeling well, but say that you are fine, your nonverbal behavior, such as the tone of your voice, might give you away.

But what if a doctor, upon entering the examining room, says to you

Good afternoon. How are you?

In this case, the maxims of quantity, relevance, and quality (telling the truth) require that your answer involve a description of your physical condition.

I have a fever, cough, and sore throat.

Sometimes the answer to the question will implicate the answer, but not state it directly. If you have been sick and your boss (who knows you've been sick) says to you:

How are you?

You might say:

You see I'm here, don't you?

You haven't said it explicitly, but the implicature is that you are well enough to be at work, but not particularly happy about it.

As with many cultural expectations, we often are aware of the conversational maxims only when they are violated. So when you greet someone with "Hi. How are you?" and the response is "Terrible. My car broke down, my parents are mad at me, and I have the flu, too," your immediate reaction (either spoken or unspoken) might be:

TMI (too much information)!

And, of course, if you are ill and you answer the doctor's request for information as if it were a greeting, you find yourself violating the maxim of quality (truthfulness) and manner (clarity) by saying:

Fine. But I have a fever, cough, and sore throat.

Other maxims of conversation

Quantity: say neither more nor less than is required

PARENT: Where did you go?
ADOLESCENT: Out.
PARENT: What did you do?
ADOLESCENT: Nothing.

In this humorous example, of course the adolescent went "out" or the parent would have been able to observe what she was doing. And, of course the adolescent did more than "nothing" or she wouldn't have gone out of the house to do it. The **maxim of quantity** requires that the adolescent respond, telling where she went (the mall, the movies, a friend's house) and what she did (bought some clothes, saw a particular movie, socialized with friends). Because an adolescent is old enough to know the maxims of conversation, and knowingly violates them, we infer the responses to have the affective meaning:

Maxim of quantity The speaker will say neither more nor less than is required.

Leave me alone. Don't pry into my private life.

Conversely, if you meet a friend you haven't seen in several years, and you ask, "What've you been doing?" and the response is a week-by-week account, that also violates the maxim of quantity. It is more than what is required.

Quality: say only what you believe to be the truth

YOU: What time is it?
CLASSMATE: A quarter after nine.

Maxim of quality The speaker will say only what he or she believes to be the truth.

In this exchange, the **maxim of quality** requires that you are being truthful in your ignorance of the time and your classmate is being truthful in giving reliable information. It is therefore a violation of the maxim of quality for you to reply "No it isn't. It's actually 9:17," because you had the information all along. It is also a violation of the maxim of quality if the person giving you the information has no access to a clock and knows that the information is not reliable.

Relevance: say only what is appropriate for the topic

Outdoors, a comment on the weather may be a conversation starter, such as:

Hot enough for you?

But indoors, comments like

Whew! It's hot in here

or

Brrr! I better keep my coat on

Maxim of relevance The speaker will say only what is appropriate for the topic.

can be considered an implicature (according to the **maxim of relevance**) requesting air conditioning, heating, closing the door, opening a window—whatever would be relevant to the situation. This kind of comment functions as an indirect request (see "Indirect language" in Chapter 8).

Manner: be brief, concise, and clear

The culture of the classroom allows the teacher to ask rhetorical questions of the class. Everyone understands that the teacher already knows the answers to these questions, that their purpose is to further the discussion; therefore, the maxim of quality has not been violated.

Maxim of manner The speaker will be brief, concise, and clear.

However, occasionally students violate the **maxim of manner** (especially as it applies to brevity and clarity) by giving an overly long reply in order to show off to classmates and the teacher.

ANTHROPOLOGY TEACHER: What is "culture"?
STUDENT: It's the learned behavior, customs, and values of a society that the people in that society use to deal with each other and with their environment. It's passed on from one generation to the next by parents, family members, and teachers, etc., etc.

Sometimes you can guess that the affective meaning of this reply is

Look at me; I'm smart.

Cross-cultural maxims of conversation

The maxims of conversation are different in other cultures; the maxim of manner is particularly variable from one culture to another. In the Middle East, when food is offered, the maxim of manner requires that the guest politely refuse the offer several times and the host repeat the offer several times before it is accepted.

In Japan, the concept of *enryo*, meaning "restraint" or "reserve," requires that the speaker practice a kind of verbal reticence in approaching a topic of conversation, especially when giving a negative answer. The maxim of manner in Japanese requires that the topic be

approached in a roundabout fashion, mentioned indirectly before the main point is raised. In contrast, the maxim of manner in English requires that speakers not "beat around the bush" but "speak right up." There are specific forms of Japanese verbs that allow the speaker to admire an offer but decline it. The phrase *Enryo shimasu* is approximately equivalent to the English phrase "I would love it, but I can't." The Japanese also observe a modesty maxim. When they are complimented, they deny the compliment rather than accepting it by saying "thank you." And, when giving a gift, they often tell the recipient that the gift is useless and of no value[14] (See Box 7-2.)

EXERCISE 6 Maxims of conversation

Read these short conversations and identify the maxim or maxims of conversation that are being followed or flouted.

1. Child: Can I watch television? Parent: You have homework to do.

   The parent's answer demonstrates the maxim of _____ because _____

   _____

2. Visitor in your town: Where is the nearest gas station? You: About a mile up the road.

   Your answer violates the maxim of _____ because _____

   _____

3. Student: When is the assignment due this week? Teacher: I don't understand why students are always asking about their assignments. Don't they write it down the first time I tell them? Don't they know it's in the syllabus?

   The teacher is violating the maxim of _____ because _____

   _____

4. Your friend: Hey! Whatcha been doin'? You: Not much. You?

   You friend's answer is acceptable according to the maxim of _____ because _____

   _____

5. Your parent: Hello. What have you been doing? You: Not much.

   Your answer violates the maxim of _____ because _____

   _____

6. Explain why numbers 4 and 5 are similar in lexical content but different in meaning. Why does one conversation conform to the cooperative principle and the other does not?

   _____

   _____

[14]Mariana Neagu, "On Linguistic Aspects from a Cross-cultural Perspective," November 1999, www.generativeart.com/on/cic/99/2899.htm, October 26, 2010. http://neojaponisme.com/2009/01/15/enryo/.

BOX 7-2

Cross-cultural pragmatics

Sometimes a sentence that is intended as a speech act can be misunderstood. A Swiss linguist, Jacques Moeschler, writing on the topic of intercultural misunderstandings, described an incident that happened to him when he was invited to give a lecture at a university in Rabat, Morocco. His plane was landing about 60 miles from the university, so he e-mailed his contact:

Can you tell me how to get from the airport to Rabat?

She replied:

You can take the train at the airport, with a change at Ain sbaâ station and you'll arrive at the Rabat downtown station.

Simple and straightforward, right? Question and answer. Brief, relevant, clear, concise.

However, Moeschler goes on to explain that native French speakers (such as him) use indirect requests and rely on the listener to infer the relevance and respond not with information, but with action. In other words, they use implicature to make an indirect request. When he realized that his polite, indirect request had not been understood, he e-mailed back:

I don't know Morocco, I have no time to plan my trip; can you please come and pick me up at the airport?

She immediately replied:

Someone will come and pick you up at the airport.

His conclusion is that members of different cultures learn to interpret statements differently as a part of the enculturation process. The Moroccan contact read the first e-mail (just as speakers of English read it) as a simple request for travel information, and stopped with that interpretation. However, a native French speaker would have learned to take this statement and reinterpret it just as we would reinterpret the statement about the indoor temperature (Whew! It's hot in here) as an indirect request for action.

Source: Jacques Moeschler, "Intercultural Pragmatics: A Cognitive Approach," *Intercultural Pragmatics*, 1 1 (2004), 49–70. https://doi.org/10.1515/iprg.2004.007.

Difficulty in processing pragmatics

People who are on the autism spectrum often have trouble understanding indirect speech, irony, sarcasm, and other non-literal utterances. Some researchers consider autism spectrum disorders to be a cognitive disorder in which the language pragmatics and theory of mind are impaired.[15] This real-life difficulty is the basis for humor in the television series *The Big Bang Theory*, in which one of the main characters, Sheldon Cooper, takes everything that is said very literally. When his roommate wants to bring a girl back to their apartment and asks him to make himself scarce, he replies, "I am a published theoretical physicist with two doctorates and an IQ which can't be accurately measured by normal tests. How much scarcer could I be?" He has to be told directly to go somewhere else, out of the apartment.[16]

[15]Asa Kasher and Sara Meilijson, "Autism and Pragmatics of Language," www.math.tau.ac.il/~isaco/Autism_English.pdf.

[16]You can read a complete analysis of Sheldon's communication difficulties in Anthony Tobia and Annmarie Toma, "Rethinking Asperger's: Understanding the DSM-5 Diagnosis by Introducing Sheldon Cooper," *Journal of Communication Disorders, Deaf Studies & Hearing Aids*, December 30, 2015, www.esciencecentral.org/journals/rethinking-asperger-s-understanding-the-dsm5-diagnosis-byintroducing-sheldon-cooper-2375-4427-1000146.php?aid=66143.

EXERCISE 7 Processing pragmatics

1. Explain the difference between referential meaning, social meaning, and affective meaning. Give examples of each kind of meaning from your own speech and conversations.
2. Pick a scene from a comedy show in which there is a misunderstanding or miscommunication—a common plot device in situation comedies. Analyze the scene in terms of pragmatics. Is the humor the result of indirect language, implication, presupposition? Is there a violation of the maxims of conversation? Is the humor the result of a unique personality or second language or cultural misunderstanding?

Summary

Pragmatics, the study of the interaction of context and meaning, looks at the practical use of language. By using particular words or phrases, speakers give an utterance social meaning, which tells more about themselves than about the referent. They can also give an utterance affective meaning, which conveys their emotions or attitude.

Speech acts are performative sentences in which the speaker is using the force of language to perform an action and not merely conveying information by speaking the sentence. Politeness theory proposes that every speech act involves the concept of social "face"—positive face and negative face.

One of the subfields of pragmatics is discourse analysis, the process of discovering the unwritten rules of discourse (communication events). This includes: distinguishing new information and old (or given) information; placing information in a specific order; inserting silence; acknowledging the prior knowledge that the listener is assumed to have (presupposition); and paying attention to deictic words that shift the referent, depending on the context. Greeting rituals are a special kind of discourse and are important for their social function.

Discourse analysis also includes study of implicature, the maxims of conversation, the cultural expectations that guide people when they are conversing. Based on the cooperative principle, some of the maxims of conversation in English are quantity, quality, relevance, and manner. People on the autism spectrum may have difficulty with the pragmatics of communication.

Suggested reading

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Schiffrin, Deborah, *Discourse Markers*, Cambridge: Cambridge University Press, 1987.

Tannen, Deborah, *Conversational Style: Analyzing Talk among Friends*, New York: Oxford.

Websites

Journal of Pragmatics: www.journals.elsevier.com/journal-of-pragmatics/

Journal of Semantics and Pragmatics: http://semprag.org/

Review of terms and concepts: pragmatics

1. The study of how language is used in context is called _____.
2. The social meaning of an utterance tells us more about the _____ than about the _____.
3. The _____ of _____ is the power of language to affect and create the social world of the speaker.
4. Performative sentences not only convey information; they also can perform the acts of _____, _____, _____, _____, _____, and _____.
5. _____ proposes how people deal with or remedy affronts or possible affronts to their dignity or "face."
6. Politeness as we are discussing it in this chapter is a communication _____.
7. Penelope Brown and Stephen C. Levinson believe that the strategy of politeness is _____, but not all researchers _____.
8. _____ can be defined as a person's desire to maintain their own and others' position, prestige, and positive standing in society.
9. _____ is the act of seeking to be admired and approved of by the communicator.
10. _____ is the desire to not be distracted or imposed upon.
11. _____ occurs when we engage people in a way that maintains their self-image and that lets them know that we enjoy being with them and feel comfortable with them.
12. _____ is the act of avoiding intrusion into such things as a person's privacy or personal space.
13. Negative politeness is only used by people when they are being rude and insensitive to others. True or false?
14. _____ are behaviors that encroach upon a person's need to maintain their self-esteem.
15. A _____ is a series of connected utterances such as a conversation, story, lecture, or any other communication event.
16. The process of discovering the rules that govern communication events is called _____.
17. Pronouns are deictic. This means that they _____ according to the context of the sentence.
18. Some words and expressions refer to their referents by "pointing" to them, and this is the way that these words derive their meaning. This activity is called _____.
19. _____ is the set of assumptions that the speaker makes about the listener's knowledge or circumstances.
20. The maxims of conversation include the maxims of _____, _____, _____, and _____.
21. Maxims of conversation are based on the _____ which assumes that each person is trying in good faith to communicate and understand.

22. _____ is a meaning that is implied or implicated, rather than stated directly.

23. The speaker will say only what is appropriate for the topic. This statement describes the maxim of _____ _____.

24. The speaker will say neither more nor less than is required is the definition of the maxim of _____.

25. The maxim of _____ states that the speaker will be brief, concise, and clear.

26. When you follow the norm of only saying what you believe to be true, you are following the maxim of _____.

27. The maxims of conversation are the same in every culture and language. True or false?

28. People on the autism spectrum have trouble understanding _____, _____, _____, and _____.

CHAPTER 8

Sociolinguistics: language and society

LEARNING OBJECTIVES

- **Explain the concept of a *language community*.**
- **Define the term *dialect*. Relate the term *dialect* to the term *language*.**
- **List the key characteristics of African American English.**
- **List the key characteristics of Hispanic English.**
- **Define *pidgin* and *creole* languages.**
- **Explain *situational dialects*.**
- **Discuss stereotypes based on dialect and language variation.**
- **Define *code switching*. Explain why people do it.**
- **Analyze how language reinforces social identity.**
- **Explain how men and women use language differently.**

Sociolinguistics is the study of how language and social factors, such as ethnicity, social class, age, gender, and educational level, are related.

The minute you hear a person begin to speak, certain information about that person's position within the social system is revealed to you. **Sociolinguistics** is the study of how language and social factors, such as ethnicity, social class, age, gender, and educational level, are related. We have already discussed some topics that are important in sociolinguistics, such as the concept of social meaning (see Chapter 7). In this chapter, we will go into more detail on subjects of importance to sociolinguistics.

Each person has a unique way of speaking that results from physical, social, and cultural factors: a certain tone of voice, often-used words, characteristic idioms and phrases. This is why comedians can do impersonations of famous people speaking and the audience can guess who the comedian is imitating. This personal, individual way of speaking is known as an **idiolect**. But an individual has to be able to communicate with other people. So the idiolects of people living and working together cannot be so different that they are not understandable to one another.

Idiolect is an individual's personal, individual way of speaking.

A **language (**or **speech) community** is a group of people who live, work, socialize, and communicate with one another.

Dialect (or variety) is the shared, unique linguistic characteristics of a language community.

Standard American English (**SAE**) is the variety of American English used in business, education, and the media.

Prestige dialect is the variety of a language spoken by the high-status people of a society.

BBC English is the prestige variety of British English, so called because the British Broadcasting Corporation uses it.

Regional dialects

A **language (**or **speech) community** is a group of people who live, work, socialize, and communicate with one another. The shared, unique characteristics of their speech are called a **dialect**. We sometimes think of a dialect as being a special, regional characteristic peculiar to New York City or New England or the South (see Box 8-1). But everyone belongs to a language community; therefore, everyone speaks a dialect. **Standard American English (SAE)** is the **prestige dialect** used in business, education, and the media. In the past, the prestige dialect in Great Britain was so closely associated with the British Broadcasting Corporation (BBC) that it is sometimes referred to as **BBC English**. Today, however, the BBC encourages its news readers (announcers) to use regional dialects.

BOX 8-1

How many dialects are there?

Most English speakers recognize that there are dialects of English based on the country where it is spoken, such as British and American dialects of English. There are also different dialects of English within a country. In the United States, most people are aware that English is spoken differently in Southern states, Northeastern states, Midwestern States, Southwestern states, and so on. And there is a difference between the British of London, of Manchester, of Liverpool, of Yorkshire, and other areas of the United Kingdom. So how many dialects are there?

This is the question anthropologist Paul L. Kirk tried to answer when he studied Mazatec language speakers in 23 different communities in the Mexican state of Oaxaca. He had them listen to stories in their own dialect and in the dialect of the other communities. Then, he asked them comprehension questions and calculated an intelligibility score. This intelligibility score reflected how well the members of one speech community could understand another community. So how many dialect areas of Mazatec are there? It depends on what score you use as the cutoff. If you use the intelligibility score of 74 or better, then there are two dialect areas. An intelligibility score of 74 means that the listener understood 74 percent of the content of the message, in this case a story. If you use an intelligibility score of 80, there are four dialect areas; 85 yields six dialect areas and 92 yields eight areas.

Kirk believes that 80 was the most significant score because the four dialect areas defined by that measure separate the speech that test subjects reported they find easy to understand from speech they find hard to understand. These four dialect areas corresponded to the subjective perception of dialect by the Mazatec speakers themselves.

In terms of English, because the number of dialects depends on what intelligibility score is used and other subjective criteria, different linguists argue for different numbers of dialects. The University of Edinburgh in Scotland has a website that compares words (sound recordings) in 50 dialects of English from around the world (www.soundcomparisons.com). They do not claim that the list is comprehensive. Other sources list many more dialects than 50 for English.

Source: Paul L. Kirk, "Dialect Intelligibility Testing: The Mazatec Study," *International Journal of American Linguistics* 36, 3 (1970), 205–211, www.jstor.org/stable/1264590.

Semantic variation

One of the most colorful ways in which dialects vary is semantically. Many lexical items vary according to region in the United States.

- Do you carry water in a pail or a bucket? Do you eat pancakes, johnnycakes, or flapjacks for breakfast? It depends on whether you live in the northern states or the southern states.
- Do you drink tonic, coke, soda, or pop? Do women carry purses or pocketbooks? These are distinctions between the West Coast and East Coast.
- In most parts of the United States, when you order fast food the clerk asks you if you want the food "For here or to go?" If you order your food to go, you are ordering *take-out* food. But in the northern plains states (Montana, Idaho, and North and South Dakota), the clerk asks if you want it "To stay or to go?" And the food that you order to go is *take-away* food.

Some lexical items distinguish American and British dialects. In the United States, people might *swipe* a few extra packets of sweetener in a restaurant. But in Britain they *nick* them.

When Americans eat *cookies*, the British eat *biscuits*. In the United States, a light meal in the early evening is *supper*, but in Britain it's *tea*.

There is lexical variation between Spanish-speaking regions. Orange juice in Mexico is *jugo de naranja*, but in Puerto Rico it is *jugo de china*. Stop signs in Mexico read *Alto*, but in Puerto Rico they read *Pare*. The Spanish spoken in Mexico has many words derived from Nahuatl, the language of the Aztecs. Therefore, in Mexico an ear of corn is called *elote*, but in other parts of the Spanish-speaking world it is called *choclo*; in Mexico avocado is called *aguacate*, but elsewhere it is called *palta*.

On the other hand, sometimes the same word is used with different meanings in various regions. In the northern and western United States, you purchase a *camper* to put on the bed of your pickup truck to use it as a recreational vehicle. But in the South it is a *camping trailer* that you pull behind your car or truck.

In Britain a *rubber* is an eraser, while in the United States the word refers to a small rain boot that fits over a shoe, or it is an informal synonym for *condom*. In Britain a *jumper* is a sweater vest that a man wears over a shirt, while in the United States it is a sleeveless dress that a woman wears over a blouse.

Phonological variation

There is phonological variation (that is, words are pronounced differently) in the different regions of the United States. This is part of what makes up the regional accent. These pronunciation differences can be traced back to the regional variation in the English of the early colonists, who came from different parts of England and spoke English differently.

- Do you /pak yə ka/ or /park yɔr kar/? The deleted /r/ is characteristic of the Boston area.
- Is your mother's sister your /ant/ or /ænt/? Do you pronounce *eye* as the monophthong /a/ or the diphthong /ay/? Southerners use the first pronunciation; northerners use the second.
- Do you say /dɪs/ instead of /ðɪs/, /tɪŋk/instead of /θɪŋk/? The substitution of /d/ for /ð/ and /t/ for /θ/ is characteristic of speech in the Bronx, New York.

There are phonological variations between SAE and modern British English.

- Do you say /təmeto/ or /təmato/? Do you say /nuz/ or /nyuz/? Americans use the first pronunciation; Britons use the second.

There is also phonological variation among Spanish-speaking countries.

- A Mexican asking *¿Qué es esto?* (What is this?) will pronounce it /ke ɛs ɛsto/. But a Puerto Rican will pronounce it /ke ɛ ɛto/, deleting the /s/'s.
- A Mexican pronounces the letter *r* in *gordo* and *hermano* as a flap of the tongue against the alveolar ridge (see "Some consonants not used in English," in Chapter 2); but a Cuban pronounces these words with the lateral liquid /l/ instead, so that they sound like /goldo/ and /ɛlmano/.

Morphological variation

In the United States, southerners distinguish between *you* (singular) and *y'all* (plural), or even *all y'all* (a larger number of people). People in other parts of the country use *you* for both singular and plural. So a southerner greeting several people at once would say

> It's nice to see y'all. How are y'all doing?

But people in other parts of the country would say

> It's nice to see you. How are you doing?

In some parts of the American South, northern England, and southern Wales, the third person present, singular inflectional bound morpheme (-s) is used with first and second person, singular and plural, as a present tense marker. So you can hear sentences such as

I likes to swim.
We likes to dance.
You eats at noon.[1]

In parts of northern England, *was* (the past tense singular form of the verb *to be*) has been completely replaced by *were* (the past tense plural form) in some dialects, as you can hear in this passage:

Her face were white like a sheet when she came in church, but afore she got to th' altar she were all one flush.[2]

Americans use the singular verb for a noun that is singular even though it refers to a group of people, places, or objects. These are sometimes referred to as the collective nouns or group nouns. So in the United States, we can say

The faculty is meeting this afternoon.
The band is playing on Saturday night.
Congress is in session.
Manchester United is the champion British soccer team.

But the British sometimes use the plural verb for singular subjects. So they might say

The USA Division are now hosting their own website.
The band are playing in the lounge.
The American Congress are in session.
Manchester United are the champion British football team.

EXERCISE 1 British and American dialects

A. The following is a list of British expressions. Check the websites below for their American English definitions:

- American-British British-American Dictionary:

  https://en.oxforddictionaries.com/usage/british-and-american-terms

- British English to American English Translator:

  http://esl.about.com/library/vocabulary/blbritam.htm

1. _____ to be made redundant
2. _____ to be sacked
3. _____ to knock someone up
4. _____ to ring someone up
5. _____ a lift

[1]Department of Linguistics, Ohio State University, *Language Files*, 11th ed. (Columbus: Ohio State University Press, 2011), 304–305.
[2]Elizabeth Gaskell, *Mary Barton* (New York: Everyman's Library, Alfred A. Knopf), 1911.

6. _____ a lorry
7. _____ a torch
8. _____ chips
9. _____ a flat
10. _____ the bonnet of a car
11. _____ the boot of a car
12. _____ petrol
13. _____ pram
14. _____ knickers
15. _____ nappy
16. _____ bum bag

B. Pronounce these word pairs as the phonetic transcription indicates and decide which is British pronunciation and which is American. On YouTube you can find many videos comparing British and American pronunciation.

1. been /bin/ _____
   been /bɪn/ _____
2. schedule /skɛdyul/ _____
   schedule /šɛdyul/ _____
3. Renaissance /rɛnesans/ _____
   Renaissance /rɛnɛsans/ _____
4. lieutenant /lɛftɛnənt/ _____
   lieutenant /lutɛnənt/ _____
5. nasty /nasti/ _____
   nasty /næsti/ _____
6. pardon /padən/ _____
   pardon /pardn̩/ _____
7. water /wɔtɪ̣/ _____
   water /wɔtʌ/ _____

C. Imagine that J. K. Rowling is planning to write a more Americanized version of her Harry Potter series.[3] How should she change the underlined words for the American audience?

1. "He'd done a <u>runner</u>."

   _____

[3] J. K. Rowling, *Harry Potter and the Order of the Phoenix* (2003); *Harry Potter and the Half Blood Prince* (2005); *Harry Potter and the Deathly Hallows* (2007). All published in New York by Scholastic Books.

2. ". . . he's going to jump out from behind a dustbin and try and do me in?"

3. "I know, mate . . . she's bang out of order."

4. "The Inquisitor will have powers to inspect her fellow educators and make sure that they are coming up to scratch."

5. "He is . . . the world's . . . biggest . . . git."

6. "Sure you don't need a lie down?"

7. "And that's our stuff you're nicking."

8. "I don't want to find my own sister snogging people in public."

9. "Ron . . . had taken a small wooden wireless out of his rucksack."

10. "Sit down dear, I'll knock something up."

11. "When more than half the class were staring at Hermione rather than at their books . . ."

D. E-mail exercise
E-mail friends and relatives in different parts of the country and ask them what words or phrases they use that are distinctive to their region. Ask them how they refer to:

1. a pail or bucket
2. a lady's handbag
3. pancakes
4. a dragonfly
5. the nearest interstate highway
6. food ordered at a restaurant, but eaten elsewhere
7. carbonated drinks
8. a water faucet
9. a grocery bag
10. the closest large urban area

African American English

African American English (AAE) is one of several names for the varieties of English used in the African American community.

People in the African American community speak a variety of English that has been referred to by several names: Black English, Spoken Soul, Ebonics, "down home" speech, African American Vernacular English, or simply **African American English (AAE)**. And, just like all varieties

BOX 8-2

The Gullah/Geechee dialect of South Carolina and Georgia

The African Americans living on the coastal plain and sea islands of South Carolina and Georgia have been successful in preserving many facets of African life and language. In South Carolina, they call themselves Gullah, perhaps derived from the name Angola, a country in West Africa. In Georgia, they are known as Geechee, a tribal name from Liberia. They are the only community of African Americans to continue the African craft of making coiled baskets of sea grass.[4]

The Gullah dialect has many features in common with other varieties of AAE. Its vocabulary is essentially English, but it preserves many grammatical and phonological features of the West African languages. Probably the most famous speaker of Gullah is Daddy Jack, a fictional character created by Joel Chandler Harris, who also created Uncle Remus, Bre'r (or Brer) Rabbit, Bre'r Bear, and Bre'r Fox.[5]

Some vocabulary is unique to Gullah/Geechee dialects, such as /ašta/ for *oyster*, /yɛdi/ for *hear*, and /bɪfode/ for *dawn*. There are many Gullah/Geechee websites, such as www.knowitall.org/gullahtales/ and http://gullahtours.com/gullah/hear-and-read-gullah. At these sites you can learn more about the culture and dialect and hear phrases, stories, familiar biblical passages, and famous speeches spoken in Gullah/Geechee.

of English, AAE varies from one region of the country to another, from one social status to another, and from one generation to another. Its origins are not completely understood, but some grammatical constructions are similar to the African languages that slaves brought to America. The Gullah/Geechee variety of AAE has retained many phonological and syntactic features of West African languages (see Box 8-2). Other constructions are similar to the English/African creole languages of the Caribbean, and may simply be the result of the creolization process (see the "Contact languages: pidgin and creole" section later in this chapter). Still other characteristics, particularly phonological ones, are similar to the variety of English that white people brought with them from England to the American South. As African Americans moved to all parts of the country, they brought their dialects with them as part of their cultural heritage and communal values.

The characteristics of African American English have often been misunderstood as incorrect, sloppy English. The speakers of AAE have often been stigmatized as uneducated and lazy. To avoid these negative stereotypes, many African Americans have learned to use SAE while conducting business or working in the white community. However, they use AAE in the African American community as a sign of ethnic pride and neighborhood solidarity. This practice of changing from one style of language to another is called code switching (see Chapter 7).

Phonological differences

/r/ and /l/ deletion is one of the phonological characteristics of some varieties of African American English.

Some of the varieties of AAE are among the many varieties of English that have a rule for **/r/ and /l/ deletion**. Like the speakers of some dialects of Boston and New York, the speakers of these AAE varieties delete the /r/ in words such as *car*, *guard*, *York*. They pronounce these words /ka/, /gad/, and /yɔk/.

[4]Dale Rosengarten, *Row Upon Row: Sea Grass Baskets of the South Carolina Lowcountry* (Columbia: University of South Carolina Press, 1986), 9.

[5]See Bill Bryson, *The Mother Tongue: English and How It Got That Way* (New York: Morrow & Co., 1990), 115.

The liquid sounds /r/ and /l/ form a natural class, so it is not surprising to find that /l/ can also be deleted by speakers of some AAE varieties. In these varieties, *help* is pronounced /hɛp/ and *soul* becomes /so/.

Both SAE and AAE have a **consonant cluster reduction rule** that allows reduction of the final consonant cluster to a single consonant before another word that begins in a consonant. So speakers may reduce the /st/ to /s/ and /ft/ to /f/, pronouncing *last night* as /læs nayt/ and *soft spot* as /sɔf spat/. Additionally, AAE speakers may apply this rule when the second word begins with a vowel, so that *last hour* becomes /læs awr/ and *soft as* becomes /sɔf æz/.

Consonant cluster reduction is the rule for reducing a consonant cluster to a single consonant. In SAE, this rule applies to clusters in the word final position that are followed by a word beginning in a consonant; in AAE, it occurs when the following word begins with either a vowel or consonant.

This consonant cluster reduction rule also allows reduction in AAE of the past tense marker /t/ as in *walked* or /d/ as in *jogged*.

	SAE	AAE
walked	/wɔkt/	/wɔk/
jogged	/ǰagd/	/ǰag/
ticked	/tɪkt/	/tɪk/

Many vowels that are diphthongs in SAE are monophthongs in AAE and in white southern dialects. **Monophthongization** is one of the most prominent characteristics of these dialects; it is always used by comedians and by actors imitating the dialects.

Monophthongization is a phonological rule that shifts the pronunciation of a diphthong to a monophthong.

	SAE	AAE
I, eye	/ay/	/a/
like	/layk/	/lak/
time	/taym/	/tam/
my	/may/	/ma/
boil	/bɔyl/	/bɔl/
boy	/bɔy/	/bɔ/
power	/pawṛ/	/paṛ/

As in the Bronx dialect, many varieties of AAE also modify the **interdental fricatives** /ð/ and /θ/. In AAE varieties, the voiceless /θ/ is replaced by /t/ and the voiced /ð/ is replaced by /d/.

Interdental fricatives /ð/ and /θ/ in many varieties of AAE are replaced by /d/ and /t/, and in other varieties by /v/ and /f/.

	SAE	AAE
thin	/θɪn/	/tɪn/
thought	/θɔt/	/tɔt/
this	/ðɪs/	/dɪs/
that	/ðæt/	/dæt/
they	/ðe/	/de/

However, when the interdental fricative /θ/ is followed by an /r/, an /f/ may replace the /θ/ instead, so that instead of *Thirty-third St.* sounding like /tɔyti tɔyd strit/, as it does in the Bronx, it would sound like /fṛti fṛd strit/.

	SAE	AAE
third	/θṛd/	/fṛd/
three	/θri/	/fri/
throat	/θrot/	/frot/
throw	/θro/	/fro/

Morphological differences

The rule for **verb deletion** in AAE allows the verbs to be deleted if they can be contracted in SAE.

Verb aspect expresses the completeness or duration of the action.

Copula is the coupling verb, and is most often a form of the verb *to be*.

Many of the differences between SAE and AAE can be traced to grammatical features of the African languages that African slaves incorporated into their new language. Two of the most prominent of these features are **verb deletion** and **verb aspect**.

AAE allows the **copula** (coupling verb) to be deleted if SAE allows it to be contracted. So in any sentence that allows an SAE speaker to say *-'s* or *-'re* instead of *is* or *are*, the AAE speaker can delete the word entirely. So "He's going to work" becomes "He going to work" and "You're waiting for me" becomes "You waiting for me."

But if the copula cannot be contracted in SAE, it cannot be deleted in AAE. So "He appreciates how lucky he is" cannot be *"He appreciates how lucky he's" or *"He appreciates how lucky he."

SAE	AAE
He's a great guy.	He a great guy.
They're busy.	They busy.
We're good friends.	We good friends.
She's a pretty girl.	She a pretty girl.

Toni Morrison (b. 1931), the Nobel Prize-winning African American author, attributed some of the success of her writing to the expressiveness of AAE. In particular, she commented on the fact that it has a variety of different present tenses.[6] These tenses express aspect, completeness, or duration of the action. SAE, with only two present tenses, distinguishes between the general present tense and the progressive tense. (The progressive tense, with the *-ing* ending, describes an action in progress.) Speakers of AAE have a further distinction; they distinguish two aspects of the present tense: the momentary aspect and the habitual aspect. While speakers of SAE have to use adverbs, such as *usually* or *right now*, to distinguish between these two aspects, speakers of AAE simply use the word *be* for habitual meanings.

Aspect	SAE	AAE
Habitual	She's going to school (this semester).	She be going to school.
Momentary	She's going to school (right now).	She going to school.
Habitual	He's (always) on time.	He be on time.
Momentary	He's on time (at the moment).	He on time.

Syntactic differences

Indirect questions in AAE preserve the word order of direct questions.

An important syntactic distinction of AAE is in the word order of **indirect questions**. As discussed in Chapter 5, in English the word order of questions (interrogative sentences) is different from the word order of declarative statements. However, when a speaker of SAE reports a question, there are two choices available. The speaker can state the question exactly as it was originally stated, using quotation marks, with the verb (*is*) coming before the subject (*the price*).

I asked, "What is the price?"

Alternatively, the speaker of SAE can restate the question as an indirect question, in which case the word order of the question is revised into the word order for a declarative statement, with the subject (*the price*) coming before the verb (*is*).

[6]Thomas LeClair, "A Conversation with Toni Morrison: 'The Language Must Not Sweat,'" *New Republic*, March 21, 1981, 25–29, quoted in John R. Rickford and Russell J. Rickford, *Spoken Soul: The Story of Black English* (New York: Wiley, 2000), 4.

I wanted to know what the price is.

However, speakers of AAE use the interrogative word order for indirect quotations. So in AAE, indirect quotations are as follows:

I wanted to know what is the price.

The **existential *it*** is another distinction of AAE. SAE sentences about the existence of something are introduced by the words *there is* or *there are*. In these cases, AAE sentences use the word *it's* or *i's*, contracted forms of *it is*.

The **existential *it*** in AAE replaces the existential *there* in SAE.

SAE	AAE
There's a house at the corner.	It's a house at the corner.
Is there a church nearby?	Is it a church nearby?
There's a bow on the dress.	It's a bow on the dress.
There are a lot of movies on TV tonight.	I's a lot of movies on TV tonight.

Multiple negation is a characteristic of AAE and many other varieties of English (see the section "Hispanic English" that follows). In the fourteenth century, Geoffrey Chaucer (1343–1400) described the Friar in *The Canterbury Tales* as "Ther nas no man nowher so vertuous," and in the sixteenth century, William Shakespeare's (1564–1616) character Viola in *Twelfth Night* said, "nor never none shall mistress of it be, save I alone." Multiple negation was very likely a feature of the early colonists' English, but disappeared from formal English after the Renaissance. AAE has retained this English feature, and requires a negative with the verb and a negative with the noun or pronoun to express a negative sentence. Where SAE speakers say *I have no dogs* or *I don't have any dogs*, AAE speakers say *I don't have no dogs.*

Additionally, in AAE there can be further negative elements, so you can hear sentences such as *I don't have no dogs, no how, no where*.[7]

Multiple negation is a characteristic of AAE and many other varieties of English. The negative word can appear before the noun, verb, and modifiers. See also **double negation**.

The "man of words" and the style of AAE

Respect and admiration for a **man of words** is an African cultural value that the slaves brought with them and their descendants have preserved. In Africa, this man might have been a chief or shaman whose oratorical skills convinced others to follow him. Or he might have been a **griot** /grio/, a learned elder who memorized the oral history of the community in a sort of epic poem. Excellent verbal performance and oratorical skills are highly valued in the African American community.

Also, a man of words in the African American community may be someone skilled at toasting; that is, reciting in rhyme the history of his experience in important events, such as World War II or the civil rights movement. Or the man of words may be an expert at playing the dozens, a rhyming game in which the participants jokingly trade insults. Rap music, with its driving rhythms and strict rhyme schemes, is the direct descendant of this African tradition. The individual who can improvise raps or rhymes on a variety of subjects gains great prestige in the community. When Johnnie Cochran (1937–2005), O.J. Simpson's lead defense attorney, said (about a glove that was in evidence)

Man of words is a person in an African or African American community who is respected for his oratorical skills.

A griot /grio/ was a learned elder in an African village who memorized the oral history of the community in a sort of epic poem.

"If it doesn't fit, you must acquit,"

he was speaking in the rhythm and rhyme of AAE.

[7] Rickford and Rickford, *Spoken Soul*, 123.

Often the African American community leader with great oratorical skills is a clergyman. These men of words use the intonation of AAE, often without necessarily using the grammatical and phonological characteristics. In his famous "I Have a Dream" speech, Dr. Martin Luther King Jr. (1929–1968) repeated the phrase "I have a dream . . ." in the poetic intonation of a toast or rap. The Reverend Jesse Jackson (b. 1941) mixes the intonation, alliteration, rhythm, and rhyme of AAE with a couple of AAE words in his preaching:

> Africa would if Africa could.
> America could if America would.
> But Africa cain't and America ain't.[8]

EXERCISE 2 Analyzing the poetic style of African American speech

1. Find a copy of Dr. Martin Luther King Jr.'s "I Have a Dream" speech.
   a. Identify all the repeated phrases and list them. What is the significance of the repeated phrases?
   b. Identify the rhymes and the alliteration (words that start with the same sound). In what context are the rhymes? What is the importance of the alliterative words?
   c. What other sources does Dr. King refer to or quote from? In what ways are these sources significant to the African American community?
   d. Find examples of metaphors. What items are compared? What is the significance of these comparisons?
   e. Is there any example of AAE grammar or phonology? Why or why not?
2. Pick another work by an African American writer—the lyrics of a rap song, a poem, dialogue in a novel, a speech, or a sermon—and analyze it in the same way.

EXERCISE 3 African American English

Decide if each of these sentences is SAE or AAE or both.

1. He's a good student.
2. He wanted to know where did he work.
3. What a nice car you have.
4. You a good girl.
5. I've got a big sack.
6. It's a church around the block.
7. He be home a long time.

[8]Geneva Smitherman, *Talkin' and Testifyin': The Language of Black America* (Detroit: Wayne State University Press, 1977), 3.

8. I didn't have no problem.
9. I had no friends.
10. I want to know what you did.
11. She'd be a good linguist.
12. She be going to school.
13. There's a movie at the theater.
14. He is fixing the car today.
15. They be going home every day.

Hispanic English

The English spoken by Americans of Hispanic descent displays a lot of variation; just as there are many varieties of AAE, there are many varieties of **Hispanic English (HE)**. Some of the characteristics of the English spoken by immigrants from Spanish-speaking countries are the result of the application of the Spanish phonological system on the English words and Spanish word order on English sentences.

Hispanic English (HE) is a general term to describe the many varieties of English spoken by Americans of Hispanic descent.

Phonological differences

English has twelve main vowels (see Chapter 2); Spanish has five main vowels, /i,e,u,o,a/. When Spanish speakers use the five-vowel system to pronounce English words, many of the distinctions between words are erased and they become homonyms. For instance, because there is no /ɪ/ in Spanish, the vowel /i/ is substituted. So words like *lip* and *leap* are both pronounced /lip/; *sip* and *seep* are pronounced /sip/.

The /ə/ sound also does not exist in Spanish, so the vowel /ɔ/, also a foreign-sounding vowel, is substituted. In this case, *but* and *bought* are pronounced alike, as are *done* and *dawn*.[9]

There is no /š/ in Spanish; therefore it is very often rendered as /č/ when it comes at the beginning of a word, as in:

	SAE	**HE**
Chevy	/šɛvi/	/čɛvi/
Chicago	/šəkago/	/čikago/

There is /č/ as in the Spanish words *muchacho* and *chico*, but the /č/ sound cannot be the terminal sound as in the English words *such* and *which*. So when the /č/ sound comes at the end of a word, it sounds foreign to the Spanish speaker and the foreign sound /š/ is substituted.

	SAE	**HE**
such	/sʌč/	/sʌš/
which	/wɪč/	/wiš/

Spanish words can never have a consonant cluster beginning with /s/ at the initial position. In a Spanish word, an /s/ consonant cluster must be preceded by a vowel. There are many **cognates** in Spanish and English, in which the English word begins with an /s/ cluster while

Cognates are similar words in two or more different languages that were derived from a similar root language and may have similar meanings.

[9]Francine Hallcom, *A Guide to Linguistics for E.S.L. Teachers* (Dubuque, IA: Kendall/Hunt, 1995), 87–96.

the Spanish word begins with an /ɛ/ before the /s/ cluster. *School* in English is *escuela* in Spanish; *student* in English is *estudiante* in Spanish; *Spain* in English is *España* in Spanish. When this Spanish phonological rule is applied to English words, it produces the following pronunciations:

SAE	HE
stop	/ɛ/stop
stand	/ɛ/stand
Steven	/ɛ/Steven
start	/ɛ/start

On the other hand, Spanish speakers who have learned English and are otherwise fluent English speakers may overcorrect themselves. They say *specially* instead of *especially* and *spect* instead of *expect* (see Box 8-3).

Syntactic differences

Double negation is the use of more than one negative word to negate a sentence. See also **multiple negation**.

Spanish, just like French, Middle English (ME), AAE, and many other languages, uses a negative word before the verb even if there is also another negative in the sentence. When this is translated into English, it results in **double negation**.

SAE	HE
I don't have any help.	I don't have no help.
You don't need a car.	You don't need no car.
I don't have any homework.	I don't have no homework.
I didn't see the sign.	I didn't see no sign.

The bilingual community

In business, education, the professions, and the media, second- and third-generation Hispanic Americans are communicating in both English and Spanish. They code switch from one

BOX 8-3

Cognates and false cognates

Cognates are similar words in two or more different languages that are derived from a similar root language and have similar meanings (see Chapter 14). The word *cognate* comes from the same Latin root as the English word *recognize*. Very often, cognates are so similar you can recognize them.

Spanish and English have many cognates that can facilitate language learning for those speakers of one language studying the other. *Nation* in English is *nación* in Spanish. *Probably* in English is *probablemente* in Spanish. *Problem* in English is *problema* in Spanish. *Mechanic* in English is *mecánico* in Spanish. In fact, sometimes it seems that translating from English to Spanish is just a matter of changing *-tion* to *-ción*, changing the *-ly* ending to *-mente*, or adding an /a/ or an /o/ to the end of a noun.

But beware of false cognates! Don't expect to borrow a book from a *libreria*. That's the Spanish word for bookstore; you will have to pay for your book. A *discoteca* is not a discotheque, a nightclub for dancing to recorded music; it's a store that sells recorded music. A *lectura* is not a lecture but a reading selection. An *advertencia* is a warning, not an advertisement. But, most important of all, if you want to say that you are embarrassed, don't say that you are *embarasada* or you might be very embarrassed. In Spanish, *embarasada* means pregnant!

language to the other, sometimes even within the same sentence. A bank officer can conduct a conversation entirely in Spanish, except for the affirmative response *OK* and conversation-ending *bye-bye*. A television announcer speaks unaccented English, but pronounces Spanish personal names and place names in unaccented Spanish. Double negation is commonly heard in the informal conversation of Hispanic English speakers who are not immigrants, but second- and third-generation Hispanic Americans.

Another interesting morphological practice of the bilingual Hispanic American community is the use of Spanish inflectional morphemes with English verbs. So you can hear such words as *watchale* and *parquiar*.

SAE	Spanish	HE
push	*empujé*	*puché*
watch out!	*¡cuidado!*	*¡watchale!*
to back up (a car)	*regresar*	*baquiar*
to park (a car)	*estacionar*	*parquiar*
to eat lunch	*almorzar*	*lonchar*

Pride in Spanish language heritage is encouraging people to ensure that their children speak, read, and write Spanish. Assimilation into the English community means that they use English too, even as part of a Spanish conversation. This code switching between two languages reinforces their identity as members of the bilingual community.

Contact languages: pidgin and creole

When people who speak different languages come in contact with each other, they need to find a way to communicate. In places with a common second language, that language will become a **lingua franca**, a common language for business and other communication needs. In many parts of East Africa, everyone speaks some Swahili, so that is the lingua franca. Among Eastern European Jews of all countries, Yiddish, a dialect of German, was the lingua franca. Today, English is the lingua franca of aviation and technology.

A **lingua franca** is a common second language used for business and other communication needs by people speaking different first languages.

But where there was no common language to rely on, simplified languages developed for use in specific interactions, such as business, service, and trade. These languages are referred to as **pidgin languages**, possibly from the word for *business* in the Chinese-English pidgin of the Far East. Tok Pisin was a pidgin language based on English and the languages of New Guinea. Tây Bôi is based on French and Vietnamese. Chinook jargon is based on the Native American languages of the Northwest Coast. Among the wide variety of pidgin languages are those based on African/English, African/French, and Portuguese/Malaysian.

Pidgin languages are simplified languages developed for use in specific interactions, such as business, service, and trade. They developed when people who had no common language came into contact.

No matter which languages pidgins are based on, they often have several things in common. First of all, they get a large part of their vocabulary from the dominant or **superstrate** language. But they get many of their syntactic qualities from the subordinate or **substrate** language. So for instance, in the pidgins that developed because of European colonization of countries in other parts of the world, the European language will provide most of the lexicon, but much of the grammar will come from the indigenous language. One explanation for this is that because pidgins develop very quickly out of necessity, the speakers of the substrate language will just learn the vocabulary of the superstrate language, but will incorporate it into the grammar of their own language.

The **superstrate** language is the dominant language; a large part of the vocabulary of a pidgin language comes from this language.

The **substrate** language is the native language of the subordinate people learning the dominant language; they retain many of the syntactic features of this language.

Pidgin languages have limited vocabularies, perhaps as few as 800–1500 words.[10] Therefore, they use explanations, which are often very colorful, to express concepts for which they

[10]Nancy Parrot Hickerson, *Linguistic Anthropology*, 2nd ed. (Fort Worth, TX: Harcourt College, 2000), 198.

have no words. Some examples from various pidgin languages are *dog baby* (puppy), *cow pig* (sow), and *lamp belong Jesus* (sun). *Grass* can mean anything that grows in great numbers from a surface, such as *grass belong face* (whiskers) and *grass belong head* (hair).

Pidgins depend heavily on word order, because they don't use affixes. Verb tense and aspect are designated by auxiliary verbs. Consonant clusters are reduced so that most syllables are just a consonant and vowel.

A **creole language** is created when a pidgin language is passed on to the next generation and becomes the first language of a community.

When a pidgin language is passed on to the next generation and becomes the first language of a community, it is then called a **creole language**. The Africans who were enslaved and brought to the Americas were deliberately kept isolated from others who spoke the same African language, to prevent them from organizing a rebellion. In order to communicate with each other, they developed a pidgin language with the overseer's language as the superstrate. Over the years, they developed a language community of their own, with the pidgin language as the means of communication among themselves and with their offspring born into slavery. This process, called **nativization**, occurs when a new language that had not previously been anyone's native language becomes the native language for a generation of speakers. During this process, vocabulary is added to the language so that the full range of human experience can be expressed.

Nativization is when a language that had not been anyone's native language becomes the native language for a generation of speakers.

Tok Pisin, now a creole language, is an official language of Papua New Guinea, and is used in government, broadcast media, schools, and churches. There are radio broadcasts, music performances, and children's books written in the Hawaiian pidgin. Gullah and other varieties of African American English are considered by some linguists to be creole languages.

In a remote aboriginal village in Australia another phenomenon has been observed since the early 1980s. Anthropologist Carmel O'Shannessy has documented that Warlpiri youth are speaking a unique mixture of English, Warlpiri, and the creole language of their parents. It is referred to as Light Warlpiri; unlike other pidgins and creoles, it does not have a well-defined substrate and superstrate languages. Instead, it mixes the lexicons and morphology of English, Warlpiri, and creole—producing novel constructions. For instance, in the sentence

Nganimpa-ng gen wi-m si-m worm mai aus-ria
We also saw worms at my house

you can see English cognates such as "worm" for worm, "aus" for house and "si" for see. But the ending "-m" on "si-m" is a tense ending meaning either past or present, but not future. This tense does not occur in English, Warlpiri, or their creole language. It is unique to Light Warlpiri. It has been theorized that the multiple linguistic sources have resulted in this innovative new means of communication.[11]

Situational dialects or registers

All people use different styles of speech in different situations. Just as many African Americans code switch between AAE and SAE, everyone code switches between styles of speech or **registers** that are appropriate to the situation, the level of formality, and the person being spoken to. When speaking with our family and friends, we speak differently than when we speak to a clerk in a store. When we speak to a small child, we speak differently than if we were to speak with a government official. When speaking with someone who has the same technical knowledge as we have, we speak differently than when we speak to someone outside our field of expertise. Using the appropriate situational dialect or register indicates our desire to express solidarity with others, to behave politely with respect to others' feelings, to establish our credibility as a professional or colleague.

Registers are styles of speech that are appropriate to the situation, the level of formality, and the person being spoken to.

[11]Carmel O'Shannessy, "The Role of Multiple Sources in the Formation of an Innovative Auxiliary Category in Light Warlpiri, A New Australian Mixed Language," *Language* 89, 2 (June 2013), 328–353.

In many languages, including most of the Indo-European languages, there is a prescribed way of speaking to others depending on your relative social status. In Spanish, French, and German, there are two different forms of the pronoun *you:* one is designated as formal, the other informal. The formal is used for elders, superiors, and people with whom you are not familiar. The informal is for children, for those of lower status, and for close friends. Along with these two distinct forms of the pronoun *you* are two distinct second person forms of most verbs. When speaking these languages, your choice of pronoun and verb is dictated by the situation.

The greeting *How are you?* takes two forms in Spanish:

¿Como estás tú?—informal
¿Como está Usted?—formal

A professor might feel that a student who addressed him with the informal *tú* was being too familiar. Conversely, addressing a friend with the formal *Usted* would give an unfriendly, distant impression. English has not had this distinction between the formal *you* and the informal *thee* since the eighteenth century. However, English speakers have other ways of signaling the level of formality of their speech.

Morphological variation

One of the main ways that English speakers indicate the level of formality of their speech is by the use of contractions. Common contractions are used in writing and in all spoken registers, in both formal and informal settings.

I am—I'm
You are—you're
He is, she is—he's, she's.

The failure to use contractions produces a very formal, somewhat stilted style of speech; or it can act as a focus construction (see Chapter 6), along with added stress on the word that is not contracted (compare "I'm coming" with "I am coming"). Somewhat more informal speech and writing also contracts the auxiliary and modal verbs.

Formal		**Informal**
You should have	becomes	You should've
I could have	becomes	I could've
He would have	becomes	He would've

In everyday speech, these contractions are pronounced /ʌv/, but in more informal registers, the contraction is reduced to /ə/.

	Informal		**More informal**
should've	/šʊdʌv/	becomes	/šʊdə/
could've	/kʊdʌv/	becomes	/kʊdə/
would've	/wʊdʌv/	becomes	/wʊdə/

Additionally in very informal registers, there can be multiple contractions, so that

I would have becomes *I'd've* /aydʌv/ or even *I'd'a* /aydə/.
I am going to becomes *I'm gonna* /am gʌnə/.

The connected speech discussed in Chapter 2 is also indicative of the informal register.

Another way English speakers signal that they are speaking more informally is by changing /ŋ/ to /n/ at the end of words. In informal registers, *knowing* becomes *knowin'*, *dancing* becomes *dancin'*, and *happening* becomes *happnin'*.

EXERCISE 4 Contractions in informal English

1. Other than the words mentioned in the text, what words can be contracted in English?

a. Read an article in a popular magazine or your school newspaper and note which words are contracted.

b. Listen to a conversation between two of your friends and determine what words they contract.

c. How is the pronunciation of the spoken contractions different from the spelling of the written contractions?

d. What kinds of words are contracted? What parts of speech are they?

2. Write the following sentences first with all of the allowable written contractions. Then write them with the informal contractions of pronunciation. What differences do you notice?

a. I am studying linguistics.

_____

_____

_____

b. I will be going to the store today.

_____

_____

_____

c. I am going to a party tonight.

_____

_____

_____

d. I am going to dance at the party.

_____

_____

_____

e. I have a large dog.

_____

_____

_____

f. I have been working a long time.

_____

_____

_____

g. We would have been late if we had stopped for coffee.

_____

_____

_____

h. He will not need a coat today.

_____

_____

_____

i. You do not have enough money.

_____

_____

_____

j. That is not going to happen.

_____

_____

_____

3. Write the contraction and its pronunciation for each of the following words:

Words	**Spelling contraction**	**Pronunciation**
a. I am	_____	_____
b. I am not	_____	_____
c. You are not	_____	_____
d. He is	_____	_____
e. They are	_____	_____
f. I am going to	_____	_____
g. I will have	_____	_____
h. I did not	_____	_____
i. I have	_____	_____
j. I have not	_____	_____

4. Listen to a conversation to hear if the speakers are changing /ŋ/ to /n/ at the end of words.

   a. What words are changed? List them.

   b. Describe the participants in the conversation. Are they friends? Relatives? Teacher/students? Colleagues? Salespersons/customers?

   c. Describe the circumstance of the conversation. Where did it take place?

   d. What can you conclude about the rules for using the /n/ in place of /ŋ/?

Syntactic variation

One grammatical indicator of the informal register is the placement of a preposition at the end of a sentence. Sentences ending in a preposition are common in informal, everyday speech.

"Where are you going to be at?"
"Who should I send it to?"

If they were written (or spoken) in a more formal register they would be:

"Where are you going to be?"
"To whom should I send it?"

In fact, the word *whom*, the objective case of the word *who*, is only used in very formal circumstances or by people who want to appear knowledgeable and erudite.

Informal speech allows deletions that are not present in more formal speech or written English. The answer to the informal questions in the example can be one or two words; the full sentence, which is shown in strike through print, is implied.

"Where are you going to be at?"
"The mall." ("~~I am going to be at~~ the mall.")
"Who should I send it to?"
"Dale." ("~~You should send it to~~ Dale.")

Additional deletions, common in informal speech, produce such questions as:

"You going to school today?"
"Going to work today?"

The first of these questions deletes the auxiliary verb *are*; the second deletes both the auxiliary verb *are* and the subject *you*.

Another feature of informal speech in English is the use of simple sentences or clauses linked repeatedly with the coordinating conjunction *and*. The following utterance would be considered a run-on sentence in writing, but is common in informal speech.

". . . I heard about it from David who is a gourmet cook, and he said read this article and, you know, it's a pretty good article and after I read that article . . ."[12]

More formal speech and written language uses compound and complex sentences (see Chapter 5). Informal speech also uses mostly sentences in the active voice, while formal speech and written language often use the passive voice (see Box 5-1).

Semantic variation

Word choice is probably the single most important indicator of formality or situational dialect. One of the legacies of the Norman invasion of England in the eleventh century is that English has synonyms that derive from the native Anglo-Saxon (see Chapter 14) and from the invading French. Because the French speakers were the aristocratic ruling class, the French cognates tend to be the more formal, upper-class words. On the other hand, the Anglo-Saxon words of the laborers, farmers, and serfs tend to be the more informal, earthy words. Notice the different connotations between these synonyms:

French origin	**Anglo-Saxon origin**
perspire	sweat
expectorate	spit
beneficial	good
desire	want
abandon	leave

The use of **slang** is another way that speakers indicate the informal register and their social identity. Slang words are newly formed words or those that have never been completely accepted in formal speech. Many slang words are **taboo words**. Some of these are for bodily functions and body parts. Small children are taught to say *pee-pee* or *wee-wee* instead of the more formal *urinate*. Very often families make up their own slang words for *penis*, *vagina*, *breasts*, and *buttocks*. Adults may use variations of these slang words or other, more adult slang, in informal settings. However, they would use the formal words when discussing the bodily function or the body part with a doctor.

Slang words are newly coined words or those that have never been completely accepted in formal speech.

Taboo words are slang words that have cultural rules restricting their use. Some of these are for bodily functions and body parts.

Other taboo words are **expletives** such as *son of a bitch*, *motherfucker*, and *god damn*. Their main function is to express affective meaning, that is, the feelings of the speaker. Racial epithets are also slang taboo words, such as *wop* for Italians who immigrated "without papers," *wetback* for Mexicans who illegally crossed the border by swimming across the Rio Grande, and *slant eyes* for Asians, who have an epicanthic fold in the eyelid. Expletives and racial epithets are not used in the formal register.

Expletives are other taboo words that express affective meaning.

TV, *phone*, and *fridge* are informal words for everyday items that have been clipped from the words *television*, *telephone*, and *refrigerator* (see Chapter 4). We use the shortened word

[12]Deborah Tannen, *Conversational Style* (New York: Oxford University Press, 2004), 80.

when talking to our family. But if we were writing a letter to the manufacturer or testifying in a consumer affairs court case, we would use the longer word. Slang words for the same household items—*boob tube*, *horn*, *reefer*—convey an affective or social meaning.

Many slang expressions typify an in-group or a generation (see Chapter 6). In the 1930s, the jazz musicians of Harlem used *cool cat* to refer to someone who was a good jazz musician. The beat generation of the 1950s addressed older men as *Dad* or *Daddy-o*. The hippies of the 1960s said *far out* to express amazement; they said *turn on* or *get high* to refer to the feelings associated with taking drugs; they wanted to *drop out* or disassociate themselves with the *establishment* or the mainstream culture. The Valley girls of the 1980s said *totally* as an affirmation and *rad* (short for *radical*) to mean "good." They said *Gag me with a spoon* to mean that something was disgusting or stupid. They used *like* along with *goes* as substitutes for *says* to introduce a quotation. Today, people in the computer industry might use geek speak, with terms such as *cube farm* (an office of cubicles) and *liveware* (people). The use of typical slang expressions indicates social identity and promotes group solidarity.

Jargon is the in-group expressions of a profession, sport, hobby, or field of expertise.

Jargon is the in-group expressions of a profession, sport, hobby, or field of expertise. In fact, the words that are printed in bold in this book are part of the jargon of the field of linguistics. People use jargon, the technical terms of their profession, as a form of shorthand when talking with others in their field. For a computer programmer, it is quicker and easier to say one word, such as *ROM*, than to give a definition for read-only memory. People in the field respect those who are knowledgeable in that field, and knowledge is often demonstrated by the correct use of jargon. For a doctor, the use of the term *contact dermatitis* to refer to a rash demonstrates an understanding that a rash can be caused by many things—virus, allergy, nerves—but in this case it is caused by contact with an irritating substance.

However, sometimes jargon is used to command respect outside of the field by making a simple concept seem more important. This is often the basis for humor in comic skits when an automobile mechanic uses jargon to explain the workings of a car to a customer. He may use terms such as *rotary attenuator* to describe a *knob* on the dashboard, or may even make up long words that are simply meant to impress (see Box 8-4).

BOX 8-4

Doublespeak

William Lutz invented the term *doublespeak* to describe language that is intended to confuse and deceive rather than to communicate. Using jargon outside of its own language community, knowing that the person listening or reading will not understand, can be considered doublespeak. Doctors refer to *aspirin* as an *NSAID* (/ɛnsed/) or *nonsteroidal anti-inflammatory drug*, chemists refer to *glass* as *fused silicate*, and linguists refer to *affixes* as *bound morphemes*. As long as these terms are used among people who can be expected to know the jargon, it is not doublespeak. But when used in advertising, an insurance policy, a corporate annual report, or anything else intended for the general public to read, it is doublespeak.

Other forms of doublespeak are euphemisms, bureaucratese, and inflated language. Euphemisms are words that make something seem less offensive or unpleasant than it is. It is not doublespeak when they are used to spare someone's feelings, as in the substitution of the phrase *passed away* for the word *died*. But it is doublespeak when used for political reasons, as when the U.S. State Department deleted the word *killing* from its annual reports on human rights and substituted the phrase *unlawful or arbitrary deprivation of life*.

Bureaucratese is also known as gobbledygook. It is an accumulation of many long words in many long sentences to impress the audience, not to communicate with the audience. Alan Greenspan, former chairman of the Federal Reserve Board, is so well known for his speeches filled with bureaucratese that he once joked, "I guess I should warn you, if I turn out to be particularly clear, you've probably misunderstood what I've said."

Inflated language is the use of terms to make everyday things seem more important. Inflated language calls *used* cars *pre-owned* or *experienced* cars. A fan that can be turned around to blow either into the room

or out is *manually reversible*. The school employee who used to be called the *janitor* then came to be called the *custodian* and is now called the *plant manager*. Teachers who used to teach cooking and sewing became teachers of *home economics* but now teach *family and consumer studies*.

Source: William Lutz, *Doublespeak: From Revenue Enhancement to Terminal Living: How Governments, Businesses, Advertisers and Others Use Language to Deceive You* (New York: Harper & Row, 1989).

The social meaning of regional dialects

Regional dialects have come to have a social meaning, in that people make assumptions about the speaker based on the dialect that he or she speaks. Dialects have been stereotyped. In the 1990s, the luxury automobile Infiniti (a Japanese car) had as its television spokesperson the British actor Jonathan Pryce. This is not unusual. Television commercials for many upscale, high-end, expensive products feature voices with British accents. They sound very elegant to an American audience. They give the product an air of elegance and exclusivity—as if by buying them the consumer can join the aristocracy.

However, if advertisers want to portray a product as earthy or down home, they may have the actors use a rural, Midwest accent; or if they want to establish a character as not too smart, the actor will use a southern or "hillbilly" accent.

The Bronx accent has been the subject of many comic routines and can add humor to the advertisement. As mentioned earlier, these speakers substitute /t/ for /θ/ insert /ɔy/, and delete the /r/ so that *Thirty-third Street* is pronounced /tɔyti tɔyd strit/. This accent portrays an uneducated, working-class, humorous character.

Awareness of these stereotypes leads people to work on changing their accent so as to affect other people's perception of them. Dan Rather and Katie Couric, television news personalities who are from the South, do not sound like Southerners when they speak on air. They use the SAE that is used by all of the national broadcast media. This makes them sound educated, reliable, and believable.

On the other hand, Keith Urban, an Australian who sings American country music, sings with the rural southern accent expected of American country singers. And although he has never lived the American country life, he sings about it—including the dogs, trucks, and girlfriends that are the typical subject matter of country songs.

EXERCISE 5 Dialect stereotypes

1. Pick a television commercial that features characters with a regional accent. Analyze the stereotype that is conveyed by that accent. What does the advertiser want you to believe about the character? What does the advertiser want you to believe about the product?

2. Pick several television or movie characters or personalities who are identified with a particular part of the English-speaking world. For example, you might pick Bad Blake (*Crazy Heart*), Cersei Lannister (*Game of Thrones*), Homer Simpson (*The Simpsons*), or Stewie (*Family Guy*). Name the region of the English-speaking world that each comes from. Pick a characteristic phrase that identifies the character as coming from that region. Write it in standard orthography (spelling) and write it phonetically.

Character's name	Region	Phrase (standard spelling)	Phrase (phonetic transcription)
a. _____	_____	_____	_____
b. _____	_____	_____	_____
c. _____	_____	_____	_____

d. _____ _____ _____ _____

e. _____ _____ _____ _____

3. Many British, Australian, Indian (from India), and English-speaking actors from other areas of the world other than the United States have recently been cast, often in starring roles, in U.S. television programs and movies. Hugh Laurie, the star of the television program *House, M.D.*, is British, for example. Find other examples of non-U.S. actors in American television or movie productions who speak SAE or some other U.S. dialect. From which country does each come? When they are acting, do these actors speak SAE or some other U.S. dialect? If they speak a dialect other than SAE, which variety of English are they speaking?

_____

_____

_____

_____

_____

4. Analyze your own regional dialect. What characteristic phrases or words do you say that identify your region? What pronunciations are distinctive to your region? Write them phonetically. What does your dialect tell others about you and your background? What might you have to change about your dialect to be successful in your chosen career?

_____

_____

_____

Gender and language

Sex is the biological aspect of being male or female.

Gender is the learned complex of masculine or feminine behaviors as defined by culture.

Another way in which people differ in how they use language is according to their gender. **Sex** is the biological aspect of being male or female. **Gender**, on the other hand, is the learned complex of masculine or feminine behaviors as defined by culture. As males and females are learning the way that their culture expects them to behave, first as boys and girls and then as men and women, they also learn the correct way to use their language. Some languages have formal rules for each gender about the use of pronouns, verb conjugations, word pronunciation, and levels of formality.

Hebrew is one of the languages in which verbs are conjugated differently by males and by females. So a female stating that she does something uses a different form of the verb than a male making the same statement.

	Males Say	**Females Say**
"I write"	/ani kotɛv/	/ani kotɛvɛt/
"I say"	/ani omɛr/	/ani omɛrɛt/
"I go"	/ani holɛx/[13]	/ani holɛxɛt/
"I love"	/ani ohɛv/	/ani ohɛvɛt/

[13] /x/ is the phonetic symbol for the voiceless velar fricative. See Chapter 2, "Some consonants not used in English."

As you can see, the masculine version is the shorter, unmarked version of the verb. The female version is created by adding a suffix and is more marked.

Hebrew also differs according to the gender of the person addressed. There are masculine and feminine versions of the second person pronoun (*you*), and therefore masculine and feminine versions of the second person conjugations of verbs and a variety of other second person constructions.

	Said to a male	**Said to a female**
"you"	/ata/	/at/
"How are you?"	/ma šlomxa/	/ma šlomex/
"I love you"	/ani ohɛvɛt otxa/	/ani ohɛv otax/

In the indigenous language of the Carib Indians, men and women had so many different words for everyday items, the early Spanish explorers reported that the men and women spoke different languages.

	Females say	**Males say**
"rain"	/kuyu/	/kunobu/
"sun"	/kači/	/hueyu/
"canoe"	/kuriala/	/ukuni/
"manioc"[14]	/kawai/	/kieire/

However, the basic syntax and most of the vocabulary were used by both genders. Linguists have suggested that the male vocabulary is related to the languages of neighboring tribes and may reflect the influence of male interaction, such as trade or war. In fact, it may reflect the use of a lingua franca.[15]

Another way that male and female language differs is in the pronunciation of words (see Box 3-1). Among the Chukchi people of Siberia, men pronounced the consonants /r/, /c/, and /g/. However, in words where these consonants occurred, women substituted the /s/ sound. This gave the women's speech a gentle hissing sound. For the word which means "people," males say /ramɪkɪčn/ and females say /šamkɪssɪn/.[16]

Among the southern Ute, a Native American nation of the plains states, words were pronounced differently according to gender and age. Until the age of thirty, both men and women pronounced words the same way. After that age, men and women began pronouncing words differently, so that the speech of older men and older women is different from each other and different from the speech of younger people. The words "mountain lion" are pronounced /tʊk uts/ by people under age thirty, but /tsuk ʊ?tsɪ/ by women over fifty and /dug undz/ by men over fifty. Ute storytellers made use of these language distinctions, imitating the pronunciation of various characters in a story to make the stories more entertaining and lively.[17]

In Japanese, there are polite forms of various words. Men can use them according to the situation, but women are required to use them at all times. The polite form of the word "I" is *watashi*; women must always use this form. Men, however, have the option of using the less polite form *boku*. The polite form of address is the suffix *-san* added to the person's family name. A more informal, familiar form of address is to add the suffix *-kun* to the family name. But women never use this form.

[14]Manioc is the starchy root of the cassava plant. It is used to make tapioca and bread.
[15]Taylor and Hoff (1980), as cited in Hickerson, *Linguistic Anthropology*, 212.
[16]Bogoras (1911), as cited in Hickerson, *Linguistic Anthropology*, 210.
[17]Hickerson, *Linguistic Anthropology*, 212.

"Mr. Sujishi/Mrs. Sujishi"	Men say	Women say
Polite	Sujishi-san	Sujishi-san
Familiar	Sujishi-kun	Sujishi-san

In recent years, this has become an issue as women enter business, politics, and other institutions that were previously all male and where the use of the familiar form of address is traditional. Men can make a direct statement, but women must add a polite tag question.[18]

Men say	*Samui yo*	"It's cold, I say."
Women say	*Samui wa*	"It's cold, isn't it?"

Gender differences in English

There is a similar difference in the language of men and women in English. Both men and women use the same lexicon and syntax. They use the same formal and informal, polite and indirect speech. However, males and females use formal and informal speech under different circumstances and at different rates. They differ in their use of certain forms of polite or indirect speech. They have different norms of conversation turn-taking and interruption. And they have differing interpretations of the meaning of some words.

Informal speech, with characteristics such as /n/ substituting for /ŋ/ at the end of words, and the use of multiple contractions and slang or taboo words, is more often used by males than by females. In studies of various social classes in England, the constructions that typify informal speech were found to be more common in the lower classes than in the upper classes. However, the speech of women tended to be similar to that of the men in the class above them, while the speech of men tended to be more similar to that of the women in the class below them.[19] In fact, in American society one of the ways for an educated or high-status man to let other men know that he is "one of the guys" is to use these informal speech forms. Women and girls, who have been socialized to talk and act "like a lady," use these informal forms less often.

Indirect language is the use of statements rather than commands, and hints and suggestions rather than orders. It is used by everyone at various times and circumstances; women tend to use indirect language more often than men.

Although all people use **indirect language** at various times and circumstances, women are thought to use indirect language more often than men. A woman manager might ask her secretary, "Would you please get the central office on the phone for me?" whereas a polite man would say, "Call the central office for me, please." Women making indirect commands use polite questions:

"Would you mind . . .?"
"Can you do . . .?"
"Would you like to . . .?"

Tag questions are short questions such as *isn't it?* and *don't you?* that are added to the end of declarative statements.

Tag questions are the short questions such as "isn't it?" and "don't you?" that are added to the end of declarative statements. Once again, although all people use tag questions occasionally, women, more often than men, are thought to use affective tag questions that have the effect of making a direct statement or command seem more polite or that engage the listener in the conversation.

"I think we should contact the central office, don't you?"
"I think it's great, isn't it?"
"You're ready to turn of]f the television and eat, aren't you?"

[18]Ellen Rudolph, "On Language: Women's Talk," *New York Times Magazine*, September 1, 1991.
[19]*Language Files*, 328–330.

The differences between male and female uses of these types of structures may be more a result of a persistent stereotype than of real linguistic performance. Experiments show that college students, when shown the caption of a cartoon, correctly identify the gender of the cartoon speaker. But when other students produced a short descriptive essay, the writer's gender could not be accurately guessed.[20]

Another popular stereotype is that women talk more than men do. But observation shows that this stereotype is untrue. In most conversation groups that include both men and women, men talk more. They take more turns at speaking and speak for a longer period of time than women do. In another experiment with college students, men and women were asked to describe a picture. The men spoke for an average of 12.0 minutes, while the women spoke for only 3.17 minutes.[21] In observations of college faculty meetings, men spoke as much as 400 percent longer than women. Instructors have observed in college classes that male students ask more questions or volunteer more comments than female students. The stereotype that women talk more than men probably comes from the male observation of all-female conversation groups. Because there is an unconscious expectation that women will not speak much, a female conversation group violates that expectation.[22]

Deborah Tannen is a linguist who has written several best-selling books on the differences in the way men and women use English. Her research shows that in conversations between men and women, men interrupt other speakers more often than women do. When women interrupt, it is more often to affirm what the speaker has said or to support it with an example. But when men interrupt, it is often to change the subject or redirect the conversation. This power to control the conversation is particularly notable when it happens in the workplace and involves men and women of differing status. In conversations in the workplace, even when the woman is the supervisor and the man a subordinate, the man was observed to successfully interrupt 50 percent more often than his female supervisor!

Tannen also explains that there is a difference in the way men and women understand the meaning of the expression "I'm sorry." A man who says "I'm sorry" is accepting blame for what happened. By apologizing, he is also accepting the inferior position of one who has done something wrong or made a mistake. In the male subculture, this is something to be avoided as much as possible; therefore, it is done sparingly.

Women, on the other hand, appear to be apologizing incessantly and without much serious thought behind it. But a woman who says "I'm sorry" often means "I regret that this happened, but I neither accept nor assign blame for it." In fact, for women the apology is not an acceptance of blame; it is the beginning of a soothing ritual in which each person is expected to contribute a part. When a woman says "I'm sorry," she expects the response to be "Oh, no. It was my fault. I'm sorry." Therefore, a woman feels blamed and misunderstood when she says "I'm sorry" and the man responds, "Apology accepted."[23]

EXERCISE 6 Males and females in conversation

1. Observe an informal group of males and females talking together.

a. Count how many "turns" the males take.
b. Count how many "turns" the females take.
c. Estimate the length of time of each turn.
d. Decide which gender speaks more in the conversation.

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[20]Cheris Kramer, "Folk-linguistics: Wishy Washy Mommy Talk," *Psychology Today* 8 (1974), 82–85.
[21]M. Swacker, "The Sex of Speaker as a Sociolinguistic Variable," in B. Thorne and N. Henley, eds., *Language and Sex: Difference and Dominance* (Rowley, MA: Newbury House, 1975), 76ff.
[22]Janet Holmes, "Women Talk Too Much," in Gary Goshgarian, ed., *Exploring Language*, 13th ed. (New York: Pearson Longman, 2011), 240–245.
[23]Deborah Tannen, *You Just Don't Understand* (New York: Ballantine, 1990), 232–233.

2. Observe the students who ask questions or make comments in one of your classes. What proportion of them are male students and what proportion are female students? How does this compare with the proportion of male and female students in the class? Is it the same? Why or why not?

3. Observe an all-male group of students (or friends, co-workers, or family members) conversing together. Note what topics they talk about. Then observe a group of females talking together. Note what topics they talk about. Are the topics the same? Are they different? Why or why not?

Summary

People of a language community live, work, socialize, and communicate together in a dialect or variety of their language. Standard American English (SAE) is the prestige dialect in the United States; BBC English is the prestige dialect in the United Kingdom. Regional dialects show semantic variation, syntactic variation, and phonological variation. Regional dialects have a social meaning in that people make assumptions about others based on the dialect that they speak.

African American English (AAE) is one of the terms for the varieties of English spoken in different parts of the United States by African Americans. It is an important part of African American cultural heritage and communal values. African Americans switch back and forth between SAE and AAE as the circumstances require; this practice of changing from one style of language to another is called code switching. The characteristics of AAE have often been misunderstood as incorrect English. However, it is rule-governed, following its distinct phonological rules that include a rule for /r/ and /l/ deletion, a final consonant deletion rule, monophthongization, and modification of the interdental fricatives /θ/ and /ð/. Many of the differences between SAE and AAE are grammatical features that include verb deletion, verb aspect, the word order of indirect questions, multiple negation, and the existential *it*. One facet of African culture that has been preserved in African American culture is respect and admiration for a "man of words."

Some of the characteristics of Hispanic English (HE) are the result of the application of the Spanish phonological system on English words and Spanish word order on English sentences. Other characteristics, such as double negation, come from the grammar rules of Spanish. Another interesting syntactic practice of the bilingual Hispanic American community is the use of Spanish inflectional morphemes with English verbs.

When people of different cultures come together, contact languages facilitate communication. A common second language can become a lingua franca. Pidgin languages are simplified languages developed for use in specific interactions; they get their vocabulary from the superstrate language, but syntactic qualities come from the substrate language. When a pidgin language is learned by the next generation as its first language, a process called nativization, it becomes a creole language.

Everyone code switches between styles of speech or registers. English speakers indicate the level of formality of their speech by the use of contractions, certain word deletions, and the placement of a preposition at the end of a sentence. Word choice is probably the single most important indicator of formality or situational dialect, including the use of everyday slang, taboo words, expletives, and racial epithets. Many slang expressions typify people of a particular generation. Jargon is the special vocabulary of in-groups and professions.

Males and females differ in the way they use language. In some languages, verbs are conjugated differently by males and by females. In other languages, different words or pronunciations are used. In English, females use informal speech less than males do. They also use indirect language, the polite question, and tag questions more often than men. In mixed conversation groups, men talk more often and they talk longer. They also interrupt other speakers and change the subject or redirect the conversation more often than women do.

Suggested reading

Bryson, Bill, *The Mother Tongue: English and How It Got That Way*, New York: William Morrow, 1990; and *Made in America: An Informal History of the English Language in the United States*, New York: William Morrow, 1994. Bill Bryson is an American humorist who lived in England for twenty years. These two books were on best-seller lists in both London and New York.

Elkholy, John T., and Francine Hallcom, *A Teacher's Guide to Linguistics*, Dubuque, IA: Kendall/Hunt, 2005. This textbook has a chapter devoted to each language that an ESL teacher is likely to encounter, including Spanish, Tagalog, Chinese, Farsi, Armenian, and Vietnamese.

Lutz, William, *Doublespeak*, New York: Harper Perennial, 1990. This is a satirical, humorous book written by a professor of English, who gives an annual award for the most egregious misuse of language.

Tannen, Deborah, *Talking from Nine to Five*, New York: Avon, 1994; and *You Just Don't Understand: Women and Men in Conversation*, New York: Ballantine, 1990. Tannen is the best-selling author of books on the topic of gender differences in language.

Websites

Australian Broadcasting Corporation: www.radioaustralia.net.au/tokpisin. Listen to broadcasts in Tok Pisin and follow along by reading the text.

American and British English: https://en.oxforddictionaries.com/usage/british-and-american-termsBritish American English: http://esl.fis.edu/grammar/easy/aebe.htm

The Best of British: The American's Guide to Speaking British: www.effingpot.com/

Do You Speak American?: www.pbs.org/speak. This is a documentary produced by the Public Broadcasting Service (PBS) and includes interactive quizzes about American varieties of English.

Linguistic Atlas Projects: http://us.english.uga.edu, The University of Georgia, Athens, has compiled years of research, including this linguistic atlas of North American speech.

Martin Luther King, Jr., "I Have a Dream": www.americanrhetoric.com/speeches/mlkihaveadream.htm; www.usconstitution.net/dream.html. These sites provide the text and historical context, and a video of Dr. King delivering his speech.

Society for Linguistic Anthropology: http://linguisticanthropology.org

University of Texas, Austin, Department of Linguistics: https://liberalarts.utexas.edu/linguistics. This website includes interactive activities and examples of speech sounds from different Latin American indigenous languages.

Gullah language sites

Gullah Tours: http://gullahtours.com/gullah/hear-and-read-gullah. This includes, among other resources, a dictionary of Gullah/Geechee. Here you can also read The Lord's Prayer, the 23rd Psalm, and Dr. Martin Luther King Jr.'s "I Have a Dream" speech in Gullah.

Gullah/Geechee Sea Island Coalition: www.gullahgeechee.net. This includes information about an organization that conducts conferences and other meetings in Gullah/Geechee.

Knowitall.org: www.knowitall.org/series/gullah-tales. Developed as a resource for elementary school teachers in South Carolina, this site has folk tales and songs in Gullah (among other languages), plus an interactive page where you can click on an English word and hear it pronounced in Gullah.

National Public Radio: www.npr.org. You can hear several radio essays about the Gullah/Geechee communities on this website. Search for the keyword "Gullah" in the program *All Things Considered*.

Review of terms and concepts: sociolinguistics—language and society

1. The way an individual speaks is known as an _____.
2. A group of people who live, work, socialize, and communicate together is a _____.
3. The prestige dialect used in business, education, and the media in the United States is called _____.
4. The prestige dialect in Great Britain is referred to as _____.
5. Many lexical items vary according to _____ in the United States.
6. The Spanish spoken in Mexico has words derived from _____.
7. In different parts of the English-speaking world, some people say /təmeto/ and some say /təmato/. This is called _____.
8. One difference between Mexican and Puerto Rican pronunciation is that Puerto Rican Spanish has a rule that allows _____.
9. In the United States, southerners distinguish between *you* (singular) and _____.
10. Americans use the singular verb for a collective noun, but the British use the _____.
11. Regional dialects have a _____ meaning.
12. _____ accents may sound very elegant to an American audience.
13. Speakers from the Bronx, New York, substitute _____, delete _____, and insert _____.
14. African slaves combined the _____ with elements of _____ to produce unique dialects.
15. Many African Americans have learned to use SAE _____.
16. This practice of changing from one style of language to another is called _____.
17. AAE is one of the many dialects of English that has a rule for _____.
18. SAE has a rule that allows reduction of the final consonant cluster to a single consonant before _____.
19. Additionally, AAE speakers may apply this rule when the second word begins with a _____.
20. Some varieties of AAE also modify the interdental fricatives /θ/ and /ð/, so that they are pronounced as the voiceless _____ and as the voiced _____.
21. One of the most prominent features of AAE dialects is verb _____ and verb _____.

22. AAE allows auxiliary verbs to be _____ if SAE allows them to be _____.
23. The _____ of a verb expresses the completeness or duration of the action.
24. Another important syntactic distinction of AAE is in the word order of _____.
25. An important African American cultural value is respect and admiration for a _____.
26. Some of the characteristics of Hispanic English are the result of the application of the Spanish _____ on English words and Spanish _____ on English sentences.
27. English has _____ (number) main vowels; Spanish has _____ (number) main vowels.
28. There are many _____ in which the English word begins with an /s/ cluster, while the Spanish word begins with an /ɛ/.
29. Spanish uses a _____ before the verb even if there is also another _____ in the sentence.
30. _____ between two languages reinforces a person's identity as a member of the bilingual community.
31. A _____ is a language used for business and other mutual activities between people who speak different first languages.
32. A _____ language is a simplified language developed for use in specific interactions.
33. This simplified language gets its vocabulary from the _____ language, but much of its syntactic qualities from the _____ language.
34. When this simplified language becomes the first language of a community, it is then called a _____ language, created by a process called _____.
35. All people use different styles of speech or _____ in different situations.
36. In most of the European languages there are two different words for the pronoun *you*; one is designated as _____, the other _____.
37. One of the main ways that English speakers indicate the level of formality of their speech is by the use of _____.
38. In English, French cognates tend to be the more _____ words. On the other hand, Anglo-Saxon words tend to be the more _____ words.
39. The in-group expressions of a profession, sport, hobby, or field of expertise are called _____.
40. In Hebrew, verbs are conjugated differently by _____ and _____.

41. In English, men and women use formal and informal speech _____ and at _____.

42. Women tend to use _____ more often than men.

43. _____ are the short questions that are added to the end of declarative statements.

44. There is a popular stereotype that women talk more than men do. But observation shows that this stereotype is _____ (true or false).

CHAPTER 9

Linguistic anthropology: language and culture

LEARNING OBJECTIVES

- **Define *linguistic anthropology*.**
- **Understand what the study of disappearing and extinct languages can tell us about the relationship of language to political power and economic success.**
- **Explain why the loss of a language is equivalent to the loss of cultural diversity and the loss of cultural identity.**
- **Explain the main reasons that languages disappear.**
- **Discuss some of the attempts to revive endangered or extinct languages.**
- **Discuss the concept of linguistic relativity.**
- **Analyze the following question: "Does language influence culture, or does culture influence language?"**
- **Explain how children are enculturated as they learn their language and culture.**
- **Discuss how personal names, as well as ethnic, racial, social class, and other labels might influence the development of a person's identify and self-concept.**
- **Explain how ethnic pride is related to language nationalism.**
- **Explain the statement, "Language is power."**

Linguistic anthropology and other subfields of anthropology

Anthropology is a holistic study of humans. As such, it has four main subfields—**physical anthropology**, **cultural anthropology**, **archaeology**, and **linguistic anthropology**. Most anthropologists have a specialty in one subfield, but study the other subfields and consider the interaction between the subfields. One unifying concept of anthropology is the concept of **culture**. Culture is a type of behavior, distinct from innate (inborn or hardwired) behavior. The word *culture* can be defined in many ways. In brief, culture is learned behavior that includes habitual behaviors (norms) and thoughts (including beliefs and moral systems), technology, political systems, economic systems, and everything else acquired through socialization (also called enculturation). Culture can be transmitted from generation to generation and to any area of the world, primarily through the symbol system we call *language*. We can also speak of *a culture*, which is a group of people who share specific cultural behaviors.

Physical anthropology focuses on the evolution of humans by studying the fossil record of human evolution, human biological diversity, and the living primates (our closest biological relatives). However, physical anthropologists also consider the effects of culture on our evolution. For example, the use of fire to cook our food changed the way our brains and teeth evolved over the last million years.

Physical anthropology is the subfield of anthropology that focuses on the evolution of humans, studying the fossil record, human biological variation, and the living primates.

Cultural anthropology is the subfield of anthropology that studies the way people in various cultures live.

Archaeology is the study of cultures through their discarded material.

Linguistic anthropology uses the methodologies of linguistics and anthropology to comparatively study the interrelationship between language and culture and how language influences social life.

Culture is a type of behavior that is learned rather than innate; it is patterned behavior that is transmittable from person to person and through time, primarily by language.

Ethnographer is another word for the cultural anthropologist who studies and writes about cultures.

Participant observation is the practice used by a cultural anthropologist, or ethnographer, of living within a group and studying their culture by participating in it.

Cultural anthropologists, also called **ethnographers**, study the way people in various cultures live. They use the technique of **participant observation** to study their subjects; they live among them and participate in their lives as they observe them. When they are analyzing cultural rules, they must take the physical human into consideration. All humans can eat the same foods. However, cultures have different rules about what animals are edible or not; for example, dogs and horses are considered meat in many cultures, but not in the United States.

Archaeology is the study of cultures through their discarded material. Archaeologists dig through the remains of cultures to find artifacts and features—that is, man-made objects and man-made alterations to the land—that were left behind by people. Archaeologists use what they find to reconstruct past lifestyles and cultures. Prehistoric archaeologists study cultures that left no written records, such as the Native American cultures of the Anasazi, the Hohokam, and the Mound Builders. Historical archaeologists supplement what is known about cultures with written records. For example, North American archaeologists have studied the colonial settlements and slave quarters to document the everyday lives of the people. Others have studied the encampments and battlefields of the Revolutionary War and the Civil War. Some archaeologists focus on modern civilization by analyzing urban garbage—hence the term "garbology projects."

The subfield that most academics currently call linguistic anthropology has a complex history. Some academics prefer to differentiate between subfields called anthropological linguistics and linguistics anthropology. Each subfield has its own history and emphasis. However, for the purposes of this book, we will (as is the practice of many anthropologists and linguists) not differentiate between them and lump them both together under linguist anthropology. Linguistic anthropology can be seen as a subfield of cultural anthropology As such, linguistic anthropology uses the methodologies of linguistics and anthropology to study a wide range of anthropological topics, including how language shapes or influences social life.

Linguistic anthropology is a comparative field, drawing information from as many cultures as possible (see Box 9-1). Linguistic anthropology is also interdisciplinary. Most of the topics discussed in Chapter 8 on sociolinguistics, such as language and gender and the social meaning of regional dialects, are also research areas within linguistic anthropology. In fact, topics of importance to linguistic anthropology have been discussed throughout the book.

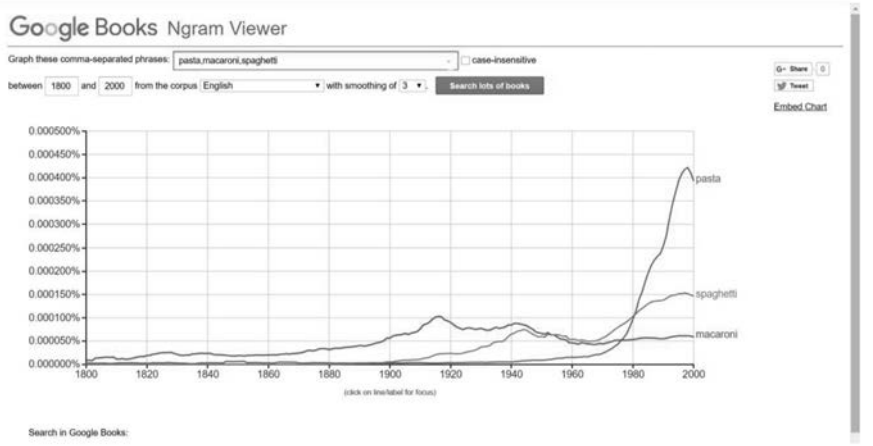
BOX 9-1

Linguistic anthropology is a comparative field

As with cultural anthropology, linguistic anthropology is a comparative discipline which aims to study individual languages and then use the information from the corpus of all languages studied to draw conclusions about commonalities in all languages or the range of variation for specific features of language. How are languages the same or similar; how do they vary in terms of phonology, morphology, syntax, semantics, pragmatics, and any other feature of language?

Linguistic anthropologists might use numerous digital tools to help research similarities and differences in a specific linguistic trait. They may start by doing a literature search using ordinary search engines but then move on to a more specialized search using a tool such as the *Human Relations Area Files* (HRAF). The HRAF has data on about 400 cultures worldwide, past and present. The HRAF has sections on both language and communication. (See sources below for more information on the HRAF.)

A more recent, but at this time limited tool is an Ngram viewer. An Ngram viewer can search for the co-occurrence of a set of factors in all digital sources that are available to the viewer. The Ngram viewer searches for specific words or phrases and calculates the frequency of their use. For now, those sources available are limited to the major world languages and there are some flaws in how the data is processed. In the future, Ngrams, or more advanced tools similar to them, might include a larger variety of modern and archaic languages with greater capabilities. Currently, the viewer can be used to give an idea of the changes in word and phrase usage over time for languages indexed. Below is an example of an Ngram that shows the change in the frequency of the usage of the words spaghetti, macaroni and pasta. (See http://books.google.com/ngrams)



See also Human Relations Area File: http://hraf.yale.edu; Topics Covered in the Human Relations Area File: http://hraf.yale.edu/resources/reference/outline-of-cultural-materials.

A linguistic anthropologist is first and foremost a cultural anthropologist, or ethnographer, studying a culture or ethnic group. To live as a participant observer within the group, it is necessary to learn the language. By going beyond simply learning the language, by analyzing it and its usage, the anthropologist attempts to learn how the people think about their world. Linguistic anthropology became the fourth subfield in the early twentieth century when American anthropologists began documenting and cataloging the Native American languages which were disappearing at a rapid rate.

Disappearing, reappearing, and emerging languages

Language is a symbol system which enables cultural behavior (see Chapter 6). As such, cultural anthropologists have had a primary interest in language. In the early years of the development of modern anthropology, anthropologists such as Franz Boas (1858–1942), who some anthropologists call the father of American anthropology, and his students became interested in documenting languages that seemed doomed to extinction. At first, the focus was mostly on endangered Native American languages. From these early studies, many concepts about the relationship of language to culture and personality, language and power, language and cognition, language universals and differences, and language structure evolved. The following section discusses the extinction of languages, the attempt to save some of them, and the origin of new languages or varieties of languages and some of the things we have learned from these studies.

Children learn their culture through language. Each language, in its lexicon and grammar, reflects a culture's knowledge, technology, belief system, and every other social and cultural dimension. Language also enables and mediates culture and personal identity. The loss of a culture's language is equal to the loss of a large part of its culture and of the cultural identity associated with that language. As of 2018, the majority of the world's 7097 living languages are spoken by fewer than 100,000 people, with about 1537 languages spoken by 1000 or fewer people and 473 languages that have fewer than 100 speakers.[1] Today, only five languages are the native language of about 50 percent of the world's population. The five languages, with their approximate number of native speakers, are Mandarin (1.3 billion speakers), Spanish (700 million), English (600 million), Hindi (490 million), and Arabic (280 million). Some researchers believe that most of the languages spoken by fewer than 100,000 people might be extinct by the end of the twenty-first century.[2] (See Box 9-2.)

[1]See www.ethnologue.com/faq#node_25184.

[2]Stephen A. Wurm, ed. *Atlas of the World's Languages in Danger of Disappearing: New Revised Edition* (Paris: UNESCO, 2001).

BOX 9-2

The last speaker of an ancient language dies

On January 28, 2010, a woman named Boa Senior died. Her death is noteworthy because she was the last speaker of an ancient language simply called Bo. Boa Senior and her language were a part of the culture of the Andaman Islands, which are a part of India located in the Bay of Bengal. However, the Bo language is thought to have originated in Africa, perhaps 60,000–70,000 years ago. In Great Andaman, the main chain of five Andaman Islands, there had been about ten languages spoken. Today, only one remains, and that language has only about fifty speakers. The death of languages in the Andaman Islands is not unique; language diversity is being lost at an alarming rate.

To hear what the Bo language sounded like, including a recording of Boa Senior, go to www.youtube.com/watch?v=WYysdOIQ-Fs. You can also read Alastair Lawson's article, "Last Speaker of Ancient Language of Bo Dies in India," BBC News Online, February 4, 2010 at http://news.bbc.co.uk/2/hi/south_asia/8498534.stm.

Why do languages disappear? Just as with biological organisms, there are two main ways that languages become extinct. A fossil hominin *Homo erectus* has been extinct for a long time. Some members of this fossil species evolved into *Homo sapiens*. Although there are no longer hominins called *Homo erectus*, their descendants (us) live on. So, one way for a language to become extinct is to change into something else. No one speaks Proto-Indo-European anymore, but many modern languages that descended from that language are spoken (see Chapter 14).

Another way for a language to become extinct is to die out altogether or to only leave a small trace that it once existed. Most dinosaurs left no modern descendants. Many languages have died out without any direct descendants and few to no fragments of their existence. This can occur because of a total genocide (killing) of a people. For instance, the Tasmanians, who inhabited an island off the southern coast of Australia, were totally killed off by the British and their language died with them. Or, a language can die out because of ethnocide (destroying a people's culture). In many colonial areas, the colonial powers seized the children of indigenous people, placing them in boarding schools and forbidding them to speak their native languages or engage in other native cultural practices. Two well-known examples of this were the policies of the Australian government toward the Aborigines and the policy of the United States government toward the Native Americans. In both cases, numerous native languages were lost completely or are on the verge of extinction because they suffered a major loss of speakers and have no new speakers. The Australian policy, which ended only in the 1970s, was depicted in the movie *Rabbit-Proof Fence*.[3]

The death of a language does not have to occur by conscious design. The spread of English, which is now the most widely spoken second language and foreign language in the world, threatens many indigenous languages. The language that one speaks can equate to power, influence, and wealth. English symbolizes wealth in some societies, and indeed it is becoming increasingly necessary to speak it to survive economically and academically in the developing world. The European Union (EU) has many official languages. However, English is the most frequently used of these languages for business and other activities (see Figure 9-1). Younger members of many societies are using English rather than their native language. They want to be economically, educationally, and politically successful.

[3] *Rabbit-Proof Fence*, directed by Phillip Noyce; screenplay by Christine Olsen from a book by Doris Pilkington; produced by Phillip Noyce, Christine Olsen, and John Winter, 2002.

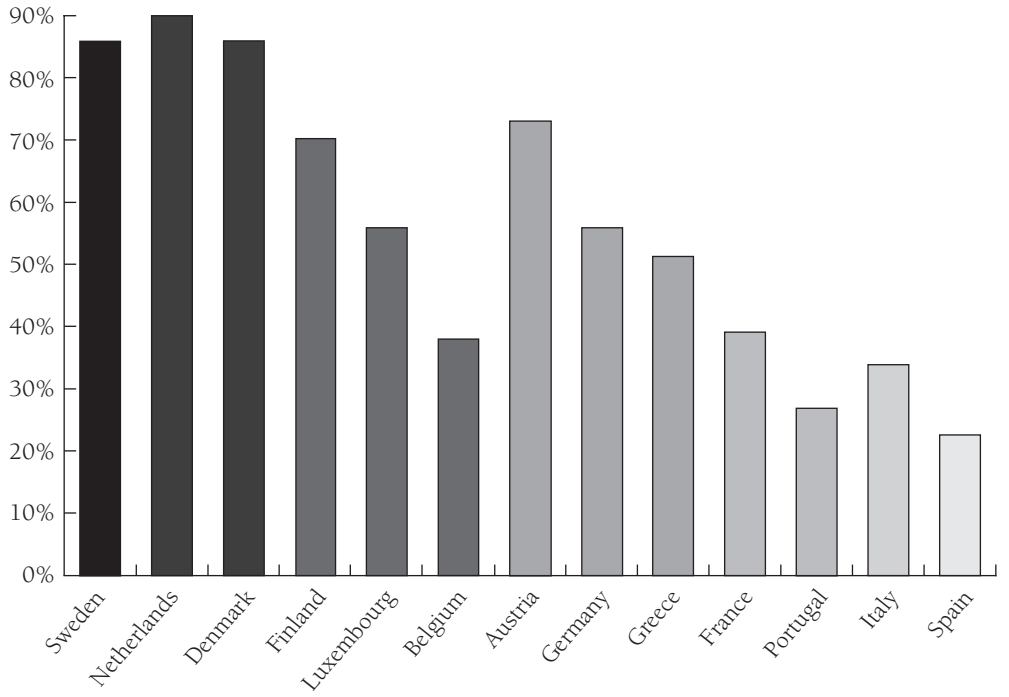


FIGURE 9-1 Percentage of some EU populations who say that they speak English as a language other than their mother language

Source: European Commission report based on a survey from March 2012 and published in June 2012. See http://ec.europa.eu/public_opinion/archives/ebs/ebs_386_en.pdf, p. 21.

The loss of languages corresponds to the loss of cultural diversity. Many societies are reacting to the loss of their native languages by attempting to revive them. The Celtic languages, Cornish and Welsh, are examples of this phenomenon. Cornish was spoken until 1777 in southwestern England. In that year, the last Cornish speaker supposedly died. But in the twentieth century, using written documents and any remaining knowledge of descendants of Cornish speakers, the language was reconstructed and is being taught in some schools. Today, about 2000 people speak Cornish. Welsh, spoken in Wales (and by some Welsh immigrants to the United States and Argentina), is the most commonly spoken Celtic language still in everyday use. However, by the 1980s fewer than 19 percent of the people in Wales spoke Welsh, and most of those speakers were over sixty-five years old. The language was dying out. That began to change in the 1980s and 1990s when Welsh, like Cornish, began to be taught in schools. In 1982, a television station in Wales started to broadcast in Welsh. The revival of Welsh has brought with it a revival of interest in Welsh literature, drama, and songs.

In Latin America, Spanish has replaced many of the indigenous languages. Today, there is an effort to revive and encourage the use of languages such as Mayan and Zapotec. Attempts to preserve the Mayan language are discussed later in this chapter; here we will focus on Zapotec speakers. In the San Juan Guelavia community near Oaxaca, Mexico, the Zapotec speakers have a long tradition of storytelling. Although people use Spanish most of the time, they consider Spanish insufficient for conveying the subtle nuances, the truths, and the hidden meanings of the traditional stories. For this reason, the storyteller must use the Zapotec language. So Zapotec is being preserved and promoted among the young by means of this oral literature.[4]

Modern Hebrew is also a revived language. Although Hebrew survived through the medieval period and into the modern era as a language of religious ceremony and scholarship, it had

[4]Elizabeth Falconi, "Storytelling, Language Shift, and Revitalization in a Transborder Community: 'Tell it in Zapotec!'" *American Anthropologist* 115, 4 (2013), 622.

died out as a spoken language. In the late nineteenth century, lexicographer Eliezer Ben-Yehuda (1858–1922) led a movement to revive Hebrew as a spoken language. That movement was successful and, in 1922, the British overseers of Palestine recognized Hebrew as the official language of the Jews in Palestine.

Language revival is going on in other areas of the world. Anthropologists and linguists are helping Native Americans reclaim some of their languages. There are programs to revive languages in Hawaii and other islands in Oceania. In fact, language revival is widespread in the world today. While globalization (one-worldism) is spreading, so is its opposite. Many ethnic groups are attempting to revive their ethnic heritage and establish a more prominent position in the larger societies in which they are embedded, and primary among these attempts is the revival of their language.

Another phenomenon also is worth noting. New languages and dialects are being generated. Of course, this has always occurred. In Chapter 8, we discussed pidgin and creole languages. These hybrid languages originate with the contact of people speaking different languages. Today, with the growth of urban centers populated by peoples from diverse areas of the globe, the rate of language hybridization is rapid. New varieties of languages, such as English, are being generated. So, when we talk about the spread of English around the world, it is perhaps more accurate to speak of the spread of "Englishes."[5] See Chapter 14 for a discussion of the spread of Englishes.

Language, culture, linguistic relativism and linguistic relativity

Cultural relativism is a basic tenet of cultural anthropology; it is the idea that a culture is consistent and comprehensible within itself.

At the turn of the twentieth century, Franz Boas proposed a concept that became known as **cultural relativism**, which became a basic tenet of cultural anthropology. This is the idea that a culture is consistent and comprehensible within itself. In other words, to understand why the people of a culture do a particular thing, you have to look for the answer within that culture. You have to look at the question from the point of view of those people.

Boas also proposed that all cultures were equally valid adaptations to the universal problems encountered by humans. They were equally complex, equally moral, and equally intellectually satisfying. Cultures were different because of the environment in which the culture had developed and the specific historical development of those cultures. This was a rather radical view at a time when governments of European countries and the United States were treating native peoples around the world as inferior, ignorant savages.

Linguistic relativism

Linguistic relativism is the idea that each language is consistent and comprehensible within itself and must be studied as a unique system.

Closely related to the idea of cultural relativism is the concept of **linguistic relativism**, which holds that there are no languages that are superior to other languages; they are equally complex, expressive, and complete. Each language is consistent and comprehensible within itself and must be studied as a unique system. Trying to translate one language into another is like trying to force one object into a container made for another. Differences between languages are not a reflection on the intellectual capacities of the people of that culture, but are a reflection of the world around them and of their necessity to communicate about it. Cultures may have simple technology, but that does not mean they have a language with a simple syntax or lexicon.

In fact, linguistic anthropologist Alessandro Duranti believes that the anthropologist must commit to studying language as a non-neutral code. In other words, the language must be studied as it is embedded and entwined in its culture. It is not a neutral code that objectively describes the surroundings and events. It is intrinsically biased to encourage its speakers to classify and order the world in a specific way. He cites an example from Boas, who noticed that English words for water, such as *liquid*, *rain*, *dew*, *river*, *stream*, are completely unrelated.

[5]David Graddol, "The Future of Language," *Science* 303 (February 27, 2004), 1329–1331.

However, in the Native American languages that Boas was studying, these words had a common root or stem that made their similarity in meaning explicit to the speakers of that language.[6]

Experiments by linguist John Lucy show that Yucatec speakers, whose language includes noun classifiers that indicate the substance that the item is made of, will classify items based on substance. English speakers tend to classify items based on shape. For instance, if the subject is shown a cardboard box and asked to pick a similar object, the English speaker will pick a box-like item, while the Yucatec speaker will pick a cardboard item.[7]

Linguistic relativity

In the early twentieth century, Edward Sapir (1884–1939), who was a student of Franz Boas, along with fellow linguistic theorist Benjamin Lee Whorf (1897–1941), became known for developing the idea of **linguistic relativity**. It also became known as the Sapir–Whorf hypothesis, although this label is somewhat misleading. Whorf was a student of Sapir, but the two of them never co-wrote anything on linguistic relativity. It was Whorf who was the strongest proponent of the idea. The concept of linguistic relativity proposes that people of different cultures think and behave differently because the languages that they speak require or influence them to do so. As discussed above, language is not a neutral code. In other words, the way in which individuals view the world around them is affected by the language that they have learned to use to interpret their world.

Linguistic relativity (also known as the Sapir–Whorf hypothesis) proposes that people of different cultures think and behave differently because the languages they speak force or influence them to do so.

We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.[8] So the relationship among the environment, the culture, and the language of a people is self-reinforcing. The environment causes the people to have a particular worldview; that worldview is encoded in the language, and then the language forces the people to speak and think about the world in a way that expresses that same worldview.[9]

Proponents of linguistic relativity point out that the lexicon of a language is not simply a list of words and definitions; it is also a system for organizing the experience of the people who speak that language. This system emphasizes whatever is important to the culture and de-emphasizes whatever is not important. While English has one word *snow*, skiers have more descriptive terms such as "packed powder" and "machine groomed." People who deal with snow on a daily basis in the winter have such categories as *slush*, *sleet*, and snow *flurries*. In his *Handbook of American Indian Languages*, Boas noted that the Eskimos have various words to describe the snow; for instance, *aqilokoq* meaning "softly falling snow" and *piegnarto* "the snow [that is] good for driving sled."[10] Current research on ten Inuit and Yupik dialects document that the various dialects have between 40 and 53 terms that describe the conditions of snow.[11] Japanese has ten words for *rice*, including such distinctions as "freshly harvested rice," "uncooked rice," and "cooked rice."[12]

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[6]Alessandro Durati, "Linguistic Anthropology: The Study of Language as a Non-Neutral Medium", in *The Cambridge Handbook of Sociolinguistics*, ed. Rejend Mesthrie (Cambridge: Cambridge University Press, 2011), 28–46.

[7]John Lucy, *Grammatical Categories and Cognition: A Case Study of the Linguistic Relativity Hypothesis* (Cambridge: Cambridge University Press, 1996).

[8]Edward Sapir, "The Status of Linguistics as a Science," in D. G. Mandelbaum, ed., *Selected Writings of Edward Sapir in Language, Culture and Personality* (Berkeley and Los Angeles: University of California Press, 1949), 160–166. Quoted by Benjamin Lee Whorf, "The Relation of Habitual Thought and Behavior to Language," in Alessandro Duranti, ed., *Linguistic Anthropology: A Reader* (Oxford and Malden, MA: Blackwell, 2001), 363.

[9]Alessandro Duranti, "Linguistic Anthropology: History, Ideas and Issues," in *Linguistic Anthropology: A Reader*, 2nd ed., Hoboken, NJ: Wiley-Blackwell, 2009, 11–13.

[10]Franz Boas, *Handbook of American Indian Languages* (Washington, D.C.: Government Printing Office, 1911; repr. Cambridge: Cambridge University Press, 2013).

[11]David Robson, "There Really Are 50 Eskimo Words for 'Snow,'" *New Scientist*, in the *Washington Post*, January 14, 2013.

[12]Sandra Lopez-Richter, "The History of Japanese Rice," originally published in *The Japan Forum* (1996), www.tjf.or.jp/eng, July 28, 2003.

Whorf, who was educated as a chemical engineer and was an insurance inspector by profession, noticed that people behaved, sometimes irrationally, according to the way their language directs them. He observed that workers were careful not to smoke around gasoline drums that are *full* of gasoline. But when the drums were *empty*, the workers were careless about their smoking. The problem is that empty drums are not really empty, but contain gasoline vapor that is far more explosive than the liquid gasoline. So the workers were acting according to the entry in their mental lexicon for the word *empty* and not according to the presence of physical danger.[13]

Furthermore, the grammar of each language includes rules that allow the speakers of the language to express concepts that are important in that culture. The European languages require that plurality be expressed—as in the words *days*, *boys*, *friends*—when there is more than one of the item. Even if we add a number to these words to express precisely how many items there are, we cannot say **ten day*, **five boy*, **seven friend*. In standard English, the plural marker is required when there is more than one of these items, even though the number makes it perfectly clear that there is more than one and indeed tells us precisely how many.

Of course there are other English nouns, the non-count nouns, that cannot be made plural, such as *rice*, *sand*, and *milk*. These nouns refer to substances that we perceive to be a continuous undividable mass. In fact, the way in which we can make them plural is to divide them into countable segments such as *bags of rice*, *buckets of sand*, and *bottles of milk*.

While studying the Hopi language, Whorf observed that there are also nouns in Hopi that cannot be expressed as a plural. However, these are different from the English non-count nouns. In Hopi, segments of time such as *day*, *month*, and *season* cannot be expressed as plurals. Whorf refers to them as "imaginary plurals," which he distinguishes from real plurals. Real plurals exist in reality in the observable world, but imaginary plurals exist only in the minds of the people speaking about them. For example, *five boys* is a real plural because it is possible to bring together five young male humans in one place and observe them as a group, or they can be experienced individually as five different individuals.

But a day, month, or season can only be experienced one at a time. You cannot see or interact with any more than one day at a time, and that is the day you are experiencing at this very moment—today. So, when English speakers use the plural *days*, they are imagining an assembly of 24-hour periods—perhaps in the past, perhaps in the future, perhaps including the present day. But, nevertheless, it is an imaginary assemblage. It is not real or observable. The Hopi language does not allow the pluralization of these nouns, and Hopi speakers do not imagine an assembly of individual distinguishable days. In fact, Hopi speakers do not perceive consecutive days as being different and distinct, but rather each day is the reappearance of the previous day. The English sentence

> I studied for five days

would be rendered in Hopi as

> I studied until the sixth day.[14]

The way time is perceived in the Hopi language is expressed in Hopi culture by a great deal of emphasis on preparation for future events. Because today is an earlier appearance of a day that will again appear in the future, something that is done today can have an effect on that future day. Whorf said,

> One might say that Hopi society understands our proverb "Well begun is half done," but not our "Tomorrow is another day."[15]

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[13]Benjamin Lee Whorf, "The Relation of Habitual Thought and Behavior to Language," in John B. Carroll, ed., *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf* (Cambridge, MA: MIT Press, 1956), 135.
[14]Whorf, "Relation of Habitual Thought," 139.
[15]Whorf, "Relation of Habitual Thought," 139.

Other linguists have criticized the hypothesis proposed mostly by Whorf. It has been referred to as **linguistic determinism** or the **strong version** of linguistic relativity known for its use of the vocabulary of coercion:

Linguistic determinism or the **strong version** of linguistic relativity holds that language compels people to think according to linguistic categories.

> [O]ur thought is "at the mercy" of our language, it is "constrained" by it; no one is free to describe the world in a neutral way; we are "compelled" to read certain features into the world[16]

Sapir himself did not believe that language was deterministic for cognition. Critics have suggested that perhaps a **weaker version** might reflect more accurately the role of language in human thought. They propose that language influences thought, but that people have tools for expressing all ideas, whether common in their culture or not. Some concepts may indeed be easier or more commonly said in a particular language. But if speakers of another language want to say that same thing, words can be borrowed. Japanese tourists visiting in the United States, when offered "optional activities or tours," have no direct equivalent for the word *optional*, so they simply borrow the English word. English speakers having no direct equivalent for the Spanish concept of hyper-masculinity have borrowed the word *macho*. In other cases, new words or phrases can be created, as when English speakers use such terms for snow conditions as *packed powder*, *slush*, and *sleet*. Just as people are not confined to one language, but can shift from one language to another, we are not confined to thinking in just the way our native language has compelled us.

The **weaker version** of linguistic relativity holds that language influences people to think in certain ways according to linguistic categories.

EXERCISE 9-1 Fieldwork I

Place an assortment of items on a table. They should be items that are similar in function and/or material. For instance, you could choose a plastic bottle, a paper cup, a paper bag, a plastic bag, a plastic toy, a paperback book, a plastic container. Ask several friends to categorize them into pairs or trios. With half of your friends refer to the items as they are listed here, naming the material. With the other half of your friends just refer to them as a bottle, cup, bag, toy, etc.

Record how they organize the items. Do they do it by function—cup and bottle together, bags together? Or do they do it by material—plastic together, paper together? Why do you think they did it the way they did? How do you think the Yucatec speakers would categorize them?

Habituation

The language that a person speaks can be seen as a habit. The person is so accustomed to the way the language models the world that this modeling is not questioned. Like the fish swimming in the water, we're not aware of the "water." For instance, in English we divide the world into here and there. In fact, we have that encoded into an idiom—"It's neither here nor there," meaning it's not important. But in other languages, like Spanish, there is *here*, *there*, and *far over there—aquí*, *ahi*, and *allí*.[17]

Part of the habitual use of language is the use of schemata—the organizational units of knowledge. Children learn the schemata of their culture as they learn how their world is organized. The North American schema for the word *dog* would include (like the semantic properties) all the things that are commonly known about dogs—they bark, have four legs, make good pets, provide security for the house. But in some cultures this schema might include the work

[16]"The Linguistic Relativity Hypothesis," *Stanford Encyclopedia of Philosophy Supplement to Relativism*, http://plato.stanford.edu/entries/relativism/, April 24, 2005.

[17]www.thoughtco.com/here-and-there-in-spanish-3079134.

BOX 9-3

Cross-cultural schemata

Have you ever had a misunderstanding when speaking with someone from another culture? Was it a misunderstanding due to language? Or was it because you and your conversation partner were using different schemata?

While traveling in Russia an American judge was asked by a Russian judge if American judges were allowed to own farms. The American answered quizzically, "Yes. Some might have a farm as a vacation home or family business." But why would anyone ask that? To the American the schema of a farm is a pastoral, peaceful, nineteenth-century ideal, with horses, cows, and chickens. For a judge it would be a place to visit in the summer, pick some fruit or vegetables, swim in a pond, or ride a horse. But for Russians the schema of a farm is a small house or *dacha* in the country with land enough for a vegetable garden, an important source of subsistence.

The American later learned that the question was actually a polite way to ask if judges' pay in the US was enough to feed a family. In the former Soviet bloc countries, judges were rather low-paid civil servants (often women) that supplemented their family's food by growing fruits and vegetables on the weekend at their small house in the country.

You can read more about *dachas* at www.ringingcedarsofrussia.org/vladimir-megre/dacha-movement.html#world1.

that dogs do, like herding, pulling a sled, and hunting. Or it may include the fact that dogs are eaten as meat. The language and culture determine the schemata that we use in our daily life.[18]

Some concepts may not be language based; in fact, they may be based on concepts that are part of our evolution, which we share with nonhumans (see Chapter 1). Certain Native American languages are non-numerate; that is, they have a limited vocabulary for numbers. Yet the people are able to perform mathematical tasks such as adding and subtracting small sets of dots and determining which set is more numerous and which sets are equivalent. It is only when the tasks call for more precision and larger numbers that non-numerate people arrive at different conclusions than people with number words. Researchers believe that this ability to perform mathematical tasks without the language for it is evidence "that [we] share with nonverbal animals a language-independent representation of number . . . which supports simple arithmetic computation and which plays an important role in elementary human numerical reasoning whether verbalized or not."[19] In this case, language only influences the performance of more precise, more complex mathematical operations involving larger numbers.

Cultural anthropologists have noticed that people that they studied carried on speech acts or events. Linguistic anthropologists originally wrote grammars and lexicons; now they focus on how people use language to organize their social lives by speaking. Topics related to this—speech acts, discourse analysis, greeting rituals, formality registers—are covered in the chapters on Pragmatics (Chapter 7) and Sociolinguistics (Chapter 8).

Color terminology is the set of words in a language that describe segments of the color spectrum. Color terms in English include words such as *red*, *blue*, *green*, *white*, and *yellow*.

Does language influence culture, or culture influence language?

Language influences culture An example of how language influences culture is **color terminology**, the words with which a language describes colors. All humans with normal

[18]Duranti, "Linguistic Anthropology."
[19]Rochel Gelman and C. R. Gallistel, "Language and the Origin of Numerical Concepts," *Science* 306 (October 15, 2004), 441–443; http://science.sciencemag.org/content/306/5695/441.

vision see the color spectrum in the same way, but different languages divide it up in different ways and assign names to the segments of the spectrum. Of course, these segments of the spectrum include a variety of shades within them; blue denim jeans and a baby's pastel blue blanket look different but are still called by the color term *blue*. Because we call them all *blue*, we tend to consider them in the same color category.

Some languages simply distinguish black and white, or dark and light. Others have black, white, and red. In these languages, the speaker describing something will compare it to an object that is either visible or something of a known color. So green would be referred to as the color of grass; purple might be the color of an object in the room.

Some languages have color terms similar to the European languages, except that they group blue and green together in one color term. When asked to pick out the most perfect example of this blue-green color, speakers of these languages will choose a turquoise color, midway between the English color blue and the English color green.

In the Athabascan languages, which include Navajo and Apache, lexical categories classify items by number, length, and rigidity. Verbs have different endings depending on the characteristics of the object spoken about. In fact, there are as many as thirteen different lexical categories dealing with such characteristics as number, length, rigidity, portability, enclosed or not enclosed, animate or inanimate, and solid or liquid.[20]

In the Navajo community, preschool-age children were shown some objects, such as a blue rope and a yellow stick, and were then asked which one was most like a yellow rope. The children who were bilingual English–Navajo tended to categorize items by color, just as English-speaking children would, and picked the yellow stick. But preschool children who spoke only Navajo tended to categorize things by length and rigidity, according to the lexical categories of their language, and picked the blue rope.[21] This is very similar to the results of Lucy's experiments with Yucatec speakers, mentioned previously.

Some researchers believe that the Asian languages make math easier for children to learn. Because concepts such as "eleven," "twelve," and "thirteen" are expressed with the words "ten-one," "ten-two," and "ten-three," numerical concepts are readily apparent to the children. They don't have to be taught that the number twenty-one is equivalent to two tens plus one; their language does it for them—"two-ten-one."[22]

Culture influences language The Pirahã Native Americans of Brazil are among the non-numerate people who do not seem to perform addition and subtraction of objects when there are more than three or four objects. This has been interpreted by some linguists as language influencing culture. However, linguistic anthropologist Dan Everett interprets this as an example of culture influencing language. Pirahã culture emphasizes the immediate, empirical reality. This culture of immediacy precludes abstractions of all kinds, including color terms, numbers, myths, and grammatical qualifiers. This emphasis on the observable extends "deep into the core of their grammar" and explains why there is no recursion.[23] (See Box 1-1 and 5-2.)

Another example of how culture influences language is **kinship terminology**, the words that a language uses to express family relationships. For example, our culture makes no distinction in responsibilities and rights between the mother's side of the family and the father's side of the family. So English speakers make no linguistic distinction between mother's mother and father's mother; they are both *grandmother*. Cultures that have different responsibilities and rights between maternal and paternal sides of the family have different kinships terms for these relationships. A Chinese child, who must learn a different word for mother's mother and for

Kinship terminology is the set of words in a language that describe family relationships. Kinship terms in English include words such as *mother*, *father*, *brother*, *sister*, etc.

[20]Basso, *Western Apache Language and Culture*, 2–16.
[21]Joseph Casagrande (1960), cited in Gary Ferraro, *Cultural Anthropology*, 5th ed. (Boston, MA: Thomson Learning, 2004), 126–127.
[22]Malcolm Gladwell, *The Outliers* (New York: Little, Brown and Co., 2008).
[23]John Colapinto, "The Reporter at Large: The Interpreter," *The New Yorker*, April 16, 2007.

father's mother, may wonder how English speakers can tell the two *grandmothers* apart. In the Chinese culture, which is patrilineal and emphasizes the importance of the father's side of the family, the child has different rights and responsibilities to each grandmother. Therefore, the language distinguishes between the two.

In cultures where extended families share in the responsibility of child rearing, such as many tribal societies, children will use the kinship term that means "mother" for mother and also for mother's sisters. They will use the term that means "father" for father and his brothers. This means that many of the people in the child's village will be addressed as *mother* or *father*; those people will in turn address the child as *son* or *daughter*. It is easy then to understand why the Africans say, "It takes a village to raise a child." Each African village is filled with men and women who are the child's "mothers" and "fathers," who are responsible for the child and whom the child must obey.

Another example of how culture influences language involves the subsistence activities of the society. The Samo, a horticultural people living in the forests of New Guinea, supplement their garden produce by hunting and gathering. Traveling through the forests, along the rivers, and up and down hillsides, they have many words that designate locations. In fact, in a collection of Samo texts, 81 percent of all sentences had locational information in them. There is a suffix added to a word that designates it as a mountaintop place; verbs differentiate between going upstream or downstream; an adjective specifies a place that is on the other side of the river. In fact, much of the Samo's conversation and storytelling involves descriptions of where the action took place and how the people got there. In this culture that emphasizes location, the language has many ways to describe it.[24]

English does not include locational information as part of the required features of the language. From this we can infer that the culture of English-speaking people does not emphasize locale and direction. And indeed, we find many people who can't point to the four cardinal directions, and teenagers who can't give accurate directions to someone driving them home.

In the Marshall Islands of the South Pacific, the need to live together in small harmonious communities dictates that people use linguistic structures that avoid assigning blame or agency. One way they do this is by using the passive voice (see Box 5-1). Another is by using the first person plural pronoun instead of the first person singular. An anthropologist working there found that when she wanted to know the time, she needed to ask "What time do we have?" rather than "What time do you have?"[25]

Mock language is the use of the phonology or the lexicon of a foreign language or non-standard dialect to "make fun of" or distance oneself from the speakers of that language.

People use **mock language**—the phonology or the lexicon of a foreign language or non-standard dialect—to "make fun of" or distance themselves from the speakers of that language. In the United States, non-Spanish speakers might say *mañana* (tomorrow) when they want an excuse to procrastinate. In the media, mock language is often humor at the expense of minorities. When the villain Terminator in the movie of that name says "Hasta la vista, Baby," the screenwriter is using mock Spanish to emphasize his villainy.[26] A cartoon that depicts an African American substitute teacher introducing himself with "I be yo teacha fo today" is making a derogatory statement about African Americans and their distinctive speech. Native Americans doing a "whiteman" skit in which they imitate the way Anglo-Americans speak are using mock language to distance themselves from the mainstream.

In science fiction films, such as *Star Trek* and *Star Wars*, the enemy alien languages often have the phonology of the languages of the terrestrial enemies of the United States. They are commonly described as "gutteral," using the velar fricative found in Eastern European and Middle Eastern languages. On the other hand, the sympathetic aliens of the movie *Avatar* speak a language that has fewer stops and more continuants than English. It has a strong alternation

[24]R. Daniel Shaw, *From Longhouse to Village: Samo Social Change* (Belmont, CA: Wadsworth/Thomson Learning, 2002).
[25]Holly M. Barker, *Bravo for the Marshallese: Regaining Control in a Post-Nuclear, Post-Colonial World*, (Belmont, CA: Wadsworth/Thomson), 2004.
[26]You can read more about mock Spanish in the chapter by Jane H. Hill, "Language, Race, and White Public Space," in Duranti, *Linguistic Anthropology*, 2nd ed., 479.

of consonant and vowel, giving it the sound of a strange Romance or Polynesian language. You can discover how a society feels about their neighboring societies by noting whose language they are mocking or imitating in a favorable way.

Another way in which culture influences language is in the use of metaphors. In Chapter 6, we talked about how the Western Apache use the names of body parts to name the parts of a car. In other words, the Apache use the metaphoric domain of body parts to name car parts. Cultures find meaningful metaphors in domains that are important to them.

In China, the metaphor of food is pervasive. The person who has work to do is said to have rice grains to chew; someone who has lost a job is said to have broken the rice bowl. Someone who is shocked has eaten a surprise, and someone who is popular has eaten a fragrance. A common greeting is "Have you eaten (dinner) yet?"

In the United States, baseball is an important part of our culture. So it is not surprising to find that many terms in the domain of baseball are used as metaphors in everyday life. You get only three chances to do things right—"three strikes and you're out." And if you start with a disadvantage, you have "two strikes against you." An approximation is a "ballpark guess." And if your estimate is somewhat close to the correct total, it is "in the ballpark." Cooperating with someone is "playing ball" with them. Being a tough negotiator or shrewd businessperson is "playing hardball." "Getting to first base" is one of many baseball metaphors to describe casual sexual activity.

In the twentieth century, the military was an important part of American life, waging several wars and figuring prominently in the Cold War. This importance of the military is still reflected in the use of military metaphors for several domains. In business, we talk about corporate "raiders," "target audiences," and "hostile takeovers." In fact, one investment company advertises that they have "an army" of retirement specialists. In football, a long pass can be a "bomb," a defensive play a "blitz," and an offensive formation a "shotgun." We "fight" disease, "defend ourselves" against disease "invasion," and "arm ourselves" with preventive medicine.

In Bali, where cockfighting is an important pastime, metaphors referring to the domain of cockfighting permeate everyday life and social relationships. The shape of the island of Bali is said to be that of a rooster. A man and woman in love "stare at each other like two cocks with their feathers up." An arrogant man is called "a tailless cock who struts about as though he had a large, spectacular one." Heaven is the way a man feels when his cock has just won, and hell is the way a man feels when his cock has just lost.[27]

EXERCISE 9-2 Fieldwork II

1. Interview someone who has lived in the United States for less than five years and whose native language is not English. Ask your informant to tell you a folk tale, legend, or myth from his or her native country. What is the theme of the story? What is the message that the story intends to communicate to the listener (perhaps the children who would hear it)? What does the story tell you about the culture that it comes from? Does it tell you about the religious beliefs, the games, the livelihood, and the family structure? Does this story influence the metaphors used in everyday language? What does this story tell you about linguistic relativity—the interconnections of language and culture?
2. Interview a friend, classmate, or relative who is not studying or working in the field of the visual arts. Show your informant an assortment of color paint samples and ask the informant to name the colors. Group the samples according to the names that they are given.

[27]Mark Turner, *Cognitive Dimensions of Social Science* (New York: Oxford University Press, 2001).

Next, repeat the procedure with one or more informants whose work or field of study involves the use of paint or color. For instance, you might interview a housepainter, a paint store clerk, an art student, or an interior decorator. Did your informants organize the colors in the same way? Why or why not?

Language and identity

Identity is a person's sense of self—who they believe they are in terms of ethnicity, gender, biological features, social class, political affiliation, age category, occupation, and place of birth or current residence.

In the preceding section, we discussed the interrelatedness between culture and language. Now we'll look at how language and culture influences one's identity. The concept of **identity** is defined differently in different academic fields, and even by different researchers in the same academic field. Also, there are many different adjectives used before the word identity, so we can speak of social identity, personal identity, master identity, and so on. For the purposes of this book we will combine these meanings and define identity as a person's sense of self—that is, who they believe that they are in terms of ethnicity, gender, biological features, social class, political affiliation, age category, occupation, and place of birth or current residence. A person may take pride in their identity or be disappointed with it. In other words, identity has to do with all those compound words that are combined with self—self-esteem, self-awareness, self-recognition, and so on.

Although a person's identity might be relatively well established at a particular point in time, it also changes over time as that person is exposed to new realities or perceived realities. This may be due to changes in personal life or changes in the social context in which the person lives.

A person's identity and social behavior are influenced by what is one of the first linguistic labels that is attached to that person in many societies, his or her name. For instance, a study done in Florida by David N. Figlio found that boys with names given mostly to girls were, by the time they got to middle school, displaying more disruptive behavior than their peers.[28] In a classic study of the influence that a person's name has on his or her identity and behavior, Gustav Jahoda (1920–2016) demonstrated that boys from the Ashanti culture of the Gold Coast of Africa (now Ghana) had a tendency to act out a traditional belief associated with one part of their name.[29] The Ashanti include the day of the week that a boy is born in their name. So each boy, and everyone else in Ashanti society, knows the day of the week that the boy was born. The belief is that boys (but not girls) born on each day will display different behaviors as they mature. For instance, the Ashanti believed that boys born on Monday would be peaceful and mild mannered, whereas boys born on Wednesday would tend to be violent and aggressive. Although a person's name was not that person's destiny, it did seem to influence a high percentage of the boys. Boys born on Wednesday wound up in trouble with the law at a significantly higher rate than expected by chance.

A **self-fulfilling prophecy** is a positive or negative expectation, prediction, or assumption communicated about a person (or event) that may influence a person to act in a way consistent with such feedback resulting in those expectations to be realized (fulfilled).

Jahoda and others have concluded that this is an example of stereotyping and of a **self-fulfilling prophecy**. A self-fulfilling prophecy occurs when a person comes to believe a reaction to them or to a situation that is consistent with a false belief. For instance, they may believe that they have violent tendencies because of their name and because others in the society also believe this. Those others might react to the person labeled as having a violent personality in a way different from other people. They might expect the person to be violent. Over time a person stereotyped in this way might believe the superstition associated with them through their name and come to act it out.

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[28]You can read the lyrics and listen to Johnny Cash sing his song "A Boy Named Sue" at www.youtube.com/watch?v=_Gbtm-93oqE. Also see David N. Figlio, "Boys Named Sue: Disruptive Children and their Peers," *Education Finance and Policy*,2, 4 (2007), 376–394.

[29]Gustav Jahoda, "A Note on Ashanti Names and their Relationship to Personality," *British Journal of Psychology* 45, 3 (1954), 192–195.

In addition to having a given name and a family name, in many societies an individual is also associated with a larger kinship unit such as a clan or tribe. Those units are often given names that are meant to describe some attribute of the group. As with the example above, such labels can influence a person's self-concept, and therefore their behavior.

A person's identity can also be influenced by nonkinship labels that are used to describe that person. If a person is labeled as smart, dumb, or average, or as creative or unimaginative, or any other number of personal labels, this stereotyping and the work of self-fulfilling prophecies might influence the person's concept of who they are. Numerous studies of gangs, prisoners and guards, and people labeled as mentally ill have shown how labeling has the power to influence self-concept and behavior. A few of these studies are listed below. Labels associated with gender, social class, educational level, and any other social dimension also will affect a person's identity (see the discussions of gender and language and gender differences in English at the end of Chapter 8). Words are not neutral description; they are speech acts, and therefore can influence behavior (see Chapter 7).

EXERCISE 9-3 Identity self analysis: words are powerful

Note: The questions below ask you to analyze your own experiences with other people. This is an exercise to help you better understand the concept of labeling and self-fulfilling prophecies. Your conclusions will be personal opinions, not scientific fact.

1. Can you think of ways that you were labeled as a young child? In other words, what adjectives or adjective phrases did parents, teachers, and/or peers use to describe you? Do you think those words influenced your personal identity and behavior as a child? If so, in what ways do you think they influenced your self-concept?
2. Can you remember acting towards others in a stereotypic way? Do you think that this, along with other people perhaps acting the same way towards that person or group of people, influenced that person or group of people in terms of their future behavior? Explain.
3. Did you have a nickname when you were young? If so, was it given to you by someone in your family, a friend, or someone else? If you had a nickname, do you think that it influenced your personality? Explain.
4. A related concept to the ones we have been discussing is called *social stigma*. Social stigma is extreme disapproval or dislike of a person or group of people based on some social or physical characteristic that they have or are perceived to have. Social stigma could be based on sexual orientation, biological or ethnic ancestry, disabilities, profession, and many other factors. What are some of the labels that you know about that have been used to characterize stigmatized people? What effect do you think that these labels have on the people who are labeled in this way?
5. Search the scientific literature for papers on the influence of labeling, stereotyping, nicknames, and social stigma on identity or self-esteem.

Language enculturation: three examples

The Tiwi (Australia)

Enculturation is the process of learning one's culture, its values, beliefs, kinship system, economic systems, personal identity, and all other dimensions of the culture. Anthropologists are very interested in language acquisition because children learn their culture as they are learning

Enculturation is the process of learning one's culture, its values, beliefs, kinship system, economic systems, and all other dimensions of the culture.

their language. The words that are taught to children guide them in learning what is important in their culture. How Tiwi children learn their kinship system is a good example of this. The Tiwi are an Australian aboriginal people who are divided into four large matrilineal clans. The people in a matrilineal clan trace their descent through the female line back to a common female ancestor.

The Tiwi have an intricate system of kinship terms, which emphasizes gender differences and clan membership so that there are two terms for daughter, one that the father uses (*miraninga*) and one that the mother uses (*mwaninga*). The mother's term indicates that the daughter is a member of her clan. The father's term indicates that the daughter is a relative who is not a member of his clan. Instead of one term for half-brother, they have different terms for half-brother sharing a mother and half-brother sharing a father. Brothers sharing a mother will be of the same clan, while brothers sharing a father will not. Because it is considered an insult to address people by their Tiwi given name, these kin terms are used in everyday conversation. The proper way to address people is by their kinship term. Therefore, it is not surprising to find that the first words children learn are kinship terms. Babies and small children are told how they are related to everyone they come in contact with, whether they are potential marriage partners or members of the same or different clans.

The Kaluli (New Guinea)

But even more important than what children are taught about their language is how they are taught. As they are enculturated through the use of their language, they are enculturated in their culture. The ideas and expectations that people have about children affect the way in which they treat children and what they say to them. Middle-class Anglo-Americans treat their infants as social beings: looking them in the eye, talking to them, using a simplified version of the language ("baby talk"), carrying on pretend conversations, and trying to interpret the meaning or intention of sounds and gestures.

The Kaluli place great value on speaking well and using language to get what they want or need. They do not speak to babies because they believe that babies are helpless and don't understand. Babies are carried or held all day and night, but the mother never addresses the baby in the kind of "pretend conversation" that Anglo-American parents carry on with their infants. Furthermore, they never gaze directly into the eyes of the baby because their etiquette forbids direct eye contact with anyone. The mothers do, however, talk to older children on behalf of the baby. They speak in correct language (never "baby talk"), stating what the baby might say to the children if the baby were older and could play or interact with them. In other words, the mother doesn't talk to the baby, but she models correct language for the baby.

For the Kaluli, babbling and other sounds are not considered precursors of language. The baby is considered to have begun acquiring language only after he or she clearly says the words /no/ *mother* and /bo/ *breast*. But even then the mother doesn't engage in conversations with the baby. Instead, she begins coaching the baby to say appropriate utterances directed at other people. With the command /ɛlɛma/ "Say like that," she models for the baby "Whose is it?" or "Is it yours?" With these instructions, the child learns the correct way of speaking to others and interacting with the rest of the group. The Kaluli avoid interpreting the intentions or ideas of others; their language does not allow indirect quotation. Therefore, the mother never tries to interpret or guess what the child is saying. Anything that is not understandable is considered nonsense. But if the child doesn't understand something, he or she is prompted to ask the speaker for an explanation with the /ɛlɛma/ command.

Western Samoans

The people of Western Samoa, who live in a highly stratified society, have still different ideas regarding language learning. Their households mirror the social stratification of society, with

the younger members being the lowest ranking. The adult caregivers talk at the baby, giving commands, but again don't engage in "pretend conversations." They expect that babies will be mischievous and strong willed, and that their first word will be /tae/ *shit*. Any unrecognizable utterance is considered to be animal sounds or a foreign language. As soon as they begin to speak, children are trained to do what low-status people in their society do—carry messages to people of higher status. So a child at the holophrastic stage (see Chapter 10) will be prompted by the mother (or aunt or older sister) to carry a one-word message to a visitor in the house. By the age of three, the child will be memorizing and delivering messages to other households.[30]

EXERCISE 9-4 Language enculturation and young children

1. Observe a parent and a young child communicating. Note the language they are speaking and their ethnic background.

   a. How does the parent speak to the child? Baby talk? Simplified sentences?

   _____

   b. Do they make eye contact?

   _____

   c. Does the parent ask the child questions?

   _____

   d. Does the parent try to interpret the child's utterances?

   _____

   e. Does the parent coach the child to make any statements?

   _____

   f. What is the child learning about his or her culture through this communication with the parent?

   _____

2. Observe a parent and a young child of another ethnic background. Answer the same questions as in Part 1. Compare and contrast them with the answers from the previous observation.

   a. What cultural differences do you think account for the differences in your observation?

   _____

   b. How do you explain the presence of these cultural differences in your community?

   _____

[30]Elinor Ochs and Bambi B. Schieffelin, "Language Acquisition and Socialization: Three Developmental Stories and Their Implications," in Duranti, *Linguistic Anthropology*, 296–328.

Language and nationalism

A **nation** is a group of people who share a history and culture, including a common language.

Although the word *nation* might have different meanings in everyday speech, in social science a **nation** is a group of people who share a history and culture, including a common language. Many countries contain different nationalities. The term *nationality* is sometimes used synonymously with ethnic group. In Great Britain, for instance, there are four major nationalities or ethnic groups that have been there for a long time: the English, Scots, Irish, and Welsh. In Nigeria, there are about 300 ethnic groups. Almost all modern countries are composed of multiple nationalities. The language one speaks is an important symbol of group identity.

In the United States, ethnic groups such as the Amish consider the maintenance of their language as central to their ethnic identity. The Amish are a religious group who first came to the United States in the 1700s from Switzerland. They speak a form of German in their homes, schools, and communities, but are bilingual and generally only code switch to English when they need to do business with English-speaking people (see Chapters 7 and 8).

The Native Americans of North America are often referred to as the First Nations. Many Native Americans are also bilingual. There are still about 175 Native American languages spoken in the United States, but only about twenty of them are spoken by a sizable number of people. Before European contact, there may have been considerably more than 1000 languages spoken in what is now the United States (see the "Disappearing, reappearing, and emerging languages" section in this chapter).

So what happened to all of these languages? As we discussed earlier, one reason for the extinction of the languages was that the people who spoke them were killed off either by bullets or disease. Other languages became extinct because of a policy of the United States government to assimilate the Native Americans. In the past, Native American children were placed in boarding schools where they were taught in English and not allowed to speak their native languages. The idea was to kill their culture (ethnocide) through the elimination of their language.

In 1992, the United States government reversed this practice with the Native American Languages Act, which provides money for the preservation of the remaining Native American languages. Native American children are no longer prevented from speaking their native languages; however, the degree of assimilation into general American culture has been so great that all but a few Native American languages may be extinct in the next fifty years or so without intensive work on the part of linguists and teachers.[31]

One example of an effort to preserve and promote a Native American language is among the people who speak approximately thirty varieties of Mayan in Mexico, Belize, Guatemala, and Honduras. Some of the varieties are in danger of disappearing as the people become bilingual in Mayan and Spanish and as the rate of literacy goes up. Children in many of the larger and more educated communities are not learning their Mayan language.

Mayan linguists are working in three main ways to preserve and revitalize Mayan. First, they are creating dictionaries and grammar descriptions. Second, they have worked on standardizing educational materials in Mayan. Third, they have worked as advocates to promote Mayan language retention and diffusion. In this way they hope to counteract the loss of Mayan languages that has accompanied the rise in Spanish literacy.

Since there are more than thirty Mayan languages, creating standard educational materials has required some hard decisions, sometimes pitting local advocates against the more centralized experts. For instance, if there are different terms for the same concept, those terms are considered synonyms (see Chapter 6). If there are different forms of the same term, the older or more historic version is considered the standard. Forms that are found only in one locale and not in others are avoided as localisms. All possibilities that exist

[31]"Native American Culture: Language," www.ewebtribe.com/NACulture/lang.htm, March 13, 2005.

as standard forms in the language are preserved. For example, word order can be S-V-O (subject, verb, object), O-V-S, S-O-V, O-S-V, and V-S-O. (Many national bilingual texts use only S-V-O because it is the most common in some of the dialects and is the word order of Spanish.)[32] The quest to maintain a native language has been vigorous in other areas of the world also.

Controversies over language rights

Civil wars have been fought, at least in part, over which language would be the official language of a country. One of many possible examples of this is India. In 1947, after India gained independence from the British, violence broke out between ethnic groups over what language would be the official language of India. Whichever language was chosen would give educational, economic, and other social advantages to the ethnicity that spoke that language. Ultimately, English was maintained as the *lingua franca* of India for use in business and political communication. However, to stop the nationalistic violence, fifteen indigenous languages of India are now considered official languages of that country. In addition, today most of India's main language (ethnic) groups have their own states.

The right of peoples to speak the language of their choice (heritage) has been a standard goal—a positive cultural value of anthropologists and people interested in indigenous rights. In fact, language has become a stand-in for culture. So language rights are equated with cultural rights. However, Peter Whiteley, in his fieldwork with the Hopi, suggests that what should be more important to the anthropologist is the right of individuals to speak the language that they choose rather than the academic objective of preserving the ancestor language.[33]

Linguistic anthropologist Joseph Errington believes that the use of the metaphors of living things—that is, "death" and "extinction"—as applied to languages may be adding an emotional bias to the issue as they make language revitalization a "matter of life and death." Recent researchers have used languages as a kind of "place-making" strategy in substantiating land rights for indigenous people, or they have idealized the languages as preserving the great diversity of human thought. Errington feels that it may be more productive for linguists to be objective in recording and analyzing the languages of marginal communities in order to clearly document them without regard to the politics of the situation.[34]

What is the official language of the United States? The answer is that there is no official language of the United States. There have been arguments for the establishment of an official language, English, since the founding of the country. The idea is that it would emphasize national unity and prevent communication problems that may arise from people within the country not being able to speak to each other. English as a national language would also have the function of emphasizing the culture of the major group who first established the country—white, Anglo-Saxon Protestants. An amendment to the United States Constitution that would make English the official language has been introduced during virtually every recent session of Congress. Such an amendment has failed each time.

However, as of 2017, thirty-one states had passed laws making English the official language of those states. On the other hand, other states publish official materials—such as ballots, department of motor vehicle information, health information, educational material, and other information—in more than one language. The only states that have more than one official language are Hawaii and Alaska. In Hawaii, both English and Hawaiian are official languages, and in Alaska, English and several native languages function as official languages. Declaring an

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[32]Nora C. England, "Mayan Language Revival and Revitalization Politics: Linguists and Linguistic Ideologies," *American Anthropologist* 105, 4 (2003), 733–743.

[33]Peter Whiteley, "Do 'Language Rights' Serve Indigenous Interests? Some Hopi and Other Queries," *American Anthropologist* 105, 4 (2003), 712–722.

[34]Joseph Errington, "Getting Language Rights: The Rhetorics of Language Endangerment and Loss," *American Anthropologist* 105, 4 (2003), 723–722.

official language has an important influence on job opportunities, education, health and other public services, relationships with authorities, such as the police and courts, and so on. It is a highly emotional and controversial issue for those involved.[35]

EXERCISE 9-5 Language is power

Exercise 9-3 asked you to explore how words (words that label people) can be powerful in influencing a person's identify. This exercise asks question based on multiple sections of this chapter about how language is powerful on a political and economic level.

1. In a nation where multiple languages are spoken, how might the language that one speaks influence a person's financial well-being?
2. In a nation where multiple languages are spoken, how might the language that one speaks influence that person's ability to participate in the political system and influence policy?
3. What might be some other consequences for people who speak a minority language within a society?
4. What might be the ultimate consequent for minority languages within a society?

Summary

Linguistic anthropology is a subfield of cultural anthropology, and uses the methodologies of both linguistics and anthropology to comparatively study the languages of the world. Linguistic anthropologists study a large range of topics, including the relationship of language to cognition and concepts of reality. They do comparative studies of core topics in linguistics such as phonology, morphology, syntax, semantics, and pragmatics. In general, linguistic anthropologists are interested in how language shapes everyday life.

Early linguistic anthropologists became concerned with the rapid extinction of native languages. One of their goals was to inventory and describe these languages before they disappeared. The disappearance of a language means the disappearance of much of the culture associated with that language, and therefore the disappearance of data important to cultural comparison. One goal of cultural anthropology is the discovery of human universals and cultural variation. So, the loss of languages would hinder that goal.

One of the tenets of cultural relativism is the idea that a culture is consistent and comprehensible within itself. Closely related is the concept of linguistic relativism, the idea that each language is consistent and comprehensible within itself and must be studied as a unique system. The linguistic relativity hypothesis, which was one of the centerpieces of early anthropological linguistics, proposed that people of different cultures think and behave differently because the languages that they speak either impel them to do so or influence them to do so. In other words, the way in which individuals view the world around them is dependent on or influenced by the language that they have learned to use to interpret their world. There is the strong version of this idea that states that language determines how people think about the world, and the weaker version that says that language simply influences how people think about the world. Others have proposed that while language influences culture, there are other instances where culture influences language.

[35]You can read more about it at www.usconstitution.net/consttop_lang.html.

Language influences how a person thinks of themselves. Even a person's name or the name of a clan or tribe that they belong to might suggest to them that they possess certain personality traits. Reinforcement of these ideas from other people in the individual's society might lead to the suggestion becoming a self-fulfilling prophecy. Words as labels are powerful generators of behavior.

Language is an important part of the national identity for many ethnic groups. Also, the language that someone speaks in a multinational society or global economy might influence the power that person has. That is, it might enhance or limit the person's access to jobs and other economic resources, to educational opportunities, to political power, and so on. The loss of a language means the loss of an important element of a culture. Civil wars have been fought, in part, over what the language of a country will be.

Suggested reading

Books

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Articles

Cavanaugh, Jillian R. et al, "What Words Bring to the Table: The Linguistic Anthropological Toolkit as Applied to the Study of Food," *Journal of Linguistic Anthropology* 24, 1 (May 2014), 84–97, 2014.

The following articles appeared in a special issue of *American Anthropologist: Journal of the American Anthropological Association*, vol. 105, no. 4 (December 2003):

England, Nora C. "Mayan Language Revival and Revitalization Politics: Linguists and Linguistic Ideologies," 733–743.

Errington, Joseph, "Getting Language Rights: The Rhetorics of Language Endangerment and Loss," 723–722.

Friedman, Jonathan, "Globalizing Languages: Ideologies and Realities of the Contemporary Global System," 744–752.

Haviland, John B., "Ideologies of Language: Some Reflections on Language and U.S. Law," 764–774.

Maurer, Bill, "Comment: Got Language? Law, Property, and the Anthropological Imagination," 775–781.

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The following appeared in other volumes of *American Anthropologist*:

Ball, Christopher, "Boasian Legacies in Linguistic Anthropology: A Centenary Review of 2011," 114, 2 (2012), 203–216.

Black, Steven, "Linguistic Anthropology in 2012: Language Matter(s)," 115, 2 (2013), 273–285.

Falconi, Elizabeth, "Storytelling, Language Shift, and Revitalization in a Transborder Community: 'Tell It in Zapotec!'," 115, 4 (2013), 622–636.

Nakassis, Constantine V., "Linguistic Anthropology in 2015: Not the Study of Language," 118, 2 (2016), 330–345.

Reyes, Angela, "Linguistic Anthropology in 2013: Super-New-Big," 116, 2 (2014), 366–378.

Websites

Society for Linguistic Anthropology: http://linguisticanthropology.org University of Texas, Austin, Department of Linguistics: https://liberalarts.utexas.edu/linguistics. This website includes interactive activities and examples of speech sounds from different Latin American indigenous languages.

Review of terms and concepts: linguistic anthropology

1. Linguistic anthropology uses the methodologies of _____ and _____ to comparatively study the interrelationship between language and culture and how language influences social life.
2. A linguistic anthropologist is first and foremost a _____.
3. There are approximately _____ languages spoken in the world today. About _____ (number) are spoken by fewer than 1000 speakers, and many are in danger of _____.
4. The language with the most native speakers is _____, followed in the number two spot by _____.
5. The two main ways that languages die out are _____ and _____.
6. In what ways and aspects of life might the language or languages that one speaks influence that person's success?

   _____

   _____

   _____

   _____.
7. Give some examples of attempts to revive endangered or extinct languages.

   _____

   _____

   _____

   _____.
8. What does it mean when we say that a language is a non-neutral code?

   _____

   _____

   _____

   _____.
9. _____ holds that there are no languages that are superior to other languages; they are equally complex, expressive, and complete. Meanwhile, the concept of _____ proposes that people of different cultures think and behave differently because the languages they speak require or influence them to do so.

10. Anthropologist Franz Boas proposed the concept of _____ relativism.
11. The answer in number 9 has become a basic tenet of _____ anthropology.
12. To understand why the people of a culture do a particular thing, you have to look for _____ that culture.
13. Boas also proposed that all cultures are _____ valid adaptations to the universal problems encountered by humans. They are _____ complex, _____ moral, and _____ _____ intellectually satisfying.
14. One reason cultures are different is because of the _____ in which the cultures developed.
15. Boas's ideas were rather radical at a time when governments of European countries and the United States were treating native peoples around the world as _____.
16. Closely related to cultural relativism is the concept of _____ relativism.
17. Each language is _____ within itself and must be studied as a unique system.
18. Linguistic relativity is also known as the _____.
19. So the relationship among the environment, the culture, and the language of a people is _____.
20. Proponents of linguistic relativity point out that the lexicon of a language is not simply a list of words and definitions, but is a _____ for organizing the experience of the people who speak that language.
21. A language emphasizes whatever is _____ to the culture and de-emphasizes whatever is _____.
22. The strong version of linguistic relativity proposed that the language or languages that people speak _____ how they think, whereas the _____ version of linguist relativity proposed that the language or languages that people speak only _____ how they think.
23. The language that a person speaks can be seen as a _____. The person is so _____ to the way the language models the world that this modeling is not questioned.
24. Language can influence _____ or be influenced by it.
25. People use _____, the phonology or the lexicon of a foreign language or non-standard dialect, to "make fun of" or distance themselves from the speakers of that language.
26. _____ is the process of learning one's culture, its values, beliefs, kinship system, economic systems, and all other dimensions of the culture.
27. Children are born into a preexisting culture. The words that are taught to children guide them in learning what is _____ to that culture.

28. A person's sense of self—that is, who they believe that they are in terms of ethnicity, gender, biological features, social class, political affiliation, age category, occupation, and place of birth or current residence—is that person's _____.

29. A person's identity and social behavior are influenced by the denotations and connotations of words and phrases associated with that person's _____, ___, _____, _____, _____, and _____.

30. If many people in a child's life label that child as being artistic, and the child as he or she grows up is constantly reminded of this and ultimately becomes an artist, then this might be an example of a _____.

31. The Tiwi kinship system emphasizes _____ differences.

32. What do the Kaluli believe about infants? _____

33. What are three-year-old Samoan children trained to do? _____

34. In what ways do middle-class Anglo-Americans treat their infants as social beings?

    _____

35. A nation is a group of people that share a _____, _____, and _____ _____.

36. Because the language that a person speaks, especially within a multilingual culture, might influence that person's access to various resources and social positions, we can say that a person's language or dialect influences _____, _____, and _____.

CHAPTER 10

Language acquisition: how children (and others) learn language

LEARNING OBJECTIVES

- **Describe the role of brain development in language acquisition.**
- **List and explain the major theories of language acquisition.**
- **Describe how children acquire phonology.**
- **Describe how children acquire syntax and morphology.**
- **Describe how children acquire the lexicon.**
- **List the stages of first-language acquisition and briefly describe each.**
- **List and explain the different forms of bilingualism.**
- **Explain the two main hypotheses about how young children simultaneously acquire two or more languages.**
- **Analyze how second-language learning is different from first-language acquisition.**

Learning to be fluent in a foreign language is one of the most difficult intellectual accomplishments an adult can achieve. But for a child, language learning is almost effortless. In fact, it happens with no formal training and can happen with very little input. It occurs at a predictable age and in a predictable sequence. The result of about 2 million years of hominin evolution, language learning is human beings' unique adaptation to living in a group. One of the reasons that anthropologists are interested in language acquisition is that children learn the culture of their group as they are learning their language. The words that are taught to children guide them in learning what is important in the culture. (See Chapter 9, "Language enculturation: three examples"). Language acquisition is also closely tied to the evolution of the large human brain.

Language and the brain

The human brain is a complex organ that evolved from the simpler brains of ancestral animals. Inside the human brain is the **R-complex**, or the reptilian brain. This ancient part of the brain is like the brains of reptiles and birds; our basic drives, basic needs, and instincts reside in it. Wrapped around it is the **limbic system**, or the mammalian brain. In mammals, the limbic system is the part of the brain that affects calls (see Chapter 1). In humans, it is the source of screaming and crying. The **neocortex**, by far the largest part of the human brain, is where the language skills reside. This area of the brain contains **Broca's area** and **Wernicke's area**, discussed in Chapter 1. It also contains: the **corpus callosum**, which facilitates communication between the hemispheres of the brain; the arcuate faciculus that connects Broca's and Wernicke's areas; the angular gyrus that is associated with complex linguistics functions such as reading and writing; and Geschwind's territory that is associated with tool use.

The **R-complex** is the part of the human brain that is similar to the reptilian brain.

The **limbic system** is the part of the human brain that is similar to the mammalian brain.

The **neocortex** is the largest part of the human brain; it is where the language skills reside. This is the area of the brain that contains **Broca's area** and **Wernicke's area** (see Chapter 1).

The **corpus callosum** is the main connection between the two hemispheres of the brain; it facilitates communication between them.

Much of the recent research regarding first-language acquisition has been focused on brain development. Indeed, many websites now offer virtual tours of the brain.[1]

Ideas about language acquisition

The **innateness hypothesis** proposes that children have an inborn (genetically hardwired) capacity to differentiate phonemes, extract words from the stream of language, and process grammar.

Linguists, such as Noam Chomsky (see Chapter 5) and Eric Lenneberg (1921–1975), believe that the potential for language is inborn in humans, that children are born with their brains hardwired for ability to learn language. This is known as the **innateness hypothesis**. Lenneberg compares language acquisition with other innate biologically based behaviors in nature. These behaviors have certain common characteristics:

- The behavior appears before it is necessary for survival.
- It does not appear in response to the environment.
- It is not the result of a conscious decision.
- It is not the result of formal education or training. In fact, formal instruction has very little effect.
- The behavior appears in a predictable sequence, at a certain stage of development.
- The behavior appears at a critical period; after that period it will be difficult or impossible to learn the behavior.[2]

Sucking, eating, grasping objects, walking, talking—all of these human behaviors exhibit the characteristics of biologically based behaviors. They don't need to be taught to human children. But cooking, sewing, carpentry, bike riding, reading, and writing require training and instruction; they are not biologically based. See Figure 10-1.

FIGURE 10-1 Reading and writing require formal instruction.

[1]For more information about the brain and its parts, go to any of the following websites and take a virtual tour: http://psycheducation.org/brain-tours; www.pbs.org/wnet/brain/3d; www.alz.org/alzheimers_disease_4719.asp; www.thethinkingbusiness.com/brain-tourbrain-facts. While you are looking at these sites, you will notice that there are several places in the brain that are associated with language functions.

[2]Eric Lenneberg, *The Biological Foundations of Language* (New York: Wiley, 1967).

To put human language learning in perspective, recall that in Chapter 1 we mentioned Viki, a home-raised chimpanzee that was taught to say, with extreme difficulty, four hard to understand words. The researchers, a married couple with a baby the same age as the chimpanzee, spent many hours teaching Viki these four words. However, they noted that by six years of age, their child had learned thousands of words with no formal training at all.[3]

The innateness hypothesis proposes that children have the innate capacity to process grammar; they are predisposed to a certain **universal grammar (UG)** involving phonemic differences, word order, and phrase recognition. The hardwiring in the brains of children that allows, indeed propels, them to learn language has been called a **language acquisition device (LAD)**. Recent criticism of this term is based on the physiology of the brain, which has no single center for language acquisition. As you saw in the virtual tour of the brain, there are many parts of the brain involved in language processing. Lenneberg also proposed the **critical period hypothesis**, noting that after the age of puberty (twelve to fifteen years), the language acquisition device ceases to function and the ability to learn language with native fluency essentially disappears.

Universal grammar (**UG**) is the system involving phonemic differences, word order, and phrase recognition that is the basis for the theory of the innateness of language acquisition.

Language acquisition device (**LAD**) is the theoretical area of hardwiring in the brains of children that propels them to acquire language.

The **critical period hypothesis** proposes that the language acquisition device ceases to function, and the ability to acquire language with native fluency declines as childhood progresses, disappearing after the age of puberty.

More recent evidence for the critical period in language acquisition is found in immigrant families. The children who immigrated before the age of seven speak the language of their new country with native fluency. Their performance on grammar and semantics tests was equivalent to that of native-born children of the same age. Those who immigrated between the ages of eight and fifteen performed more poorly than their native-speaking counterparts on the test of grammar, but performed equally well as their counterparts on semantic tests. Those children who immigrated after the age of sixteen did no better than adults on tests of English grammar and semantics.[4] The older children and adults may, with study and hard work, learn the language, but they will rarely achieve native fluency and will generally speak with an accent.

So how do children use their innate predisposition to acquire language? Intuitively, we sense that children acquire language by imitating the people around them. Of course, we know that children learn the language (or languages) that they hear spoken or signed around them. This is called the **imitation hypothesis** of language acquisition. In Chapter 1, we discussed the arbitrary relationship between the meaning of a word and its sound. Learning that the sound /dog/ refers to a canine, and not a feline or a bovine, happens as children listen to the adults around them. Children in other parts of the world, listening to adults speaking other languages, learn to refer to the same animal with sounds such as /šiɛn/, /pɛʁo/,[5] /hʊnt/, or /kane/.[6]

The **imitation hypothesis** of language acquisition proposes that children acquire language by imitating the people around them.

However, imitation cannot account for other aspects of children's language. Children say **goed* instead of *went* or **mouses* instead of *mice*. They say sentences such as:

**Mama ball* instead of *Mama, throw the ball to me.*

**I have a sud on my hand* instead of *I have some suds on my hand.*

These are utterances that they have certainly never heard from an adult and cannot be imitating.

Imitation also does not account for children's ability to learn all of the structures of the language when there is **poverty of the stimulus**.

Poverty of the stimulus theory, proposed by Chomsky, accounts for the ability of children to acquire patterns of language for which they have not heard examples. It supports the innateness hypothesis, the theory that children are born with universal grammar and certain abilities to acquire language hardwired into the brain.

For example, the child hears

He is going

He's going

and concludes that "he is" can be pronounced "he's." However, the child also hears

Is he going? Yes, he is.

---

[3] Catherine Hayes, *The Ape in Our House* (New York: Harper & Row, 1951).

[4] J. Johnson and E. Newport, "Critical Period Effects in Second Language Learning," *Cognitive Psychology* 21 (1989), 60–99.

[5] /ʁ/ is the phonetic symbol for the trilled *r*. See Chapter 2, "Some consonants not used in English."

[6] *Chien* (French), *perro* (Spanish), *Hundt* (German), *cane* (Italian).

But, in examining many transcripts of developing children's speech, there is no instance in which the child generalizes the contraction rule, making the mistake of saying

**Yes, he's.*

In another example, the child learns to form questions by moving the auxiliary verb to the beginning of the sentence:

John is going.
Is John going?

But in a sentence like

The man who is here is tall

which "is" should be moved to the beginning of the sentence? Children seem to understand that "the man who is here" functions as a single structure and they only move the second "is":

Is the man who is here tall?

Since there is no stimulus in the environment to give children a clue to these structures (there are no examples of what not to do), Chomsky concludes that this is evidence of innate knowledge of the grammar, or "a priori structure dependent constraints" on grammar.[7]

Furthermore, imitation cannot fully account for the productivity of language generated by children in the five years after birth. Just like all human beings, they produce and comprehend utterances that they have never heard before.

The **reinforcement hypothesis** postulates that children acquire language by positive reinforcement when they produce a grammatical utterance and by being corrected when they don't.

The **reinforcement hypothesis** postulates that children learn language by positive reinforcement when they produce a grammatical utterance and by being corrected when they don't. However, language studies in children as well as anecdotal evidence show that parents and caretakers usually respond to the facts of the child's statement. So, when a three-year-old child asks

Doggie go outside?

the parents' response will be either *yes* or *no*, depending on whether or not the dog is outside. They will not correct the grammar of the statement.

When parents do try to correct the child's grammar, they often meet with frustration, as in this humorous exchange between a parent and a five-year-old:

CHILD: Nobody won't play with me!
PARENT: No, "Nobody will play with me."
CHILD: Nobody won't play with you, too?

The **interactionist hypothesis** postulates that children acquire language by their innate language abilities to extract the rules of the language from their environment and construct the phonology, semantics, and syntax of their native language. **Constructivism** is another name for the interactionist hypothesis.

The **interactionist hypothesis** (also known as **constructivism**) proposes that children use their innate language abilities to extract the rules of the language from their environment and construct the phonology, semantics, and syntax of their native language. In fact, it seems that the innate language ability is the ability to identify patterns in language, formulate rules about those patterns, and then apply them to new utterances. In all of the examples given in this chapter so far, the children who generated them have demonstrated that they know the English word order for a sentence, S-V or S-V-O. They have demonstrated that they know that the

[7]Robert C. Berwick, P. Pietroski, B. Yankama, and N. Chomsky, "Poverty of the Stimulus Revisited," *Cognitive Science* 35 (2011), 1207–1242.

suffixes /d, /t/, or /əd/ make a verb past tense and the suffixes /s/, /z/, or /əz/ make a noun plural. They have demonstrated that they know that using the negative *not* with the auxiliary *do* negates the verb; they've also learned the use of the contraction *don't*. All of these rules are correct. However, the utterances are incorrect because the rules have been applied incorrectly or incompletely. Through interaction, observation, and trial and error, children spend their first five to ten years acquiring the language or languages that surround them.

In recent years, the proponents of **cognitive-functional linguistics** have taken issue with the concept of the language acquisition device, and indeed with the idea that language development and use are different from any other intellectual human activity. They argue that language is situated in a context and embedded in the human's environment and development. Rather than looking at language acquisition as a separate process of the child's development, they seek to blend all of the child's experience into a coherent whole. They consider language learning to be the result of general cognitive and intellectual development.

Cognitive-functional linguistics proposes that language acquisition is not a separate process of the child's development, with a distinct language acquisition device in the brain, but rather a result of the child's general cognitive and intellectual development.

How do children acquire the components of language?

It now appears that babies begin language acquisition before birth by learning the "melody" of their native language. After birth they continue their language acquisition by cooing and babbling the sounds of human language. They go on to say one word, two words, and then longer sentences. They then spend many years learning the meaning of tens of thousands of words.

Phonology

There is evidence that a baby in the womb in the third trimester is already acquiring prosodic features of their native language, such as those based on pitch (see Chapter 2). For instance, at just three days old, the cries of a German baby can be distinguished from the cries of a French baby. French babies cry with a rather persistent rise in pitch, whereas the cries of German babies tend to have a slight rise in pitch and then a fall. These patterns match the general prosodic features of the speech of the adult language of the baby's caregivers. The researchers doing the study, Birgit Mampe and colleagues, cannot rule out the possibility that the babies learned this part of the melody of their language in the three days after birth. However, they believe that, based on other studies that show that prosodic features of speech pass through the wall of the abdominal area with little disruption, it is more likely that the learning begins in the womb.[8]

Within a few months after birth, babies begin making verbal sounds. **Cooing**, which comes first, is all vowel sounds, such as *ahh*, *ooh*, *æhh*, *iiih*. By four to six months of age, babies are **babbling**, alternating consonants and vowels, such as *bababa*, *gagaga*, *mamama*. While cooing and babbling, they experiment with forming many sounds. They may respond to any sounds that are phonemic in any human language, whether or not those sounds are phonemic in the language they are hearing around them. For instance, experiments have shown that babies, including Japanese babies, respond to the sounds /l/ and /r/ as different phonemes. Later in life, Japanese speakers respond to them as allophones of the same phoneme and have trouble distinguishing between them. The babies of English-speaking families recognize the sounds of /t/ and /t_j/ (the Russian phonemes mentioned in Chapter 3) as different, although they will have trouble doing so in later years. After six months of age, babies begin to learn the phonemic structure of their own language(s) and slowly stop responding to the phonemic distinctions of other languages. However, the fact that they can initially recognize the phonemic differences from all languages has been interpreted as evidence for the existence of the phonological component of a universal grammar (UG).

Cooing, the first verbal sounds that babies make, consists of sounds that are all vowels, such as *ahh*, *ooh*, *æhh*, *iiih*.

Babbling is the verbalization made by babies beginning at four to six months of age, which alternates consonants and vowels, such as *bababa*, *gagaga*, *mamama*.

[8] Birgit Mampe, Angela D. Friederici, Anne Christophe, and Kathleen Wermke, "Newborns' Cry Melody Is Shaped by Their Native Language," *Current Biology*, 19 (December 15, 2009), 1994–1997.

The ability to perceive distinctions among sounds precedes the ability to produce the sounds. Babies' typical mispronunciations include the following:

/nænæ/	for	*banana*
/fis/	for	*fish*
/dai/	for	*doggie*
/dus/	for	*juice*
/titu/	for	*thank you*

As babies begin to speak words with typical mispronunciations, they will resist attempts to correct them and become frustrated at adults who imitate them. They hear the word correctly; it is their production that isn't quite correct yet. But their production is more correct than you might think. When the child's speech is analyzed by a sound spectrometer, missing elements, such as the first syllable of *banana* and the middle consonant of *doggie*, are heard. They are being produced, but too softly to be heard by the human ear. The difficult (more marked) consonants /š/, /θ/, and /ǰ/ seem to be replaced by the easier (more unmarked) consonants /s/, /t/, and /d/. But here again the sound spectrometer detects that the sounds are slightly different from the /s/, /t/, and /d/ pronounced in the places where they are the correct consonant. So, although the adult hears the last consonant in /fɪs/ and /dus/ as being the same, the child (and the sound spectrometer) hears them as different.

Syntax

Babies' first words are not words; they are sentences. When a twelve-month-old baby says *cat*, it is a sentence that might mean "There is the cat" or "I want to pet the cat" or "Keep that cat away from me!" These one-word utterances are referred to as **holophrases**, because they are complete or undivided phrases; this stage of language acquisition is the **holophrastic stage**. Typical holophrases and their possible meanings are:

Holophrases are one-word utterances with which a toddler expresses an entire sentence.

The **holophrastic stage** in language acquisition is when a child uses holophrases.

ball	I want the ball.
	Throw me the ball.
	I see a ball.
mama	Come here, mama.
	That purse belongs to mama.
	There is mama.
bird	There's a bird outside.
	I hear a bird.
	Let's go look at the bird.
	I see a picture of a bird.

Some holophrases are utterances that are more than one word, but are perceived by children as one word: *I love you, thank you, Jingle Bells, there it is*.

The **two-word stage,** which begins sometime after eighteen months of age, is when children begin combining words into two-word utterances.

The **two-word stage** begins sometime after eighteen months of age, when children begin combining words into two-word utterances. But these are not just any two words spoken together. They are two words that have a grammatical relationship to each other and express a complete thought in the same way that an adult sentence does. Very often the grammatical relationship expressed is agent–action, action–object, possessor–possession, or action–location, as in the following examples:

agent–action	*Doggie run*
action–object	*Push ball*
possessor–possession	*Mommy car*
action–location	*Ride car*

The fact that there is underlying syntax generating these utterances becomes apparent when the child substitutes appropriate words to produce new sentences. For instance:

Kitty run
Doggie eat
Push block
Throw ball
Daddy car
Mommy house
Ride bus
Sit car

If you expand these utterances into full English sentences, you will find that the child is already using English word order. They conform to the S-V-O word order of English.

As children begin adding more words to their two-word sentences, their utterances are described as **telegraphic speech**. (They resemble telegrams that were priced by the word; to save money, the writer deleted function words such as auxiliaries, articles, pronouns, and copulas—*is*, *am*, and *are*.) In many ways, telegraphic speech is simply an expansion of the two-word utterances. Modifiers might be added to generate *throw blue ball* or *sit car now*. Objects or locatives might be added, as in *doggie eat food* or *kitty run outside*. Of course, several typical modifiers take on special meaning for two-year-olds who are learning to deal with other children and trying to assert their independence: *my*, *mine*, *no!*

Telegraphic speech occurs as children begin adding more words to their two-word sentences.

EXERCISE 1 Early language acquisition

Interview the parent of a young child (between the ages of three and five years) to answer as many of the following questions as you can about the child's language development.

1. What are the child's gender, current age, and stage of language development? What is (are) the language(s) spoken in the home?

_____

_____

_____

2. When did the child start cooing and babbling? What did it sound like? (Write the parent's answer phonetically.)

_____

_____

_____

3. What was the child's first word or words? At what age did the child first speak them?

_____

_____

_____

4. What was the meaning of the child's first holophrastic utterances?

5. What were some of the child's two-word utterances? What did they mean?

6. How do the parent's recollections of their child's development differ from the information in this chapter? What do you think is the reason for the differences? Analyze and discuss your conclusions.

Morphology

As children's language becomes more sophisticated, they begin to add bound morphemes to the basic words (see Chapter 4). One of the first bound morphemes they acquire is the plural marker. In fact, children may go through three steps in the acquisition of the plural marker. In the first step, they imitate what they hear around them:

Singular	Plural
mouse	*mice*
child	*children*
suds	*suds*
sip	*sips*
dog	*dogs*
house	*houses*

Overgeneralization occurs when children acquire a morphological rule and then apply it too broadly.

But with their innate drive to identify patterns and apply them as rules, in the second step they **overgeneralize** the rule (add /s/, /z/, or /əz/ to form a plural) and apply it to all of the words. Box 10-1 is about a famous linguistic experiment, the Wug Test, in which children demonstrated that they had acquired the pluralization rule. They even perceive *suds* and *gauze*, which are mass non-count nouns that cannot have a plural form, as plurals just because they end in /z/. At this step children produce:

Singular	Plural
mouse	*mouses*
child	*childs*
children	*childrens*
sud	*suds*
gau	*gauze*
sheep	*sheeps*

This same sequence of steps applies to the acquisition of the past tense marker /t/, /d/, and /əd/. At the second step we hear **goed* instead of *went*, **breaked* instead of *broke*, **runned* instead of *ran*.

It is not until the age of four or five that children arrive at the third step, in which they learn the exceptions to the rules. And as you will read in Chapter 14, language change has come about gradually, when language communities have ignored the exceptions to the rules.

EXERCISE 2 Parents' perception of language development

1. Interview the parent of an older child to answer the following questions about what they remember of their child's language development.

   a. How old is the child now? How do they recall their child's language development? Did they keep notes of the child's words and sayings in a "baby book"? Do they remember them as part of the family lore? Or do they have video of the child speaking?

   b. What "cute" mistakes do they remember their child making? Did they say words like *mouses* or *goed?*

Semantics

As early as six months, babies indicate that they understand the meaning of words by looking at the object or person mentioned. Children say their first word around age one. From then on, they learn about ten words a day until around the age of six, when their **productive vocabulary** (the words they are able to use) will be about 14,000 words. Their **receptive vocabulary** (the words they are able to understand when they hear them) can be twice that size. How are they able to accomplish this huge task? How are they able to sort through the various sounds they hear coming from adults and assign the correct meaning to each sound?

Productive vocabulary consists of the words that a person is able to use.

Receptive vocabulary consists of the words that a person is able to understand.

Imagine a one-year-old child is in the backyard and sees a cat on the roof of a neighbor's house. The mother points to it and says, "Look at the cat." By the age of one, the child has heard the introduction "Look at the _____" very often and knows that it is intended to focus attention on a particular item, which is named in the blank space. In this case, the blank space is filled in with *cat*. But how does the child know to what the word *cat* refers? Is it the house, the roof, the chimney, the sky, the clouds, the tree shading the roof, or the animal? All of these items are in the same general direction that the mother is pointing. Furthermore, how does the child know that the word *cat* refers to the entire animal and not just one of its parts, like the tail or the mouth? And how does the child learn that *cat* only refers to some small, furry animals and not to others that are called *dog*?

Just as in the acquisition of phonology and morphology, the acquisition of semantics follows universal principles that guide the child in sorting out the meanings of words. First of all, children assume that an identifying word applies to the whole object, not its parts or attributes. So with the word *cat* or *wug* (see Box 10-1), children assume that the word applies to the whole animal, not its body parts, color, or texture. Therefore, in the scene described previously, the child would be most likely to apply the word to the animal, because the child can see the entire animal, *but* only parts of the house, sky, and tree.

Next, children begin the process of refining their understanding of words. First they extend the meaning of words they know to things that have similar properties. This **overextension** is similar to the overgeneralization in syntax mentioned earlier. For instance, the child who has

Overextension occurs when a child acquires the definition of a word and applies it too broadly.

learned that this small animal is called *cat* may overextend and apply that word to all small animals or even all animals, large and small. In fact, you might find that the definition of *cat* is "four-legged animal with fur." For this child, the category of *cat* includes dogs, cows, horses, rabbits, sheep, mice, rats, and hamsters. Another child, whose first words include *doggie*, uses that word for birds, cats, horses, pandas, monkeys, and apes. (This child uses the word *fish* for any animal found in the water, including turtles, seals, sea lions, frogs, and otters.)

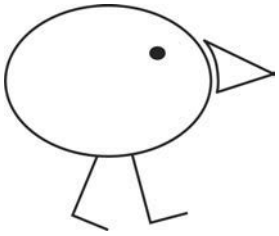
Children categorize the objects around them systematically. Experiments with babies have shown that they first pay attention to size, shape, and texture. The overextensions of *cat* and *doggie* described earlier are based on shape and texture (four-leggedness versus two-leggedness and fur/feathers versus bare skin).

English-speaking children often learn the word *ball* and apply it to all round things (shape). Some may use the same word to refer to bugs, crumbs, and pebbles (size). They may refer to all men as *Daddy* (size and shape). But they will not group and name things according to color. In

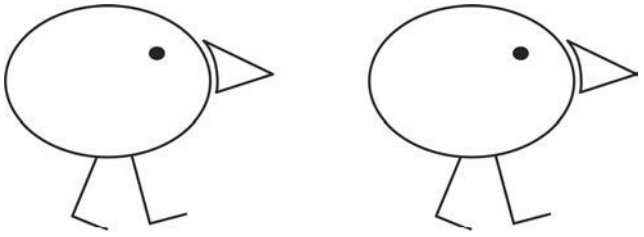
BOX 10-1

The Wug Test

In a famous linguistic experiment of the 1950s, Jean Berko Gleason (b. 1931) showed children a line drawing of a nondescript animal and said, "This is a wug."



Next, she showed them a page with two of the same animals on it and said,



"Now here is another one. There are two of them. There are two _____." Children as young as three years old were able to supply the correct plural, *wugs*, for a word they had never heard before.

Not only was the plural morphologically correct, but it was also phonologically correct. The *-s* morpheme was pronounced /z/ because it followed /g/, a voiced sound. When another critter called a *bik* was introduced, the plural morpheme was pronounced /s/ because it followed /k/, a voiceless sound. An object called a *tass* was pluralized by adding /əz/.

The full experiment included morphemes that form possessives, tenses, and agentives (adding *-er* to a verb to name the person who does the action).

The experiment showed that very young children extract morphological and phonological rules of their language and apply them in new circumstances. In other words, the language of children is productive.

Something you can try is to interview a preschool-age child (with the permission of a parent) and ask questions similar to the Wug Test. Make up nonsense words illustrated with simple pictures. See how the child applies the rules of pluralization and tense formation.

For more information, go to www.wikipedia.org/wiki/Wug_Test.

fact, color names and association of items by their color is something that is taught formally in preschool books, early childhood education curricula, and television programs such as *Sesame Street*; it is an outcome of the influence of the English language that causes its speakers to categorize things by their color. As we mentioned in Chapter 9 in the section "Language influences culture," children who speak Navajo learn to organize things by the lexical categories (related to number, length, rigidity, portability) in their language, not by color.

All adult words encompass a range of meanings. The child's task in learning semantics is to learn the range of meanings that adults assign to each word. Children's "errors" in this regard are the result of having a different range of meaning for the word than adults do. Don't forget that the adult definition of *dog* includes such different-looking animals as a Chihuahua and a Saint Bernard. Compared to these two, the cat and the small terrier look very much alike! In English, adults distinguish between their father, grandfathers, and uncles, but there are many African and Native American languages in which all of these men would be referred to by the same kinship term. So children who call all men they know *Daddy* are "wrong" in English, but might be "right" if they are learning a different language.

One reason that children may overextend is that they don't have the vocabulary to identify every object, so they use the vocabulary that they have (see Box 10-2). (This is the same circumstance—small vocabulary—that produces colorful phrases in pidgin languages. See the "Contact languages: pidgin and creole" section in Chapter 8.)

As children learn that their broad categories have to be narrowed down and they acquire a larger vocabulary, they may go through a phase of **underextension**. In this phase, a word like *chair* may only be used for the child's special chair but no others, or the word *dog* may refer only to the child's own pet.

Underextension occurs when a child acquires the definition of a word and applies it too narrowly.

The processes of overextending and underextending go on throughout the preschool years as the child's lexicon and its entries are revised and refined. During the school years, and even in adulthood, hey continue this process through formal education. Schoolchildren learn that they underextend the word *mammal* by failing to include the marine mammals, such as dolphins and whales. In fact, they may underextend the word *animal* by not including fish, insects, or protozoans. In anthropology classes, college students learn that they cannot overextend the word *monkey* to refer to all nonhuman primates, including apes and prosimians.

Pronouns pose another problem for children because their meaning shifts, depending on who speaks to them and who is spoken to. Before the age of three years, children generally use names, not pronouns. So they produce utterances such as

Daddy throw Kevin ball

Theo see Mama

BOX 10-2

A six-year-old's lexicon

Six-year-old Samantha, whose parents rent their house, asked her grandparents who the *owner* of their house was. Puzzled, her grandparents, who own their own house, asked what she meant by *owner*. Samantha replied with her definition of *owner*: "You know, when something breaks you call him to come fix it."

When telling what happened when her father's car broke down and had to be towed to a mechanic, Emma, not having the term *tow truck* in her vocabulary, said they had to wait for a "pick-up truck that drags cars behind it."

Daniel, six years old, called an LP record album a *CD*. Another child combined the words *earbud* and *headphone* to name the *hearphone*. Still another called a match a *firestick*. And what comes at the end of a sentence? A *pyramid*, of course!

Children use these to mean

(You) throw the ball to me.

I see you.

Before they have accurately begun to use pronouns, such as *you* and *me*, they may confuse them, using them interchangeably. Or they may treat them as an extension of the preceding word and not a separate word. A two-year-old child who has heard her mother say "Do you want me to carry you?" will hold her arms up and say "Carry you!"

The pragmatics (rules) of conversation require that a speaker use a proper noun or noun before using a pronoun to establish the referent (see the section on discourse analysis in Chapter 7). Three- and four-year-olds don't always do this, making their conversations difficult to follow. Statements such as

He took my ball!

She wants to go, too.

He came to my house.

are offered with no explanation of the pronoun referents, much to the confusion of the adult listener.

EXERCISE 3 Semantics and young children

1. Interview a parent of a child between the ages of three and five years to determine the definitions of the child's words.
   a. How old is the child? Or how old was the child when each of the definitions was valid?

   _____

   _____

   _____

   b. What words did the child say, and what were their definitions?

   _____

   _____

   _____

   c. How did the parent know what the child meant?

   _____

   _____

   _____

   d. Is the child overextending or underextending?

   _____

   _____

   _____

2. Observe a young child interacting with a parent. Write down everything the child says for a period of time, such as ten minutes.
   a. How old is the child? Describe the setting and the activities.

   b. Explain the meaning of the child's utterances. If they are holophrastic, write the intended meaning.

   c. Make a list of the words the child said; separate them into lexical categories. Which lexical categories dominate? Are some categories missing?

   d. Define the words according to the child's usage.

   e. What are the child's rules for pluralization and tense formation?

   f. Write a grammar for the child's utterances.

During preschool and beyond

As children grow older and more fluent in their language, they acquire the elements of fluency in a predictable order and within a predictable time range. The inflectional bound morpheme *-ing* (present progressive) will usually have been the first grammatical morpheme to be acquired during the toddler years. In the preschool years, it will be followed by such morphemes as *in*, *on* (prepositions), *-'s* (possessive), and *the*, *a/an* (articles), among others. Table 10-1 summarizes fourteen of these important morphemes and the age range at which they are found to be used correctly 90 percent of the time.

TABLE 10-1 The sequence of grammatical morpheme mastery

Grammatical morpheme	Example	Age range of mastery (in months)
Present progressive	Mama eat*ing*	19–28
In (preposition)	Doggie *in* car	27–30
On (preposition)	Kitty *on* chair	27–30
Regular plural	Lad*ies* going	27–33
Irregular past tense	Mama *went* to Ralph's	25–46
Possessive	Kevin*'s* car	26–40
Uncontractible copula	Lucy *was* crying	27–39
Articles (*the, a/an*)	Daddy fixing *the* bike	28–46
Regular past tense	Mama wash*ed*	26–48
Regular third-person singular	Sami *eats*	26–46
Irregular third-person singular	Theo *has* pancake	28–50
Uncontractible auxiliary	I *was* looking	29–48
Contractible copula	Dale*'s* busy	29–49
Contractible auxiliary	John*'s* cooking	30–50

Source: L. Hulit and M. Howard, *Born to Talk: An Introduction to Speech and Language Development,* Boston, MA: Allyn & Bacon, 2006. Adapted from R. Brown, *A First Language: The Early Years,* Cambridge, MA: Harvard University Press, 1973; and J. Miller, *Assessing Language Production in Children: Experimental Procedures,* Baltimore, MD: University Park Press, 1981.

Negation and question formation are two important developments in the syntax of preschool children. The two-year-old simply places a negative word—*no*, *don't*, or *not* (used interchangeably)—at the beginning of the utterance to negate it.

Don't that one. (Not that one.)
No vacuum. (Don't use the vacuum cleaner.)
Not buckled. (My car seat's not buckled.)

By about three and a half years, the child, whose utterances are becoming longer and more complex, has learned to put the negative word between the subject and predicate, but still doesn't distinguish between them.

That *don't* Scooter. (That's not Scooter; it's another cat.)
I *not* close it. (I didn't close it.)
I *no* want it. (I don't want it.)

Note that at this age the child considers words such as *don't*, *won't*, or *can't* to be single units, not contractions. The child doesn't use them in the uncontracted form and doesn't use the positive form (*do*, *will*, or *can*), either. By about four years old, however, the correct forms are beginning to appear in the correct settings, along with additional modals (*couldn't*, *wouldn't*, *shouldn't*) and past tense contractions (*wasn't*).

The two-year-old forms questions by using a rising intonation and perhaps a questioning gesture along with a declarative sentence. At this age, *yes/no* questions and *wh-* questions have the same form.

Mama home? (Is Mama home?)
Daddy go? (Where did Daddy go?)

Between about two and a half and three, the child begins to use *what*, *where*, and *who* for *wh-* questions.

What old are you?
Where Daddy go?
Who that?

Around three years old, *why*, *how*, and *when* are used to form questions. The order of appearance of the *wh-* question words makes sense when you realize that *what*, *who*, and *where* refer to concrete referents. But *when* refers to time concepts that the small child has trouble grasping; *why* and *how* introduce complex questions that are difficult to answer even for adults. Also around three years old, the form of *yes/no* questions begins to take on the correct inverted word order with auxiliary verbs.

Can Grannie go with me?
Do you have a cookie?

However, the child will be school age before producing complex questions with modals and negative elements such as

Don't you want to go with me?

In Chapter 5, we talked about how we recognize the grammaticality of an utterance. But, as part of their socialization, children also learn the acceptability of an utterance. Children of all languages learn how to form grammatical questions. But when are they acceptable? English-speaking American children will recognize the question "How old are you?" as a grammatical question that is acceptable for adults to ask them. However, at some point they will learn that it is not acceptable for them to ask the same question to an adult. Araucanians (indigenous people of Chile) learn that repeating a question is an insult and is not acceptable. Cahinhua (indigenous people of Brazil) learn that a direct answer to a question means that the speaker has no time to talk further; a vague answer means the speaker is willing to talk.[9] The Western Apache observe times at which it is acceptable not to speak at all and to observe silence. For instance, when their children return home from boarding school, they may not speak normally for a day or so; when they are with people who are sad or who have been angry, they will observe an extended period of silence.[10]

Preschool children are also learning pragmatics, the rules of conversation and the use of language. Sometime after age three they learn that when a person who is speaking to them pauses, it means that it is their turn to speak. They also become aware that a pause longer than about one second means that the conversation partner is not going to respond. At around three and a half, they may also become aware of the conversational requirement that each subsequent turn contain information on a similar topic. They may also then become aware of strategies for changing a topic to one of more interest than the current one. It is at this point that a child who is interested in trains will start a turn with

Speaking of choo choos . . .

even though the topic of the previous turn was not about trains.

One element of conversation that 64 percent of preschoolers have not mastered is the appropriate loudness for the personal or social distance; they speak too loudly (see the section on proxemics in Chapter 13). It's no wonder that preschool teachers are always reminding their students to use their indoor voices.

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[9]Dell Hymes, "On Communication Competence," in Duranti, *Linguistic Anthropology*, 61.
[10]Basso, *Western Apache Language and Culture*, 80–98.

Conversation repair is the attempt to revise or expand an utterance when the speaker senses that the listener has not understood.

Another feature of pragmatics, **conversation repair**, occurs when the speaker senses that the listener has not understood the message. The speaker makes corrections or restatements to clarify the message. Teachers and parents often expand a message, giving examples or more information. They might also paraphrase the information using synonyms for the original wording. When an adult says "What?" toddlers between one and two years old try pronouncing the original word differently. Between two and a half and three, children try rewording, perhaps using a noun instead of pronoun or in some way simplifying the utterance. As children get older, their techniques for conversation repair do not change, but their ability to analyze the problem and focus on the specific point of misunderstanding increases. Also, their patience in making a number of attempts increases. A five-year-old will typically give up after two tries; a nine-year-old, on the other hand, will persist for five or six tries, each time trying to pinpoint the basis for the miscommunication.

Indirect language (see Chapter 8) is easily misunderstood by preschool children. The three-year-old who answers the phone treats "Is your mother home?" as a *yes/no* question, not as an indirect request. But the five-year-old understands the indirect request. Preschool children take language literally; therefore, they will often misunderstand polite questions or indirect hints such as the following:

Would you like to clean your room?
Can you pick up your toys?
Your toys are all over the floor.

Because they take language literally, they also do not understand the humor of jokes that are based on the multiple meanings of words. However, six- to nine-year-olds enjoy jokes based on phonological similarity, such as

What's black and white and /rɛd/ all over?
(If *read*, then a newspaper; if *red*, an embarrassed zebra or various other answers.)

Nine- to twelve-year-olds love jokes based on words with more than one meaning, such as

What has four wheels and flies? (A garbage truck or an airplane.)

As children learn to love these jokes (and tell them incessantly), they also enjoy books of riddles, a popular genre for school-age children. These children are also perfecting their comprehension of syntax in sentences that are linguistically complex (see Box 10-3).

BOX 10-3

The acquisition of syntax in children from five to ten

Carol Chomsky, wife of Noam Chomsky, did research in language acquisition in school-age children, investigating four syntactic constructions that she assumed to be only slowly acquired after the age of five because of their linguistic complexity. She designed sentences with no semantic clues that the children had to interpret according to their understanding of syntax. She chose constructions that had at least one condition making them difficult to understand. That condition might be an exception to the general pattern of the language, or it might be a restriction that operates in some circumstances but not others.

One example of her research structures is the following: in a sentence with two noun phrases (NP), the subject of the verb will be the NP closest to the verb. So in the sentence

Kevin *tells* (*asks*, *orders*, *begs*, *requests*) Theo to pick up the toys

Theo is going to do the work. But if the sentence is

Kevin *promises* Theo to pick up the toys

then Kevin is going to do it. Sentences with the word *promise* in this position represent an exception to a general pattern of the language; that exception is acquired by children between the ages of five and a half and nine. In other words, many children before the age of nine will hear both of these sentences and think that Theo will be picking up the toys.

Chomsky's research design verified that the children understood the meaning of the verbs involved. They know what it means to make a promise and they know what it means to tell someone to do something. But, as she points out, there are two components to a complete understanding of an utterance. The child must understand the lexicon, the words, and must understand how they are used in the sentence, the syntax.

For practical purposes, this example means that if a teacher in the primary grades tells the class

I promise you to bring cookies to school tomorrow

some of the children are going to go home and tell their parents that they need to bring cookies to school tomorrow!

Source: Carol Chomsky, *The Acquisition of Syntax in Children from 5 to 10* (Cambridge, MA: MIT Press, 1969).

Nonverbal communication

Deaf children and hearing children in Deaf families acquire sign language in a way that is similar to the acquisition of spoken language (see Chapter 11). All children, both hearing and deaf, make meaningful gestures, called emblems, long before they can speak or sign (see Chapter 13).

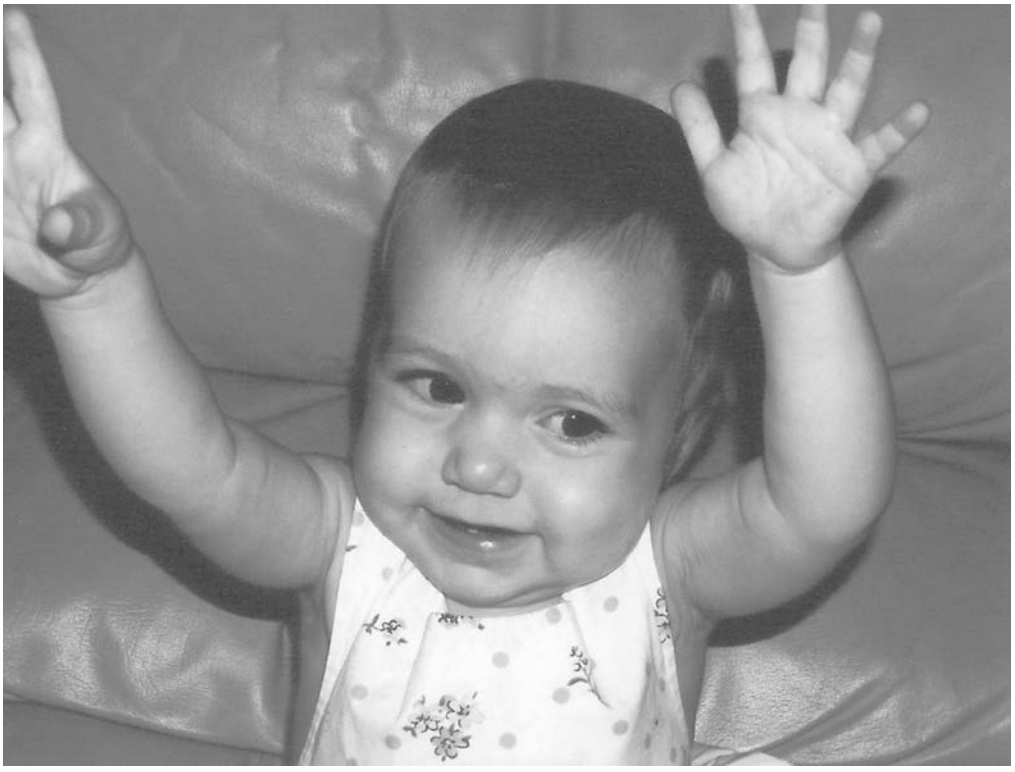

FIGURE 10-2 A nine-month-old preverbal child is asked the question "How big is the baby?" and gestures the answer "So big!"

BOX 10-4

Baby signs

Linda Acredolo, Ph.D., psychology professor at the University of California at Davis, and Susan Goodwyn, Ph.D., psychology professor at California State University, Stanislaus, have developed a program to encourage babies to learn a whole vocabulary of gestural signs so that they can make their needs known to their parents before being able to verbalize them. The "baby signs" or symbolic gestures, as they are more correctly called, are based on ASL and give the child a basis for learning ASL in the future. Acredolo and Goodwyn also said, "In a nutshell, the signing babies outperformed the other babies in comparison after comparison. They scored higher in intelligence tests, understood more words, had larger vocabularies, and engaged in more sophisticated play."

Some of the research that they cite in their books on infant-learning includes the findings that:

- Newborns can recognize a Dr. Seuss story their mothers had read to them while they were still in the womb.
- Encouraging nine- to twelve-month-old babies to use simple, homegrown sign language not only lowers frustration levels, but also makes learning to talk easier and raises IQ scores.
- The more nursery rhymes a three-year-old knows, the better prepared the child is to learn to read.

You can learn more about the Baby Signs program at www.babysignlanguage.com.

Source: Linda Acredolo and Susan Goodwyn, *Baby Signs: How to Talk with Your Baby Before Your Baby Can Talk*, 3rd ed. (New York: McGraw-Hill, 2009), quotation p. 4.

Parents have long known that babies are capable of communicating with gestures many months before they can say their first words (see Figure 10-2). It is not uncommon for a nine-month-old to wave "bye-bye," to hold out his or her arms "asking" to be picked up, or to make an exaggerated chewing movement with the mouth to indicate hunger. A program to systematically teach hearing babies a system of signs has been developed to facilitate early communication between parents and infants (see Box 10-4).

Bilingualism

Simultaneous bilingualism occurs when a child acquires two (or more) languages from birth.

Most of the people in the world acquire more than one language. **Simultaneous bilingualism** occurs when a child acquires two (or more) languages from birth. This occurs when more than one language is spoken in the household. In Quebec, Canada, it is not uncommon for children to be raised in a home where one parent is Francophone (French-speaking) and the other Anglophone (English-speaking). In sub-Saharan Africa, children are raised in households speaking two or three indigenous languages. In the United States, a child may be raised by a foreign-speaking nanny who has joined an otherwise English-speaking household. Or in an immigrant family, the grandparents might speak the ancestral language to the child, while the parents and older siblings speak English.

Sequential bilingualism occurs when a child acquires a second language after having begun to acquire a first language.

Sequential bilingualism occurs when the child acquires a second language after having begun to acquire a first language. In the United States, the older children in immigrant families may speak only the ancestral language until they begin school, where they acquire English. In India, where English is a lingua franca uniting a diverse country, children may only acquire it as part of their formal education. In parts of southern China, Cantonese is acquired in the home, but Mandarin, the official language, is acquired in school. Whether children acquire multiple languages simultaneously or sequentially, they will achieve native fluency only if they do it during the critical period before puberty.

Attitudes toward bilingualism reflect attitudes of the larger cultural community. Armenians believe that the more languages a person speaks, the better educated and well rounded that person is. They pride themselves on speaking four, five, or six languages. They raise their children to speak Armenian, Russian, Syrian, Greek, and Arabic, among other languages. Switzerland is a small country surrounded by larger, more powerful European neighbors. Many Swiss are proudly trilingual, speaking German, French, and Italian. In the small European country of Luxembourg, it is common to hear people code switching among English, French, German, Dutch, and Flemish.

The United States has a history of isolationism; the emphasis on monolingualism is a reflection of this attitude. In the early twentieth century, there was a large wave of immigration to the United States from non-English-speaking countries, especially those in Eastern and Southern Europe. Assimilation of the new immigrants was the goal of the school systems. As part of this goal, parents were advised to speak only English to their children, on the grounds that hearing two languages would confuse children.

In 1929, studies comparing the IQ test performance of bilingual immigrant children and monolingual native-born children showed that the monolingual native-born children consistently scored higher. Rather than conclude that the immigrant children were genetically inferior, the progressive thinkers of the day concluded that bilingualism was the cause of the poor performance. The native-born children were middle class, while the immigrant children were of the poorer, lower class; but this difference in their socioeconomic backgrounds was not considered. Later studies from Canada and Israel compared bilingual and monolingual children of similar socioeconomic backgrounds; they concluded that bilingual children actually have several advantages over monolingual children. They found that bilingual children are better at solving certain problems; they have more mental flexibility and a greater awareness of how language works.[11]

Theories concerning bilingual language acquisition

There are two main hypotheses that propose how children acquire and process two or more languages. Each has its proponents and detractors. The first is called the **unitary system hypothesis** and the second is the **separate systems hypothesis**.

The **unitary system hypothesis** proposes that infants exposed to two or more languages begin by constructing one lexicon and one set of semantic rules to encompass both languages.

The **separate systems hypothesis** proposes that infants exposed to two or more languages differentiate the languages from the very beginning, constructing different phonological systems, lexicons, and semantic systems.

Proponents of the unitary system hypothesis believe that infants who are exposed to two or more languages begin by constructing one lexicon and one set of semantic rules to encompass both languages. Later, they divide the words into separate lexicons for each language, but continue using one set of rules. Around three years of age, they develop separate sets of semantic rules. An example of language mixing used to support the unitary system is the two-year-old French/English child who asks an English-speaking babysitter for *beurre* (butter) *on bread*.

Researchers who support the separate systems hypothesis believe that infants differentiate the languages from the very beginning, constructing different phonological systems, lexicons, and semantic systems. These researchers would interpret the preceding example of language mixing by the child as a form of code switching, similar to Spanish speakers who use English words like *OK* and *bye* in their conversations. Or they interpret these examples as the child's attempt to use the best word possible with a limited lexicon; when there is no English word available, use the French word (see Box 10-2).

Several studies of bilingual children have shown that their vocabulary in each language is somewhat smaller than the vocabulary of monolingual children of the same age. However, when their vocabulary in both languages is considered, it is larger than the vocabulary of monolingual children. One study of Spanish/English preschool children in south Florida showed that there was as little as a 30 percent overlap in the vocabularies. In other words, only 30 percent of the children's words were translation equivalents, such as *dog/perro*, *sister/hermana*, *milk/leche*.[12] Fully 70 percent of the words in these children's vocabularies had no equivalent words in their other language.

[11] Erika Hoff, *Language Development*, 5th ed. (Belmont, CA: Wadsworth/Cengage Learning, 2014), 366–391.
[12] Hoff, *Language Development*, 372.

This study has been cited as evidence for the unitary system hypothesis because most of the words have no duplicate in the other language. However, proponents of the separate systems hypothesis maintain that this is only evidence that the child is learning the different languages in different settings. The parents speak Spanish at mealtimes; therefore, the child has no English words for rice, beans, bread, and butter. English is spoken at the preschool; therefore, the child has no Spanish words for puzzle, finger paints, and animals such as octopus, antelope, and kangaroo. The vocabularies overlap where the child's experience overlaps; in these places, the child has a word in each language.

Bilingual children go through the same stages of syntactic development that monolingual children do: holophrastic, two-word, and telegraphic. Interestingly, their mistakes correspond to the mistakes of monolingual children in each language. For instance, young English speakers delete verb endings in their telegraphic speech:

Doggie eat food.
Kitty run outside.

instead of saying

Doggie eats food.
Kitty runs outside.

Young Spanish speakers do not delete verb endings. Bilingual Spanish/English children delete verb endings in English, but not in Spanish. This has been cited as further evidence for the separate systems hypothesis, and has sometimes been referred to as "two monolinguals in one head."[13]

Second-language learning after puberty

Learning a language after the age of puberty—as a result of immigration to a new country, as an academic requirement for a diploma, or as an educational goal for self-improvement—is a somewhat different process than first-language acquisition. Whether it takes place in a classroom or in contact with speakers of the second language, it is more of an intellectual process than first-language acquisition. It may involve pronunciation practice, grammar exercises, and vocabulary memorization. Or it may be less formal and simply involve listening carefully to native speakers, asking about the meaning of words, or analyzing and imitating utterances. In any case, lexical and grammatical knowledge of the new language is stored in a different part of the brain than the first language (see Box 10-5). Much of the difficulty encountered in learning the second language is due to interference from the first language.

BOX 10-5

The secondary cognitive plane

Second (and subsequent) languages seem to exist on a different plane than the primary language; they are stored in a separate part of the brain than the first language. In a foreign environment, a person trying to make himself or herself understood may reach into his second-language plane and come up with the wrong language. This is especially common when the person is under stress, is not thinking clearly, or is more fluent in one foreign language than another.

An American hospitalized and under strong medication in Eastern Europe, trying to make herself understood to the Bulgarian-speaking nurses, searched her meager Bulgarian vocabulary. Not finding the

[13] Victoria Fromkin, Robert Rodman, and Nina Hyams, *An Introduction to Language*, 10th ed. (Boston, MA: Wadsworth/Cengage Learning, 2014), 428–429.

needed words in Bulgarian, instead she asked in Spanish for *Agua con hielo, por favor* ("Water with ice, please"). (Luckily, a doctor on duty had trained in Panama and understood her.)

A Chinese anthropologist was visiting an American colleague when they met with an Austrian visitor. At dinner, the American, carrying on the conversation in English with his international guests, casually commented to the Austrian, *Ch'ing-lai, puke-ch'I.* He had accidentally encouraged his European guest to "eat up!" in Chinese.

The Chinese anthropologist who witnessed this exchange hypothesized that it would not be unusual to see an American student of Spanish use that language to communicate with a Japanese tourist.

Source: Huang Shu-min, "A Cross-Cultural Experience: A Chinese Anthropologist in the United States," in Philip R. DeVita and James D. Armstrong, eds., *Distant Mirrors: America as a Foreign Culture* (Belmont, CA: Wadsworth, 1993), 39–45.

Phonology

During the early stages of first-language acquisition, babies learn the sounds that are phonemic in their language. After puberty, the first-language phonological system often interferes with learning the second language. Think of the difficulties that foreign speakers have in pronouncing English (see Box 3-3) or the difficulty English speakers have in pronouncing the African click or the Germanic velar fricative. Sounds that do not occur in the sound system of the first language have to be learned in the second-language classroom by demonstration and pronunciation drill.

Second-language learners also have to be taught which sounds are phonemic and which sounds are not. By classroom drill, English-speaking students of Russian learn the difference between the /t/ and /tʲ/ (see Figure 3-2). Students of Spanish have to learn the difference between the single *r* alveolar flap and the double *r* trill. Japanese students of English have to learn to recognize the difference between /l/ and /r/.

Morphology and syntax

The rules for forming verbs and plurals in a first language other than English may cause errors in learning English as a foreign language. For instance, in Spanish, the subject may be deleted in many sentences because the conjugation of the verb implies the subject. In similar sentences, Spanish-speaking learners of English will produce such sentences as

*Is not here.
*Are in school.
*Use the car.

instead of the English sentences

He is not here.
They are in school.
I use the car.

On the other hand, English speakers learning Spanish will always use the pronoun (which is obligatory in English), producing sentences such as

Él tiene un lápiz. (He has a pencil.)
Yo hablo el español. (I speak Spanish.)
Ellos estudian en la escuela. (They study at school.)

Although these sentences are essentially correct, the inclusion of the subjects (*él*, *yo*, *ellos*) sounds stilted and is not idiomatic Spanish.

Asian-language speakers will have difficulty with English articles because their languages do not have articles. They will omit them completely or use them incorrectly. For example, a Japanese student, who was married to an American, introduced himself in an ESL class by saying

I am the musician; my wife is the teacher.

Although these clauses are not ungrammatical in English, they were used incorrectly in his statement (see the section on discourse analysis in Chapter 7). To make them correct, they would have had to be preceded by an introductory statement such as

In my family there is a musician and a teacher.

Without this introductory statement, he should have said

I am a musician; my wife is a teacher.

Speakers of languages in which the adjective follows the noun will tend to do the same in English, producing phrases such as

*house red
*class small
*chair rocking

instead of

red house
small class
rocking chair.

Second-language learners will transfer the linear word order of their first language (S-V-O, S-O-V, V-S-O; see Chapter 5) to the second language. This makes it easier for students to learn languages with similar word order. The Romance languages—Italian, Spanish, and Portuguese—all have the same word order as English. In German, however, some sentences are S-V-O and some are S-O-V, making it more difficult for English speakers learning German.

Second-language learners whose first languages are analytical or isolating languages, with no inflections, often ignore inflectional affixes (see Chapter 4). Vietnamese or Cambodian speakers seem to "swallow" or drop the English plural marker and past tense marker.

Fossilization of the first-language characteristics results in the "foreign accent" of second-language learners after the age of puberty.

The foreign accent of second-language speakers is the result of the **fossilization** of the first-language characteristics (phonological system, morphology, and syntax) in the second language to produce the pronunciation and grammatical "errors." Because these errors are the product of the rules of the first language, second-language learners with the same first-language background have similar accents and similar difficulties with the new language.

Summary

Much of the recent research regarding first-language acquisition has focused on brain development. Many linguists believe that the potential for language is innate to humans, that children are born with their brains hardwired for ability to learn language. This innateness hypothesis states that they are predisposed to a certain universal grammar (UG) involving phonemic differences, word order, and phrase recognition. This hardwiring in the brain has been called a

language acquisition device, and it seems to work only during childhood, according to the critical period hypothesis. It works despite poverty of the stimulus. Other proposals concerning language acquisition include the imitation hypothesis, the reinforcement hypothesis, the interactionist hypothesis (constructivism), and cognitive functionalism.

Children seem to use their innate language abilities to extract the rules of the language. Within a few months of birth, babies begin cooing and then babbling. Around one year of age, children begin saying one-word utterances, which are referred to as holophrases; this stage of language acquisition is the holophrastic stage. Sometime after eighteen months of age, children enter the two-word stage, in which they combine such words as agent–action, action–object, possessor–possession, and action–location. As children begin adding more words, their utterances are described as telegraphic speech. As they begin to learn the rules of morphology, they acquire the plural marker, which they overgeneralize.

As early as six months of age, babies indicate that they understand the meaning of words by looking at the object or person mentioned. By the age of six, their productive vocabulary will be about 14,000 words. Their receptive vocabulary is considerably larger. Children overextend the meanings of words; they may also underextend them. All adult words encompass a range of meanings; the child's task in learning semantics is to learn the range of meanings that adults assign to each word. Language acquisition continues well into the school years.

Children acquire more than one language as a result of either simultaneous bilingualism, where the child acquires two (or more) languages from birth, or sequential bilingualism, where the child acquires a second language after having begun to acquire a first language. There are two main hypotheses that propose how children acquire and process two or more languages: the unitary system hypothesis and the separate systems hypothesis.

Learning a language after the age of puberty is an intellectual process involving pronunciation practice, grammar exercises, and vocabulary memorization. The second language is stored in a different part of the brain than the first language. Much of the difficulty encountered in learning the second language is the result of the fossilization of the first-language characteristics (phonological system, morphology, and syntax) in the second language to produce pronunciation and grammatical errors.

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Rymer, Russ, *Genie: A Scientific Tragedy*, New York: HarperCollins, 1993.

Websites

HowStuffWorks: www.howstuffworks.com. For more information on the brain, search using keywords such as "brain", "learning language", and "second language learning."

University of Manchester: http://research.bmh.manchester.ac.uk/ldd/researchprojects. The university's Language Development and Disorders (LDD) Research Projects site has information on a variety of current studies on the topic.

For information on multilingualism you can consult the *International Journal of Multilingualism* at www.tandfonline.com/loi/rmjm20.

Review of terms and concepts: language acquisition

1. Inside the human brain is the _____, which is like the brains of reptiles and birds; in it resides our basic _____.
2. Wrapped around the answer to number 1 is the _____ or the mammalian brain, which affects animal calls. In humans, it is the source of _____.
3. The _____ is where the language skills reside. This is the area of the brain that contains _____ area and _____ area.
4. Linguists such as _____ and _____ believe that the potential for language is innate to humans.
5. This is known as the _____.
6. Examples of biologically based behaviors include _____, _____, and _____.
7. Cooking, sewing, carpentry, bike riding, reading, and writing require training and instruction; they are _____.
8. The innateness hypothesis proposes that children are predisposed to a certain _____ or UG.
9. The hardwiring in the brains of children, which allows them to learn language, has been called a _____.
10. The _____ states that after the age of puberty the language acquisition device ceases to function.
11. The imitation hypothesis does not account for the ability of children to learn language when there is a _____.
12. The _____ postulates that children learn language by positive reinforcement when they produce a grammatical utterance and by being corrected when they don't.
13. The _____ (also known as _____) states that children use their innate language abilities to extract the rules of the language from their environment and construct the phonology, semantics, and syntax of their native language.
14. Within a few months of birth, babies begin making verbal sounds, first _____ then _____.

15. One-word utterances are referred to as holophrases because they are _____; this stage of language acquisition is the _____.
16. Longer utterances are described as _____ because they resemble telegrams in which function words are deleted.
17. With the innate drive to identify patterns and apply them as rules, children _____ the rules and apply them to all of the words.
18. Productive vocabulary consists of _____; receptive vocabulary consists of _____.
19. Children assume that an identifying word applies to the _____, not to its _____.
20. When children begin the process of refining their understanding of words, first they extend the meaning of words they know to things that have similar properties. This is called _____.
21. Children who call all men they know *Daddy* are "wrong" in English, but might be "right" if _____.
22. As children learn that their broad categories have to be narrowed down and they acquire a larger vocabulary, they go through a phase of _____.
23. When people use the word *monkey* to refer to apes and prosimians, they are _____.
24. _____ are problematic for children because their meaning _____ depending on who is speaking and who is addressed.
25. Simultaneous bilingualism is when _____.
26. When children learn a second or third language after entering kindergarten, it is referred to as _____.
27. The unitary system hypothesis proposes that bilingual children learn the two languages at first as _____.
28. The separate systems hypothesis proposes that, from the very beginning, bilingual children learn the two languages by _____.
29. The concept of "two monolinguals in one head" refers to the fact that bilingual children _____.
30. Learning a language after the age of puberty is an _____ process, involving _____ practice, _____ exercises, and _____ memorization.
31. The first-language phonological system often _____ with learning the second language.
32. The accent of second-language speakers is the result of the _____ of the first-language characteristics in the second language.

CHAPTER 11

Sign language: the language of the Deaf community

LEARNING OBJECTIVES

- **Explain why linguists now consider sign language to be a form of linguistic expression on a par with speech or writing.**
- **Discuss some misconceptions about sign language.**
- **Describe how the term *phoneme* can be applied to a sign language.**
- **Compare the acquisition of sign language by deaf children to speech by hearing children.**
- **Identify William Stokoe and discuss what he contributed to the study of sign language.**
- **List and explain the main parameters of sign language.**
- **Discuss how linguists describe the morphology and syntax of sign language.**
- **Explain why signers sign differently in different situations.**

Only the profoundly brain damaged, psychotic, or abused fail to acquire or maintain language abilities. Humans acquire language even in the presence of deafness, muteness, blindness, many forms of brain damage, depressed emotional states, and serious psychological conditions. This chapter deals with the linguistic abilities of deaf people.

The phrase *deaf and dumb* is an unfortunate one. Two common meanings of the word *dumb* are *mute* and *not bright*. However, most deaf people are not truly mute. Many people also consider people who are deaf to be unintelligent. The unenlightened reason for this belief is the false notion that without speech a person cannot form complex ideas and cannot efficiently communicate with others. Using this line of thought, deaf children are often forced to learn oral methods of communication, as we will discuss shortly. The purpose of this chapter is to show that the human facility for language is not dependent on either speech or hearing.

Language is a mental potential that involves, among other features, a lexicon (vocabulary) and rules to combine lexical items (a grammar). To be of use, the linguistic potential must be "released" from the individual's mind and delivered by some means to the minds of the receivers. Speech is one delivery system for language. But the auditory–vocal method of delivery is not the only channel on which linguistic information can be carried and received. Language can also be conveyed through the manual–visual channel by the use of sign language or writing.

Although speech may have advantages over signing, manual–visual delivery systems have some of their own advantages. Writing provides a permanent record, whereas speech, unless recorded, fades rapidly. Sign language can be used in a noisy environment and in situations where quiet is required. For instance, the Bushmen of Africa use a sign language when hunting.

The average American may know about 100 hand or body signals that convey dictionary-type meanings, such as the hand sign used to signal "OK." The use of such signs does not

constitute the use of a full sign language. In this chapter, we will explore systems of signs (used along with other nonauditory devices, such as facial behaviors and body postures) that do constitute full languages.

The nature of sign language

Although some people have contended that signing is a universal language, it is not. Those who argue that it is universal assert that sign language is easy for anyone to understand because it is iconic. An **iconic sign** is picture-like; it is a mimetic representation of some phenomenon. Although some signs in any particular sign language may be transparent (that is, have iconic properties), most signs are not. And the fact that some signs do have iconic properties does not mean there is a universal sign language. Even iconic signs are arbitrary because they belong to a particular culture and sign language.[1] A sign that vaguely looks like a tree may look like a tree only to the people of a specific signing community. Other signing communities may use a different sign to indicate *tree*. Therefore, the use of a specific iconic *tree* sign is arbitrary. A sign can still be arbitrary even if it is iconic.

An **iconic sign** resembles what it represents.

The situation is somewhat analogous to **onomatopoeia** in spoken languages. Words that are considered onomatopoetic are supposed to be mimicking the sound made by some agent or situation. Words like *buzz*, *bang*, *thump*, *crack*, and *bow-wow* are called onomatopoetic. These words, like iconic signs, do not translate well from one language to the next. In French, the sound of a dog barking is not *bow-bow*, but is represented by the sound *oua-oua*. In German, the dog's bark is *wau-wau* or *wuff-wuff*, in Italian *bau-bau*, in Albanian *ham-ham*, and in Chinese *wang-wang*. This variety of expression suggests that they are not simply an imitation of the sound, but an interpretation of it. The same is true of iconic signs; they are interpretations of the object they represent. Sign languages can be more iconic than speech because signers use three-dimensional space. A signer can draw a picture in the air that might come close to illustrating what the sign represents.

Onomatopoeia is the phenomenon that occurs when words supposedly imitate natural sounds.

People who sign in one language are more adept at making themselves understood to signers of another sign language than are people using different oral languages. When people speaking different oral languages want to communicate, they may turn to gestures. The deaf are more experienced than most hearing people in the use of nonverbal cues. Even though deaf people using different languages are no more able to communicate linguistically with each other than people speaking different oral languages, they usually communicate better nonverbally.[2] This ability to so efficiently communicate nonverbally has contributed to the false notion that signing is a universal language.

Just as there are many spoken languages, there are numerous mutually unintelligible signed languages. People who speak different oral languages might use a sign language as a type of *lingua franca*, a way of communication used by people who speak different native languages. This was the case with Native Americans (see Figure 11-1). Others use sign language for specialized purposes, such as for the hunting done by the African Bushmen (Figure 11-1). Then there are the many sign languages used by deaf people. Some of the sign languages used by deaf people around the world are Australian Sign Language, Brazilian Sign Language, British Sign Language (BSL), Danish Sign Language, Finnish Sign Language, French Sign Language, Japanese Sign Language, Taiwan Sign Language, and Thai Sign Language. One of the most researched of any signed language has been American Sign Language (ASL). For this reason, we will focus our discussion on ASL.

[1]William C. Stokoe, "Sign Language Structure," *Annual Review of Anthropology* 9 (1980), 365–390.
[2]Robbin M. Battison and I. King Jordan, "Cross-Cultural Communication with Foreign Signers: Facts and Fancy," *Sign Language Studies* 10 (1976), 53–68.

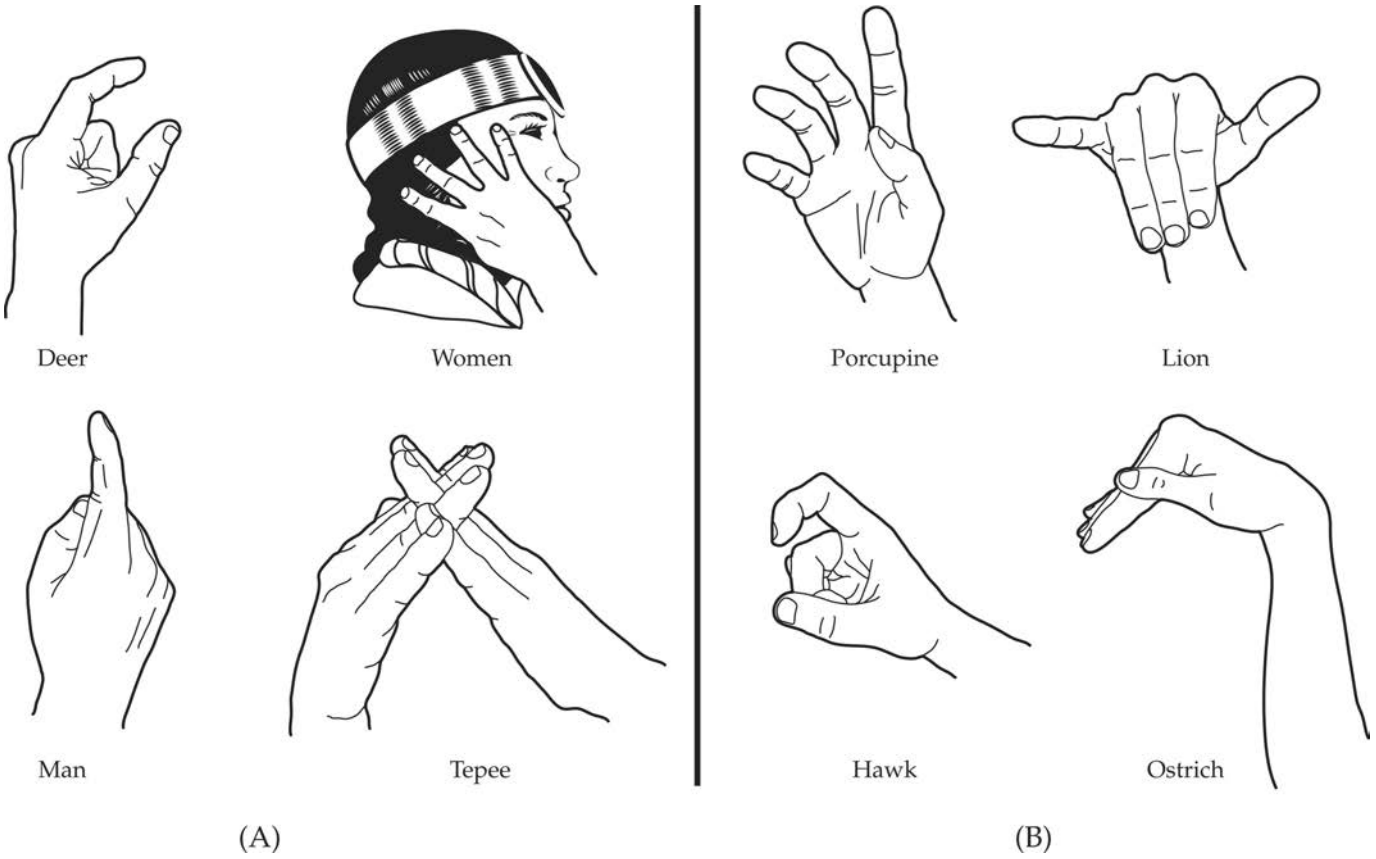

FIGURE 11-1 Sign languages
(A) Native American intertribal communication signs; (B) indigenous African (!Kung) hunting signs

What is ASL?

Manually coded English (MCE) is an invented form of signing based on oral English grammar, with the signs, most of which are borrowed from ASL, directly representing English words.

Contact sign is analogous to oral pidgin languages and is used by signer and interpreter to communicate about specific things.

With some exceptions, ASL is not what you might have seen at public forums or on television shows interpreted for the deaf. The signing done in these situations, and usually in schools, is some form of **manually coded English (MCE)**. These forms of signing are artificial (invented) systems based on oral English grammar, with the signs, most of which are borrowed from ASL, directly representing English words. There are many forms of MCE, including Seeing Exact English (SEE1), Signing Exact English (SEE2), and Signed English. In addition to MCE, signers might use **contact sign**. Like oral pidgin languages discussed in Chapter 8, contact sign is a combination of languages based on a need to communicate about specific topics. Basic English grammar is usually followed, but elements of grammatical English sentences may be left out. For example, the English sentence

He is coming right now

might be signed as

He come now.

One form of contact sign is called Conceptually Accurate Signed English (CASE). People who interpret for the deaf use CASE. CASE signers choose signs based on the sign's meaning

in ASL; the signs are used in English word order, and the sign may be mouthed in English. Unlike some types of MCE, which are systems created artificially, contact sign is a natural mix of two languages (ASL and English). **Fingerspelling** might also be used with signing (see Figure 11-2). In fingerspelling, different hand shapes represent different letters of the alphabet, so words can be spelled directly (see Figure 11-3).

In **fingerspelling,** different hand shapes represent different letters of the alphabet. Words of an oral language can be spelled directly.

Unlike MCE and fingerspelling, ASL is a completely different language than English. It is not based on English or any other oral language. Modern ASL originated in the 1800s as a combination of French Sign Language and early indigenous sign language in the United States (see Box 11-1).

ASL signs often have only approximate English translations, and vice versa. Even for words that do translate closely from ASL to English, the forms of the resulting utterances in the two languages are different. For example, the ASL sign sequence that would have the word-for-sign translation of

FINISH TOUCH EUROPE?

is a grammatically correct ASL sentence. This is not proper English word order; nor is the meaning of the sequence completely obvious. As represented in English, that meaning is

Have you been to Europe?[3]

ASL is a complexly structured language with its own grammar. It displays the fundamental properties linguists have described for all languages. ASL is the native language of hundreds of thousands of deaf people in the United States and Canada. Unlike MCE and fingerspelling, which are usually used in educational settings and for public communication with hearing people, ASL has historically been used almost exclusively within the Deaf community. For native signers of ASL, the encoding and decoding of their language operates without any link to English.

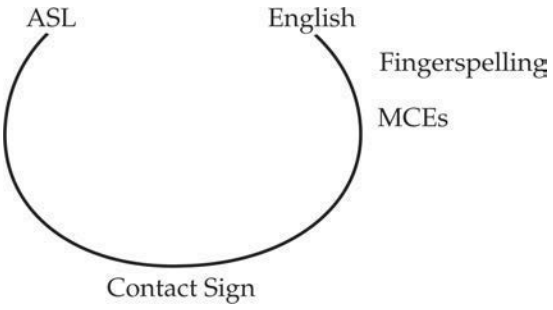

FIGURE 11-2 ASL, English, and other systems
ASL is not based on English. Contact sign, like any pidgin, is a combination of forms from more than one language. In this case, the languages are ASL and English. As we move upward on the right side of the diagram, the signing systems become increasingly influenced by English.

[3] Dennis Cokely, "Foreword," in Harry W. Hoemann, *American Sign Language: Lexical and Grammatical Notes with Translation Exercises* (Silver Spring, MD: National Association of the Deaf, 1976).

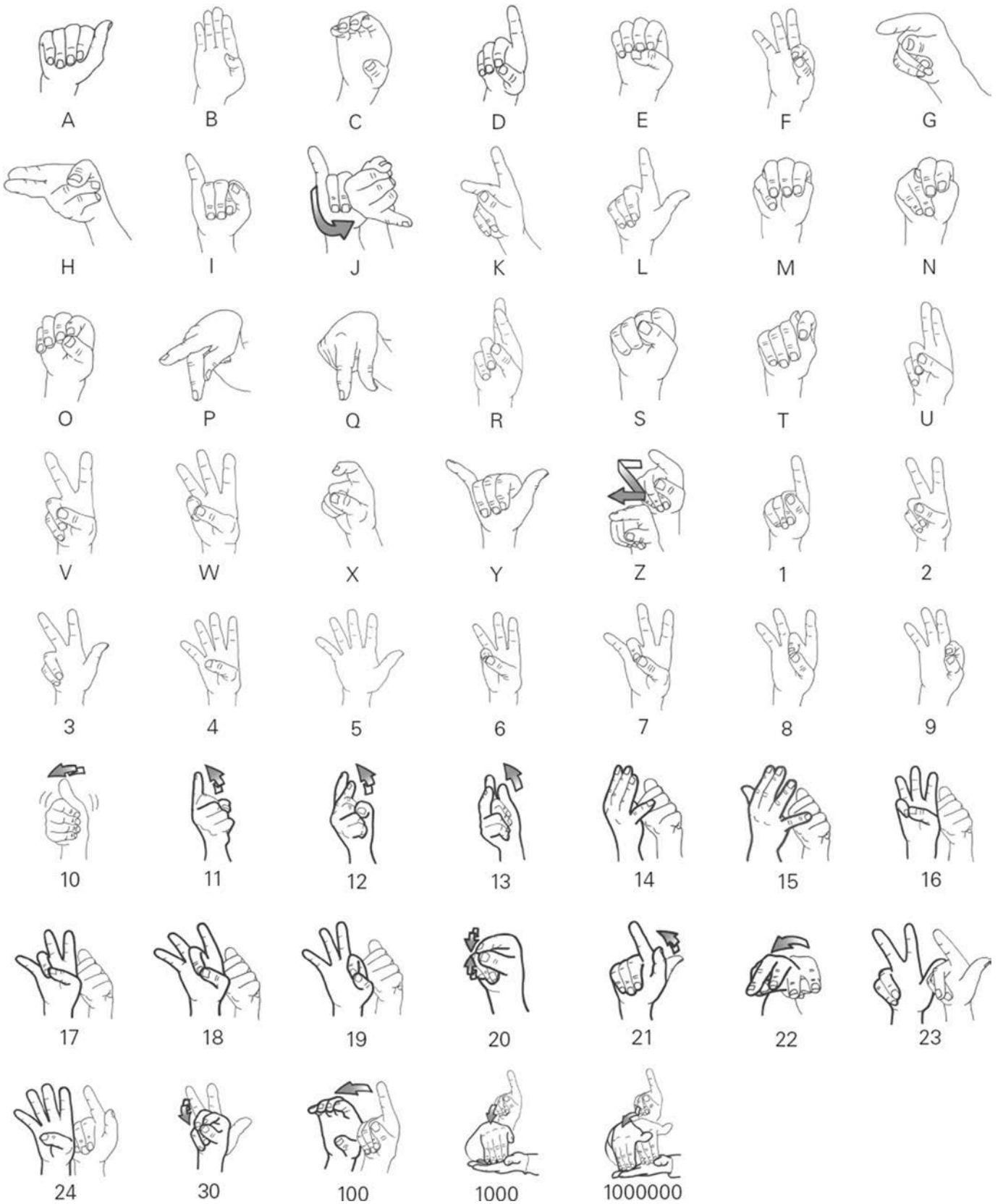

FIGURE 11-3 **Fingerspelling: American Manual Alphabet and selected numbers**

BOX 11-1

Teaching sign language in the United States

The French connection to American Sign Language starts with Thomas Hopkins Gallaudet (1787–1851). In 1814, Gallaudet, an apprentice lawyer, encountered a young girl named Alice Cogswell. Alice was deaf. There were no schools for the deaf in the United States at that time, and Gallaudet became interested in teaching Alice and other deaf people to communicate. He and Alice's father raised money to go to England and France, where there were schools for the deaf. They wanted to get help in their quest to begin a school in the United States. Gallaudet's first stop was a school for the deaf in London, England. Unfortunately, the people who ran the school said their teaching method was a secret and refused to teach Gallaudet about their method unless he agreed to certain conditions. He thought the conditions were not realistic or fair, so he refused.

While in London, Gallaudet saw an advertisement for a demonstration of French Sign Language. He went to the demonstration and met two deaf men who taught sign language in France. One was Laurent Clerc (1785–1869). In 1816, Gallaudet visited the Institut Royal des Sourds-Muets in Paris and began to learn French Sign Language. Clerc came to the United States to continue teaching Gallaudet sign language and to help start a school for the deaf. In 1817 in Hartford, Connecticut, Alice Cogswell and six other students became the first class in the first school for the deaf in the United States. In 1856, the groundwork was laid for the first college for the deaf. Edward Miner Gallaudet (1837–1917), one of Thomas Hopkins Gallaudet's children, became the school's first president. In 1864, Congress accredited the school, authorizing it to confer college degrees. Abraham Lincoln signed the bill. Now called Gallaudet University, in 2017 the school had 1129 undergraduate and 445 graduate students.

For additional information see www2.gallaudet.edu/attend-gallaudet/about-gallaudet/ and www.gallaudet.edu/history.html.

The acquisition of ASL

Where does the deaf child learn ASL? The answer to this question depends on the situation. Only about 10 percent of all deaf children have Deaf parents (see Box 11-2 for the reason that we are capitalizing *Deaf* here). For those 10 percent, there is usually no problem in learning ASL. If their parents know ASL, which they often do, the children acquire ASL and other visual modes of delivering language as easily and as efficiently as the hearing child learns to speak, going through the same stages. Hearing children of Deaf parents learn both the sign language of their parents and the spoken language of the community around them. First they babble, both orally and manually. Then they make single signs with predictable errors, comparable to the hearing child's errors in pronunciation. For instance, they may make the sign with the correct movement and hand shape, but with an error in the placement of the sign, as when a three-year-old child of Deaf parents makes the sign CUTE on her cheek instead of her chin.[4]

When signing children begin combining signs, they omit function signs just as speaking children omit function words, producing telegraphic speech. Function signs come into use for signing children at the same age that function words come into use for speaking children.

Signing children have the same difficulty with pronouns as speaking children. Even though the personal pronouns *I* and *you* are indicated by pointing to oneself and to the other person, signing children perceive these as abstract symbols or words, not as illustrators gesturing in the direction of a person (see Chapter 13). Signing children reverse *I* and *you* in the same way, and at the same age, that speaking children do.

On the other hand, Deaf children of hearing parents have traditionally had a great disadvantage. Until relatively recently, most hearing parents made little or no effort to learn ASL or

[4] The glosses for ASL signs are written in all capitals.

any other signing system. Instead, the emphasis was often put on attempting to teach the Deaf child to speak and read lips.

Congenitally Deaf people (deaf from birth) generally cannot communicate as efficiently with oral language as they can with sign language. This is true even when the oral language is taught to the Deaf child from an early age; so, Deaf children of hearing parents definitely can be at a communicative disadvantage. This disadvantage was propagated as much by schools for Deaf children as by parents. These schools often taught almost exclusively oral methods. Deaf children who were not placed in a signing environment usually learned ASL ultimately, not from teachers or parents but from peers. For many social reasons, Deaf people tend to associate with and learn from one another. The strength of the desire of Deaf people to associate within the Deaf community is indicated by the fact that only about 5 percent of Deaf people would prefer to marry a hearing person rather than another Deaf person (see Box 11-2).[5]

BOX 11-2

Deafness and Deaf culture

A person is considered deaf if sound has no meaning for that person. A person who is hard of hearing can use amplification to access varying degrees of understanding of oral language. In the United States, about 1 out of every 1000 infants is born totally deaf, and 1 in 22 infants has a hearing problem. More than 24 million people in the United States are deaf or hard of hearing. Approximately 60 percent of deafness is genetic; the rest is caused by disease and injury.

People tend to associate with other people with whom they feel comfortable. Deaf people tend to marry other Deaf* people, and indeed the divorce rate in deaf–hearing marriages is significantly higher than it is for deaf–deaf marriages. Deaf people often want to have Deaf children to share their traditions and experiences. Many Deaf people feel that they are part of a culture. A hearing person, even one with Deaf parents, is rarely accepted into Deaf culture. Deaf culture (also referred to as the Deaf community) is characterized by a shared language (ASL in the United States and Canada) and shared values, beliefs, behaviors, survival techniques, experience, and traditions. Many Deaf people share their own art, literature, entertainment, and political views.

Like other subgroups, members of the Deaf Community have pride in their culture and in their deafness. This pride and defiance was shown strongly in 1988 when Elisabeth Zinser, a hearing person, was appointed over two Deaf finalists in a search for a new president for Gallaudet University. The students successfully protested the appointment with an action that became known as the Deaf President Now Movement. Zinser resigned a week after the protests began. A Deaf president, I. King Jordan, was appointed, and the school's board of trustees was reconstituted to contain mostly Deaf trustees. This event is considered to be the beginning of a Deaf power movement similar to other minority group power movements. In 2006, Gallaudet's board of trustees announced a replacement for Jordan, who was retiring. There were protests over Jordan's replacement, Jane Fernandes, who is deaf, in part because she did not grow up using American Sign Language. Fernandes's appointment was withdrawn and Robert R. Davila became the next president. Davila, a graduate of California School for the Deaf and Gallaudet University, is a Mexican-American who has been deaf since the age of eight. In 2010, T. Alan Hurwitz, a former president of the National Association of the Deaf, became the tenth president of Gallaudet University.

*When spelled with a capital D, *Deaf* refers to the cultural community and the members of that community.

Source: Carol A. Padden and Tom Humphries, *Deaf in America: Voices from a Culture* (Cambridge, MA: Harvard University Press, 1991). For additional statistics on deafness see www.deaf-culture-online.com.

[5] Anders Lunde, quoted in William C. Stokoe, *Sign Language Structure: An Outline of Visual Communication Systems of the American Deaf* (Silver Spring, MD: Linstok Press, 1978), 23.

Current research shows that Deaf children of Deaf parents generally fare better psychologically, cognitively, linguistically, socially, educationally, and in familial development when compared to their counterparts who are raised in an oral environment. Many hearing parents and schools for the deaf have become aware of and sensitive to this. An increasing number of hearing parents now learn some form of signing so that they can better communicate with their deaf children and aid in their intellectual and social growth. And many schools now embrace the idea of **total communication teaching**. As the term implies, deaf children who are taught with this philosophy are exposed to ASL, MCE, fingerspelling, and perhaps other signing methods, as well as being exposed to speech training, reading, and writing. They are also encouraged to use hearing aids.

Total communication teaching is a teaching philosophy in which instruction is given using as many channels and types of communication as possible.

If ASL is a language in the linguistic sense, then it should be subject to analysis as such. Researchers have found that ASL has its own phonology (previously called **cherology** by some), morphology, and syntax. Because the study of ASL is shedding new light on almost all areas of research dealing with the nature of human communication, we will briefly examine some of the findings of ASL research. The following sections are presented not as exhaustive reviews, but to show that ASL is a delivery system for linguistic competence governed by rules similar to those for speech.

Cherology is the term formerly used for the phonology of sign language.

Phonology of ASL

The Greek root *phone* means both sound and voice. So the use of such terms as *phonology*, *phoneme*, and *allophone* to label concepts applied to a silent language might seem inappropriate. A pioneer in the study of the linguistics of sign language, William Stokoe (1919–2000), proposed substituting such words as *cherology*, *chereme*, and *allocher* for the words using *phon-*.[6] The combining form *cher-* (/ker/) means *handy*. However, today sign language researchers use the terminology applied to speech for sign language studies. As you remember from Chapter 3, a phoneme is a mental construct, not a physical unit. No one hears a phoneme. The units for sign language that Stokoe described are equivalent in an organizational and functional sense to the units of spoken language. So linguists use the words *phonology*, *phoneme*, and *allophone* for sign language as well as spoken language. Just as no one has ever heard a phoneme of spoken language, no one has ever seen a phoneme of sign language. You hear or see the allophones that are conceptually perceived as being the same phoneme.

In 1960, Stokoe described three distinctive characteristics that could be used to analyze signs. He saw signs as being produced by the simultaneous combination of features that he called **DEZ (designator)**, **SIG (signation)**, and **TAB (tabula)**. Another linguist added **palm orientation**, also known simply as **orientation (ORI)**, as a major feature or **parameter** of sign language.

DEZ (designator) is the handshape of a sign.

SIG (signation) is the type of motion used in a sign.

TAB (tabula) is the location where a sign is made.

Palm orientation, or simply **orientation (ORI)**, is the direction that the palm faces.

The **parameter** of a sign is any feature or type of feature of the sign.

- DEZ describes what part of the body acts, such as the arm–hand configuration.
- SIG tells what motion (action) is involved in making the sign.
- TAB indicates the location in which the sign is made: in front of the signer's body, in the face or head region, etc. TAB is comparable to the place of articulation of oral phonemes.
- Palm orientation (ORI) is the direction that the hand is held.

If the DEZ is a body part that is relatively fixed in position (for example, the eyes), the TAB does not need to be noted. Any sign could be defined in terms of these characteristics, just as

[6]Robert Hoffmeister and Ronnie Wilbur, "The Acquisition of Sign Language," in Harlan Lane and François Grosjean, eds., *Recent Perspectives on American Sign Language* (Hillsdale, NY: Erlbaum, 1980), 61–78.

any sound could be defined in terms of the characteristics of stop, voiced, nasal, and so on. For instance, the ASL sign SORRY is:

- DEZ = the handshape for letter *A* (see Figure 11-3)
- TAB = trunk area (over heart)
- SIG = a circular motion (see Figure 11-4)

In speech, phonemes of a morpheme are segmented, produced one after the other. In sign language, phonemes of a morpheme are produced at the same time.

Stokoe isolated 55 phonemes for ASL (12 TAB phonemes, 21 DEZ phonemes, and 22 SIG phonemes). Figure 11-5 lists the 55 TAB, DEZ, and SIG phonemes and the symbols used by linguists to transcribe them. There are also six ORI phonemes: inside, outside, left, right, forward, and backward.

Just as the spoken word *sorry* is made up of phonemes (/sari/), the ASL sign SORRY is made up of simultaneously produced phonemes: /[ ] A/ (see Figure 11-4).

Just as there are minimal pairs in oral language, there are minimal pairs in sign language. The ASL sign FATHER is open (also called five) handshape (DEZ), on the forehead location (TAB), tapping movement (SIG), and a pointing to the right palm (ORI). The sign MOTHER is open handshape, the chin location, a tapping movement, and with the palm pointing to the right. The signs FATHER and MOTHER are a minimal pair. They are the same except for the TAB phoneme. Changing the TAB from the forehead to the chin changes the meaning of the sign. Similarly, the tap on the forehead for FATHER or the chin for MOTHER is a single tap. If the signer instead bounces the hand out from the forehead or the chin in an arc shape twice, the words become GRANDFATHER and GRANDMOTHER, respectively. In this case, a minimal pair has formed with a change in SIG.

FIGURE 11-4 ASL sign for SORRY

The hand, held in an *A* handshape (DEZ), moves in a circular motion (SIG) over the heart (TAB), with the palm orientation (ORI) toward the body to form the word SORRY (see Figures 11-3 and 11-5).

Manually produced signs of American Sign Language are written, first with a TAB symbol to show where the sign action occurs:

- in front of signer's body
- face or head region
- forehead or top of head
- mid-face, nose, eyes
- chin, lower face
- cheek, side of face, ear
- neck, throat
- trunk (shoulders to hips)
- upper arm
- forearm, elbow
- back of hand, wrist
- inside of wrist

Next with a DEZ symbol for the handshape, and attitude*, of what acts:

- A closed hand
- Ȧ thumb extended hand
- B flat hand
- B̈ bent hand
- 5 fully spread hand
- C curved hand
- E retracted hand
- F loop and 3/finger hand
- G index finger hand
- H double finger hand
- I little finger (pinkie) hand
- K 'k' hand of fingerspelling
- L angle hand, thumb & index
- 3 thumb & 1st 2 fingers spread
- M similar to
- R 2nd finger crosses index
- V̈ "victory" hand, spread
- W 3 fingers spread, thumb on pinkie
- X index finger bent
- Ẏ 'y' hand of fingerspelling
- 8 mid-finger in from spread hand

Then with one or more SIG symbols to show the sign action:

Motion

- up
- down
- up & down
- rightward
- leftward
- side to side
- toward signer
- away from signer
- to & fro
- in a circle

Internal (hand or finger)

- bend
- wiggle
- open
- close

Interaction: hand w/ hand or body

- approach
- touch
- link or grasp
- cross
- enter
- separate
- interchange
- alternate

*Subscripts show how DEZ (D) is held

- D_a supine (palm up or back)
- D_b pronated (palm down or out)
- ˬD forearm near vertical
- $D_<$ salient finger to left

Diacritics show detail of action

- sharp upward motion
- repeated touching action

FIGURE 11-5 Symbols that linguists use for writing signs

The asterisk in the left-hand column refers to the subscripts listed at the bottom of the right-hand column.

Source: William Stokoe, *Sign Language Structure: An Outline of Visual Communication Systems of the American Deaf*, rev. ed. (Silver Spring, MD: Linstok Press, 1978), 26.

In addition to DEZ, TAB, SIG, and ORI, other parameters of a sign include:

- The region of the hand that contacts the body.
- The orientation of the hands with respect to each other.
- The non-manual parameters of sign language, which include body and facial expression, are also extremely important.

TABLE 11-1 The six most unmarked handshapes used in ASL

Name	Description
S-hand	a closed fist
B-hand	a flat palm
5-hand	the B hand with fingers spread apart
G-hand	fist with index finger and thumb extended
C-hand	hand formed in a semicircle
O-hand	fingertips meet with thumb, forming circle

Source: Ronnie Wilbur, "Linguistic Description of American Sign Language," in Harlan Lane and François Grosjean, eds., *Recent Perspectives of American Sign Language* (Hillsdale, NJ: Erlbaum, 1980), 9.

The **symmetry condition** refers to two-handed signs that move, for which the DEZ for both hands must be the same.

The **dominant condition** is a grammatical rule describing the fact that if only one hand of a two-handed sign moves, the nonmoving hand can only be in one of six handshapes.

ASL signs can be one-handed or two-handed. Two phonological rules of ASL are the **symmetry condition** and the **dominant condition**. The Symmetry Condition refers to two-handed signs that move, for which the DEZ for both hands must be the same. The palm orientation must also be the same, or one hand must be a mirror image of the other. The Dominant Condition is a grammatical rule that describes the fact that if only one hand of a two-handed sign moves, the nonmoving hand can only be in one of six handshapes. These handshapes are the most unmarked hand-shapes in ASL (see Table 11-1 and the "Markedness and ASL" section). This rule has exceptions, but the exceptions are also rule-governed.

BOX 11-3

Interpreting for the Deaf

Many readers of this book have seen a person signing at the front of a classroom, public meeting, or entertainment event. The person signing is a sign language interpreter. These interpreters convert a spoken message into sign language and a signed message into speech or writing to facilitate communication between Deaf or hard-of-hearing people and hearing people. That is the general use of the term *interpreting*. It can also be used more specifically to mean changing ASL to a spoken language, and vice versa. The word *transliterating* is used instead of *interpreting* if the facilitator is converting spoken language, such as English, into any of the varieties of MCE or CASE. Interpreting and transliterating have only been recognized professions since the late 1960s. Before then, the majority of people who helped deaf and hard-of-hearing people communicate with hearing people were volunteers. Often these volunteers were relatives of a Deaf person, or teachers of the Deaf.

In 1964, as a result of a meeting at Ball State University in Indiana, an organization called the Registry of Interpreters for the Deaf (RID) was founded. RID is dedicated to training and certifying interpreters and to providing an ethical standard for interpreters. As of 2018, RID had more than 16,000 members, including interpreters, transliterators, interpreting students, and educators.

To find out more about interpreting and about interpreting as a profession, consult the RID website at http://rid.org/.

Non-manual grammatical signals in ASL

In addition to DEZ, SIG, TAB, and ORI, signers use non-manual grammatical signals (NMGSs) that include movements of the eyebrows, mouth, shoulders, head, and body to change the

meaning of signs that are otherwise the same. In other words, variations in NMGSs can create minimal pairs.

NMGSs serve a variety of grammatical functions. One function is marking sentence types. Raising the eyebrows can change a statement to a *yes/no* question. For example, to mean "I understand," the signer would nod the head and leave the eyebrows in a neutral position while signing I UNDERSTAND. But to mean "Do you understand?" the signer would tilt the head forward slightly and raise the eyebrows while signing YOU UNDERSTAND. NMGSs also function as adverbs, modifying verbs, and as adjectives, modifying nouns or other adjectives.

Markedness and ASL

Most of the principles that apply to oral phonemes also apply to sign language phonemes. For instance, some sounds are more marked (unexpected, less basic, less natural) than others. The same goes for elements of signs. For instance, the six DEZs in Table 11-1 are the most unmarked handshapes in ASL. These handshapes are found in all sign languages. They are the most distinctive in their formation, and together they are used more frequently than all other handshapes combined. They are also among the first DEZs acquired by Deaf children.[7]

Redundancy and ASL

Redundancy is a characteristic of sign language, in much the same way that it is of spoken language (see Chapter 1). Redundancy refers to the linguistic condition in which more information is provided than is absolutely necessary to communicate a specific message in an ideal situation. Redundancy allows us to predict that certain linguistic information is present due to the fact that other information is present. One phonological example is that of aspiration. Aspiration is predictable (redundant) if a voiceless stop occurs initially and before a stressed vowel. Redundancy helps to prevent miscommunication in a static-filled environment by giving multiple clues to the information encoded in the message.

In ASL, there are also redundant situations. For instance, in many signs made with two hands, where each hand forms a different handshape, we could predict that only one hand will move. In addition, the nonmoving hand can only take one of the six unmarked shapes listed in Table 11-1. So, if only the moving hand is fully seen, the predictability built into the system, plus the context of the conversation, normally provides enough information to understand the message. ASL also shows other processes analogous to those of oral language. Such phenomena as assimilation, deletion, and insertion have been described for ASL.[8]

Morphology and syntax of ASL

Although fewer morphological and syntactic processes than phonological processes have been described for ASL, it seems that the basic principles of language analysis used for speech are equally valid for studying ASL. However, the manual–visual channel both adds to and subtracts from possible modes of communication when compared to the auditory–vocal channel. For instance, the use of three-dimensional space in ASL makes possible phonological, morphological, and syntactic mechanisms not possible in oral language.

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[7] William C. Stokoe, *Sign Language Structure: An Outline of the Visual Communication Systems of the American Deaf* (Buffalo: University of Buffalo Press, 1960).

[8] P. Boyes, "Developmental Phonology of ASL," Working Papers, Salk Institute for Biological Studies, 1973; H. Lane, P. Boyes-Braem, and U. Bellugi, "Preliminaries to a Distinctive Feature Analysis of Handshapes in American Sign Language," *Cognitive Psychology* 8 (1976), 276.

Inflection and three-dimensional space

The words of many languages can be altered by inflection; the use of markers can determine the grammatical significance of a word. One way this is done is by adding affixes. Depending on its grammatical use, the verb *move* could appear in the form *moved*, *moving*, or *moves*. All of these words are verbs and have the same general meaning. They have been formed by modifying the root *move* by adding the inflectional morphemes *-ed*, *-ing*, and *-s*. A series of words can also be derived from the same lexical base by adding derivational morphemes. The verb *move* can be made into the adjective *movable* or the nouns *mover* and (with morphophonemic alteration) *motion*. The forms *-able*, *-er*, and *-tion* are used to derive different words from a single root.

Some languages, like Chinese, allow few morphological alterations of any kind. That is, Chinese words are basically immutable (fixed in their form). Other languages, like English, are rich in derived forms but have relatively few inflectional variations. Still other languages, like Latin and Navajo, have a wide range of inflections.

ASL is a highly inflected language. It uses inflection to determine the following (among other things):

- number—singular, dual, trial (three), and so on
- distributional aspect—such things as *each*, *certain ones*, and *unspecified ones*
- temporal aspect—for example, *for a long time*, *regularly*, *over and over again*
- temporal focus—such as *starting to*, *gradually*, and *progressively*
- manner—for example, *with ease*, *with difficulty*, *with enthusiasm*, *slowly*, *quickly*
- degree—for example, *a little bit*, *very*, and *excessively*
- reciprocity—indicating mutual relationships or actions
- index—changing person references for verbs.[9]

Although ASL is rich in inflections, the mechanisms for inflecting words differ from those used in oral language. Instead of stringing affixes to roots, ASL makes use of the three-dimensional space available to the signer, as well as facial expressions and other mechanisms. Figure 11-6 shows how one of the eight categories listed above, referential indexing (index), works for the word ASK.

Does ASL have sentences?

The answer to this is yes. The sentence is a clear unit in ASL. Utterances are typically produced within an area, called the sign box, in front of the body and bounded by the waist and head, extending a few inches to either side of the body. Sentences are marked by a few co-occurring

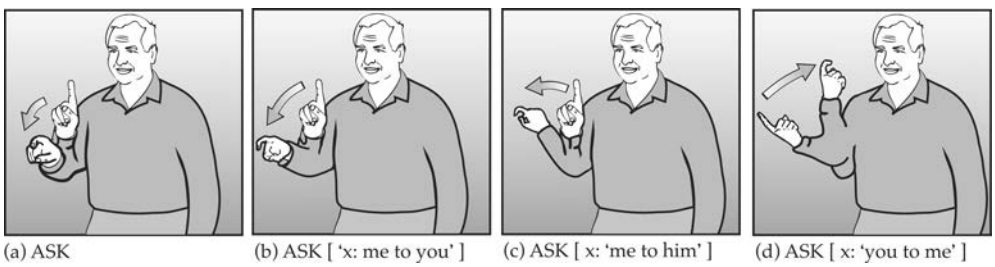


FIGURE 11-6 Referential indexing in ASL

The *x* is a symbol denoting a form that has undergone indexical change. Modifications of the basic one-handed sign ASK for indexic reference to first-, second-, and third-person singular.

[9]Edward S. Klima and Ursula Bellugi, *The Signs of Language* (Cambridge, MA: Harvard University Press, 1979), 273–274.

linguistic features such as NMGSs for the sentence types (i.e., yes/no questions, conditionals, rhetorical statements, etc.); certain vocabulary that marks sentence types (i.e., KNOW+ for topicalization, SUPPOSE for conditionals, etc.); and sentence boundary markers, such as eye blinks, pauses, body leans, etc. Without the necessary co-occurring NGMSs in ASL, a sentence would be ungrammatical.

The use of non-manual signals is one way in which the signer increases the speed of delivery of an utterance. In oral language, meanings can be modified using inflectional and derivational morphemes. Notice, however, that it usually takes longer to produce a single sign than a single spoken word. Several facts indicate that the perception of language is, in part, dependent on maintaining a relatively constant rate of transfer of information. In ASL, that flow is often maintained by modifying the meaning of a root by facial and other body movements.

Nicaraguan Sign Language: the birth of a new language

The origin of specific oral languages is lost in the distant past. However, in the mid-1980s, the opportunity to study the genesis of a totally new language presented itself in a surprising way. In Nicaragua, deaf people were scattered throughout the mostly rural country. Most deaf people never met other deaf individuals, and therefore a Deaf community did not develop. In fact, deafness was a condition that stigmatized the deaf, who were often isolated from others in their towns and villages. Deaf adults usually didn't marry, so genetic deafness was not transmitted at the same frequency that it would have been if the deaf had had children. Therefore, deaf children did not have deaf parents from whom they could learn sign language. In fact, no sign language was available to deaf people in Nicaragua. Most Nicaraguan deaf people used a limited number of **home signs**. Home signs are invented by deaf people and their relatives to help communicate about everyday items and activities. Although there might be some similarities between the home signs of different deaf people, the signs are basically unique to the individual.

Home signs are signs invented by deaf people and their relatives to help communicate about everyday items and activities.

This began to change in the 1970s. When the Sandinistas came to power in Nicaragua in 1979, a part of their social reform program was to provide education to the deaf. Deaf people from all over Nicaragua were brought to a school. The teachers at the school were not signers, and were supposed to teach their new students basic skills like reading (Spanish) and math. The teachers tried to teach fingerspelling. This effort failed. The children did not know oral Spanish, and it was not possible to teach them to read a language they did not know.

What happened instead was amazing to the linguists who began studying the children at the school. The children ultimately invented their own unique sign language. This occurred in stages. In the first stage, children tried to communicate just using their own home signs; then they began to learn one another's home signs and combine them into a communication system similar to a spoken pidgin (contact) language. Next, the pidgin became broader and broader, able to convey more and more information, and its structure became more complex. In other words, the pidgin turned into a creole (see Chapter 8).

Interestingly, it was the younger children who were most inventive in transforming the pidgin into a creole. We know that young children acquire language more automatically and easily than older children and adults. They do this even with a poverty of stimulus (see Chapter 10). As younger children came to the school, they converted the impoverished pidgin into a full-blown language by enriching its grammar. Did they know they were doing this? Of course, they did not.

One explanation is that because the younger children were still in their critical period of language learning stage, what some linguistics call the language acquisition device (see Chapter 10) perhaps allowed them to add universal features of language to the pidgin of the older children and adults that the older individuals were no longer capable of doing.

Not every linguist believes that a language acquisition device exists, so there are alternative ideas on what was happening to create this new language. Some psychologists believe that

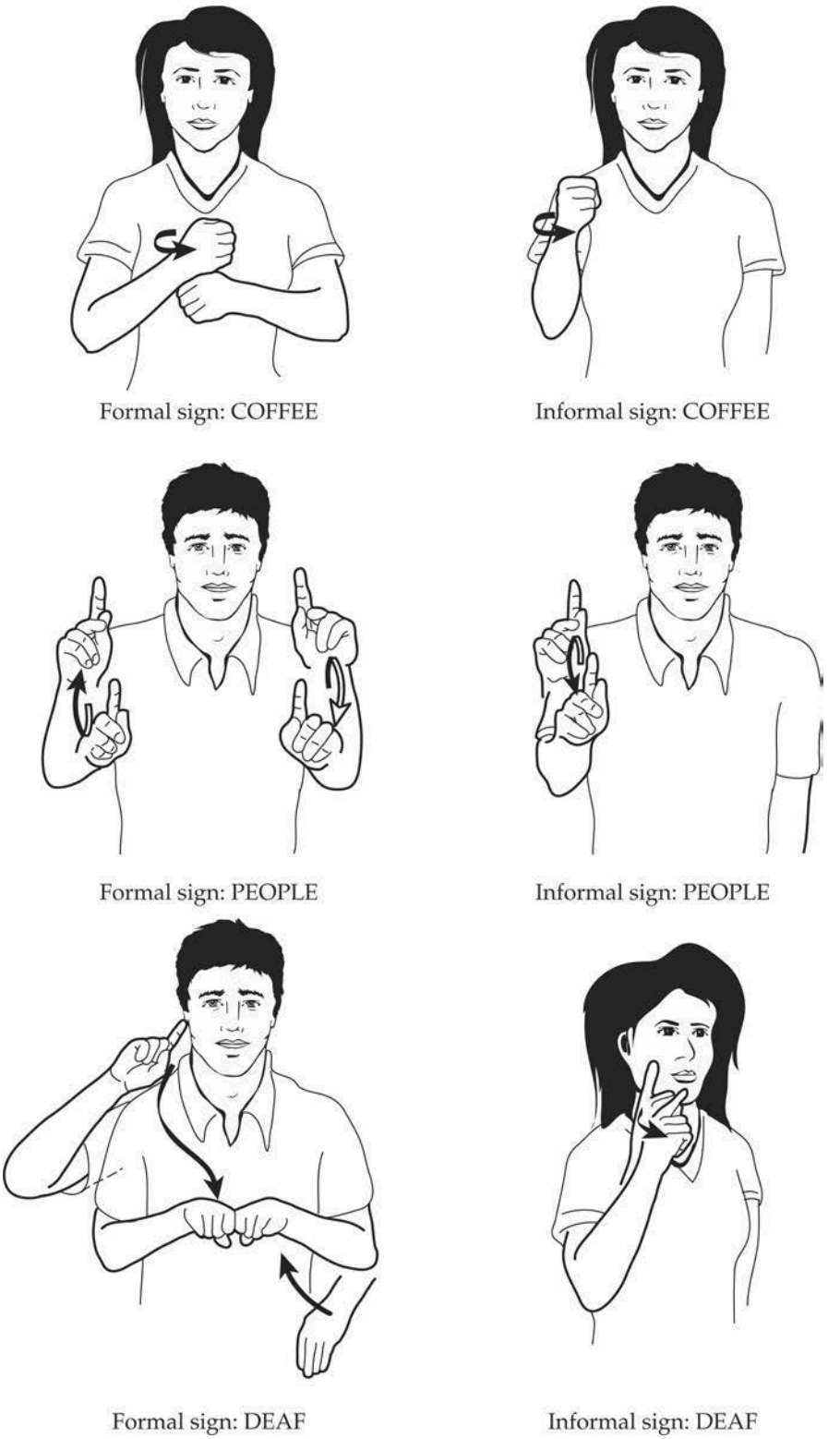


FIGURE 11-7 Examples of register variation in ASL

Source: Clayton Valli and Ceil Lucas, *Linguistics of American Sign Language*, 3rd ed. (Washington, DC: Gallaudet University Press, 2001). Copyright © 2001 Gallaudet University Press. Reprinted by permission.

instead of a language acquisition device, children have a more general mental ability to solve a range of problems, communication being one of them. In any case, the origin of Nicaraguan Sign Language (NSL) provided a unique opportunity for linguists to see a language form from inception to full language status.[10] Judy Shepard-Kegl was one of the first linguists to study NSL. She is now the president of the Nicaraguan Sign Language Project.[11]

Social dimensions of sign language

Sign language conveys social meaning just as speech does. In Chapter 7, we discussed discourse analysis, which includes the study of maxims of conversation. Maxims of conversation are the cultural expectations that guide people when they are conversing. One of those maxims in ASL is simply that only one person signs at a time. A person who begins to sign before another is finished has broken a maxim of conversation and will be considered rude. In spoken language, if you walk between people who are talking to each other, the convention is to say, "Excuse me." However, if a person walks between two people who are signing, the passing person would not excuse himself or herself because that might bring the ASL conversation to a halt. So in this case, the convention is to just pass as quickly as possible and not distract the signers any further.[12]

Registers are styles of speech that are appropriate to the situation, the level of formality, and the person being spoken to (see Chapter 8). As with spoken language, there are register differences in sign language. For example, in informal settings, one-handed signs might be substituted for the two-handed signs used in a formal setting (see Figure 11-7). Other examples of register in ASL that depend on formality are that: the location in which a sign is made may change; rhetorical questions are more common in a formal setting than an informal one; certain signs, such as the one for PEA-BRAIN, are like slang and occur only in informal situations; and topicalization (see Chapter 5) is more likely to occur in informal situations.[13]

Summary

This short review of ASL has made the following points: First, the fact that Deaf children in a signing environment learn manual–visual modes of communication as easily and in a similar pattern as hearing children learn speech indicates that language and speech are not the same thing. Speech is one way to convey linguistic competence; signing is another. Second, the drive to communicate linguistically is exceedingly strong. When one pathway of linguistic delivery is closed, humans will find another. Third, the basic principles of phonology, morphology, syntax, and semantics are remarkably similar for signing and oral language. To summarize all of the preceding statements in two sentences:

- The human faculty for language is the consequence of anatomical and neurological specializations that arose during hominin evolution.
- This faculty is not dependent on either speech or hearing.

Sign language structure is based on variations in several parameters. These include handshape, location of the sign, movement of the sign, palm orientation, the region of the hand

[10] Laura Helmuth, "From the Mouths (and Hands) of Babes," *Science* 293 (September 7, 2001), 1758–1759.
[11] You can find out more about NSL at the project's website: www.nicaraguansignlanguageprojects.org.
[12] Clayton Valli and Ceil Lucas, *Linguistics of American Sign Language*, 3rd ed. (Washington, DC: Gallaudet University Press, 2001), 177–179.
[13] Valli and Lucas, *Linguistics of American Sign Language*, 179–180.

that contacts the body, the orientation of the hands with respect to each other, and non-manual signals. Using these parameters, morphemes, minimal pairs, clauses, and sentences can be formed. These forms can be as varied as they are in spoken language. ASL and all sign languages have phonological, morphological, and syntactic rules.

Suggested reading

Armstrong, David F., and Sherman E. Wilcox, *The Gestural Origin of Language*, New York: Oxford University Press, 2007.

Lane, Harlan, Robert Hoffmeister, and Ben Bahan, *A Journey into the DEAF-WORLD*, San Diego, CA: DawnSignPress, 1996.

Lucas, Ceil, Robert Bayley, and Clayton Valli, *What's Your Sign for Pizza? An Introduction to Variation in American Sign Language*, Washington, DC: Gallaudet University Press, 2003.

Paul, P.V., *Language and Deafness*, 4th ed., Sudbury, MA; Jones and Bartlett, 2009. This reviews studies on language and literacy development in deaf students.

Valli, Clayton, Ceil Lucas, and Kristin J. Mulrooney, and Miako Villanueva, *Linguistics of American Sign Language*, 5th ed., Washington, DC: Gallaudet University Press, 2012.

Websites

American Sign Language Browser: https://commtechlab.msu.edu/sites/aslweb/browser.htm

American Sign Language Linguistic Research Project (ASLLRP), Boston University: http://bu.edu/asllrp/site.html. This includes links to other relevant sites.

American Sign Language Teachers Association: https//:aslta.org. A valuable resource for people studying sign language.

ASL Fingerspelling: www.tucows.com/preview/205271. This is a free, downloadable fingerspelling program.

Aslinfo.com: www.aslinfo.com. This site deals with ASL, interpreting for the deaf, Deaf culture, and other deaf issues.

Deaf Information Resources: http://www.gallaudet.edu/rsia/world-deaf-information-resource.html. This is the Gallaudet University's site on world Deaf information.

Gallaudet University Press: http://gupress.gallaudet.edu/catalog.html. Here you can view the catalog of the numerous books the university publishes on Deaf culture and education.

Linguistics of ASL: www.angelfire.com/ny4/linguisticsofasl. This has numerous links to other sites dealing with the linguistics of ASL.

National Association of the Deaf: https://nad.org. This is the site of the leading civil rights organization for deaf and hard-of-hearing people in the US.

Nicaraguan Sign Language Project: www.nicaraguansignlanguageprojects.org

Sign Language Studies: http://gupress.gallaudet.edu/SLS.html. This is the site of a journal devoted to the linguistics of sign language.

Apps

ASL Coach: American Sign Language, Duchy Software, Version 2.0, 2012. Demonstrates fingerspelling.

American Sign Language Alphabet Game LITE, Fundi 3D, Version 1.3, 2013. Flashcards to help you learn fingerspelling.

ASL American Sign Language, Teachersparadise.com, Version 6, 2016. Learn fingerspelling.

MobileSign, Version 2.5.1, 2015, Christopher John/University of Bristol, UK. A BSL lexicon with over 4000 signs accessed using a predictive search engine. You can use it to create and manage your own signs.

My Smart Hands Baby Sign Language Dictionary LITE, My Smart Hands, Version 1.6 2015. This shows you how to do 33 signs; the upgraded (paid-for) version has over 300 signs and 45 minutes of instruction.

Sign BSL, Daniel Mitchell, Version 1.1, 2015. Search and compare thousands of words and phrases in BSL; easily find and view signs; over 20,000 videos.

Review of terms and concepts: sign language

1. The human facility for language is not dependent on either _____ or _____.
2. Language is a _____ potential involving a _____ and a _____.
3. Some advantages of sign language over speech are _____, _____, and _____.
4. Everyone knows a sign language. This statement is _____ (true or false).
5. Signing is not a _____ language.
6. A sign that is picture-like is called _____.
7. Sign languages are composed of signs which, by and large, are not iconic. This statement is _____ (true or false).
8. Three reasons that sign languages are used are _____, _____, and _____.
9. The type of signing that one usually sees in public forums is _____.
10. ASL is a completely _____ language than English.
11. ASL has its own grammar. This statement is _____ (true or false).
12. Only about _____ percent of deaf children have deaf parents.
13. Deaf children of Deaf parents acquire sign language _____ as hearing children learn spoken language.
14. At first, signing children make single signs with _____ errors, comparable to hearing children's errors _____.
15. When signing children begin combining signs, they omit _____ producing telegraphic language.
16. Hearing parents have traditionally discouraged their deaf children from _____, and encouraged them to learn and/or use _____ and _____.
17. Congenitally deaf people who do not learn to sign are usually at a communicative disadvantage. This statement is _____ (true or false).
18. Cherology was the old name for what is now called _____.
19. An ASL sign can be thought of as a symbol composed of four simultaneously produced features. The feature that refers to the location of the sign is called _____; the feature that refers to the action of the sign is called _____; the feature that refers to the shape of what acts is called _____; and the feature that refers to the direction that the palm is held is called _____.
20. William Stokoe isolated 55 _____ for ASL.

21. In addition to the answer to question 19, other parameters of sign language include

_____

_____

_____

_____.

22. The abbreviation NMGSs stands for _____.

23. NMGSs include

_____

_____

_____

_____.

24. A sound or sign that is frequently used, basic, and easily formed is said to be _____.

25. ASL displays redundancy in the following way: _____

_____

_____.

26. ASL is a highly inflected language. This statement is _____ (true or false).

27. ASL uses _____ for inflection.

28. In ASL, the constant flow of information is often aided by the use of _____.

29. Nicaraguan Sign Language allowed linguists the rare opportunity to study the _____.

30. The fact that signers will use different signs in different situations is an example of _____ in sign language.

End-of-chapter exercises: signing

1. The average hearing American uses and/or understands slightly fewer than 100 emblems. Emblems are hand or body gestures that have a specific dictionary-type definition (see Chapter 13). Describe at least six of these emblems.

   EXAMPLE: Two fingers formed into a *V* represent peace or victory.

_____

_____

_____

_____

_____

_____

2. Describe the DEZ, SIG, TAB, and ORI for the emblems you listed in question 1. Use Figure 11-5 as your guide. You may find that this list will not always be adequate for your purposes. In those cases, devise your own DEZ, SIG, TAB, or ORI descriptions and invent a symbol for each.

3. Most emblems stand for a single word or a short phrase. Sometimes emblems will be strung together to create longer phrases or sentences. List six phrases, sentences, or series of sentences that Americans may construct from emblems.

   EXAMPLES: Finger to lip (QUIET), first finger of outstretched hand in back-and-forth motion (COME IN), finger pointed to chair (SIT DOWN), one finger held straight up (WAIT A MINUTE).

   "Quiet. Come in and sit down. I will only be a minute."

4. Are the signs and sign sequences you listed as answers to questions 1 to 3 accompanied by facial movements or postural changes? Explain.

5. Does the use of 100 or so emblems on limited occasions constitute a sign language? Explain why it does or does not.

6. What is the difference between a delivery system for a language and a language?

7. Is ASL a language? Explain.

8. How does the study of ASL show that language is not dependent on either speech or hearing?

CHAPTER 12

Writing systems: the graphic representation of language

LEARNING OBJECTIVES

- **Writing is a graphic interpretation of speech. List and describe the three main ways that speech can be interpreted graphically.**
- **The Chinese writing system has been in continuous use for longer than any other writing system. List and explain what characteristics and functions of Chinese writing are responsible for this fact.**
- **Describe the *rebus principle*.**
- **Analyze the function or functions that many linguists see in the inconsistencies of English spelling.**
- **Evaluate the ways that writing and speech differ.**
- **Explain some of the ideas on the origin of writing.**
- **Define *stimulus diffusion* and give an example of a writing system originated by virtue of this phenomenon.**

Writing is a visual representation of speech. Initially, writing was the work of only a small number of scribes. In the 1400s, movable type was invented and documents could be mass produced. Today, anyone can post information on the Internet. What cultural consequences do you think this mass dissemination of information (and often misinformation) has had on cultural development, and will have in the future?

Writing is a graphic (visual) representation of units (morphemes, syllables, phonemes) of speech.

When the first group of people began to represent their knowledge and new discoveries by means of conventional marks, a new era of human cultural development had begun. At this point, the transfer of information became independent of the physical presence and life span of communicators. Unlike speech or sign language, a written message does not rapidly fade.

Writing is secondary to speech and sign language

Writing is secondary to the other delivery systems of language (speech and sign) in a number of ways. Writing systems are based on speech or sign language, but the reverse is never true. A spoken or signed language is never based on writing. There has been limited success with writing systems based on sign language, so we will concentrate our discussion on writing based on speech. The three ways that writing represents speech are discussed in the next section.

Writing is also secondary to speech in that humans have been speaking for a lot longer than they have been writing. Although there is no agreement on an exact date, most people who study the origin of language believe that the origins of the speech areas of the brain can

be seen in the endocranial casts (casts of the inside of the brain case) of ancient hominins as much as 2 million years old. Natural selection favored the evolution of speech capabilities, and by about 200,000 years ago people were speaking in ways similar to today. The first true writing is about 5200 years old. Not only is it much more recent than speech, but perhaps it also has not been in existence long enough for natural selection to have selected for innate writing or reading skills.

The long evolution of speech (the ability to sign might have predated the ability to speak) has led to an innate ability to acquire speech (see Chapter 10). Writing must be formally taught by a child's caregivers or school teachers.

In addition to this, writing is secondary to speech in that everyone acquires speech naturally and quickly. Everyone passes through the same stages of acquisition, unless they live in total social isolation or suffer from a medical condition that would prevent the acquisition of speech. The same is not true for writing. Many children find it difficult to learn reading and writing, take a long time to learn to read and write, and learn reading and writing in different ways than other children. Also, many spoken languages do not even have a writing system. In cultures that have a writing system, but no universal education, there may be a high rate of illiteracy.

Types of writing systems

Paintings in a cave or on a city wall may tell a story to all those who know how to interpret the images in the paintings. However, picture writing is not true writing. Picture writing represents things and events, whereas true writing visually represents some element of speech.

Different writing systems reflect speech or linguistic principles in different ways. There are three main types of writing, which are defined in terms of how each represents speech. The first is **logographic writing (word-writing)** in which the symbols stand for whole words or morphemes. The second system is **syllabic writing**. In this system, each symbol represents one syllable. The third type of writing is **alphabetic writing**. In this system, each symbol ideally corresponds to individual phonemes. Each writing system uses one of these principles as a predominant mode, but each system mixes the forms to varying degrees.

In **logographic writing (word-writing)** the symbols stand for whole words or morphemes.

In **syllabic writing** each symbol represents one syllable.

In **alphabetic writing** each symbol, ideally, represents one specific phoneme.

Although it is a predominantly alphabetic system, English writing uses all three types of symbol. For example, the letter P is an alphabetic symbol that represents the collection of sounds phonemically symbolized as /p/. (The /p/ phoneme includes a variety of allophones, including [p] and [p^h].) But some English writing symbols are logographic. For instance, the symbols normally found on one of the rows of a typewriter or computer keyboard are **logograms** (or **ideograms**). These keys include the Arabic numerals 1, 2, 3, and so on. The numeral 3 stands for a whole word (*three* in English), but it also stands for the same concept in the writing of German, French, Greek, Italian, Japanese, and numerous other languages. In each language, the concept 3 would be expressed by different-sounding words. So the symbol 3 does not carry a specific phonetic value (pronunciation). In a like manner, such symbols as ¢, @, #, $, %, ?, &, *, and 5 are all logographic, as are more specialized symbols such as ♀ (female) and ♂ (male). Each of these symbols may conjure up the same basic concept in the minds of people speaking various languages. Each person would use a word from his or her own language to label the concept.

Logograms (sometimes called **ideograms**) are written symbols that represent a concept or word without indicating its pronunciation.

English also has some syllabic symbols. For instance, some people spell *barbecue* in the abbreviated form *bar-b-q*. In this form, the second *b* stands for the syllable /bə/ (sometimes pronounced /bi/), and *q* for the syllable /kyu/. Can you see how the symbols that usually represent individual consonants represent syllables in such forms as *OK* (*okay*) and *PJs* (*pajamas*), and in initialisms such as *FBI*, *CPA*, and *TNT*?

Logographic writing

In a picture, a story may be told by the images depicted. A picture of a man throwing a spear at a deer may be interpreted as: "The man kills the deer." But the picture does not reflect linguistic units of any type; it is not made up of words, syllables, or phonemes. The picture is a device that conveys meaning by the totality of the content of the drawing. However, if we had conventionalized symbols for *man*, *kill*, and *deer* (let's say Ω, Θ, ξ, respectively), then we would not have to draw a picture. Instead, we could string the symbols together to form a sentence made up of the three word symbols (logograms).

Ω Θ ξ would mean *(The) man kill(s) (the) deer*.

When the logogram resembles the thing that it represents, it is called a **pictogram** or **pictograph**. Thus, a picture on a cave wall or a canvas differs from logographic writing in three main ways:

A **pictogram (pictograph)** is a logographic symbol that is a simplified picture-like representation of the thing it represents.

- Writing uses conventionalized symbols that may or may not look like what they represent.
- Symbols stand for linguistic units (words or individual morphemes).
- The order in which the logographic symbols are placed reflects the word order used in speech.

A fully logographic writing system would need tens or even hundreds of thousands of symbols and combinations of symbols. There would have to be a way of symbolizing each word in the language. This would present monumental problems in learning such a system. A fully logographic system would be so impractical that, as far as it is known, one has never existed. Instead, all known logographic systems, modern and ancient, include syllabic or alphabetic symbols. For this reason, it is more precise to label writing systems that are predominantly logographic as **logophonetic**. Most logophonetic systems combine logograms and syllabic representations and therefore are called **logosyllabic**. Egyptian writing combined logographic symbols with symbols for consonants (but not vowels).

Logophonetic refers to a writing system that uses predominantly logographic symbols, but also includes symbols (or elements of the logographic symbol) that represent sound.

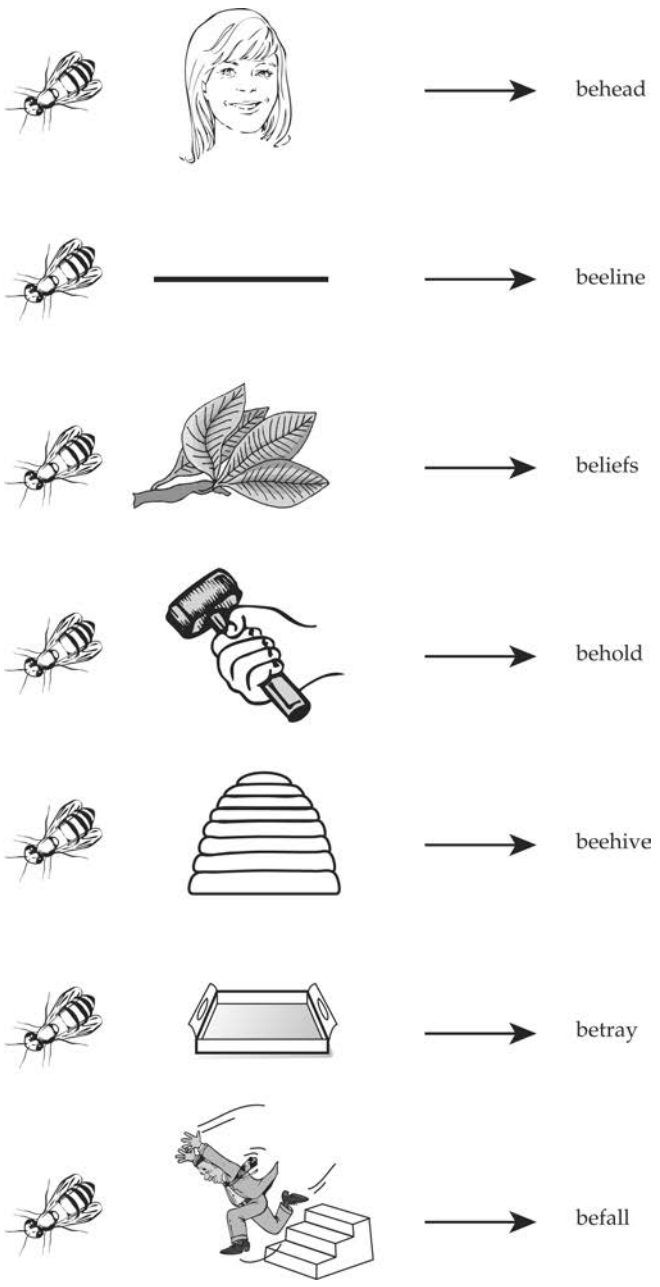
Logosyllabic refers to a logophonetic system that includes both logographic and syllabic representations.

The rebus principle

The most important step in the development of writing was the invention of symbols that had conventional meaning. Perhaps the second most important step was when some of those symbols came to represent not words, but sounds. Once this **phonetization** of symbols occurred, the symbols could be used in all words that contained the sound they represented. For instance, the original meaning of a logogram 𓎆 might have been *four* (four of any thing). The original meaning of a logogram 𓂝 may have been *bee*. However, if 𓎆 came to represent the syllable /fər/ and 𓂝 the syllable /bi/, then the combination 𓂝𓎆 could mean *bee four* or *before* (see Figure 12-1). Note that in *before*, the symbols have been freed from any reference to the original logographic (word) meaning of the symbols and are acting as syllabic symbols.

Phonetization refers to the process whereby logographic symbols come to represent sounds.

FIGURE 12-1 The rebus principle. Using the graphic symbol that has now become associated with the sound [bi] and other graphic symbols that have become associated with a specific sound, a person could make a number of words from the symbol in addition to *before*. These might include:



The **rebus principle** refers to the process by which symbols which once stood for whole one-syllable words become symbols for those syllables, not the words they once represented.

Employing symbols that once stood for whole one-syllable words as syllables (not words) is called the **rebus principle**. The rebus principle supplemented the logographic principle and allowed full writing systems to develop. Until the development of the alphabetic principle, logograms were still used extensively. Although it would appear on the surface that logograms might have been completely replaced by the rebus principle, syllabic writing without the aid of logograms is inefficient for most languages. We will see why this is so in the section on syllabic writing.

TABLE 12-1 Logosyllabic writing systems

System	Location	Approximate origin	Deciphered
Sumerian	Mesopotamia	5100 BP	Yes
Egyptian	Egypt	5000 BP	Yes
Proto-Elamite	Elam (southwestern Persia)	4500 BP	No
Proto-Indic	India (Indus Valley)	4200 BP	No
Cretan	Crete and Greece	4000 BP	No
Linear A	Crete	3800 BP	No
Hittite	Turkey and Syria	3500 BP	Not the earliest material
Chinese	China	3300 BP	Yes

BP stands for "before the present."

In the past, eight fully developed logosyllabic writing systems existed in an area extending from Egypt to China. These systems included the written forms of the ancient Sumerian and Egyptian languages (see Table 12-1). New World systems never developed the degree of phonetization of the eight Old World writing systems. Mayan, Aztec, and other New World systems are not full logosyllabic writing systems.

EXERCISE 12.1 Logographic writing and the rebus principle

1. Translate the following rebuses, which may be sentences or phrases.

a. 

b. 

c. 

d. 

e. 

2. Provide five examples of rebuses that you invent.

a. _____

b. _____

c. _____

d. _____

e. _____

Chinese: an example of logosyllabic writing

Chinese is the most logographic of modern writing systems. However, it also employs syllabic symbols and, recently, alphabetic symbols. We will look only at the logographic element of Chinese writing. The symbols we are using here are simplified versions of the traditional symbols (also called characters).

Each logogram stands for a word or concept. For instance, the symbol 月 means *moon*, 子 means *child*, and 大 means *big*. Some meanings are represented by a combination of symbols, such as, 移, which means *to move*. Often, combined symbols are used to express abstract concepts. For example, the concept *good* is expressed by combining the logogram 女 (*woman*) and 子 (*child*). To the Chinese, a woman and a child symbolize fertility, and fertility is considered to be *good*, thus 女子.

Other Chinese symbols have one element that is logographic and another that hints at pronunciation. However, the element that hints at pronunciation may be of little help because the pronunciation may have changed since the symbol was originally used. The second edition (2010) of the *Hanyu Da Zidian* or *Great Compendium of Chinese Characters* lists 60,370 symbols and combinations of symbols, though most of these characters are not in current use. According to the Hutong School, a popular school in China that teaches Mandarin to non-Chinese students, a person who knows about 2500 symbols will be able to read about 98 percent of everyday writing.[1] A Chinese college student might know about 5000 Chinese characters (see Figure 12-2).

It is certainly not a mystery why logographic writing is so rare today. The great number of symbols needed to reflect spoken language is a major disadvantage of the system. Learning to read and to write 2000–5000 or so Chinese symbols is difficult and time consuming, especially when compared to learning the 26 alphabetic symbols used in English writing.

In the past, the difficulties associated with learning Chinese writing represented an advantage to people in power. The elite had plenty of time to learn Chinese writing, whereas the peasants did not. Limiting the peasants' access to information made it easier for the elite to maintain their rule. More than 2200 years ago, there were attempts to make Chinese writing easier to learn. At that time, a Chinese scholar revised about 3000 Chinese characters by reducing the strokes needed to make them. Other attempts at simplifying Chinese symbols were made over the years.

In 1958, another reform began when the Chinese government adopted romanized alphabetic symbols to be used in conjunction with logographs in teaching children to read. These phonemic symbols are also employed for the transliteration of new foreign words. The idea is that the new alphabetic system will ultimately replace the logographic system. However, logographic writing has been so much a part of Chinese culture that its replacement will be slow. More than fifty years after the addition of romanized symbols, Chinese writing is still the main way of representing oral Chinese languages.

There is another reason for the persistence of the Chinese character system. Chinese is actually several related languages collectively called the Han languages. About 93 percent of people in China speak one of the seven Han languages (often called dialects), which include Mandarin and Cantonese. Each of these forms of Chinese has numerous subtypes. People who

FIGURE 12-2 Examples of one form of Chinese writing

[1]See www.hutong-school.com/how-many-chinese-characters-are-there.

speak one variety of Chinese often cannot understand people who speak a different variety. However, because most logographic symbols refer to concepts and not to their pronunciation, all literate Chinese can understand the logographic elements of a large number of Chinese symbols regardless of the variety of Chinese they speak. This situation is analogous to the ability of all people who use Arabic numerals to recognize the meaning of the symbol 3. The symbol 3 stands for a concept, not the pronunciation of a word as the alphabetic representation does (*three*, *drei*, *tres*, in English, German, and Spanish). For the Chinese, their writing system is one of the main elements that allows them to be a more or less unified culture, even though they speak many mutually unintelligible tongues (see Box 12-1).

BOX 12-1

Women's writing

Traditional Chinese culture was very male-oriented. Women did not receive any formal education and did not learn to write. About 1000 years ago, a concubine of a Song Dynasty emperor invented a secret script that allowed her to communicate with her sisters. This secret code was the first phonetically based (as opposed to logo-syllabic) writing in China. The writing system was called *Nushu*. The words *nu* and *shu* mean "woman's writing." It originated and developed in Jiangyong County of Hunan province. Some of the Nushu characters are based on the "men's writing" and others are invented. Nushu characters are more rounded and flowing than regular Chinese characters (see below).

A custom of Hunan province had been the development of very strong bonds between its women. These "sworn sisters" might ultimately be separated when they married and moved to the villages of their husbands. One of the ways to overcome the feelings of separation was through a type of diary. On the third day after a marriage, the bride was visited by her relatives. She would be given a book called the *San Chao Shu* (Third-Day Book). This recorded the hopes and good wishes of sworn sisters, along with songs. The rest of the book was left blank to be used as a diary.

Chinese scholars have become interested in this writing system only relatively recently. A dictionary of Nushu characters was published in 2003, but represents only a portion of the characters that once existed. Unfortunately, the last woman who knew some of the system died in 2004.

Nushu Characters

坐 头 教
似 插 她
观 珍 打
音 珠 粉
出 放 便

Traditional Chinese Characters

Source: Damien EcElroy, "Race against Time to Save Ancient Chinese Language," *Scotland on Sunday*, April 7, 2002. For a novel about the life of nineteenth-century Hunan women and their use of Nushu, read *Snow Flower and the Secret Fan* by Lisa See (New York: Random House, 2005).

Syllabic writing

As we have seen with the spelling *bar-b-q*, modern English writing occasionally uses the syllabic principle. Unlike the logographic systems, each symbol in a syllabic writing system has a specific phonemic value. The second *b* in *bar-b-q* has the phonemic value /bi/, and if English were a predominantly syllabic system, the symbol *b* could be used throughout the writing system to represent /bi/. Logographic symbols do not tell us how words are pronounced, but syllabic symbols do. Because there are always a smaller number of syllables in a language than there are words (or morphemes), syllabic writing will have fewer symbols than logographic writing.

Japanese is currently represented by three types of writing. It has a logographic system called *kanji*, a syllabic system called *kana*, and alphabetic symbols called *rōmaji*. A Japanese text can include symbols from all three of these systems. But whereas the Chinese system is predominantly logographic, the Japanese system is predominantly syllabic.

A **noninflecting language** is a language with no (or few) inflectional morphemes.

The Japanese "borrowed" Chinese characters (called *kanji*), but found that these characters did not always fit well with their language. Chinese is a **noninflecting language**. It does not have grammatical markers for verb and noun changes. On the other hand, Japanese is a highly inflected language that employs tense markers, for example. The Japanese get around the lack of such markers in Chinese by employing the syllabic system (*kana*), which has 46 basic symbols that represent Japanese syllables. Ideally, any word in Japanese could be written with these symbols. However, the Japanese also use about 1850 logographic symbols. These are used for some root morphemes and to clarify homophones—words that sound the same but have different meanings, such as *to*, *two*, and *too* in English (see Chapter 2).

Kana consists of two systems of characters that represent syllables. The system called *hiragana* is used mostly for native Japanese words and to indicate various grammatical functions such as inflection. The second system is called *katakana* and is used mostly for loanwords, scientific names, and emphasis.

Modern Japanese also uses some Roman (alphabetic) symbols called *rōmaji*. This system is used for acronyms, initialization, brand names, other words used internationally, and some foreign words and phrases (see also "A survey of ancient and modern scripts" later in this chapter).

Japanese is an ideal language for syllabic writing. Japanese words are composed mostly of sequences of syllables that take the shape CV (a single consonant followed by a single vowel). In addition to the 46 combinations of a consonant and a vowel, there are some syllables that are made up of a consonant followed by a *y* sound and then a vowel, such as in the word *Tokyo*, which in the Japanese is pronounced To-o-kyo. Also, the sound /n/ can occur at the end of a

FIGURE 12-3 Examples of Japanese writing (Hiragana)

BOX 12-2

An ancient syllabic script: Linear B

Many ancient writing systems remain undeciphered. This includes a writing system, known simply as Linear A, used on the island of Crete starting about 3800 years ago. The language it represents is still unknown. Another writing system from Crete, but also found on the southern area of the Greek mainland, is referred to as Linear B and dates to about 3500 years ago. The script was discovered in 1900 by archaeologist Sir Arthur Evans (1851–1941), along with a picture-writing script and Linear A. To Evans's surprise, in 1939, clay tables with Linear B were found on mainland Greece. He had thought that Linear B was used only on Crete. Although Evans did discover some important facts about Linear B, he was not able to decipher the writing. However, Michael Ventris (1922–1956), an English architect and classical scholar with an interest in linguistics, and John Chadwick (1920–1998), a linguist, fully deciphered the writing system and published their initial results in 1953.

Evans was convinced that Linear B represented the ancient language used by King Minos on Crete, so he called the language *Minoan.* Minoan is not related to Greek. When Ventris was fourteen, he attended a school field trip to an exhibition on Minoan culture and heard a lecture by Evans. He was hooked. Ultimately, with the help of Chadwick, he was able to show that Linear B did represent an early form of Greek. Unlike Linear A, which was a predominantly logographic system, Linear B was predominantly syllabic, but did include a number of logographic symbols as well as a base ten numerical system. Shortly after Ventris and Chadwick published their definitive work on Linear B (*Documents in Mycenaean Greek*) in 1956, Ventris was killed in a car accident.

For details on how Ventris and Chadwick deciphered Linear B, and for the symbols in that system, see John Chadwick, *The Decipherment of Linear B* (Cambridge: Cambridge University Press, 1990) and Ancient Scripts, www.ancientscripts.com/linearb.html.

word, as in *Pokémon* [pokiman]. There are other details of Japanese which allow for some other types of syllables, such as a single vowel beginning or ending a word. For example, the word for "good morning", *ohayou*, is pronounced similar to the US state *Ohio*.

English examples of the general Japanese pattern of pairs of a consonant followed by a vowel would be *papa* (CVCV) and *macaroni* (CVCVCVCV). Yet English has many other types of syllable. For instance, *crash*, *thought*, and *string* are one-syllable English words. They have syllabic shapes CCVC, CVC, and CCCVC, respectively. Each of these and the numerous other syllabic possibilities in English would have to have separate syllabic symbols. This would necessitate hundreds of symbols instead of the limited number used in Japanese. Syllabic writing is best for a language, like Japanese, that has few consonant clusters. For Japanese, with its predominance of CV syllable sequences, syllabic writing is more compact than alphabetic writing and less cumbersome than logographic writing (see Figure 12-3). Box 12-2 discusses the deciphering of an ancient predominantly syllabic script.

EXERCISE 2 Rebuses and syllabic writing

1. Translate the following sentences.

a. I C Y _____

b. R U 8 E? _____

c. C A B? _____

d. U R O K _____

e. U R A  _____

2. Translate the following words, phrases, or sentences.

a. NE _____

b. I M MT _____

c. U R KG _____

d. I NV U _____

e. 2 X S _____

f.  _____

g. 2  _____

h. UR A QT _____

3. The syllabic principle is often used in creating personalized license plates for cars. Think of five possible plates using the syllabic principle.

Plate	Translation
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4. List several names of products, stores, services, and others that employ the syllabic principle in at least part of the name.

_____

_____

_____

5. Create a short story or write a letter to someone using both the rebus principle and the syllabic principle.

_____

_____

_____

_____

_____

_____

_____

6. What are the limitations of the rebus principle? What are the limitations of the syllabic principle?

Alphabetic writing

Graphemes are alphabetic symbols.

There are 26 **graphemes** (letters of the alphabet) in English, 36 in Russian, and 22 in Hebrew. Ideally, each grapheme stands for one specific phoneme. There is no practical reason for every sound that is produced orally to be represented alphabetically. In English, no purpose would be served in having different graphemes for [p] and [p^h]. Because all English speakers have a subconscious knowledge of the complementary distribution of the allophones of the phoneme /p/, it would be inefficient to have a different letter for the *p* in *pin* [p^hɪn] and the *p* in *spin* [spɪn]. The speaker's linguistic competence directs that speaker to aspirate in the proper context.

English approaches the ideal of one grapheme for one phoneme with such letters as *f*, *r*, *v*, and *m*. These graphemes generally represent only one phoneme. However, many letters actually can stand for numerous phonemes. The letter *s* can be the phoneme /s/, /z/, /š/, or /ž/ in the words *sat*, *physics*, *sure*, and *vision*, respectively. Conversely, numerous letters and combinations of letters can represent many phonemes. The /k/ phoneme can be spelled *k*, *ch*, *c*, *x*, *que*, or *ck* as in *kit*, *chlorine*, *cap*, *exceed*, *clique*, and *tack*.

For historical reasons, some writing systems (such as Finnish and Turkish) approach the ideal alphabetic principle more closely than English. Many countries have instituted wide-ranging writing reform. In 1922, for example, the Turkish government abandoned the Arabic alphabet in favor of a Roman-type alphabet. Linguists devised this new alphabet according to the ideal alphabetic principle. However, since then, some changes have occurred in Turkish speech patterns, creating new inconsistencies in the ideal one grapheme–one phoneme system.

Spelling and speech

It is not surprising that speech changes faster than alphabetic writing. Because we cannot speak to them, it matters little how people of the past pronounced their words. But it does matter that our ancestors' writing was similar to ours. For instance, if spelling constantly changed to reflect changing speech patterns, the writing of the past would soon become incomprehensible to all but those trained to decipher it. The fact that the one grapheme–one phoneme principle is inconsistent is, in part, due to the different rates of change for speech and writing. Most current English spellings are about 400 years old. Speech patterns have changed greatly in that period and are probably less than 100 years old.

When scholars have attempted to repair the effects of time on the spelling–speech relationship, the result has sometimes been increased inconsistencies. Early reformers of English in the fifteenth and sixteenth centuries were successful in changing many Middle English spellings. Instead of attempting to make the spelling of a word correspond to its pronunciation, they made the spelling correspond to the language from which the word was derived. If an English

word's origin was traced to Latin, then the English spelling would be made to correspond to the Latin spelling. So, for instance, the Middle English word *dette* was changed to *debt* (from the Latin *debitum*), even though the *b* is not pronounced in English.

Later reformers attempted to reverse some of the Renaissance-era changes by making the spelling more closely conform to the phonemes of English. A notable attempt was by Theodore Roosevelt (1858–1919), who tried to legislate away certain unpronounced letters and letter combinations, such as the *gh* in *light* and *night*. In Old English and Middle English, this letter combination was pronounced as a velar voiceless fricative, phonetically symbolized as /x/, but it has been silent since about the fifteenth century. President Roosevelt wanted to drop the silent letters and spell the words *lite* and *nite*. Congress reacted in such a negative manner that the president's proposal was dropped instead of the silent letters. Congress may have been thinking of the problems of translating the writing of the past if future generations spell words differently; more likely, they were resistant for other reasons. The written tradition of a culture is usually so closely associated with the whole of the culture that tampering with the writing is often considered tampering with the culture itself.

However, it appears as if time has caught up with the silent *gh*, especially in the business world. Today, more and more manufacturers, advertisers, and shop owners are using the shortened spellings of such words as *lite* and *brite* (see Table 12-2 and 12-3).

Is English spelling really so bad?

Does it really matter whether the part of the day beginning at sunset is spelled *night* or *nite*? If the alphabetic principle was followed more exactly, children might learn to read more quickly and people learning English as a second language might learn the English writing system more easily. However, if the alphabetic principle was applied in its pure state, numerous extra symbols would be required. For example, the final consonant in *mats* and *zoos* are different phonemes. In the first case, the phoneme /s/ is used (/mæts/), and in the second case the phoneme /z/ is used (/zuz/).

Some spelling reformers have suggested that these and similar contrasts be written to show the differences in sound. Yet this would only complicate the writing system. The letter *s* used

TABLE 12-2 Spelling reform: a small sample of the hundreds of products or companies with names spelled using *lite* or *brite*

Product or company	Comment
Lite Diet Bread	In 1954, this was perhaps the first product to use *lite*, meaning fewer calories, in its name
Lite beer	Miller was the first company to use *lite* for low-calorie beer, starting in the early 1970s
Lite-Brite	Toy from Hasbro first sold in 1967
Bite-Lite	A device to help with night fishing
Mity-Lite	A manufacturer of commercial furniture
Myoplex Lite	A dietary supplement
Mag-Lite	A type of flashlight
Rail-Lite	A lightweight composite material used in trains
Brite Computers	Computer security company
Brite Eyes	Type of eye drops
Clean and Brite	Stain remover

TABLE 12-3 Spelling reform: a small sample of the hundreds of other products or companies with nontraditional spellings

Product or company	Comment
Construx	A toy introduced in 1983
Construx software	A software engineering company
Classic Trax	A supplier of music (the term *trax* is used for a number of music products and companies)
Blinx	A type of eye drops and a computer game
Ty-D-Bol	A toilet cleaner
Quik	An instant drink mix
Playskool	A line of toys from Hasbro
Luvs	Diapers
Hefty Steel-Sak	Garbage bags
Glo-Mor products	Tape and markers that glow in the dark
Mor-Glo	Floor-care product
Freefoto.com	Website that gives access to free photographs of various topics
Fantastik	Cleaning product
Tinder-Quik	Fire-starting product

at the end of a noun indicates only one grammatical distinction—plurality. Why use different symbols to do what one can do? Native speakers subconsciously know that certain nouns are pluralized by adding /s/ and others by adding /z/, and still others by adding /əz/ as in *pauses* /pɔzəz/). This is a part of the speaker's morphophonemic competence. When the speaker reads out loud, he or she will automatically pronounce the *-s* correctly. And we usually do not read aloud. Spelling *mats* as *mats* and *zoos* as *zooz* would obscure the fact that the possible *-s* and *-z* suffixes are the same morpheme (they are allomorphs), and by doing so would perhaps slow down reading.

Some grapheme–phoneme inconsistencies are actually quite valuable. Except for the loss of continuity with the past, in practical terms it might be hard to argue against the spellings *nite* and *lite*. However, should all silent *gh* combinations be removed from written English? Should we spell *might* as *mite*? There is a problem with this and other potential changes in spelling. The spelling *mite* already has several meanings (a small arachnid, a small object or amount of money, and the twentieth part of a grain). *Might* and *mite* are homophones, words that sound the same and differ in meaning and spelling. Spelling distinctions are in a sense logographic in homophones such as:

might/mite

to/too/two

their/there/they're

heir/air.

Regardless of context, the different shapes of the written words, not how they are pronounced, give a direct indication of the meaning of the word. As mentioned earlier, Japanese syllabic writing uses Chinese logograms to distinguish between homophones. In a similar manner, when we see the word *two*, we automatically know it means the numeral 2, not *also*. In speech, the meaning of homophones must be extracted entirely on the basis of context.

Homographs are words that differ in meaning but are spelled the same. They might or might not differ in how they are pronounced. The words *rose* (a flower), and *rose* (got up) are homographs that are pronounced the same.

Homonyms are words that differ in meaning, are pronounced the same, and might or might not be spelled the same. The word pairs *rose*/*rose* and *might/mite* are homonyms.

Heteronyms are homographs that are not pronounced the same. The words *tear* (water in the eye) and *tear* (to rip) are heteronyms.

Different spellings for homophones can also indicate grammatical function. In the homophones *passed/past*, the *-ed* immediately shows that *passed* is a verb.

English writing does have sets of words that can be distinguished only by context. The various meanings of *mite* are an example of this. Words that differ in meaning, are spelled the same, and might or might not be pronounced the same are called **homographs**. And, as we learned earlier, **homonyms** are words that differ in meaning, are pronounced the same, and might or might not be spelled the same (see also Chapter 6). The word pairs *rose/rose* and *might/mite* are homonyms. In contrast, **heteronyms** are homographs that are not pronounced the same, such as the words *tear* (water in the eye) and *tear* (to rip). Notice that the words *homonym*, *homograph*, *homophone*, and *heteronym* have overlapping meanings, as shown by the following simple semantic property analysis (see Chapter 6 for an explanation of semantic property analysis).

	Homonym	Homophone	Homograph	Heteronym
Same sound	+	+	+/–	–
Same spelling	+/–	–	+	+

Homographs do not have the logographic character of homophones. Box 12-3 explores the concept of alphabetically written words functioning as logograms from a different direction.

BOX 12-3

Aphableitc sepllnig and wrod rneogticotin

No, the authors of the book are not as inept at spelling as the title of this box might indicate. In September 2003, the following anonymous blurb spread like wildfire on the Internet:

> *Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is taht the frist and lsat ltteer be at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.*

Or rather . . .

> *According to a researcher [sic] at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter be at the right place. The rest can be a total mess and you can still read it without problem. This is because the human mind does not read every letter by itself but the word as a whole.*

The authors of your text tell their students that not everything on the Internet (or any mass media or personal source) is correct just because it is written or said. This piece, on the surface, seems plausible. And it seems to support the idea that the written word is a kind of logogram, which the accomplished reader recognizes by its shape rather than sounding it out. After all, almost everyone can read most of the scrambled words. Yet this meme is basically a joke. It does have some truth to it, but is a simplification of what linguists know about how the mind recognizes words.

Matt Davis, a linguist at the Cognition and Brain Science Unit of Cambridge University, points out that:

- No one from Cambridge University had anything to do with the information.
- Some words with scrambled letters would have alternative possible meanings, for example, *salt* and *slat*. None of the words in the scrambled passage could result in more than one real word.
- Short words of two and three letters are not scrambled.
- Function words, such as *the* and *and*, tend to be short and they are not scrambled. This helps to set the context of the meaning of the passage and conserve the grammatical structure of the sentences, making the sentences easier to read.
- In the second scrambled sentence, eight of the fifteen words are not scrambled.

- The words are not scrambled randomly. Most of the scrambling puts scrambled letters close to their original position. For instance, in the title of this box the word *alphabetic* (*aphableitc*) is probably easier for you to read than *recognition* (*rneogticotin*). In the former, the letters that are adjacent in regular spelling stay close to each other; but in the latter, originally adjacent letters are farther apart in the scrambled version.
- Some of the scrambled words preserve or come close to preserving the way that the word would be pronounced, such as *toalt* for *total* (instead of writing it as *ttaol*).
- The text is relatively predictable. You can guess from context some of the words that follow other words.

Although the claims made in the jumbled message are partially true under manipulated circumstances, the mental process of reading is much more complicated. Davis points out that although people do not usually read each letter in a word, correct word shape does provide information that makes it easier to decode the word. For instance, if *eXPeRiMeNTiNG* is written in this way, it slows down the reading of the word.

Source: www.mrc-cbu.cam.ac.uk/people/matt.davis/cmabridge. There, Davis discusses the points made in this box, and gives examples of the jumbled passages in other languages and bibliographic sources about the process of reading.

Writing's influence on speech

When the ideal alphabetic principle is approached, writing has a conservative effect on pronunciation. If there is a one phoneme–one grapheme correspondence, we might expect anyone who reads a word to pronounce it in a standard way. Actually, the written word can act to alter the traditional pronunciation of a word. For example, the *t* in *often* was at one time never pronounced. It was silent just like the *g* in *sign*. Yet today many people say this word as /ɔftən/. The presence of the *t* in the written form has influenced its oral form. This phenomenon is called **spelling pronunciation**.

Spelling pronunciation is the process by which a word is pronounced as it is spelled, even if that pronunciation was not the original or intended pronunciation. This often occurs for foreign words that enter a language.

Spelling pronunciation often occurs for foreign words that enter a language. The final syllable in the German word *Neanderthal* is pronounced in German as /tal/. Not hearing the word pronounced by Germans, English speakers usually pronounce the final syllable as /θal/. This pronunciation conforms to one of the two usual pronunciations of English words spelled with a *th*. The /ð/ is the other pronunciation. Due to spelling reform in Germany, the silent *h* has been removed from their writing system. The word is now spelled *Neandertal* in Germany. Even though some American writers use the new spelling, most American speakers still pronounce the final syllable as /θal/.

Writing also influences oral language through abbreviations. If there were no alphabetic symbols (which are pronounced syllabically), such forms as FBI, CPR, and NBA would not exist. In an initialism such as FBI, each letter is pronounced as such. Another type of abbreviation leads to words that are pronounced according to the phonological system of English. These are acronyms (see Chapter 4), formed by using the initial letters of each word in a phrase, such as *NATO* for North Atlantic Treaty Organization. We do not say *N A T O*, calling off the names of each letter (/ɛn + e + ti + o/). Instead we pronounce it as an English word (/neto/).

Writing and speech: further considerations

We have already mentioned that writing systems are more conservative than spoken systems. This is understandable. We acquire speech informally from our verbal environment. Parents and teachers who are concerned with prescriptive rules of "correctness" formally teach writing to us. Speakers are usually not corrected when they end a sentence with a preposition or when they dangle their modifiers. Yet teachers often correct every minor error of a writer's spelling

and grammar. As a result, people tend to write more formally and carefully than they speak. There is usually more time to prepare a written communication than a spoken message. The writer can edit the work to conform to a specific standard. Today, there are also spelling and grammar checks on word processing programs. Furthermore, because writing does not rapidly fade, the writing of the past conservatively influences present writing more than the speech patterns of the past influence current pronunciation. Partially for this reason, changes in pronunciation often are not reflected in writing.

Another way in which writing differs from speech is in writing's inability to completely represent the suprasegmental aspects of speech. In Chapter 2 on phonetics, we discussed the concept of perceived juncture. We would write the following sentence as

When is he coming to your house?

However, a native speaker would not pause between each word. That speaker would say something like

[wɛnzikʌmn̩ + təyrhaws↑]?

Punctuation (such as the question mark in the above sentence) and capitalization aid in indicating intonation and rhythm. Yet they do not fully and accurately represent how the sentence would be pronounced. Consider the next sentence:

The urge to communicate by means other than speech has been apparent in the archaeological record for at least 32,000 years.

In the spoken form of this sentence, there would normally be a pause after *communicate* or *speech*, but there is no punctuation to indicate this. The punctuation of the written form of this sentence does not accurately reflect the spoken form. On the other hand, punctuation can sometimes clarify that which would otherwise be ambiguous. If spoken, the distinction between the two sentences written below could only be gleaned from context. That distinction is perfectly clear when the sentences are presented in writing:

Your son's grades are not what they should be.
Your sons' grades are not what they should be.

The placement of the apostrophe clarifies two possible meanings of the spoken utterance.

Spoken and written forms each have their own ranges of potentials and limitations. An advantage to writing is that complex passages can be reread as often as needed. For this reason, written forms are often more syntactically complex than spoken forms. A native speaker of English would seldom utter a sentence like

The car that my brother who is in the oil business bought is a gas-guzzler.

If heard, this sentence might sound ungrammatical and confusing. However, in written form, although perhaps bad stylistically, the sentence is understandable. Even if the sentence was not decoded correctly the first time, it could be reread.

Writing and speech are related but different systems. Writing represents the words of spoken language, although it does not differentiate the separate morphemes. Syllabic and alphabetic writing represent the sound system of spoken language, although not on a one-sound to one-symbol basis. And punctuation and capitalization mark syntactic structures. However, this is done in ways that often differ from the syntactic structure of the oral utterance. For these reasons what is considered a "good" speaking style and what is considered a "good" writing style are determined by different sets of prescriptive rules.

Most linguists consider writing to be secondary to speech. Historically, speech is much more ancient than writing. Although the date is debatable, humans may have been able to speak for hundreds of thousands of years—and most certainly, the last 40,000. Writing is only about 5100 years old. In the next section, we will turn to a brief overview of the history of writing.

EXERCISE 3 The alphabetic principle and spelling

1. Write a five-sentence passage using the rebus and syllabic system, and then write the same passage alphabetically. Which way is more efficient? Why?

2. The Phoenicians were the first people to make extensive use of the alphabetic principle. They introduced this principle to the Greeks, who developed it further. The Phoenician alphabet lacks symbols for vowels. The Phoenician alphabet has nineteen consonant symbols. The vowel sounds are determined by context. The following English sentences are written without the vowels. Can you figure out what they say?

a. Ths s clssrm.
b. Wnt rlly gd grds? Thn d yr hmwrk.
c. Thy strtd slw, bt pckd p spd.
d. Nglsh pprchs th dl f n grphm fr n phnm wth sch lttrs s f, r, v, nd m.

3. Table 12-3 gave examples of how advertisers have altered traditional spellings of words. Add to these examples from your own observations of this phenomenon.

4. What problems are represented by the following sentences?

a. The school had a great principle.

b. He was arrested for disturbing the piece.

c. The movie cost to dollars.

Hypotheses on what led to true writing systems

As with all aspects of human culture, alphabetic writing represents the result of numerous earlier developments. In this section, we will examine some of the ideas that have been proposed to explain the origin and development of writing.

Nonwritten visual communication

The urge to communicate by means other than speech has been apparent in the archaeological record for thousands of years. In Europe, artists 32,000 years ago produced pictures of women and incomplete animal figures deeply grooved into boulders. Also at about that time, in places such as Grotto Chavet and the Lascaux Caves in France, artists painted beautifully shaded and colored animals, which were often outlined in black (see Figure 12-4). Early paintings were also created in other parts of Europe and in North and South America, Africa, and Australia.

A **descriptive-representative** depiction has a lifelike (emblematic) relationship to what it represents.

Some drawn or painted images, which are meant to communicate, are **descriptive-representative**. They tell stories. Many modern road signs do a similar thing. A sign showing falling rocks tells us of this possible roadway danger (see Figure 12-5, number 1). Most people exposed to Western culture would interpret this sign correctly, regardless of the language they speak. The road sign, as well as many cave paintings, has a direct (iconic) relationship to what is being represented.

Other visual representations do not tell stories. These visual aids are meant to identify or remind the viewer of a specific person, event, song, legend, or trail, or are used to make

FIGURE 12-4 **Cave art from Lascaux, France. Glasshouse Images/Alamy stock photo**

calculations. Such devices are said to be **identifying-mnemonic**. A hand stenciled onto a cave wall may have been a pictographic identifying-mnemonic image that acted as a signature. Robinson Crusoe marking off the passing days with slash marks was using an identifying-mnemonic device to remember the length of his stay on his island.

Identifying-mnemonic representations are visual aids that are used to make calculations or are meant to identify or remind the viewer of a specific person, event, song, legend, or trail.

Many identifying-mnemonic devices are not iconic. For instance, a group of Northeastern Native Americans, the Abenaki, indicate the direction, distance, and anticipated duration of a journey by placing sticks in the ground in the manner shown in Figure 12-6.[2]

The Inca of Peru also used mnemonic devices, the most precise of which was the *quipu*, an assemblage of knotted colored cords. Although the exact nature and use of *quipus* is debated, they were most likely used for calculating and record keeping (see Figure 12-7). Other peoples have used pebbles or other objects to make calculations.

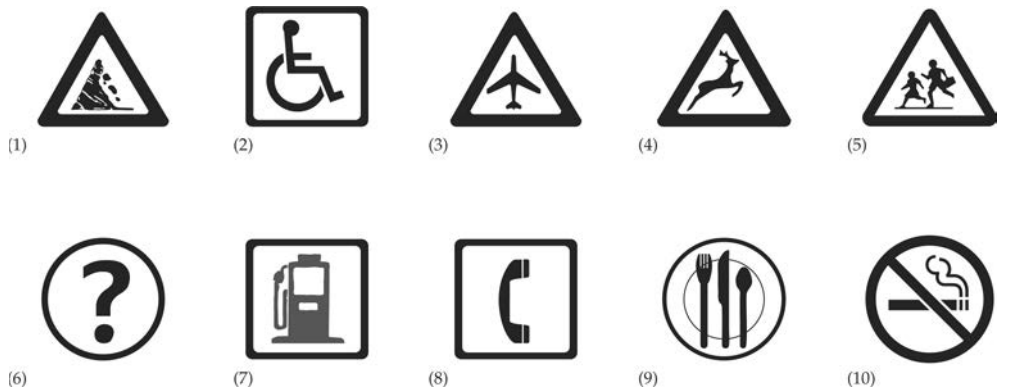


FIGURE 12-5 Modern pictograms

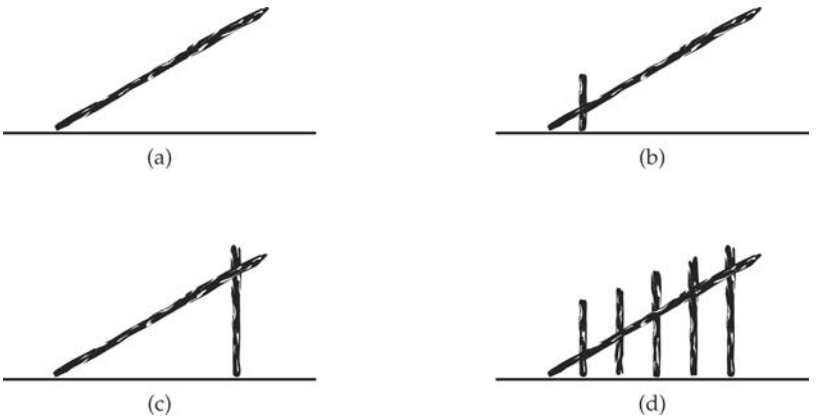


FIGURE 12-6 Abenaki sticks

a. This stick indicates the direction of travel to reach some place, such as a camp.
b. The short upright stick indicates that the destination is a short distance away.
c. The longer upright stick indicates a farther distance.
d. The number of upright sticks indicates the number of days to a particular location.

[2] For further information see Daniel Beard, "Trail Signs of Direction," www.inquiry.net/outdoor/skills/beard/signs_direction.htm.

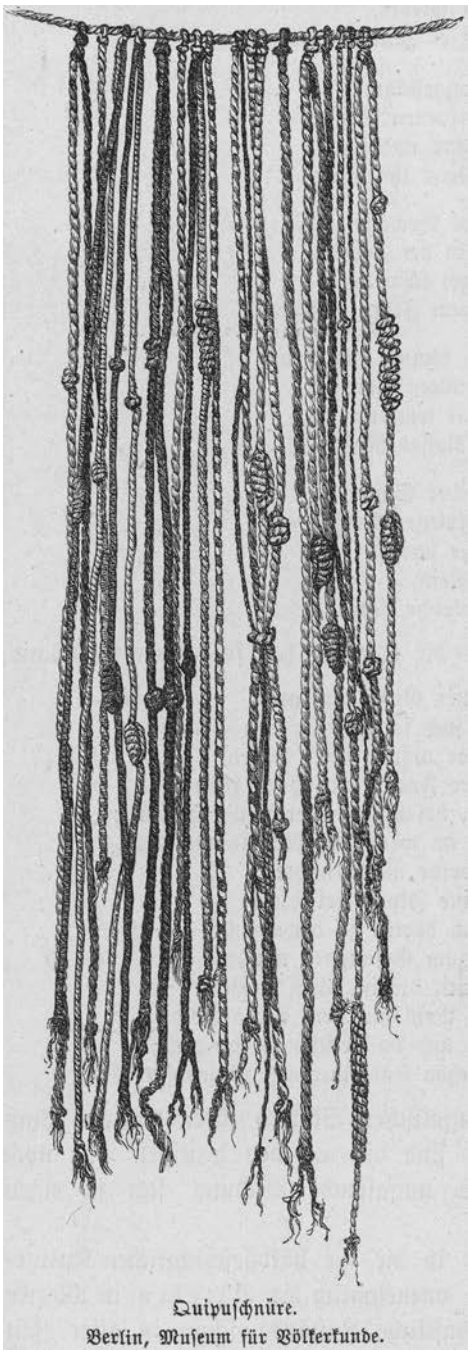


FIGURE 12-7 Peruvian *quipu* from about 1430–1532 CE. Chronicle/Alamy stock photo

None of these descriptive-representative or identifying-mnemonic methods is in writing. That is, the picture stories, sticks, cords, or pebbles do not represent linguistic structures (sounds or morphemes). They are simply visual devices used to inform or to make calculations.

Two views on the origin and development of writing

Did any of these methods or similar visual representations directly lead to writing? Most likely, devices such as the Inca's *quipu* and the Abenaki's sticks are too specialized and removed in form from writing to have been the stimulus for its invention. However, most linguists and historians believe that more general representations in the identifying-mnemonic category led to true

writing. Descriptive representative objects and symbols were most likely too closely tied to the traditions of art to have led to writing.

Many scholars deny a direct link between any of these early visual representations and writing. Instead of a concrete-to-abstract development for writing, they believe that writing had its original roots in already highly abstract symbols. From the time of the earliest cave paintings, people were making dots, lines, and various other abstract marks on or near the paintings. Such marks were also made on bone and other materials, such as clay. Some researchers believe that these abstract marks were the roots of writing and, perhaps, calendrics (the recording of time), and mathematics.[3]

Archaeologist Denise Schmandt-Besserat embraces this concept, and is supported by data from the Near East reaching back at least 9000 years.[4] She examined thousands of small clay spheres, disks, and cones from that period that were inscribed with various abstract marks. Some of them appear to have represented animals and goods (see Figure 12-8). The tokens predate writing by as much as 5000 years, and were most likely used to keep track of products from fields and orchards, as well as livestock, raw materials, and manufactured goods. In other words, they were mnemonic devices.

About 5200 years ago, round "clay envelopes" were invented to enclose the tokens (see Figure 12-9). A person receiving a shipment could break open the envelope and count the

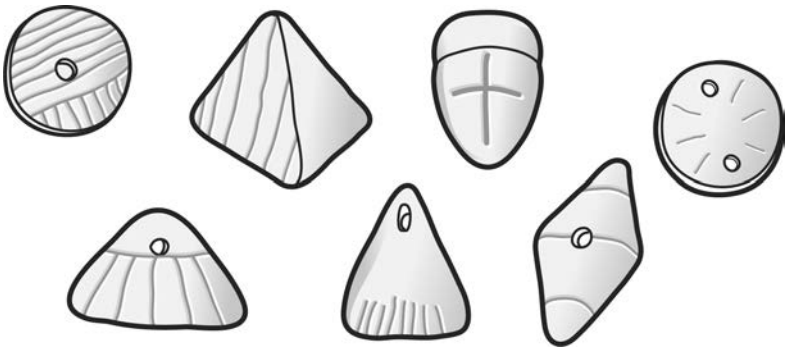


FIGURE 12-8 Clay tokens

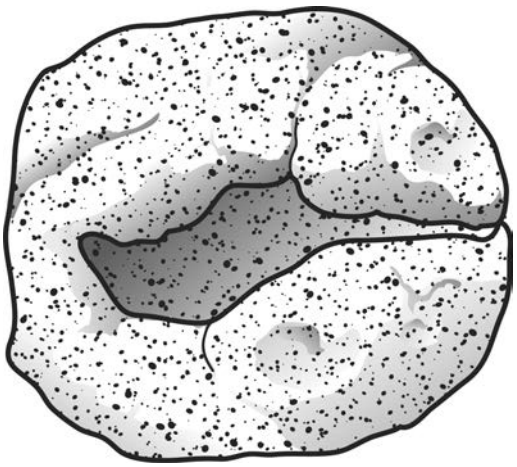


FIGURE 12-9 Clay envelope

[3]Alexander Marshack, "Upper Paleolithic Notation and Symbol," *Science* 178 (November 24, 1972), 817–828; and Marshack, *The Roots of Civilization: The Cognitive Beginnings of Man's First Art, Symbol and Notation* (New York: McGraw-Hill, 1972).

[4]Denise Schmandt-Besserat, *When Writing Came About* (Austin: University of Texas Press, 1996).

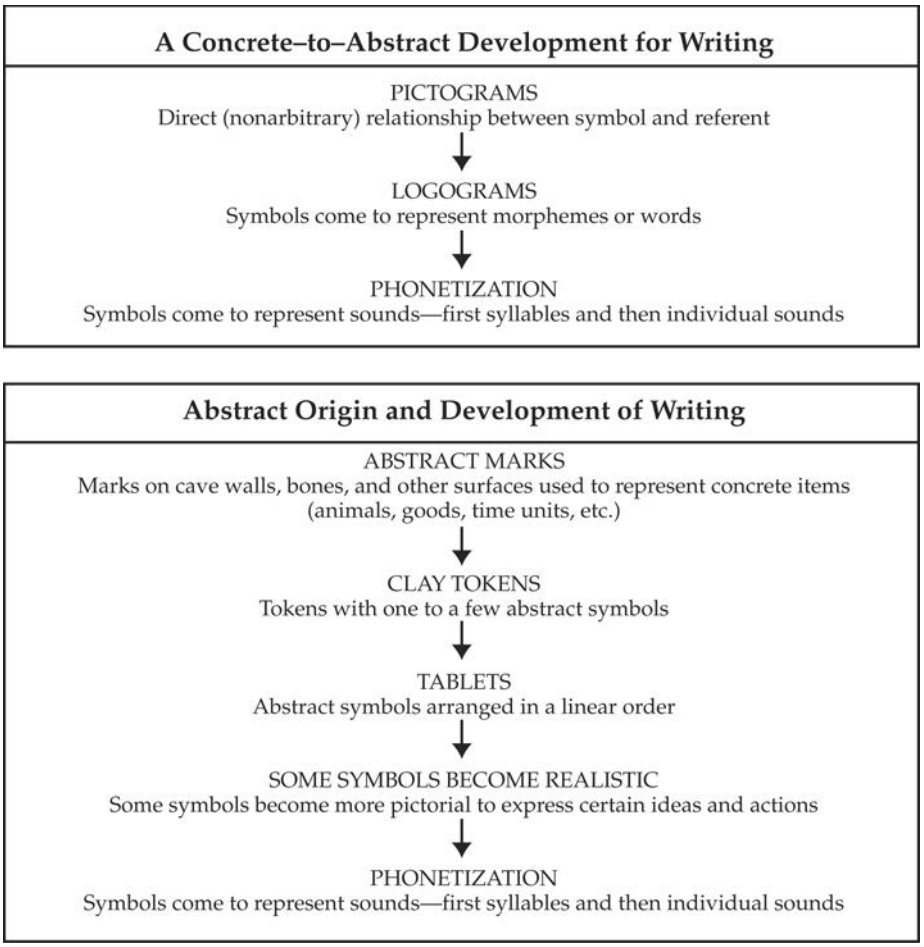


FIGURE 12-10 Two views on the origin and development of writing

enclosed tokens. If there were ten sheep tokens and five cow tokens, then this would be the expected number of animals in the shipment. Subsequently, the tokens were stamped on the outside surface of the envelopes before being enclosed inside. This made it possible to check the contents of the envelopes without breaking them open. This simple change constituted the invention of writing, as signs were substituted for tokens. Ultimately, tablets that carried the abstract impressions replaced the hollow envelope.

More representative symbols, such as those in early Sumerian writing and Egyptian hieroglyphics, came after the general idea of writing had been invented. There is strong evidence for this scenario. The first clay tablets, which were found at the Sumerian city of Uruk and date to about 5100 years ago, are not flat. They are convex, reminiscent of the round clay envelopes. Also, most of the 1500 symbols on the various Uruk tablets are abstract ideograms, not realistic representations (see Figure 12-10).

A brief outline of the history of true writing

Whether the ultimate origin of writing was in realistic pictures and/or abstract symbols, it is an established fact that writing systems were in use in Sumer by 5100 years ago. This earliest form of writing already included syllabic and consonant symbols alongside logograms. From these logophonetic systems, other systems that could convey most or all information by syllabic symbols developed. For instance, beginning in the middle of the second millennium BCE, Semitic peoples such as the Ugaritans, the Phoenicians, and the Hebrews developed Egyptian

logophonetic writing into various syllabic systems. Some linguists collectively refer to these systems as the **Northern Semitic Syllabary**.

The **Northern Semitic Syllabary** is a group of primarily syllabic writing systems developed by Semitic peoples from earlier logophonetic systems.

The Greeks invented the first fully alphabetic system. In fact, the word *alphabet* is derived from the first two letters of the Greek alphabet, *alpha* and *beta*. The Greeks had borrowed and adapted the Phoenician script that was basically syllabic but did allow for symbols to stand for individual consonants. The Phoenician system was not completely alphabetic because vowels were not indicated by their own symbols. The Greeks used some Phoenician consonant symbols to represent vowels and reduced other syllabic symbols to represent Greek consonants. Thus, Greek symbols for the first time represented only single sounds, either a consonant or a vowel, but not a combination of sounds. The Greek alphabet spread widely, and a Western version developed into the form in which this book is written, the Roman alphabet (see Figure 12-11 and the following section on a survey of different types of scripts).

Whether Old World forms of writing were invented just once (monogenesis) or numerous times (polygenesis) is a question to be debated. Some researchers claim independent origin for all eight logosyllabic systems (three of which are included in Figure 12-11). Others make an argument for monogenesis. They see true writing developing somewhere in the Western world, and then **diffusing** (transferring) to other areas through direct or indirect contact. The forms of early writing systems are said to differ greatly because often only the idea of writing diffused, not the actual form of the writing system. This type of diffusion is called **stimulus diffusion**. Pre-Columbian New World scripts were devised independently of Old World writing.

Diffusing (diffusion) is the process whereby a cultural item moves from one geographic area to another.

Stimulus diffusion is the process by which an idea, but not the actual cultural item, spreads from one geographical area to another.

A survey of ancient and modern scripts

Cuneiform writing was made by using a wedge-shaped stylus pressed into soft clay. This type of writing was developed about 5000 years ago and was used by the Sumerians, Babylonians, Assyrians, Urartians (pre-Armenians), Hittites (ancient people of Asia Minor), Elamites (ancient people of Iran), Persians (also from Iran), Syrians, and others.

Many cuneiform symbols developed from the rotation of earlier Sumerian pictograms which were then converted into a series of linear strokes. Cuneiform was written in a horizontal manner. Cuneiform scripts were logosyllabic (see Figure 12-12).

Hieroglyphic means *sacred carving*. This name is derived from the fact that priests used hieroglyphics. Although the word *hieroglyphics* is associated with Egypt, similar sign systems were used elsewhere in the Near East, India, and Mesoamerica. Two simplified versions of Egyptian hieroglyphics developed. The demotic form was used to write rapidly on clay. The hieratic form was used for formal writing (see Figure 12-13). Egyptian hieroglyphics was a basically logosyllabic system, but it had some consonant sound symbols. The Phoenicians developed both the syllabic and alphabetic aspects of Egyptian hieroglyphics, but never took the alphabetic principle to completion. As outlined above, this was eventually done by the Greeks.

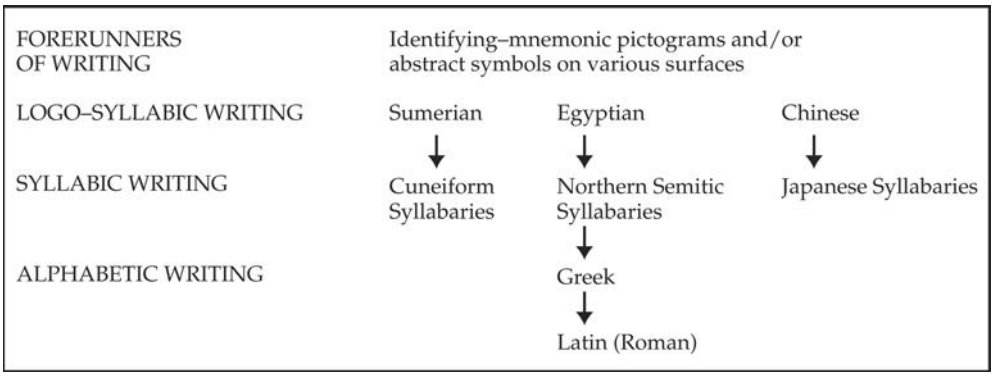


FIGURE 12-11 The relationship between some of the world's ancient and modern writing systems

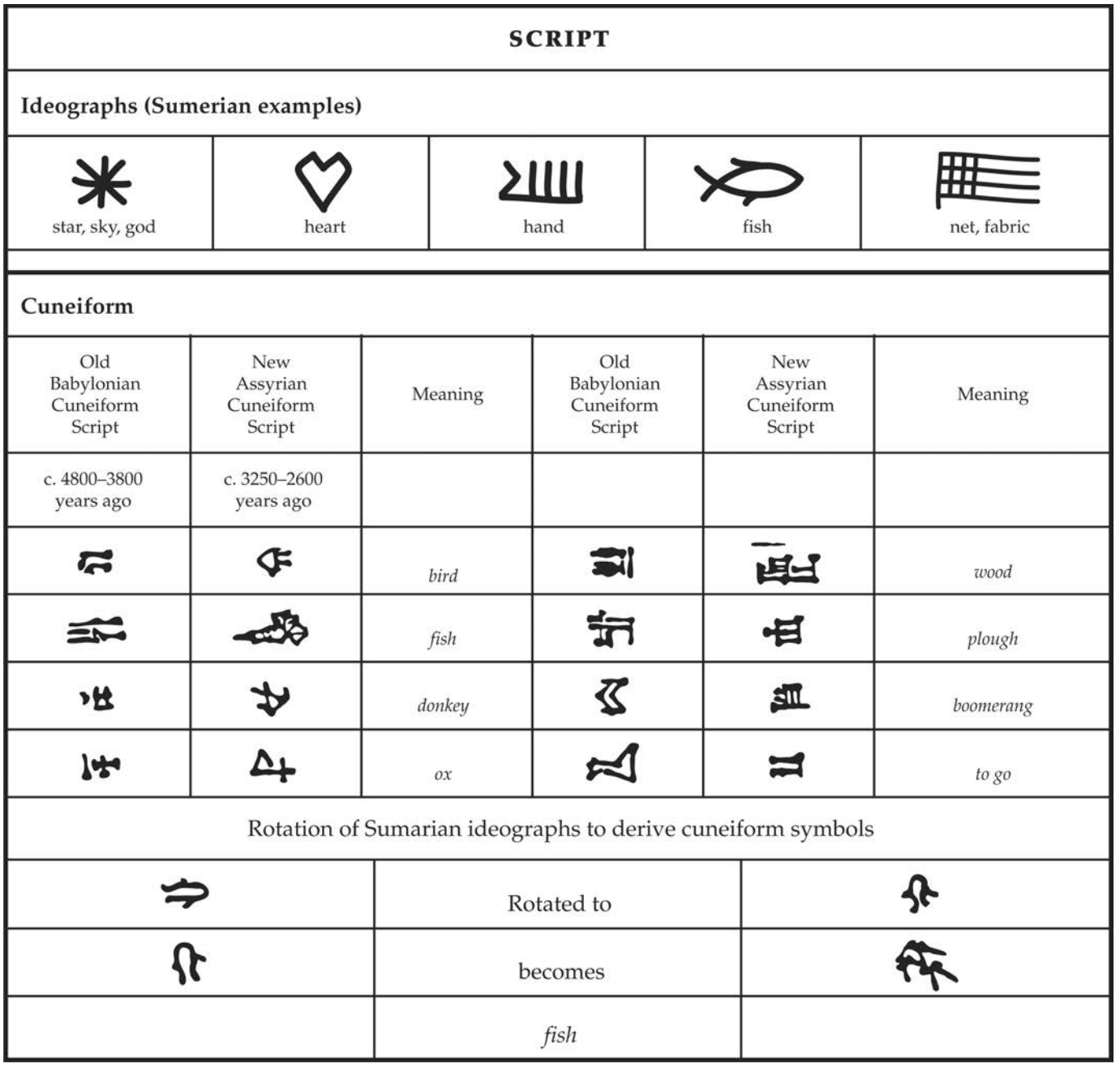


FIGURE 12-12 Sumerian and cuneiform

Chinese characters are used in Chinese, Japanese, and Korean writing. Chinese script has been used continuously, with only minor alterations, for about 4000 years. This makes it the oldest script still in use today. Chinese script, as it is used to represent Chinese languages, constitutes a logosyllabic writing system (see Figure 12-14.)

As outlined earlier in the chapter, Japanese is represented by three writing systems: *rōmaji*, *kana*, and *kanji*. *Rōmaji* uses Roman-type characters and is used for such things as trademarks and some advertising. It is therefore used for the convenience of foreigners. *Kana* employs symbols that are simpler than the traditional Chinese symbols. Two types of kana are currently used: *hiragana* and *katakana* (see Figure 12-15). Hiragana is more curved, while katakana is

Hieroglyphics (Egyptian examples)								
Hieroglyphics					Hieratic			Demotic
								
2900–2800 BCE	2700–2600 BCE	2000–1800 BCE	circa 1500 BCE	500–100 BCE	circa 1900 BCE	circa 1300 BCE	circa 200 BCE	400–100 BCE

FIGURE 12-13 Egyptian hieroglyphics

Examples of Chinese Characters					
人	狗	猫	山	水	大
people	dog	cat	mountain	water	big

FIGURE 12-14 Chinese characters

Examples of Katakana (One Form of Kana) with phonemic values in / /.					
This writing is syllabic. It is used in Japan, and developed from Chinese character writing.					
セ /se/	サ /sa/	ケ /ke/	キ /ki/	へ /he/	ホ /ho/
タ /ta/	ト /to/	ナ /na/	ニ /ni/	マ /ma/	ミ /mi/
ラ /ra/	レ /re/	ロ /ro/	ト /to/	ヤ /ja/	ヨ /jo/

FIGURE 12-15 Katakana

more angular. The symbols of both types of kana are used to represent syllables. The third writing system, *kanji*, is made up of Chinese-type logograms.[5]

[5]For a discussion of the different functions of these writing systems and how they are "mixed" in Japanese writing, see www.valerieyule.com .au/writjap.htm and www.guidetojapanese.org/learn/grammar/writing.

Sequoia. North Wind Picture Archives/Alamy stock photo

Cherokee writing is syllabic. It was invented in about 1821 by Sequoia (1770–1843), a member of the Cherokee Nation who was born in Tennessee. Many of the symbols used in the Cherokee syllabary are derived from Latin characters. This is a good example of stimulus diffusion, the process whereby an idea spreads from one culture to another and then is adapted to the needs and practices of the receiving culture. Stimulus diffusion also may be responsible for the spread of Old World writing systems.

Although some researchers see independent origins for all or most of the seven Old World logosyllabic systems, others see them all developing from Sumerian. This development would have been due, in large part, to stimulus diffusion as opposed to direct borrowing (see Figure 12-16).

The earliest New World writing dates to about 3000 BP. It is Olmec writing from southwestern Mexico. The script is on a slab of stone called the Cascajal Block. It contains 28 symbols. Other New World writing developed among the Maya (southern Mexico to Honduras), Aztec (central Mexico), and the Mixtec (southwestern Mexico). New World writing most likely was invented independently of Old World writing. Although we are calling these systems *writing*, they do not seem to have developed into full logosyllabic systems. None of the New World systems has been fully deciphered (see Figure 12-17).

The Arabic script was developed from the Northern Semitic syllabary about 1600 years ago. It is alphabetic. One feature of Arabic is that it has multiple forms of the same letter. The form of the letter depends on the place that it appears in a word. Figure 12-18 shows just one form of some of the letters of Arabic.[6]

Cyrillic alphabetic script is used in Russia, Serbia, Bulgaria, and elsewhere. It was developed by St. Cyril 1100 years ago and is derived from Greek (see Figure 12-19).

Most Western European languages are currently represented by Roman (Latin) characters, which developed from the Greek through the Phoenician alphabets. The Roman alphabet spread as the Roman Empire expanded (see Figure 12-20).

Examples of Cherokee with phonemic values in / /.

/gwa/	/gwe/	/gwi/	/gwo/	/gwu/	/gw^/	/ta/
/sa/	/se/	/si/	/so/	/su/	/s^/	/ti/

FIGURE 12-16 Cherokee

[6]For a more detailed treatment of Arabic, go to www.ancientscripts .com/arabic.html.

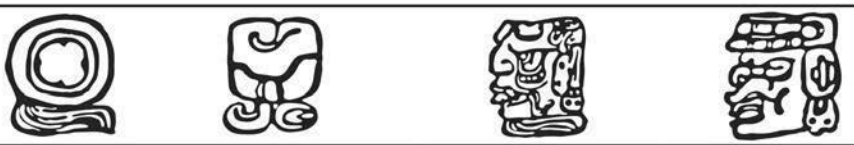
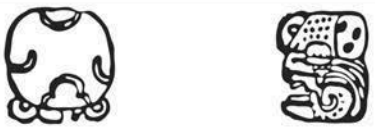
Examples of Hieroglyphics (Mesoamerica) Mayan Calendric Glyphs	
The day	
	
A 20-day period	A 360-day period
	

FIGURE 12-17 Hieroglyphics (Mesoamerica)–Mayan calendric glyphs

Source: Hans Jensen, *Sign, Symbol, and Script* (New York: Putnam, 1969); and Joyce Marcus, "Zapotec Writing," *Scientific American* 242 (February 1980), 50–64.

Examples of Arabic (Modern) with approximate phonemic values in / /.				
ا /a/	ج /g/	ز /z/	ر /r/	ل /l/
ب /b/	د /d/	و /w/	ت /t/	ش /š/

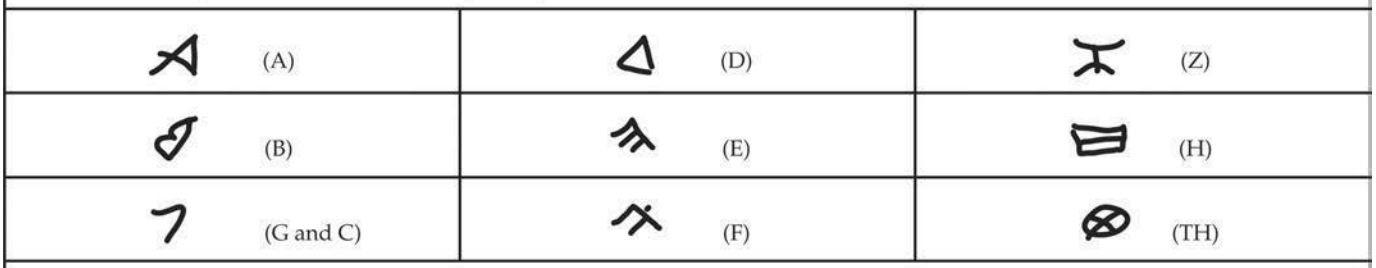
FIGURE 12-18 Modern Arabic

Examples of Cyrillic					
Phonetic value	a	b	v	g	d
Original Cyrillic					
Russian	a	б	В	⊠	д

FIGURE 12-19 Cyrillic

Examples of Greek (Early)

Greek was developed from Phoenician 2900 years ago.



Latin/Roman

A	D	G	J	M	P	S	V	Y
B	E	H	K	N	Q	T	W	Z
C	F	I	L	O	R	U	X	

FIGURE 12-20 **Early Greek and Modern Roman alphabetic characters**

The printing press

The scrolls in the Library of Alexandria, Egypt were made by hand (see Box 12-4). Copies of originals also had to be made by hand. This was a tedious and time-consuming task. The tragic loss of information with the destruction of the ancient library was due in part to the fact that there were no copies of many of the documents stored there. In contrast, approximately 200 million copies of Charles Dickens's *A Tale of Two Cities* have been printed.

The mass production of writing became possible with the invention of the printing press. The first presses did not have movable type. Blocks of wood were hand carved with illustrations and small amounts of carved texts (often captions to the illustrations) and then printed. This was an improvement over making a (limited) number of copies by hand. The blocks, once prepared, could be used to make multiple copies. However, the process of hand carving each page was extremely time-consuming and labor-intensive. The first book made in this way came from China and was called *The Diamond Sutra*. It was produced in 868 CE. It would be nearly 600 years before this block printing process began to be used in Europe. There, block printing was used mostly by and for the church to reproduce religious documents, although the process was also used to make playing cards.

The invention of movable type made printing much faster. As with block printing, it was the Chinese who pioneered this technology. In 1041 CE, they invented movable type that could be set in lines to create text. Chinese type was made of clay and, of course, represented Chinese characters. However, it was the printing press invented by Johannes Gutenberg (c. 1397–1468) in Germany that revolutionized the process of making multiple copies. Unlike the Chinese type, Gutenberg's movable type was made of metal blocks, each with a single letter. The press itself was wood and was fashioned after a wine press. The world's first book printed on the Gutenberg press was, not surprisingly, the Bible. *The Gutenberg Bible*—also known as the *Mainz Bible* (after the town where it was printed) or the *42-Line Bible* (after the number of lines per page)—was completed in 1455. In 1477, William Caxton (1422–1491) produced the first

book using movable type in England. By the end of the 1400s, printing had become established in over 250 cities in Europe.

The spread of the printed word helped fuel Renaissance ideas, and ultimately the political revolutions of the 1700s and the Industrial Revolution of the eighteenth and nineteenth centuries. It made literature and scientific ideas available to a larger number of people than in the past. The availability of scientific information to a relatively large audience helped usher in the scientific revolution of the 1800s. In turn, the scientific revolution made printing faster and more efficient. For instance, in 1814 steam-run presses began to replace hand presses. Later in the 1800s, improvements were made in typesetting.

As more and more people began to read printed material, the collective consciousness of people in developed nations became more worldly and less provincial. Of course, just as the printing press helped spread rational and scientific ideas, it also helped spread irrational and pseudoscientific ideas. As with all technologies, printing presses and computers (see the next section) are ethically and morally neutral, and they can spread inaccurate and purposely untruthful information as easily as they can spread accurate and truthful information.[7]

BOX 12-4

The Library at Alexandria

At first, writing seemed to be mostly for accounting. Much of the first scripts are lists of items such as crops, domestic animals, and finished goods of various types, including weapons. But by 2300 years ago, there were already hundreds of thousands of writings on a vast number of topics. At about this time, Alexander the Great founded the city of Alexandria, Egypt. His successor, Ptolemy I, founded the Museum (Library) of Alexandria in 283 BCE. Alexandria became a cultural, intellectual, political, and economic center of the ancient world. One symbol of this was its library, which at its height had an estimated 400,000 to 700,000 scrolls, including the works of poets and the accumulated knowledge on such topics as philosophy, science, politics, and mathematics. In addition to the scrolls, the museum/library also included a zoo, dissecting facilities, a botanical garden, and even an observatory.

Many great intellectual accomplishments occurred at the Library of Alexandria:

> Euclid wrote his *Elements of Geometry* there. Herophilus identified the brain, rather than the heart, as the center of intelligence. Eratosthenes estimated the Earth's circumference with an error of just 140 kilometers. And Hipparchus calculated the year's length to within 6.5 minutes.[8]

Unfortunately, the library was destroyed along with much of the knowledge it stored. It is a mystery as to how and when the magnificent buildings that housed the collection disappeared. Most historians hypothesize that the library burned, but there is debate about who was responsible or even exactly when this happened. The library was definitely gone by 300 CE. The information lost with the library's destruction may have delayed progress for centuries, especially in the area of science and technology. In October 2002, a new library, named Bibliotheca Alexandria and costing $120 million, was inaugurated. Alexandria is no longer the center of learning for the world, and the high cost of the library was controversial. Many think the money could have been spent more effectively in this now poor nation. However, the motivation to rebuild what was one of the wonders of the ancient world acknowledges the importance of writing to the modern world.

The website for the Bibliotheca Alexandria is www.bibalex.org.

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[7]For an analysis of the influence of movable print on modern society, see the classic work by philosopher Marshall McLuhan (1911–1980), *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: University of Toronto Press, 1962).

[8]A. Abbott, "New Alexandria Library: A Temple of Knowledge," *Nature* 419 (October 10, 2002), 556.

A few words about computers

The ability to speak or to sign is intimately associated with all aspects of human behavior. The much more recent ability to "freeze" messages by writing is a major factor responsible for the development of civilization. Writing allows for the management of centralized government, precise record keeping, and the accumulation, storage, and dissemination of vast amounts of information. When the Library of Alexandria was destroyed, an enormous amount of information was lost (see Box 12-4.) This type of loss became less likely with the development of the printing press, and especially movable type. Today, computers—and in particular the Internet and storage systems such as CDs, DVDs, and flash drives—have all but ensured that important (and not so important) information will be preserved. Information on the Internet is decentralized, and the chance is small that any large amount of information would be totally lost. In a like manner, information can be copied onto CDs, DVDs, and flash drives and stored by numerous people and institutions.

The use of computers makes more efficient much of what has been traditionally handled by writing. The material of millions of written volumes and messages can be accessed via the Internet. Such material, once accessible only to a relatively few specialized persons, is now available to the general population. Any individual who can connect to the Internet can access much of the collective knowledge of human beings. The amount and diversity of information available and the number of people able to make use of computers are increasing rapidly.

In addition to access to information, computers allow for: electronic mail (e-mail); instantaneous linking of business or information systems throughout the world; two-way educational instruction; instantaneous translation of one language into others; and numerous other possibilities, including large online social networks. These networks can be used to find and communicate with virtual "friends," raise money for charities or individuals in need, organize and manage elections, vent frustrations to potentially large audiences, help catch criminals, create study groups, play games, and many other things.

Perhaps future historians will find that there were two great significances of personal computers (including smart phones and related devices). The first might be that computers equalized the worldwide distribution of the knowledge that has accumulated through the centuries by virtue of writing. The second great significance might be that computers and phones with cameras allowed anyone to instantaneously relay events, which then might lead to rapid political, fund-raising, or other activities that require the participation of many people. Politically, these activities might include inciting revolution and reform or spreading an opinion about a candidate for an election.

Of course, as we said with the discussion on the printed word (or for that matter any form of verbal communication), the information that is spread might or might not be accurate or truthful. Computer-aided communication also allows for a rapid charitable response to a disaster or even to the personal needs of an individual. Computer-aided communication also can be used to raise funds quickly for a business venture and for many other things, including calling for flash mobs. The significance of computers will no doubt be broader than this. However, just as writing did not replace speech, computers will most likely not replace writing or speech, although text messaging, instant messaging, and social networking platforms, such as Twitter, have already had effects on writing styles and speech patterns. Human culture is basically additive. Computers provide an additional dimension to the human drive for communication.

Summary

The significance of writing rests on the fact that it does not fade rapidly, as speech does. Writing allows for the persistence of messages and the geometric accumulation of culture. However, writing is secondary to speech because no true writing system exists separately from a "mother" language that is mediated through speech (or signing). Writing is a visual representation of speech and, quite recently, of sign language.

There are three basic types of writing; each shows a different intimacy to language. Logographic writing uses symbols that represent whole words or morphemes. The same logogram,

having the same meaning, could be pronounced entirely differently in different languages or dialects of the same language. The other two writing systems employ symbols that stand for sounds, either syllables or phonemes.

No writing system uses only one type of symbol. However, most modern writing systems are predominantly alphabetic (phonemic). With alphabetic writing, the one phoneme–one grapheme correspondence often is weakened by time. Spelling inconsistencies that result may befuddle some readers and writers. However, most apparent inconsistencies are governed by rules that native readers and writers usually know subconsciously. Some potential spelling problems, such as having different spellings for the same sound (homophones), are actually helpful in providing a logographic mechanism to distinguish meanings. We know that the written form *their* is a possessive by its graphic shape, not by how it is pronounced. This graphic shape distinguishes it from the graphic shapes *there* and *they're*.

The traditional concept of the origin and evolution of writing sees pictures (on cave walls, for instance) evolving into logograms. In this scenario, some of these logograms came to represent syllables by virtue of the rebus principle. At this point we have logosyllabic writing. We call the writing system syllabic at the stage when syllabic symbols can convey all or most written messages. When these syllabic symbols are reduced to represent single consonants and vowels, an alphabetic system has originated. The Greeks innovated the first alphabet that had symbols for every consonant and vowel in their language.

Some researchers believe that writing developed from already abstract symbols, not from pictures. Archaeological data reveal that abstract symbols adorned early cave art as well as smaller objects made of bone and stone. Beginning at about 9000 years ago, we see numerous clay tokens inscribed with such abstract marks. Many of these marks are similar to those found later (at about 5100 years ago) as a part of Sumerian, the first writing system. The first writing was done strictly by hand. Thousands of years after the first writing systems were devised, the printing press was invented. Today, computers aid the production and dissemination of the written word. Anyone with a computer can almost instantaneously retrieve information that originated anywhere in the world and from any time period.

Suggested reading

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Websites

Ancient Scripts: www.ancientscripts.com

Evolution of Alphabets: www.wam.umd.edu/~rfradkin/alphapage.html. This is material from the History of the Alphabets course at the University of Maryland.

Mesoamerican Writing Systems: www.angelfire.com/ca/humanorigins/writing.html#maya. This site provides information on Mayan and other related writing systems.

Omniglot: www.omniglot.com/writing/types.htm. This encyclopedia gives examples of various writing systems.

Review of terms and concepts: writing systems

1. The three basic types of writing systems are _____, _____, and _____.
2. Symbols such as: 3, #, $, and ! are _____ in nature.
3. A picture on the wall of a cave is not writing because it has no units (symbols) that represent _____ _____.
4. Logographic writing systems always include syllabic symbols. It is, therefore, more accurate to label these systems as _____.
5. The most important step in the development of writing was _____.
6. According to the text, the second most important step in the development of writing may have been _____ _____.
7. Employing symbols that once stood for one-syllable words as syllables is called _____.
8. Many fully logosyllabic writing systems developed in the New World. This statement is _____ (true or false).
9. _____ is the most logographic of modern writing systems.
10. Each logogram stands for a _____.
11. A Chinese college student will know about _____ (how many) logograms.
12. The Chinese character system persists because of _____ and _____.
13. Japanese and syllabic writing go together well because Japanese syllables usually take the form of _____.
14. The technical name for a letter of an alphabet is a _____.
15. Alphabetic symbols ideally represent _____.
16. Most alphabetic systems come very close to a one grapheme–one phoneme correspondence. This statement is _____ (true or false).
17. The fact that the one grapheme–one phoneme correspondence is inconsistent is, in part, a factor of _____ _____.
18. Grapheme–phoneme inconsistencies can be quite valuable, as when such inconsistencies _____.
19. The phenomenon whereby a word comes to be pronounced as it is spelled, when it had originally been pronounced differently, is called _____.
20. Drawn or painted images meant to communicate are _____.
21. Visual representations that tell stories are called _____, whereas those that identify or remind the viewer of something are called _____.

22. Most historians who study writing believe that descriptive-representative pictograms led directly to writing. This statement is _____ (true or false).
23. Denise Schmandt-Besserat believes that small objects inscribed with various _____ marks were mnemonic devices that led to true _____.
24. The first true writing dates to about _____ (how many years ago). This is found in _____ (area) and is _____ (type of writing system) in nature.
25. Syllabic writing systems were developed by _____ peoples, and these systems are collectively referred to as the _____.
26. The first fully alphabetic system was invented by the _____.
27. The first European printing press with movable type was invented by _____.
28. The first book printed in Europe with movable type was called the _____. It was printed in _____ (what year).
29. Some of the sociocultural influences of the rapid and broad dissemination of information made possible by the printing press are _____.
30. Five sociocultural functions of computers are:

_____

_____

_____

_____

_____

End-of-chapter exercises

1. The text mentions numerous types of logographic symbols used alongside English alphabetic writing. How many additional logographic symbols can you think of? List them.

_____

_____

_____

2. Phonemically transcribe ten abbreviations. How do these transcriptions show that English maintains syllabic symbolism in some contexts?
   Example: CPR (cardiopulmonary resuscitation) /si+pi+ar/

_____

3. Invent a logographic symbol (such as the bee in Figure 12-1) to stand for a syllable other than /bi/. Then, as exemplified in Figure 12-1, make as many words using that syllable and other syllables (also represented by logograms). How do Figure 12-1 and your work illustrate the rebus principle?

4. What advantages does the alphabetic principle of writing have over logo-syllabic and syllabic writing?

5. The same grapheme may be used to represent different sounds. The example used in the book was that *s* can be used to represent the sound /s/, /z/, and /əz/ as in *mats* /mæts/, *zoos* /zuz/, and *pauses* /pɔzəz/. In this case, all the *s* sounds refer to a specific grammatical distinction, plurality. List two other grammatical distinctions where the same grapheme is used to mark the distinction, but where the grapheme is pronounced differently in different contexts. Explain why this phenomenon occurs.

6. Would it be more efficient to spell *zoos* as *zooz* or even as *zuz*? Explain.

7. What is the difference between homophones, homographs, homonyms, and heteronyms? List five sets of each.

8. Explain the logographic function of homophones.

9. Explain the term *spelling pronunciation*. Can you find examples of spelling pronunciation not used in the book?

10. List as many differences as you can think of in the form, structure, and function of writing as compared to speech.

11. What are the two views of writing origins and development mentioned in the book? Which one sounds more believable to you? Justify your answer.

12. Some people say that the Phoenicians invented the alphabet; we have said it was the Greeks. Why are there two views on this? Go beyond the material in the book to answer this question (see "Suggested reading").

CHAPTER 13

Nonverbal communication: communicating without words

LEARNING OBJECTIVES

- **Compare the differences between verbal and nonverbal communication.**
- **List the ways that humans communicate extensively through the main categories of nonverbal communication discussed in this chapter.**
- **Explain the statement: "People in different cultures display different patterns of nonverbal communication."**
- **Explain why one should be cautious of "how-to" books on nonverbal communication.**
- **Explain the statement: "The study of facial expressions and concepts of physical attractiveness illustrates that human behavior can be influenced by both innate biological factors (nature) and cultural factors (nurture)."**

Human communication is a symphony of continuously altering states. Utterances are rapidly created, fading as quickly as they are produced; body odors change with varying emotional states and with differing levels of stress; communicators shift their postures, wave their arms, cock their heads, and generally move in synchrony to the sounds that they produce. Most likely, you have watched people on television with the sound turned off. Such images graphically illustrate that the entire body, not just the vocal channel, is used in communication.

Fifty years ago, a single chapter might have been sufficient to review what was known of nonverbal communication. Although the Greeks made some comments on nonverbal communication and Charles Darwin published a book on the subject in 1872, the modern study of nonverbal communication is basically a development of the 1950s.[1] In fact, it was not until 1956 that the term *nonverbal communication* was used in the title of a book (*Nonverbal Communication: Notes on the Visual Perception of Human Relations* by Jurgen Ruesch and Weldon Kees). Today, the study of nonverbal communication is a dynamic and expanding field. There is an abundance of articles and papers being published each month in popular magazines and professional journals, as well as a growing number of mass-market and specialized books. There is even a US television program, *Lie to Me*, about the usefulness of the analysis of nonverbal cues in criminal investigation.

What does "nonverbal" mean?

A policeman stops a motorist for allegedly speeding. Taking a firm stance very close to the motorist's car door while maintaining a forbidding gaze, the officer says, "May I see your

[1]Charles Darwin, *The Expression of the Emotions in Man and Animals* (London: John Murray, 1872). This has been reprinted numerous times (and in several languages), most recently in 2016.

license?" Fidgeting through his wallet, brows lowered and drawn together, eyes bulging, nostrils dilated, the motorist responds in a sheepish voice, "What did I do wrong?" Not receiving an immediate answer, the motorist begins nervously patting his leg.

Only some of the messages being conveyed in this interchange depend on words. All of the other messages are conveyed nonverbally. **Nonverbal communication** is any communication that occurs between people, usually within each other's presence, by means other than spoken or written words or the signs (words) of a sign language. The firm stance, stern gaze, and the "invasion" of the motorist's territory may have conveyed the idea of the officer's authority and dominance. The motorist's fidgeting, patting himself, and his facial expression may have delivered the message of his nervousness, restlessness, or anger. Nonverbal behavior is important in establishing, regulating, and maintaining interpersonal relationships. Although there are other forms of nonverbal behavior, we will explore the form and function of only eight types in this chapter. They are kinesic behavior, affect displays, eye movements, physical appearance, touching behavior, paralanguage, proxemics, and the effect of the physical environment on communication.

Nonverbal communication is any communication that occurs between people, usually within each other's presence, by means other than spoken or written words or the signs (words) of a sign language.

Kinesic behavior

As individuals speak, they appear to be leading a band with their arms and hands while performing an intricate dance with their entire body. The study of communicating with body movements or, as it is sometimes called, body language, is **kinesics.**

Kinesics is the formal study of communicating with body movements.

The intricate communicative "dance" of the body is highly patterned. An individual's movements (kinesic behaviors) are often synchronized with the individual's own speech and body, and with the speech and body movements of all interactants. A person may shift posture when changing topics and the listener might imitate this. Heads nod and tilt; eyes widen and squint; and the direction of gaze changes as sentences begin and end, as topics change in difficulty, and in response to the interactants' behavior. A group of people sitting on a bench may all shift their legs at the same time, point at passersby, sometimes describing them with hand and arm gestures, gaze at each other, and change their positions in response to each other's movements. They may occasionally flash hand signs, such as "OK," as the synchrony of body language and speech continues. Let's take a closer look at these kinesic behaviors: emblems, illustrators, regulators, and adaptors.

Emblems

The "OK" sign—thumb and forefinger touching to form an "O" shape (see Figure 13-1)—and the peace or victory sign made by holding your hand up and forming your first and second fingers into a "V" shape are examples of **emblems**. Emblems are nonverbal acts that have very specific meanings. Although many emblems are produced by the hands, some are produced by the face, such as dropping the jaw and holding the mouth open to indicate

Emblems (speech-independent gestures or **autonomous gestures)** are movements of the hands, arms, face, or other parts of the body that have a very specific meaning and are not as dependent on speech as other kinesic behaviors.

FIGURE 13-1 Emblem
The "OK" emblem is one of many hand emblems that most Americans know.

surprise. Shrugging the shoulders is an emblem to indicate you don't know the answer to something or don't want to talk about it. Because they are least dependent on speech compared to other nonverbal behaviors, emblems are also called **speech-independent gestures** or **autonomous gestures**.

The number and types of emblems differ from culture to culture. Americans employ fewer than 100 emblems, while Israeli students use more than 250.[2] In American culture, the head is nodded forward, or forward and backward, in an emblematic expression of assent. In other cultures, assent is expressed quite differently:

> A Bengali servant in Calcutta rocks his head rapidly from shoulder to shoulder, usually four times, in assent; in Delhi, a Moslem boy throws his head diagonally backward with a slight turning of the neck for the same purpose; and the Kandyan Singhalese bends the head diagonally forward to the right with an incredibly graceful turning of the chin, often accompanying this with a cross-legged curtsy, arms partly crossed, palms upward.[3]

On the other hand, quite different cultures might use some of the same emblems, as Robert L. Saitz and Edward J. Cervenka found in a comparison of Colombian and American cultures. They discovered, for instance, that both of these cultures used head nods to indicate agreement, fist shaking for anger, hand waving for *good-bye*, and the thumbs-down gesture to display disapproval.[4]

Illustrators

Illustrators are nonverbal behaviors that accompany speech and serve to clarify or emphasize what is being said.

Speech-related gestures (also called **co-speech gestures**) are kinesic behaviors that coordinate with and accompany speech. Speech-related gestures include illustrators and regulators.

Illustrators are nonverbal behaviors that accompany speech and serve to clarify or emphasize what is being said. Illustrators, along with regulators, are sometimes classified together as **speech-related gestures** (also call **co-speech gestures**). Examples of illustrators would be:

- pointing at an object to indicate its location;
- moving your arm and hand at a specific rhythm to illustrate the pace of an event;
- moving your finger in the air to show the spatial relationship of one thing to another;
- using a quick downward movement of the fist to emphasize a point;
- using your hand to show the relative size of the space of something, such as illustrating with your hands that your room is larger than your sister's;
- making "out of breath movements" with the face and body to emphasize that a physical activity you are talking about is strenuous.

Regulators

The director of a television show, who is standing out of the range of the camera, will be producing a series of hand signals and body movements to let the people on camera know whether they should speed up their conversation, continue to talk at the same rate, slow down, or break for a commercial. In everyday conversation, we also must know when to keep on talking, when to allow someone else to begin to talk, when to repeat or elaborate, and when to say good-bye. The role of the television director is replaced in everyday conversation by certain nonverbal habits. These habits, which direct the back-and-forth nature of speaking and listening, are called **regulators.**

Regulators are kinesic behaviors that shape or influence turn-taking in speech and listening.

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[2]Mark L. Knapp, Judith A. Hall, and Terrence G. Horgan, *Nonverbal Communication in Human Interaction*, 8th ed. (Belmont, CA: Wadsworth/Cengage, 2014), 208.

[3]W. Labarre, "The Cultural Basis of Emotion and Gesture," *Journal of Personality* 16 (September 1947), 50–51. You can also see this gesture used for comic effect in *Dum Laga Ke Haisha (Heave, Ho Carry That Load)*, Yash Raj Films, February 2015, an Indian comedy available on Netflix.

[4]R.L. Saitz and E.J. Cervenka, *Handbook of Gestures: Colombia and the United States* (The Hague: Mouton, 1973).

A person may be talking with uncertainty in his or her voice because the speaker is unsure of whether the listener understands what is being said. The listener, detecting this, might make a movement with a hand indicating that the speaker should continue. In another moment, the listener might start making rapid and repeated head nods, gaze away from the speaker, or use a combination of both of these behaviors. This may indicate that it is time for the speaker to give up his or her turn at talking. Hand movements, direction or gaze, and head nodding are only a few of the nonverbal means of regulating conversations. In other words, regulation of an interaction can involve many nonverbal types of behavior produced simultaneously or sequentially.

Adaptors

Picking at oneself, scratching, holding your own arm, restless movements of the hands and feet, and the tapping of a pencil on a table are all examples of **adaptors**. Adaptors are nonverbal acts that are not intended to communicate, yet the viewer of such acts might make certain judgments about the person who is displaying them. Adaptors are movements that function to satisfy personal needs.[5]

Adaptors are kinesic behaviors that satisfy personal needs, such as nervousness, and are not meant to communicate.

Adaptors are thought to develop in childhood as a physio-psychological means of coping. Some of these movements increase with increased anxiety. Others are thought to be partial survivals of other behaviors, which are believed to have been a part of our evolutionary past. For example, psychologist Paul Ekman (a pioneer in nonverbal studies of facial expressions) sees restless movements of the hands and feet as perhaps being a throwback to flight reactions. Many animals that retreat when another animal approaches too closely are displaying flight behavior.

Affect displays

The word *affect* means emotion. Artists, especially cartoonists and illustrators, can create with a few strokes of the brush or pencil a representation of a human figure that displays a feeling of an affect state (see Figure 13-2). A figure drawn with the head down, hands clasped and arms extended down to the midline of the body, and feet turned in toward each other might be seen as portraying shyness. A tensed body with hands in a fist might signify anger and a readiness to fight. Of course, the artist takes this imagery from real life. Various configurations of the body, in a standardized way, indicate the emotional state of the person displaying them. Movements of the body that tell us about the emotional state a person is experiencing or faking are called **affect displays**.

Affect displays are kinesic behaviors that communicate the real or faked emotional state of the communicator.

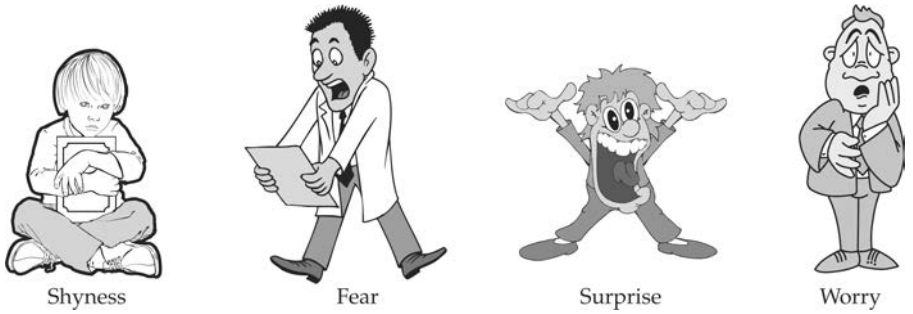

FIGURE 13-2 Affect displays as depicted by a cartoonist

[5]Knapp et al., *Nonverbal Communication in Human Interaction*, 12–13.

FIGURE 13-3 Facial expressions as illustrated by a cartoonist

Although the entire body or various parts of it can be used to display emotion, the face is the primary site for conveying emotional states. The face is perhaps the area of the body most able to make rapid alternations in states. Thousands of combinations of facial muscle movements have been identified to date (see Figure 13-3).[6]

Are facial expressions universally understood? In 1973, Paul Ekman published an article attesting to rather high cross-cultural accuracy in judging the emotions of happiness, fear, anger, surprise, sadness, and disgust/contempt in five literate cultures. Because these cultures were all exposed to a similar body of mass media, it could be argued that this would affect the results. However, Ekman also found a high degree of accuracy in judging emotions in a group of people from New Guinea who were told stories and then asked to choose a photo showing the emotion described in the story.[7]

Does this mean that the ability to understand facial displays and other nonverbal methods of communication is innate? There is currently little evidence of universally understood nonverbal acts other than those created by the face. However, at least four separate lines of evidence seem to lend validity to the idea that there is a genetic (innate) component to the understanding of at least the six primary emotions mentioned in the previous paragraph, as they are expressed in the face.

The first line of evidence is the cross-cultural studies by Ekman. A second line of evidence comes from the study of blind children. Although their expressions can have several differences, generally speaking, children who are congenitally blind produce spontaneous facial expressions that are not significantly different from those of seeing children.[8] Because these children could not have learned the expressions from observation, it is assumed from these studies that facial expressions have a genetic component.

The third line of evidence comes from studies of nonhuman primates. Most visitors to the zoo probably have noticed and commented on the parallels to human behavior that the apes and monkeys often display. These parallels in many cases do not seem to be accidental,

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[6]Paul Ekman, "Methods of Measuring Facial Action," in K. R. Scherer and P. Ekman, eds., *Handbook of Methods in Nonverbal Research* (Cambridge: Cambridge University Press, 1982), 45–90.

[7]Paul Ekman, "Cross-Cultural Studies of Facial Expression," in P. Ekman, ed., *Darwin and Facial Expression: A Century of Research in Review* (New York: Academic Press, 1973), Chapter 4.

[8]I. Eibl-Eibesfeldt, *Ethology: The Biology Of Behavior* (trans. E. Klinghammer), 2nd ed. (New York: Holt, Rinehart and Winston, 1975), 450–454.

but rather the result of similar evolutionary backgrounds.[9] The display of certain emotions in humans and nonhuman primates is very similar, and the displays are often evoked for similar reasons; for example, aggression, affection, play, and fear. A fourth line of evidence comes from brain-imaging studies, which show that the emotions that lead to various facial expressions are processed in the same areas of the brain for most people, and that different emotions are processed in different areas of the brain.[10]

Facial expressions that seem to have a dictionary definition, in the sense that their meaning can be easily "read," are sometimes called **facial emblems.** Facial emblems, like nonfacial emblems, are generally speech-independent gestures. They do not have to accompany speech to be understood.

A **facial emblem** is a kinesic behavior that usually has a very specific meaning, such as a smile meaning happiness; it does not have to accompany speech to be understood.

Although the six primary facial expressions are universally understood, there is cultural variation in how and when certain facial expressions, such as a smile, are used. North American schoolchildren smile in their annual school photographs, but Russian schoolchildren pose with a serious face for this occasion. Balinese laugh and smile at the funerals of their close relatives, because crying would show weakness and invite the evil spirits that caused the death to do further damage. Perhaps one reason that some non-Parisians consider Parisians to be unfriendly is that many Parisians do not smile at strangers when they accidentally make eye contact with them in public as people in many other cultures do.

Eye movements

One of the most expressive parts of the face is the eyes. Obviously, one of the things we do with the eyes when communicating with others is look at those people and at things in the environment. The term **gaze** refers to looking behavior, and the term **mutual gaze** is used when people are looking at each other. On the basis of numerous studies, Knapp and colleagues list five functions of gazing: regulating the flow of communication, monitoring feedback, reflecting cognitive activity, expressing emotions, and communicating the nature of the interpersonal relationship.[11]

To **gaze** is to look.

A **mutual gaze** occurs when people are looking at each other.

Gazing regulates communication in a number of ways. Gazing at a person in a certain way says "I am ready to communicate," or gazing away might indicate that you no longer want to communicate. In addition to opening up or closing down a channel of communication, gazing is one way that turn-taking is controlled. We have already talked about kinesic regulators; gazing also helps to regulate interaction. A pattern of gazing and gazing away, as well as the length of a gaze, gives subconscious cues to the interactants about when it is time to start or stop talking.

Gazing patterns also act as feedback. If a person is barely looking at you while you are talking to them, an American usually takes this as a sign of inattention and disinterest. Of course, this is not always true. People with certain emotional or psychological conditions might find it hard to make eye contact but may still be listening to what another person is saying. Also, people in different cultures have different attitudes toward gazing. Bosnian Muslims and some traditional Vietnamese have been taught from childhood not to look directly at people of the opposite sex and at elderly people.[12] Many Latin American and Asian children are taught not to look directly at people in authority positions.

Because gaze patterns are culturally relative, incorrect conclusions are often made. Teachers might think that children who do not look at them are not interested in what they are saying. Conversely, a child who is talking without gazing at a teacher might be thought to be

[9]S. Chevalier-Skolnikoff, "Facial Expressions of Emotion in Nonhuman Primates," in Ekman, *Darwin and Facial Expression*, Chapter 2.

[10]M. L. Philips et al., "A Specific Neural Substrate for Perceiving Facial Expressions of Disgust," *Nature* 389 (1997), 495–498.

[11]Knapp et al., *Nonverbal Communication in Human Interaction*, 298.

[12]G. A. Galanti, *Caring for Patients from Different Cultures*, 2nd ed. (Philadelphia: University of Pennsylvania Press, 1997), 26.

BOX 13-1

The eyes: pupil dilation and constriction

In the late 1950s, psychologist Eckhard Hess (1916–1986) began to study the communication effects of pupil movement in the eyes. It is common knowledge that pupils dilate in low light and constrict in high light. Hess and his colleagues conducted experiments in which pupils also dilated when a person viewed something that was pleasing or emotionally satisfying, and constricted when they saw something that was ugly or emotionally unpleasant. For instance, he found that women's eyes dilated the most when they saw a picture of a baby, a woman with a baby, or a muscular man. Men's eyes dilated the most when they saw a picture of a naked woman. In another experiment, Hess found that if he altered the pupil size of a woman in a photograph and then showed the picture to men, the men would react differently to the same woman with different-sized pupils. The men's pupils dilated, on average, twice the size while looking at the picture of the woman with the large pupils compared to the picture of the woman with small pupils.

For some time after Hess's research was first published, criminologists and advertisers became very interested in it. Criminologists thought that they could detect whether someone was lying from filming or taping the person's eyes when the person was being questioned. Advertisers thought that airbrushing larger pupils on models in print ads would make people more interested in the product being sold. However, numerous studies done since Hess's original work tend not to support this idea. Many flaws have been detected in how he conducted the research. However, more recent research does indicate that the study of pupillary dilation might aid in diagnosing certain neurological illnesses, indicate whether a person is lying about not remembering something, and indicate whether or not they have reached a decision.

Source: Mark L. Knapp, Judith A. Hall, and Terrence G. Horgan, *Nonverbal Communication in Human Interaction*, 8th ed. (Boston, MA: Wadsworth, 2014), 318–321.

dishonest. However, these might be patterns based on cultural values that require a person not to look directly at someone in power. Teachers, health workers, international travelers, employers of foreign workers, and other people who come into contact with people from cultures other than their own should be aware of differences in gazing patterns and other elements of nonverbal communication.

Gaze patterns change, depending on whether a person is talking about factual things or reflecting on an abstract or complex concept. If the cognitive activity is difficult, people who normally would be occasionally gazing at the speaker might totally avert the gaze while thinking, and might even close their eyes.

The eyes are the most expressive part of the face showing emotions. Each of the six basic emotions discussed in the section on facial expressions has its own universally produced and recognized eye configuration. For instance, fearful eyes are ones in which the brows are raised and drawn together. Raising the upper eyelid exposes the white of the eyes around the entire iris. The lower eyelid is drawn up.

Gazing and mutual gazing also are shaped by the nature of the relationship between people. Unless our culture has socialized us otherwise, we tend to look at things and people who are more interesting to us. People often stare at celebrities. We often stare at people we either like or dislike, but gaze less at people that we don't have strong opinions about or interest in (see Box 13-1). And of course, the mutual gaze of lovers has been celebrated in song and drama.

Physical appearance

Although it might be unlikely to observe the following contrast, a person might react very differently to a woman wearing a burka (a type of clothing worn by some Muslim women that covers them from head to toe) or the same woman wearing a scanty bathing suit. Physical

appearance is a powerful form of communication that influences mate selection, job potential, social and professional status, the ability to persuade others, and virtually all other human interactions. The perception of one's own physical appearance affects self-esteem, which in turn affects the way one interacts with others.

People's physical appearance is dependent on how they dress, what types of body adornments they may have (tattoos, body piercing, jewelry, scars, and so on), and physical characteristics such as height, weight, and attractiveness. Dress and body adornment usually follow cultural conventions. These conventions can communicate such things as whether individuals are married or not; initiated into manhood or womanhood or not; the clan, club, or gang they are a member of; the subgroup of the society they are a part of; the social status they hold, and other sociocultural facts.

In Western societies, the dress of certain professions is a powerful communicator. People react differently to a person dressed in a police officer's clothes than to a person dressed as a nurse or priest. A person interviewing for a job at a business firm who dresses in old wrinkled clothes and sandals might convey to the interviewer a message of carelessness or of low social status. To the Old Order Amish of Pennsylvania, fancy clothes signify vanity. Amish culture puts a negative value on vanity, and Amish clothes symbolize this concept. The women wear only solid-color clothes in public, and the style does not change from generation to generation. The men wear dark-colored suits that are similar to the dress of their ancestors over 300 years ago. To the Amish, the "fashionlessness" of their clothes signifies their humility and their desire to be separate from the rest of the world.

Body adornment and decoration can communicate many different messages. A king's crown or the eagle-feathered headdress worn by a Great Plains Native American chief signifies high status. Scars on the back of young men of the Kpelle culture of Liberia indicate that they are no longer children, but adults. One function of body painting among certain groups in Morocco is to protect the wearer from evil. For a Sudanese woman, her body paint expresses her love for her husband. Among the Hopi, a Native American group of the American Southwest, a girl's hair worn tied up into "squash blossoms" indicates that she is unmarried. Among the Tlingit of southeastern Alaska, a man could raise the social status of his sister's children and his grandchildren by hosting a communal feast called a potlatch. With each potlatch, the children's ears would be pierced. More piercing bestows a higher status on the child. Of course, in North America and some parts of Europe, a ring on the fourth finger of the left hand indicates an adult's status as a married person. In other parts of Europe, the wedding ring is worn on the fourth finger of the right hand.

Concepts of attractiveness also have meaning. What is considered attractive varies greatly from culture to culture. In many non-Western societies, especially in those where food is scarce, large women are considered more attractive than thinner women. In fact, in many societies, large size is associated with high fertility, prosperity, and wisdom. In the past, among the Nuer of western Africa, girls would be force-fed to make them heavier. Heavier girls would marry high-status men.

In modern American society, there is usually a reverse relationship between heaviness and social status. The heavier a person, the harder it is to obtain high social status.[13] Also, in the United States, heaviness in both men and women is often associated with laziness, stupidity, meanness, and other negative traits. In American society, a thinner person is more likely to marry earlier, compete more effectively for a job, or even be elected to a political position than someone who is "overweight." The concept that thinness is attractive is spread through the culture by the mass media and the weight-loss industry.

The meaning of a person's weight is relative to the specific culture. However, some factors related to physical attractiveness seem to have a strong genetic and evolutionary element. For

[13]David M. Buss, *The Evolution of Desire: Strategies of Human Mating* (New York: Basic Books, 1994), 56.

instance, such features as full lips, unblemished and smooth skin, and lustrous hair have been positively correlated to general health, and more specifically to fertility. Two other factors that are important in guiding concepts of physical attractiveness are the waist-to-hip ratio in women and body symmetry in both genders.

The waist-to-hip ratio is the circumference of the waist divided by the circumference of the hips. A healthy premenopausal woman has a ratio between .67 and .80. The average range for the ratio in men is about .85 to .95. Numerous studies have indicated that women who fall into the normal range are generally physically healthier and have greater fertility than those who fall outside of it.[14] Researchers have also found that men in a wide variety of cultures judge women within the normal waist-to-hip ratio range as more attractive, and these women are chosen as mates more frequently and earlier in life; therefore, they have more children. In other words, beauty as judged by an ideal waist-to-hip ratio is actually an innate signal of health and fertility.[15] As such, it is selected for, and other waist-to-hip ratios outside of the ideal are selected against.[16]

Body symmetry also seems to be a universal factor in judging a person's degree of physical attractiveness. A person with a more bilaterally symmetrical face is usually perceived as more attractive than a person who is more asymmetrical. Because of developmental differences, identical twins often show differences in facial symmetry. In one study, pictures of identical twins were shown to people who then judged their attractiveness. The twin with the more bilaterally symmetrical face was consistently judged to be more attractive.[17] As with waist-to-hip ratios, bilateral symmetry is related to general health and fertility.

The concept of physical attractiveness is a good topic to illustrate the relationship between nature and nurture. Many of the characteristics that people consider beautiful are determined by culturally specific traditions (nurture). However, several characteristics, such as waist-to-hip ratio and facial symmetry, are the result of biological evolution (nature) and signal such things as health and fertility.

Touching (tactile) behavior

> The skin, like a cloak, covers us all over, the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient of protectors.[18]

The skin is the largest and perhaps the most obvious organ of the body. One person touching another person's skin or clothes can have either a positive or negative effect. The study of touching behavior is called **haptics**. Haptic research shows that this type of communication is much more important to humans than was previously thought. Humans are **mammals**—that is, they are animals that maintain a constant body temperature and have mammary glands, hair, four-chambered hearts, and other distinguishing features. Mammals, unlike many other animals, do a considerable amount of touching. Mammalian females nurse their young, and many clean their infants by licking or using their teeth and hands.

Haptics is the study of touching behavior.

Mammals are a class of animals in the subphylum of vertebrates. Humans are mammals, along with chimpanzees, baboons, dogs, cats, and about 4000 other species.

Primates are an order in the class of mammals that includes humans, apes, monkeys, tarsiers, and prosimians.

Humans, as well as apes, monkeys, tarsiers, and prosimians, are mammals in the order of **primates**. Almost all primates spend long hours touching each other. This is especially accomplished by grooming, the activity of going through the fur or hair with the hands or mouth to

[14]Adrian Furnham, Melanie Dias, and Alastair McClelland, "The Role of Body Weight, Waist-to-Hip Ratio, and Breast Size in Judgments of Female Attractiveness," *Sex Roles: A Journal of Research* (August 1998), 311–326.

[15]Devendra Singh, "Female Mate Value at a Glance: Relationship of Waist-to-Hip Ratio to Health, Fecundity and Attractiveness," *Neuroendocrinology Letters* 23, supplement 4 (December 2002), 81–91.

[16]For a more technical discussion of this idea, consult the sources in footnotes 14 and 15.

[17]L. Mealey, R. Bridgstock, and G. C. Townsend, "Symmetry and Perceived Facial Attractiveness: A Monozygotic Co-Twin Comparison," *Journal of Personality and Social Psychology* 76 (January 1999), 151–158.

[18]Ashley Montagu, *Touching: The Human Significance of the Skin*, 3rd ed. (New York: Columbia University Press, 1986), 1.

FIGURE 13-4 Baboons (*Papio cynocephalus*) grooming. Nicola Rodgers/Alamy stock photo

remove insects, dirt, twigs, dead skin, and so on. Although most nonhuman primates spend more time grooming than do humans, we also spend a considerable amount of time combing, styling, and cutting our hair, or having a relative, friend, or specialist do it. People living in certain environments, such as the tropics, have to spend long periods of time removing lice and other insects from each other. Grooming serves not only to remove materials from the fur or hair, but also as a means of communicating reassurance and affection. Among nonhuman primates, grooming also figures in such things as dominance hierarchies, a system of social ranking in an animal group (see Figure 13-4).

Anthropologist Ashley Montagu (1905–1999) saw tactile communication as essential to the normal development of the individual. He outlined the evolution of grooming: from licking, to using the specially adapted teeth (dental comb) found in some prosimians, to the use of the fingers of monkeys and apes (although they also use their mouths), to hand stroking or caressing in humans. He concluded that:

> handstroking is to the young of the human species virtually as important a form of experience as licking is to the young of other mammals . . . it would seem evident that one of the elements in the genesis of the ability to love is "licking" or its equivalent in other forms of pleasurable tactile stimulation.[19]

The amount of touching varies greatly from culture to culture. A couple spending an hour in a Puerto Rican café may touch each other one hundred eighty times. In Paris, the number of contacts may be about one hundred ten per hour, while in Gainesville, Florida, they may possibly be as low as two per hour and in London there may be no contact at all.[20]

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[19]Montagu, *Touching*, 35–36.

[20]S. M. Jourard, "An Exploratory Study of Body-Accessibility," *British Journal of Social and Clinical Psychology* 5 (1966), 221–231. Also see D. C. Barnlund, "Communicative Styles in Two Cultures: Japan and the United States," in A. Kendon, R. M. Harris, and Mary Ritchie Key, eds., *Organization of Behavior in Face-to-Face Interaction* (The Hague: Mouton, 1975), 427–456.

Paralanguage

Paralanguage is the system of nonverbal but vocal cues that accompany or replace language.

Sometimes it is not what we say (the content), but how we say it, that is important. Some messages which do not include words at all convey large amounts of information, as when we laugh or cry. **Paralanguage** is the system of nonverbal but vocal cues that accompany or replace language. Paralinguistic features include such things as falsetto, overloud speaking, nasality, breathiness, creakiness, giggling, and whistling (see Box 13-2). Such factors are important in all vocal communication, even in a courtroom. A witness's tone of voice, the length of an answer, the tempo of speech, and other paralinguistic features affect the jurors' perception of the witness's sincerity.[21]

Paralanguage and stereotyping

Just as we form stereotypes of individuals and groups on the basis of such things as body build, skin color, and type of hair, we also form vocal stereotypes. For instance, Americans often stereotype a female who speaks in a breathy way as effervescent in personality but shallow in character. A male with this same quality of voice might be judged to be younger than he really is. A high-pitched male voice is often associated with feminine characteristics, but in the female, it is taken to indicate a dynamically extroverted personality.[22] Although the accuracy of these

BOX 13-2

Whistle speech: is it verbal or nonverbal communication?

English speakers use specific whistled tones, like the wolf-whistle, as a kind of audio emblem. But in tonal languages, where the meaning of the word can be expressed by the pitch and tonal contour of the word, whistles can substitute for words (see Chapter 2, "Differences in pitch"). Is this whistle speech an elaborate system of audio emblems? Or is it a language with a slightly different delivery system—no consonants and vowels, only tones?

The Mazatec Native American people of Mexico and other Mesoamerican native groups use whistle speech to communicate from one mountainside to another, or to communicate without interrupting a spoken conversation. While it is understood by everyone in the community, it is most commonly used by young men who learn to whistle as they learn to speak. The whistles imitate the tone of the words and intonational curve of the sentence; but since the vowels and consonants are missing, the interpretation is highly dependent on context. However, anthropologist George Cowan (1916–2017) observed an entire business transaction completed with whistles from a man standing in front of his hut to a man on the trail below. He also documented exact translations of whistled speech that were verified by several different informants. A similar system is used in Africa when native peoples communicate with drums from one village to another.

Listen to Mazatec whistle speech in the following videos. Do you think it is verbal or nonverbal communication?

www.youtube.com/watch?v=quZYEXDNaKo

www.youtube.com/watch?v=m5t0XErwaMc

Source: George M. Cowan, "Mazateco Whistle Speech," in Dell Hymes, ed., *Language in Culture and Society: A Reader in Linguistics and Anthropology* (New York: Harper & Row, 1964), 305.

[21]William M. O'Barr and J. M. Conley, "When a Juror Watches a Lawyer," in William Haviland and R. J. Gordon, eds., *Talking About People*, 2nd ed. (Mountain View, CA: Mayfield, 1993), 43–45.

[22]D. W. Addington, "The Relationship of Selected Vocal Characteristics to Personality Perception," *Speech Monographs* 35 (1968), 492–503.

stereotypes is questionable, they do affect the ways in which we perceive other people. Therefore, they influence the way in which we communicate.

In addition to stereotyping people in our own group, we stereotype people from different groups based on vocal cues. For instance, the paralinguistic features of foreign languages contribute to stereotyping those languages and the people who speak them. Some people characterize French as the language of love, whereas other languages might be described as sounding harsh, jumbled, or cold. These factors indicate that paralinguistic features are extremely important in shaping our attitudes about people, as well as in interpreting the information that we receive from utterances. Even when actual words are missing (as in crying) or when we don't understand the language we hear, strong opinions can be formed and emotions aroused by the pitch, tone, nasality, rhythm, pattern of pauses, and other nonverbal vocal cues.

Proxemics

A person walks into a restaurant and looks for a place at the counter. Will this hungry individual simply sit down at the first empty seat? Probably not. On the basis of age, sex, cultural background, and various other factors, this person will find a seat in a place that is psychologically comfortable. The study of the use of space in human interactions is called **proxemics**. In choosing a sitting or standing place, and in how we occupy the space around us, we communicate pleasure or displeasure, fear, apprehension, trust, skepticism, status, leadership, and a wide variety of other states.[23]

Proxemics is the study of the social use of space—the study of the patterns of the use of space to convey messages and how this usage differs from culture to culture.

Just as different individuals use space differently, the ways in which different cultures use space differs, too. Anthropologist Edward T. Hall (1914–2009), a pioneer in the study of proxemics, a word he coined, generalized on this:

> People of different ethnic origins need different kinds of spaces, for there are those who like to touch and those who do not. There are those who want to be auditorially involved with everybody else (like the Italians), and those who depend upon architecture to screen them from the rest of the world (like the Germans).[24]

Hall defines four distance zones used by a group of Americans he studied. He describes this group as middle-class, healthy adults, mainly natives of the northeastern seaboard.[25] He labels the zones as intimate distance, personal distance, social distance, and public distance. Intimate distance, between 0 and 18 inches, is an area into which only the best of friends and relatives are usually allowed. If a stranger entered what has been called the "invisible wall" that extends 18 inches around a member of the study group, the group member got fidgety and used kinesic behavior to maintain the boundaries. This could include stepping back to reestablish the 18 inches, taking a defensive body posture, or actually pushing the other person out of the way. It is within the intimate distance that close personal contacts, such as lovemaking and comforting, take place. Within each of the other distances, standardized types of behavior occur (see Table 13-1).

The 18-inch boundary between intimate and personal distance is an average for the type of Americans for whom the distance was determined. When we look at different cultures, we can see that the behaviors that occur at various distances differ greatly. Hall describes some of the common and expected elements of the Arabic use of space that would make most Americans uncomfortable, including crowding and high noise and smell levels in public places; pushing and shoving in public places; and standing close to each other when conversing.[26]

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[23]Edward T. Hall, *The Hidden Dimension* (Garden City, NJ: Doubleday-Anchor, 1966).
[24]Edward T. Hall, "Human Needs and Inhuman Cities," *Ekistics* 27 (1969), 183.
[25]Hall, *The Hidden Dimension*, 116.
[26]Hall, *The Hidden Dimension*, 154–165. See also Kenneth Friedman, "Learning the Arabs' Silent Language: Edward T. Hall Interviewed by Kenneth Friedman," *Psychology Today* 13 (August 1979), 44–54.

TABLE 13-1 Distances and behaviors

Distance classification	Feet	Possible behaviors
Intimate distance	0–1½	Lovemaking, wrestling, comforting, protecting occur at this distance. Vocalization is minimal and usually restricted to a low level or whispering.
Personal distance	1½–4	In the closer phases of this distance, one could hold or grasp another person. At a farther phase, subjects may discuss topics of personal interest, such as a professor discussing a grade with a student.
Social distance	4–12	At the closer phase of this distance, impersonal business is conducted. People stand 4–7 feet from each other at social gatherings. At 7–12 feet, more formal business might occur.
Public distance	12–25+	Public speaking occurs at this distance. The voice is loud; a careful choice of words and more formal phrasing of sentences are used.

Behaviors are those that might occur at different distances for middle-class, healthy, adult Americans living in the northeastern seaboard of the United States.
Source: Edward T. Hall, *The Hidden Dimension* (Garden City, NJ: Doubleday-Anchor, 1966), 114–129.

The difference between American and Arabic concepts of intimate space might be related to the fact that America was a predominantly rural country with wide-open spaces for much of its history. Only relatively recently has America become urbanized. Many Arabic cultures, such as some of those in Egypt, have lived in crowded urban civilizations for about 5000 years. These differences may have led to different sensitivities in relationship to the social use of space.

The use of space is important in regulating interactions, as in arranging furniture in ways to either encourage or limit conversations. The position that an individual occupies in a room or at a table will be influenced by that person's age, sex, attitudes, degree of leadership and status, and the topic and task underway.[27] Each culture has its own proxemic patterns, and breaches of these patterns can be very disturbing. Misunderstanding the space requirements of others, and the reactions that often occur when such requirements are violated, is a major element of the culture shock that travelers to other cultures often experience (see Box 13-3; see also Box 1-2).

BOX 13-3

Some additional proxemic findings

Researchers have found that:

1. People are very territorial about parking spaces. Not only do they try to defend a parking space that they have just found, but also they will leave more slowly from a parking space they occupy if someone is waiting for it.
2. German businesspeople and college administrators keep their heavy office doors closed. Americans interpret this as an indication of Germans' coldness and secretiveness. Germans see Americans' "open door" policy as being too relaxed and unbusinesslike.
3. Many people, after being away from their home, wander around checking for possible signs of intruders. This reconnaissance behavior is common among mammals.
4. The American Fencing Association says that about 72,000 miles of residential fencing is bought each year to "encircle" American homes.

[27]Robert Sommer, *Personal Space* (Englewood Cliffs, NJ: Prentice-Hall, 1969).

The physical environment

Features of the physical and social environment affect how we communicate. We are more relaxed and often informal in an environment that we perceive as being friendly. A house painted with dark colors and with furniture arranged in such a way that people will not be sitting close to each other might be perceived as lacking warmth and, at least initially, will stifle interaction. Other houses "say," "Come in. Sit down. Let's talk."

The colors and sounds in an environment also influence the interactions that occur there. Although the research is only suggestive, certain colors are associated with academic achievement. In one classic study, students did better on IQ tests in rooms that were painted blue, yellow, yellow-green, and orange than in rooms painted white, black, or brown.[28] Students are also less aggressive in orange rooms than in rooms painted other colors. Interior decorators use colors to create an environment where various emotions and feelings will be expressed. For instance, red is thought to create feelings of excitement, whereas blue is soothing (see Box 13-4).

BOX 13-4

The meaning of color

Different colors have different meanings in different cultures. So, travelers to a foreign culture need to be careful about how they wrap a present, what color flowers they give a local host, or what color clothes they wear. For instance, in China and many other parts of Asia, red is associated with good luck and happiness. Thus, wrapping a present in red or giving red flowers would be good. However, handing someone a red pen to sign his or her name would be bad in Korea, where red ink is used to write the name of dead relatives in family books. In the United States, red is often associated with rage and anger; and red ink is associated with indebtedness. In Asia, white instead of black is often the color of mourning. If an Asian enters a Western hospital, the white sheets may suggest that the patient is going to die. However, in the United States, white is often associated with happy occasions such as weddings, baptisms, and first communions.

Corporations doing international business also take into consideration the color of their logos, packaging, website, booths at trade shows, and advertisements. A color or combination of colors that creates a positive association or positive feelings in one culture might have the opposite result in another culture. For example, as mentioned above, white is often associated with mourning in Asian cultures, so corporations avoid white when marketing products in Asia.

The following are some other cultural associations for colors:

- Purple represents death in Brazil, sin and fear in Japan, dignity and power in the United States, happiness to the Navajo, anger and fear to the Polish.
- Yellow is a sacred color to the Chinese; it means jealousy in France and sadness in Greece.
- In North America, green might signify jealousy or envy, or concern for the environment.
- Blue is the color of villainy in Japan, but of holiness in Israel.

Sounds in the environment affect the communication that occurs in that environment. Overly noisy surroundings might give people headaches and cut short interaction. Music can arouse, soothe, or even agitate. Fast music might encourage people to move faster, and slow music might encourage them to move slower. Businesses have used this to influence

[28]"Blue Is Beautiful," *Time*, September 17, 1973, 66.

people's behaviors in stores. Playing slow music might make people stay in the store longer and therefore buy more.

Another environmental factor is lighting. For example, lighting can create the perception of intimacy or nonintimacy. Asking intimate questions of a casual acquaintance in a dimly lit room can cause considerable anxiety for the person being questioned.[29] Objects in a room can also affect communication. A person might react differently in a room that is perceived as being plain and ordinary than in one that has numerous paintings of demonic characters. Some objects, "conversation pieces," might actually be the "ice breakers" that initiate an interaction.

Furniture arrangement can encourage personal interaction or discourage it. In the 1950s, a study done in a large mental hospital showed that simply by rearranging the furniture into conversation groups, the patients interacted with each other twice as much as before. Of course, this is also affected by culture. Edward T. Hall reports that a Chinese subject that he was interviewing felt intimidated by a face-to-face seating arrangement. The subject was more at ease and talkative with the seating arranged side by side.[30]

A brief word about nonverbal-type communication in cyberspace

Face-to-face communication perhaps is the most meaningful form of communication in that the verbal channel and all of the nonverbal channels can be working simultaneously. Some research indicates that the ability to think of others as real is important to meaningful and intimate communication. An avatar or robot that does not look human will not be perceived as human, whereas one that does might be. This has been the theme of many science-fiction stories. A robot that looks like a human and displays the nonverbal cues of a human is often depicted as human.

At first, online communication was conceived mostly to convey verbal messages. However, as texting, emailing, instant messaging, tweeting, and the use of other social media became increasing popular and increasingly the way people accomplished much of their daily communication, cyber communicating was seen as lacking in its ability to express affect and other nonverbal messages, and therefore to lack the same depth of meaning as face-to-face communication. So, as time passed, more and more ways to add nonverbal-type information was employed in cyber communication. First it was methods similar to those used in other types of written messages: italicizing, bolding, underlining, using all capital letters, using color for emphasis, and so on. Today, graphic methods of communication such as emoticons, emoji, GIF images, and videos are used to give a feeling of affect and other nonverbal messages. In order for graphic methods of communication to be effective they have to be understood by those who are viewing them. Face-to-face communication is still more effective in accurately conveying a variety of information simultaneously in a person-to-person interaction.

"How-to" books and apps: a word of caution

In 1971, a book on nonverbal communication was published with the title *How to Read a Person Like a Book*.[31] In it, the authors attempted to provide a guide to business success through knowledge of body movements. Other similar books and apps for smart phones and tablets promise

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[29]S. J. Carr and J. M. Dabbs, "The Effect of Lighting, Distance, and Intimacy of Topic on Verbal and Visual Behavior," *Sociometry* 37 (1974), 592–600.

[30]Edward T. Hall, "Proxemics: The Study of Man's Spatial Relations," in Norman Klein, ed., *Cultures, Curers, and Contagion: Readings for Medical Social Science* (Novato, CA: Chandler & Sharp, 1979), 22ff.

[31]G. I. Nierenberg and H. H. Calero, *How to Read a Person Like a Book* (New York: Pocket Books, 1971). It has since been reissued several times, most recently in 2011.

success in virtually every line of interpersonal relations, as well as in learning the knowledge of self to promote better mental and physical health.[32] It is well established that people vary in their nonverbal skills, just as they do in their verbal skills.[33] Although people may vary in their genetic potential to learn such skills, the ability to encode and decode nonverbal messages is learned. Therefore, it would follow that a low achiever in this regard might learn to improve such skills. There is no reason to doubt the validity of this statement. A few of the popularized books and apps may give some reliable pointers. However, these books and apps seldom pay enough attention to the complexity, flexibility, and variability of human behavior. Nonverbal behavior with the same form, as elicited from a variety of people, might have quite different contents. Also, one behavioral form might have different meanings in different contexts. The research into nonverbal skills is ongoing and exciting, but it is too new to expect validity for most of the "how-to" claims made in the popular literature.

Summary

Speech conveys information. Simultaneously, a sender will be conveying numerous other messages nonverbally. These nonverbal messages may reinforce, contradict, emphasize or deemphasize, or modify the verbal messages. Often the nonverbal messages are more important than the verbal ones.

The dance of the body can indicate everything from very specific information through emblems to feelings about a person's anxieties through adaptors. The hands can be used to draw pictures in the air by using illustrators, or to regulate the pace of speech. We reassure or rebuke by touching, and show our displeasure if someone moves within our "invisible wall." The general way in which we speak will stereotype us as a specific type of person. This will influence the type of messages we receive from others, as well as the messages we will return to them. The way we gaze at other people and the way they gaze at us convey a wealth of impressions, as do the facial expressions that we make. These impressions may be interpreted correctly or incorrectly as to the intent of the sender of the message.

People's appearance will influence important factors of their lives, including the jobs they do or don't get, with whom they will associate socially, how seriously others take them, and their concepts of self-esteem. Standards of beauty and positive personal appearance differ from culture to culture, subculture to subculture, and over time in the same culture or subculture.

Although what is considered to be physically attractive is culturally relative, there are innate, universal factors that influence the perception of physical attractiveness. These include body symmetry and waist-to-hip ratios in women.

The features of the physical and social environment also influence communication. An environment might be perceived as friendly or unfriendly, intimate or not, formal or informal, or inviting or scary. The colors of a room might be stimulating or stifling. Noises may encourage or discourage interaction.

Suggested reading

Axtell, Roger E., *Essential Do's and Taboos: The Complete Guide to International Business and Leisure Travel*, New York: Wiley, 2008. This book focuses on variations in nonverbal communication and how certain behaviors that are normal and expected in one culture might get you in trouble in another.

[32]Some other popularized books are Julius Fast, *Body Language* (New York: Evans, 1970); Julius Fast, *The Body Language of Sex, Power, and Aggression* (New York: Harcourt, Brace, Jovanovich, 1977); Desmond Morris, *Manwatching: A Field Guide to Human Behavior* (New York: Abrams, 1977); and Wayne W. Dyer, *Your Erroneous Zones* (New York: Funk & Wagnalls, 1976).

[33]Robert Rosenthal, ed., *Skill in Nonverbal Communication: Individual Differences* (Cambridge, MA: Oelgeschlager, Gunn & Hain, 1979).

Ekman, Paul, and Erika L. Rosenberg, eds., *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*, 2nd ed. Oxford/New York: Oxford University Press, 2005.

Gamble, Teri Kwal, and Michael Gamble, *Nonverbal Messages Tell More: A Practical Guide to Nonverbal Communication*, Routledge, New York: 2017. This is a short and up-to-date review of the various areas of nonverbal communication.

Hendry, Joy, and C. W. Watson, *An Anthropology of Indirect Communication*, New York: Routledge, 2001. This book provides a variety of explanations of different types of nonverbal communication from an anthropological point of view.

Knapp, Mark, Judith Hall, and Terrence G. Horgan, *Nonverbal Communication in Human Interaction*, 8th ed., Boston, MA: Wadsworth, 2014. This is a basic introductory text for nonverbal communications studies.

Simmons, Ann M. "Where Fat Is a Mark of Beauty," *Los Angeles Times*, September 30, 1998, in *Annual Editions: Anthropology*, ed. Elvio Angeloni, New York: McGraw-Hill, 2016.

Ting-Toomey, Stella, *Communication across Cultures*, New York: Guilford Press, 1999. This volume is a cross-cultural look at verbal and nonverbal communication.

Websites

Exploring Nonverbal Communication: http://nonverbal.ucsc.edu. Videos produced by the University of California at Santa Cruz.

Journal of Nonverbal Communication: www.springer.com/psychology/personality+%26+social+psychology/journal/10919.

Xmarks: www.xmarks.com/s/site/www.usal.es/~nonverbal/varios.htm. This bookmarking site has links to numerous resources on nonverbal communication.

App

Quizzed! How to Read People: Body Language Quiz, S. Tallett. This has interactive quizzes on such topics as lying, flirting, and facial expressions.

Review of terms and concepts: nonverbal communication

1. Nonverbal communication is _____.
2. The study of communicating with body movements is called _____.
3. When we say there is a communicative "dance" that takes place, we mean that _____

   _____.
4. Holding a finger up to the mouth to sign to someone to be silent is an example of what type of kinesic behavior?

   _____
5. Describing a big fish that you had just caught by extending your arms out in front of your body is an example of a(n) _____.
6. Repeatedly tapping yourself with a pencil is a nonverbal act called a(n) _____.
7. The nonverbal behavior of shrugging the shoulders is a(n) _____.
8. A smile would be called a(n) _____.
9. The primary site for conveying emotion is the _____.

10. There are four lines of evidence that point to the innateness of the production of and reaction to basic facial expressions. They are _____, _____, _____, and _____.
11. Nonverbal behaviors that modulate the back-and-forth nature of speaking and listening are called _____.
12. _____ are movements that function to satisfy personal needs.
13. The six basic emotions expressed by the face are _____.
14. What are the five functions of gaze and mutual gaze that we discussed in this chapter? _____, _____, _____, _____, _____.
15. Of the five types of kinesic behavior discussed in the text, the type produced most consciously is _____ and the type produced most subconsciously is _____.
16. Grooming functions to _____ and to _____. In nonhuman primates, it also figures in _____.
17. The system of nonverbal, but vocal, cues that accompany or replace language is called _____.
18. The study of the use of space in human interactions is called _____.
19. Among the group of Americans that Edward T. Hall studied, people got fidgety if strangers came, on average, closer than _____. The space from the person's body to this distance is called _____ and the area extending all the way around the individual at this distance is called that individual's _____.
20. We discussed the fact that some of the factors that determine what we think is attractive are learned though the socialization process. What are some factors that determine our judgment of beauty that are innate and the result of millions of years of biological evolution? _____ _____.
21. Some factors of the physical or social environment that affect communication are: _____ _____.

End-of-chapter exercises

1. Watch a television program with the sound off. What can be said about body and facial movements that occur while the people on the screen are talking?
2. Play a recorded television program or movie with the sound off. Guess what information is being conveyed or what the story is about. Now listen to the sound. Were you correct in your impressions of what was said? What type of information were you most accurate in guessing? Specific information? Attitudes? The nature of relationships? What other types of information did you perceive? Explain your conclusions.
3. This exercise involves the score sheet reproduced after the last exercise. Watch people talking in places where they may stay put for a time, such as a restaurant, park, or social gathering. Can you see examples of emblems, illustrators, affect displays,

regulators, adaptors, and other nonverbal behavior? Use the format of the score sheet to collect your data. Record all of these kinesic behaviors that you see and make note of their participants, and their meaning and context.

4. After you have done exercise number 3, answer the following questions.

   a. Is there any difference in patterns of nonverbal behavior (type of behavior used, frequency and intensity of behaviors, who initiates and closes an interchange, and so on) when different mixes of the genders are interacting; that is, one male with another male, one female with another female, two males and one female, and so on?
   b. What effect does the age of the interactants have?
   c. What effect does the number of interactants have?
   d. If you have done the exercise in different locations, can you see any differences in the patterns of nonverbal behavior based on the setting?
   e. What other observations and conclusions can you make on the basis of your score sheets?

5. How do such things as music, color of the environment, furniture arrangement, and architectural design influence human communication?
6. Ask ten or more people to characterize how various languages that they do not speak sound to them as compared to English. That is, do these other languages sound harsher than English, more monotone, more rapidly spoken, and so on? After you have collected your data, analyze it for the following: Are some languages characterized similarly by most people in your sample? Do you think that these characterizations are valid? How do you think such stereotyping affects the listener's perception of the people who speak various foreign languages?

Nonverbal Communication Score Sheet

Note: Photocopy as many copies of this sheet as you need.

Starting Time _____

Ending Time _____

There should be two to four people interacting.

A = age S = sex

Nonverbal Behavior	**Number of Times Observed**				**Comments**
	Person 1 A S	Person 2 A S	Person 3 A S	Person 4 A S	
Emblems					
Illustrators					
Regulators					
Adaptors					
Touching Behaviors					
Shifts in Position					
Other Behavior					

CHAPTER 14

Historical linguistics: the history of languages

LEARNING OBJECTIVES

- **List and describe the main reasons that languages change over time.**
- **Identify the contributions of August Schleicher, Johannes Schmidt, and Sir William Jones to the study of historical linguistics.**
- **Define the terms *language family* and *proto-language*.**
- **Describe how the comparative method is used to show relationships between languages and to reconstruct proto-languages.**
- **Compare the family tree model and the wave model of language relationship. Analyze the benefits and difficulties of each of model in terms of their ability to explain historical linguistic phenomena.**
- **Explain what *cognates* are and provide examples.**
- **Explain the relatedness and regularity hypotheses.**
- **Define Grimm's law.**
- **Explain the difference between conditioned and unconditioned phonological changes and provide examples of each type of change.**
- **List some examples of morphological changes and syntactic changes in language.**
- **Provide some examples of sociocultural and semantic changes in the English language. Discuss how sociocultural and semantic changes are related to each other.**
- **List and explain the ways linguists attempt to determine the rate at which daughter languages change from a mother language.**
- **Discuss the two main competing hypotheses on the location of the origin of Indo-European.**
- **When we speak of the spread of English throughout the world, it is more accurate to speak of the spread of "Englishes." Analyze this statement.**

All of the elements of culture change over time. The political systems, economic systems, religion, kinship, and art are all modified by the passage of time; so is language. Culture change occurs for a variety of reasons. The movement of people spreads new ideas, values, beliefs, behaviors, and language. This movement might be due to peaceful trade and travel, or to invasion and warfare. Because people move around and take their language with them, languages that develop in one area can wind up being widely distributed. For instance, the spread of the British Empire distributed the English language throughout the world, starting at the beginning of the seventeenth century. By the end of World War I, the British had delivered the English language to about 25 percent of the world's population.

As a language spreads, it is influenced by the language(s) already spoken in an area. This is why English is spoken somewhat differently in Nigeria, India, Hong Kong, Burma, Australia,

New Zealand, the United States, and other areas of the world. A similar thing occurred much earlier when the Romans colonized a large part of Europe. In fact, modern French is in a sense modern Latin as spoken in France; Spanish is modern Latin spoken in Spain and Central and South America; and Italian is modern Latin spoken in Italy.

Also, as a language spreads to different areas, the descendant languages may become isolated from one another to varying degrees. Changes that occur in any of these languages might not spread to other languages. As more and more changes occur, languages that originated from the same mother language might become increasingly dissimilar because of isolation.

But people do not have to move for culture change to occur. Cultural elements might change to accommodate new knowledge or changes in the physical environment. For instance, an economic system might have to change if certain resources disappear or become scarce. In terms of language, as new inventions and discoveries are made, these things must be named. Also, subgroups within society, such as rappers in American society, might introduce new expressions and even alter the grammar of those expressions from the standard usage. Although the older members of a language community usually see these changes as corruptions, some of the changes that each new generation makes in the language will ultimately become part of the everyday language of their and future generations.

Historical linguistics (also called **comparative linguistics**) is the study of how languages change over time and the relationship among different languages. Historical linguists study the process of language change, the "genetic" relationship between languages, and how best to classify languages into groups. The term **diachronic linguistics** (*dia-* means *through*, *chronic* means *time*) is also used to label historical studies in linguistics. Nonhistorical research is called **synchronic linguistics** (*syn-* means *same*). Synchronic linguists study languages at a given point in time.

Historical linguistics (also called **comparative linguistics**) is the study of how languages change over time and the relationship among different languages.

Diachronic linguistics (meaning through time) is another name for historical linguistics.

Synchronic linguistics is the study of a language at a given point in time.

The relationships among languages

The number of languages currently spoken in the world depends on the criteria used to define what a language is, as opposed to a dialect of a language. However, the largest database on languages of the world, *Ethnologue*, lists 7097 living languages in the world in its 21st edition, published in 2018.[1]

One of the facts of historical linguistics is that languages can be highly related to each other, minimally related, or not related at all. One of the reasons that two or more languages are highly related is that they derived from the same *parental language*. That is, using a biological analogy, they are "genetically" related to each other and are called a **language family**. In fact, languages that are said to derive from a common language are called *daughter languages*. For instance, we know that Portuguese, Spanish, Catalan (spoken in Spain), French, Italian, and Romanian are all daughter languages derived from Latin as it mixed with the native languages of each area. Linguists classify these languages and a few others as **Latin languages** (also called **Romance languages** from the Latin phrase *romanica loqui*, "to speak in Roman fashion"). Icelandic, Norwegian, Swedish, Danish, English, Dutch, German, Yiddish, and several other languages are Germanic languages. Linguists show language relatedness in two main ways: the family tree model and the wave model.

A **language family** is a group of languages derived from the same ancestral language.

Latin languages (also called **Romance languages**) are those that make up the language family derived from Latin and the native languages of the Roman-conquered lands.

The family tree model

The **family tree model** of language relationships was devised in 1861 by linguist August Schleicher (1821–1868). As can be seen in Figure 14-1, a diagram based on this model starts at the top with what's called a **proto-language**. A proto-language is a parent language from which it is assumed many ancestral and modern languages were derived. The prefix *proto-* means

The **family tree model** of language relationships assumes a "genetic" relationship among languages in a language family in that all languages in the family derived from a common ancestor called a proto-language.

A **proto-language** is an ancestral (parent) language from which it is assumed that many languages were derived.

[1] *Ethnologue*, www.ethnologue.com, February 21, 2018.

Proto-Indo-European is the proto-language from which many linguists assume that about 445 modern and extinct languages of Europe, western Asia, and parts of India were derived. Not all languages spoken in these areas are descended from Proto-Indo-European.

before and a proto-language is a reconstructed language, and therefore a hypothetical language as opposed to an observed language. The proto-language diagrammed in Figure 14-1 is **Proto-Indo-European**.

All languages that descended from Proto-Indo-European are called Indo-European languages. Proto-languages have also been reconstructed to various degrees for other groups of languages. Some of these are Proto-Algonquian (Native American languages such as Blackfoot, Micmac, Cree, and Ojibwa); Proto-Athabaskan (another Native American language family that includes Navajo, Apache, and Chipewyan); Proto-Oto-Manguean (Mesoamerican languages such as Zapotec and Otomi); and Proto-Dravidian (languages of southern India).

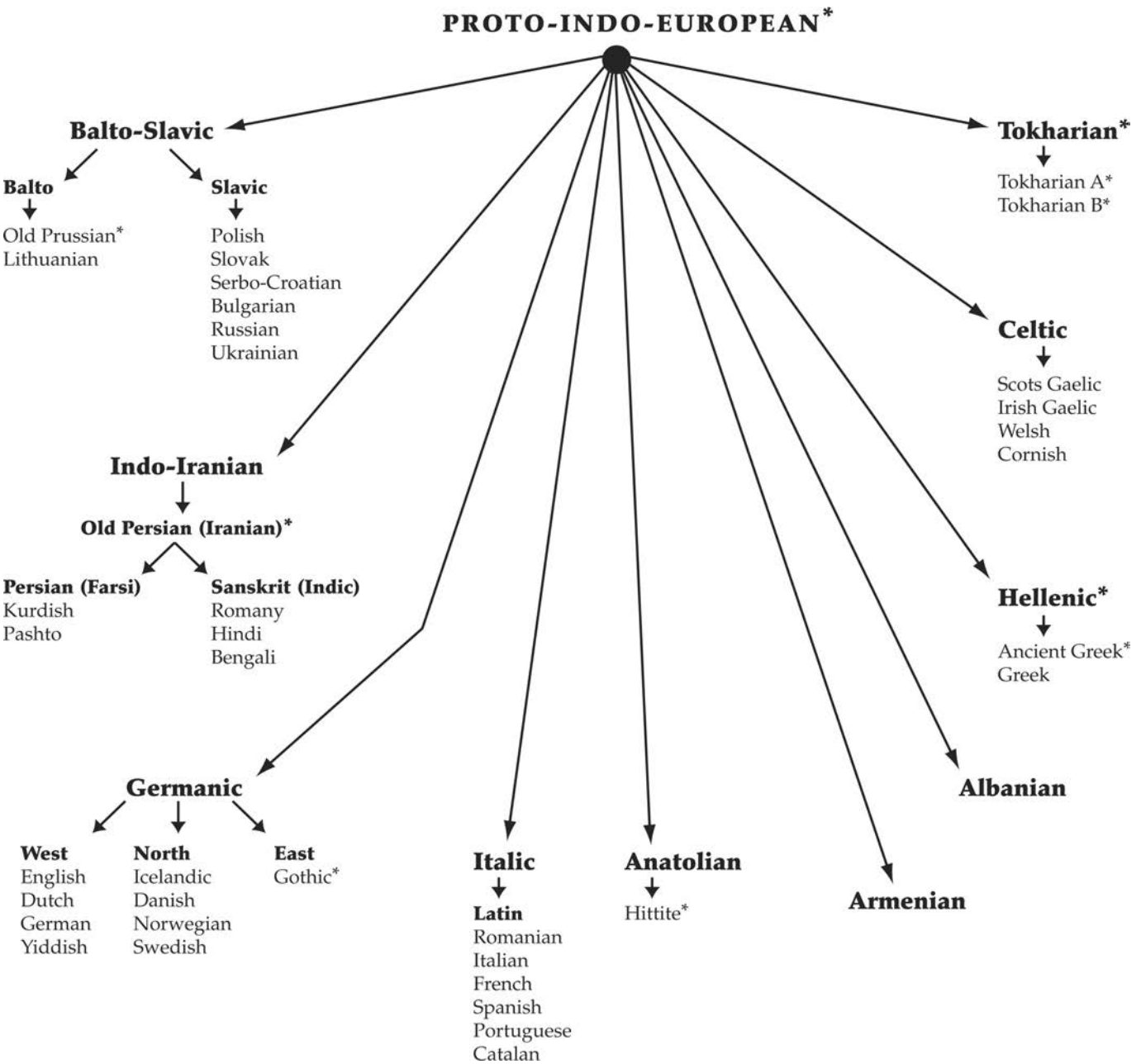

FIGURE 14-1 The Indo-European family tree

According to *Ethnologue,* there are 445 living languages in the Indo-European family. This chart is not exhaustive; it is a sample of living and extinct Indo-European languages. The * indicates a reconstructed form.

Algonquian, Athabaskan, Oto-Manguean, and Dravidian, along with the Latin and Germanic languages, are six of the world's language families. Some other language families are listed in Table 14-1.

Indo-European has several subgroups. Two of those subgroups, Germanic and Italic (which includes Latin), are shown in Figure 14-1. Germanic, Italic, and the other subgroups are referred to as **daughter languages** of the **mother language**, Proto-Indo-European. In relationship to each other, the ten subtypes of Indo-European are **sister languages**. The family tree model assumes that languages, as they branch off from a proto-language, change over time in regular ways. This concept is called the **regularity hypothesis**. This family tree model also assumes that numerous similarities in languages indicate that languages derive from a mother language. This idea is labeled the **relatedness hypothesis**. A proto-language is reconstructed by comparing similarities in languages that are assumed to be related to each other.

Daughter language, **mother language**, and **sister language** indicate the type of relationship languages have in their family tree. Daughter languages derive from a mother language, and different daughter languages are referred to as sister languages with respect to each other.

The **regularity hypothesis** is the idea that numerous similarities in languages indicate that the languages derive from a mother language (the **relatedness hypothesis**).

Although several individuals, starting in the sixteenth century, recognized the similarities among different languages and the possibility that these similarities might be due to a common ancestry language, it was philologist Sir William Jones (1746–1794) who formally described the similarities among a number of languages. Jones was a linguistic prodigy who, by the time of his death at forty-eight, had learned to speak twenty-eight languages. In 1786, Jones, a Supreme Court judge in India, published a book that provided comparative evidence that Sanskrit was related to Latin and Greek. Sanskrit is an ancient language that is still used in India and other parts of Asia, mainly in religious ritual.

Jones also believed that Sanskrit, Latin, and Greek might be related to Gothic, Celtic, and Persian. His work was the first concrete indication that there was a mother language (later called Proto-Indo-European) for Sanskrit, Latin, Greek, Gothic, Celtic, and Persian. Other languages, including English, have been added to those sister languages. Table 14-2 lists several English words and their equivalents in some of the Indo-European languages.

Jones noticed that many words in these languages that had the same meaning were very similar phonemically. Such word pairs or sets are called **cognates**. He assumed that the cognates were similar because they derived from the same parental language. This is the main premise of the relatedness hypothesis. This assumption is made because the sound of a word has an

Cognates are words in different languages that are related to each other because they derive from a common mother language.

TABLE 14-1 A sample of the world's language families

Language family	Focal location
Finno-Ugric	Parts of northern Scandinavia, eastern Europe, and northwestern Asia
Austro-Asiatic	Widely distributed from eastern India to Vietnam
Austronesian	Madagascar, Indonesia, and some of Oceania
Australian	Australia
Indo-Pacific (Papuan)	New Guinea
Afroasiatic	Northern Africa and Arabian Peninsula
Niger-Congo	Central and southern Africa
Nilo-Saharan	Central to north central Africa
Khosian	Southern Africa
Sino-Tibetan	China, Burma, Thailand, Tibet, and other areas of Asia and India
Eskimo-Aleut	Northern Alaska and northern Canada
Mayan	Southern Mexico and Guatemala

For a quite comprehensive list of language families, the individual languages that belong to each, and links to sites with information on each, see www.ethnologue.com/family_index.asp.

arbitrary relationship to what it means (see Chapters 1 and 2). If sound and meaning were intrinsically (causally) related to each other, then words with the same meaning would have the same sound in all languages. This is not the case; therefore, similarity in sound and meaning must be the result of a common origin. Table 14-2 also illustrates that each language diverged from the parent language (Proto-Indo-European) in a regular way (the regularity hypothesis).

Jones's conclusions were based on his knowledge of ancient and modern languages and his intuition about their relatedness. The Danish researcher Rasmus Rask (1787–1832) built on Jones's conclusion by being the first person to formally outline some of the regularities in sound differences in certain languages. For instance, he noticed that certain sounds in Greek regularly correspond to different sounds in Germanic languages. For example, the Greek *ph* sound, as in *phrater* and *phero*, consistently become *b* in English (*brother*, *bear*) and German (*der Brüder*, *der Bär*).

Jacob Grimm (1785–1863), the German linguist—and collector of fairy tales (with his brother Wilhelm, 1786–1859)—expanded on Rask's work on the regularity of sound differences. Jacob's conclusion, made in his four-volume work written between 1819 and 1822, is known as **Grimm's law** or the **first Germanic sound shift**. In addition to providing the first in-depth study of a sound shift from a mother to a daughter language, Grimm introduced a rigorous methodology for comparative studies that greatly influenced the growth of historical linguistics.

Grimm's law (also called the **first Germanic sound shift**), proposed by Jacob Grimm, described a systematic phonological change from certain Proto-Indo-European consonants to different consonants in daughter languages.

English is one of the Germanic languages. Grimm discovered that the /p/, /t/, and /k/ of Proto-Indo-European systematically changed to /f/, /θ/, and /h/ in English. These and other shifts are shown in Table 14-3. Grimm was aware that his "law" was not really a law in that there are exceptions. Other linguists have expanded on Grimm's work and also explained exceptions to his law.

TABLE 14-2 Some word comparisons in five Indo-European languages (many of these words will have different endings depending on case, number, and gender)

Sanskrit	Greek	Latin	Gothic	English
pitar	pater	pater	fadar	father
padam	poda	pedem	fotu	foot
bhratar	phrater	frater	brothar	brother
bharami	phero	fero	baira	bear
sanah	henee	senex	sinista	senile
trayas	tris	tres	thri	three
dasha	deka	decem	taihun	ten
sata	he-katon	centum	hund(rath)	hundred

TABLE 14-3 Some sound shifts discovered by Jacob Grimm

Proto-Indo-European	*b^h	*d^h	*g^h	*b	*d	*g	*p	*t	*k
	↓	↓	↓	↓	↓	↓	↓	↓	↓
English	b	d	g	p	t	k	f	θ	x or h

*The asterisk indicates that the linguistic form is part of a reconstructed language.
[x] is the phonetic symbol for the voiceless velar fricative, which is the last sound in the name Bach and the initial sound in the word *Chanukah*. It is produced by making a sound as if you are clearing your throat.

Table 14-3 illustrates that Grimm's law involved regular changes in three natural classes of sound. The sounds [bh], [dh], and [gh] are in the natural class of sounds called *voiced aspirated stops*. They systematically become *voiced unaspirated stops*. The sounds [b], [d], and [g], which are voiced stops, become the voiceless stops [p], [t], and [k]. In turn, [p], [t], and [k] become voiceless fricatives. These three changes from Proto-Indo-European to Germanic languages help to define the Germanic languages because these shifts occur in none of the other Indo-European languages. Grimm also discovered another systematic sound shift (the second Germanic sound shift) that relates only to a form of German called High German.

The reconstructed forms for Proto-Indo-European were established by the **comparative method**, which involves looking at similarities in languages. Although comparative reconstructions can be done for any level of language, phonological comparisons are most common. Through an analysis of modern and ancient Indo-European languages, linguists concluded that there was a */p/ phoneme in Proto-Indo-European. Applying statistical analysis and other techniques, all of the phonemes of Proto-Indo-European have been reconstructed. This reconstruction and the analysis of cognates allow for the reconstruction of Proto-Indo-European words. The reconstructed words for *father* and *foot* in Proto-Indo-European are */pəter/ and */ped/, respectively. Latin and Greek maintained the */p/ (see Table 14-2), but the Proto-Indo-European */p/ was systematically replaced with /f/ in English (*father* and *foot*).

The **comparative method** involves looking at similarities in languages to determine the degree of relationship among those languages and to reconstruct ancestral (proto-) languages.

Some linguists have suggested that Proto-Indo-European can be combined with other proto-languages at the same level to form more general proto-languages called **superfamilies** or **macrofamilies**. The term *Proto-World* is used to describe a hypothetical language from which all or most modern languages originate (see Box 14-1). Proto-Indo-European is the most general reconstructed language for Indo-European languages that is considered valid by most historical linguists. More specific proto-languages such as Proto-Germanic, Proto-Balto-Slavic, Proto-Celtic, and Proto-Indo-Iranian have also been reconstructed. In fact, it has been the reconstruction of these more specific proto-languages that in part has allowed linguists to reconstruct Proto-Indo-European.

Superfamilies or **macrofamilies** are groups of proto-languages.

BOX 14-1

Macrofamilies of languages and Proto-World

A macrofamily is a group of more than one proto-language. One of these macrofamilies is called Nostratic. Danish linguist Holger Pedersen (1867–1953) proposed the existence of Nostratic as a macrofamily in 1903, grouping together the Indo-European, Uralic, Afro-Asiatic, and Eskimo-Aleut language families. Various linguists since 1903 have suggested that various language groups either be added to or deleted from Nostratic. American linguist Joseph H. Greenberg (1915–2001) proposed another macrofamily (which some linguists consider a branch of Nostratic) called Eurasiatic. Eurasiatic includes Indo-European, Uralic, Altaic, Ainu, Japanese, Korean, and some eastern Siberian languages. Other macrofamilies have also been proposed.

The next step in this process of creating larger groupings of languages is to group the macrofamilies into a larger grouping. The largest of these groupings yields the supposed proto-language for all modern languages and is called Proto-World. Again, Greenberg and his colleagues, who are sometimes referred to as "lumpers," were proponents of the Proto-World idea.

In the biblical story of the Tower of Babel, all people at one time were seen as unified and speaking the same language. This unified humanity attempted to build a tower to heaven and was punished by God for this attempt. God made the people speak many languages so that they could not continue their unified effort to build the tower. After this event, people moved to different areas of the world where they spoke their separate languages (see Genesis, 11:1–9). This is the biblical explanation for the existence of so many different languages.

Unlike the biblical explanation, Greenberg's idea of a Proto-World language is based on human evolution. Physical anthropologists have good evidence that modern *Homo sapiens* evolved in Africa. Greenberg

believed that Proto-World was the language of these early modern *Homo sapiens* and moved with them as they spread out of Africa starting about 200,000 years ago. Over time, as these people spread to various areas of the world, Proto-World evolved into the thousands of languages spoken today. The idea that there was only one original language for all early *Homo sapiens* is called monogenesis.

The concept of macrofamilies has been controversial since it was first proposed. The possibility that Proto-World can be reconstructed or even that there was such a thing received even less support than the idea of macrofamilies. The whole idea of monogenesis is questionable. For example, if we accept signed languages as full languages (see Chapter 11), then it is entirely likely that at least signed languages had a separate origin from oral languages.[2] The idea that modern languages may have had more than one origin is called polygenesis. The monogenesis versus polygenesis debate is ongoing for oral languages. A big problem with the concept of macrofamilies and the Proto-World concept is the length of time that has passed since their supposed existence. Linguists who study the rate of language change generally agree that after 10,000 years, or even less, there would not be enough cognates to compare; furthermore, word pairs or sets that appear to be cognates might be accidental similarities. In other words, possible sister languages would have lost all traces of their genetic relationship. We will explore the reasons for this in a later section of this chapter.

Recent researchers have suggested that the occurrence of a word like "huh?" to initiate conversation repair when an utterance is unclear is universal and gives support to evolutionary models of language change.[3] However reconstructions of words in Proto-World may be no more accurate than saying that some of the first humans' first words were "yaba daba do."[4]

There are some problems with the family tree model of language relatedness. The example in Figure 14-1 implies that a mother language splits into several daughter languages at exactly the same time, and that the split is rapid. The family tree model also pictures the split as complete, with no further contact between mother and daughter languages or among sister languages. These assumptions are incorrect. Language change is usually gradual, and sister languages might diverge from a mother language at different rates. The speakers of sister languages can remain in contact with each other and with the mother language. For instance, even after the Roman influence on Western Europe diminished, the speakers of various Romance languages were still exposed to Latin through the church and other means. France is next to Spain and other countries that speak Romance languages; these countries have traded or warred with each other continuously, bringing the languages into contact with each other.

The family tree model also does not show the relationship between languages not in the same family. For instance, languages in very diverse families can form pidgins and creoles (see Chapter 8). These types of relationships are not indicated on a family tree diagram. The family tree model also fails to show that there are dialect differences within a language. For instance, English is listed on the diagram as if it is a unified language. But English is spoken differently in England, North America, Australia, India, Hong Kong, and all areas to which English has spread. And within each of these areas, it is spoken differently in different locations (for instance, the southern United States versus the northeastern United States).

The wave model

The **wave model** of language relatedness attempts to deal with some of the weaknesses of the family tree model. It characterizes a specific language change as spreading out from a central point in a manner similar to the ripples created when a small object is thrown into water. Changes spread at different rates. Some changes reinforce other changes and others interact to create additional change.

In 1872, linguist Johannes Schmidt (1843–1901) proposed the **wave model** of language relatedness to address some of the inadequacies of the family tree model. In the wave model, circles

[2]J. C. Salmons and B. D. Joseph, "Nostratic: Sifting the Evidence," *Current Issues in Linguistic Theory* 142 (Amsterdam and Philadelphia: John Benjamins, 1998), 3–7.

[3]Mark Dingemanse, Francisco Torreira, and N. J. Enfield, "Is 'Huh?' a Universal Word? Conversational Infrastructure and the Convergent Evolution of Linguistic Items," *PLOS ONE*, November 8, 2013, www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0078273.

[4]John McWhorter, *The Power of Babel: A Natural History of Language* (New York: Times Books/Henry Holt, 2001).

are drawn around languages that share a specific characteristic or characteristics. All the languages within a circle share the characteristic defined by the circle. Figure 14-2 is a wave model for a segment of Indo-European languages.

An advantage of the wave model over the family tree model is that the wave model shows more precisely how languages are related. For instance, in Figure 14-2, the circle enclosing Baltic, Slavic, and Germanic (labeled A) was drawn because these languages have plural case endings that have an [m], whereas many other Indo-European languages have plural case endings that include an aspirated *b* [bh]. There is a circle (labeled B) around Baltic, Slavic, Indic, and Iranian that excludes German. This circle includes languages that have an extensive amount of palatalization (a phonological process that makes sounds more palatal than they otherwise would be). Palatalization, among Indo-European languages, is found exclusively in the languages enclosed by circle B. Each circle on the diagram describes a linguistic feature held in common for the languages encircled.

The wave diagram also represents the idea that linguistic features (phonological, morphological, or syntactic) **diffuse** (move from one place to another). A feature that starts to diffuse from one area (usually an area of sociocultural significance) moves to other areas where the feature may be rejected, accepted as is, or modified to fit the existing linguistic system of the receiving group. The feature may not diffuse to more isolated areas. Different linguistic features will diffuse at different rates. The circles in Figure 14-2 also indicate that a language is not a unified system but has variation within it (dialects).

To **diffuse** means to move out from one place to another.

Although the wave model addresses some of the weaknesses of the family tree model, it also has deficiencies of its own. Wave model diagrams can be extremely hard to read. More and more circles can be added to the diagram as new similarities among languages are found. Also, wave diagrams show the relationship among languages at one point in time (synchronic) as opposed to showing how languages change over time (diachronic). They only show the relationship between or among the languages on the diagram, usually languages that are adjacent to each other. We know that languages that are not next to each other can influence each other through trade, warfare, and other factors. One thing that neither the family tree model nor the wave model depicts about language similarities is that languages that are not "genetically" related to each other can contain similarities for a number of reasons, including contact between the cultures, chance similarities, and language universals.

Even though both the family tree model and the wave model have faults, they have been valuable, especially when used together, in helping linguists picture how languages are related to each other and in tracking linguistic change. In reality, the relationships among languages

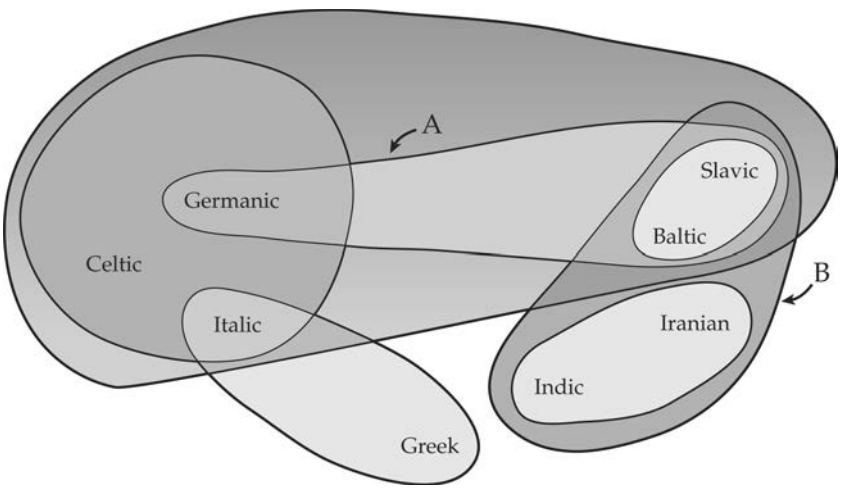

FIGURE 14-2 The wave model of language relatedness
See the text for a detailed explanation of the figure.

are much more complex than either of these models, separately or together, can reveal. More complicated models have been devised, including one based on the biological evolutionary model called punctuated equilibrium.[5]

Types of language change

We have used sound changes as examples of language change so far, and will go into that in more detail in a moment. Morphological and syntactic changes also occur in language, as well as semantic and sociocultural changes.

Sound change: unconditioned sound change

A **sound change** is the change of one or more distinctive features of a sound to another feature or features.

An **unconditioned sound change** is a sound change that appears to have happened spontaneously and everywhere (with few exceptions) in the language.

A **sound change** is the change of one or more distinctive features of a sound to another feature or features. We have already talked about the sound change described by Grimm's law. Grimm's law provides an example of an **unconditioned sound change**. An unconditioned sound change is a sound change that appears to have happened spontaneously and everywhere (with a few exceptions) in the language. That is, for example, everywhere that there was a /b/ in Proto-Indo-European there is now a /p/ in English and other Germanic languages. In other words, /b/ did not change to /p/ only in certain phonetic environments; it changed in all environments. This is because the definition of a sound change is that one distinctive feature is replaced by another. In this case, the feature [+voice] was replaced with [–voice].

The **Great Vowel Shift** was an unconditioned sound change that altered all Middle English long vowels.

Another example of an unconditioned sound change is referred to as the **Great Vowel Shift**. The Great Vowel Shift occurred in English between about 1400 CE (during the time that Middle English was spoken) and about 1700 CE (during the time of Modern English). The Great Vowel Shift altered the pronunciation of all Middle English long vowels. The two highest Middle English vowels became diphthongs in Modern English. For instance, the Middle English long vowel [u:] became the Modern English diphthong [aw] consistently, regardless of the phonetic environment. So, the Middle English word for *mouse* [mu:s] became [maws] in Modern English. In all, seven Middle English vowels were altered by the Great Vowel Shift; these changes are summarized in Table 14-4 (see also Box 14-2).

Sound change: conditioned sound change

A **conditioned sound change** takes place only in certain phonological environments.

A **conditioned sound change** depends on the phonetic environment. For instance, the /f/ sound in Old English becomes the /v/ sound in Modern English. This does not happen everywhere

TABLE 14-4 The Great Vowel Shift

Middle English word	Modern English word	Meaning
[hu:s]	[haws]	house
[wi:f]	[wayf]	wife
[se:n]	[si:n]	seen
[go:s]	[gu:s]	goose
[na:mə]	[ne:m]	name
[hɔ:m]	[ho:m]	home
[sɛ:]	[si:]	sea

[5]You can read about it in R. M. W. Dixon, *The Rise and Fall of Languages* (Cambridge: Cambridge University Press, 1997).

in the language; it would be an unconditioned change if it did. Instead, it only occurs if the /f/ in Old English occurred between two vowels. Vowels are usually voiced and /f/ is voiceless. In Modern English /f/ assimilates to the voiced vowels and becomes voiced. A voiced /f/ is /v/. For example, the Old English word *heofonum* became the Modern English *heavens*, *yfel* became *evil*, and *aefen* became *even(ing)*. This is voice assimilation.

Certain types of deletions are conditioned changes. You have probably noticed that a lot of English words are spelled with a silent "e" at the end. At the conclusion of the Middle English period, unstressed schwa sounds, /ə/ at the end of words, which had previously been pronounced, were deleted from the pronunciation of the word but kept in the spelling. The deletion of the unstressed schwa sound is a conditioned change because it did not occur everywhere in the language, just in word final position. Assimilation and deletion are only two of many types of conditioned sound change.

BOX 14-2

An overview of the history of English

English was not always the language spoken on what is known today as the British Isles. Before the arrival of English, a variety of Celtic languages—including Welsh, Cornish, Scots, Gaelic, Manx, and Irish Gaelic—were spoken there. These languages are still spoken. The British Isles were invaded by the Romans at about the time of the beginning of Christianity. The Romans stayed for nearly 400 years, but Latin only had minor influence on the Celtic languages during this time. However, when they left in 410 CE, the British Isles were vulnerable to attack. In 449 CE, Germanic tribes (Angles, Saxons, and Jutes), from what are today Germany and Denmark, invaded Britain. England and English are named for the Angles. The Angles, Saxons, and Jutes spoke Old English, a language similar to modern Frisian spoken today by a small number of people in the northeastern Netherlands. So, the period called Old English started in 449 CE; Old English was very much like Old German.

In 597 CE, Latin changed Britain as the Anglo-Saxons converted to Christianity. Latin was the language of the church. Latin words entered the basically Germanic vocabulary at this time. In the eighth and ninth centuries, the Vikings (from Denmark) invaded the British Isles, introducing words with the *sk* sound, such as *sky* and *ski*. The next big invasion occurred when the Normans (French) invaded in 1066 CE. The Norman lords forced the British who came in daily contact with them to speak French. French, a Latin language, greatly influenced English. As many as 10,000 new words of Latin origin entered the English language starting in 1066. Structural changes also occurred, including the reduction of case endings (see Table 14-5). The changes were so significant that historical linguists call the period directly after the Norman invasion, until about 1500, Middle English.

Modern English (about 1500 to the present) starts with the Renaissance. Many Classical Latin and Greek words entered the language. Inflectional endings were reduced further (see Table 14-5). Most of us are familiar with early Modern English through the works of William Shakespeare (1564–1616). Even though we also call what we speak today Modern English, a comparison to the works of Shakespeare shows that a great deal has changed since the late 1500s.

This is a very brief outline of the development of English. More information on this topic is discussed in this chapter. The sources listed in "Suggested reading" also provide detailed accounts of the history of the English language. A brief video (about 12 minutes) that gives a humorous but accurate overview of the history of the English language can be found at: www.brainpickings.org/index.php/2013/11/13/open-university-history-of-the-english-language-animated.

Sources: Robert McCrum, William Cran, and Robert MacNeil, *The Story of English*, 3rd rev. ed., New York: Penguin, 2003; Thomas Pyles and John Algeo, *Origins and Development of the English Language*, 4th ed., London: Harcourt, Brace, 1993; and Yudhijit Bhattacharjee, "From Heofonum to Heavens," *Science* 303 (February 27, 2004), 1326–1328.

EXERCISE 1 Sound changes

1. Consult an Internet or print source and list other examples of unconditioned sound changes (other than those described by Grimm's law and the Great Vowel Shift).
2. We discussed assimilation and deletion as examples of conditioned sound changes. Do research to find other examples of conditioned sound changes.

Morphological changes

Morphological changes in a language are changes in the words of the language and include changes in the meaning of words, the addition of new words, and analogy.

Morphological changes also occur in a language. The most obvious is the addition of new words or a change in meaning of existing words. In Chapter 4, we discussed several processes that are used to form new words. These processes included compounding, blending, acronym formation, foreign word borrowing, clipping, derivation, back-formation, and using people's names and trade names. In that chapter, we also discussed how the meaning of a word could be broadened, narrowed, elevated, degenerated, or reversed. We refer you to that chapter to review these concepts. These types of changes are referred to as lexical semantic changes.

Words and bound morphemes can also be lost. A reading of Shakespeare will reveal many words no longer used in English, such as *wot*, which meant "to know." Recent words purged from some English dictionaries are *snollygoster* (a shrewd and unprincipled person) and *ten-cent-store*. Words that might soon be used rarely or not at all are *typewriter*, *floppy disk*, *pager*, and other words that refer to technologies that have been replaced. In the section later in this chapter on syntactic changes, we will discuss how many bound inflectional morphemes have been lost in Modern English.

In addition to words being added to or deleted from a language and inflectional bound morphemes being lost, new bound morphemes are rarely added. A famous case of this in English is the addition of the suffix (bound derivational morpheme) *-gate*, which was clipped off *Watergate*, the name of a hotel and office complex in Washington, DC. In 1972, burglars were arrested after they had broken into the headquarters of the Democratic National Committee at the Watergate. This burglary was linked to President Richard Nixon's administration; ultimately, the scandal led to Nixon becoming the first American president to resign. The element *-gate* was not only clipped off Watergate, a compound word, but was also semantically reanalyzed to be a suffix with a completely different meaning than *gate* in *Watergate*. As mentioned in Chapter 4, the suffix *-gate* began to show up added onto other names to indicate a scandal. The free morpheme *gate* did not take on this meaning. In 1976, the word *Koreagate* was introduced, followed by *Comeygate*, *debategate*, *Irangate*, *nannygate*, *hairgate*, *Camillagate*, *travelgate*, *Gizmodogate*, *filegate*, *Monicagate*, *Angolagate*, *Fajitagate*, *Katrinagate*, *deflategate*, *and Tigergate*.[6]

Analogy or **analogous change** is the process whereby a dominant linguistic pattern in a language replaces exceptions to that pattern.

There are other morphological processes that lead to change. One of those is called analogy. English teachers refer to a comparison between things that have some element of similarity or likeness, but otherwise are quite different, as an analogy. In the study of language change, **analogy** or **analogous change** occurs when a dominant linguistic pattern in a language replaces exceptions to that pattern. For example, the dominant pattern used to pluralize a noun in Modern English is to add an *-s*. Actually, depending on the phonetic environment, an /s/, /z/, or /əz/ is added (see Chapter 3). In previous stages of English, words were pluralized in a number of ways, depending on the case (function in the sentence) of the word. One of those plurals was *-en*.

[6]You can find out what each of these and many other scandals labeled with the suffix *-gate* refers to at http://en.wikipedia.org/wiki/List_of_scandals_with_%22-gate%22_suffix.

So, one way to pluralize *ox* was as *oxen*. Most English speakers still use *oxen* for the plural of *ox*. One plural of *fox* was *foxen* and *cow* was *cowen*. Today, speakers of Standard English no longer say *foxen* or *cowen*. Instead, these speakers say *foxes* and *cows*.

Analogous change, a process of simplification, is responsible for these forms changing to conform to the dominant plural in Modern English. In fact, some dictionaries now list one acceptable plural of *ox* as *oxes*. Analogy also works on words borrowed from foreign languages. For example, the words *phenomenon* and *cactus*, which came to English from Latin, are pluralized in Latin as *phenomena* and *cacti*. Many Modern English speakers have made the plurals of these words conform to the dominant pattern and say *phenomenons* and *cactuses* for the plurals. In fact, some speakers might pluralize the foreign plural of some borrowed words and say, for example, *phenomenas*. Another example of this is the word *agendum*, the Latin plural of which is *agenda*. Most English speakers use *agenda* as the singular and pluralize the Latin plural to derive the English plural *agendas*.

Analogy applies to language categories other than pluralization (see Exercise 2), and in all cases reduces the number of irregular forms, making the language more internally consistent.

One more thing might be said about pluralization in Modern English. Sometimes instead of analogy occurring, the plural marker (morpheme) is eliminated altogether. The Greek word *criterion* was pluralized as *criteria*. Many English speakers have dropped the Greek singular and use *criteria* for both the singular and plural.

EXERCISE 2 Analogous changes

1. Provide examples of analogous changes other than those involving the plural. ***Hint:*** *think* past tense, for one example.
2. What are some other English words that use what was once a plural foreign word as both a singular and a plural form (as with *criteria*)?

Syntactic changes

Syntactic changes are changes in the rules for structures larger than words.

Some of the general **syntactic changes** that occurred as Old English changed to Modern English include a loss in inflectional (case) endings, an emphasis on prepositions, and an increase in the importance of word order (see Chapter 5). Table 14-5 lists the different case endings in Old English, Middle English, and Modern English for the word meaning *stone*.

You can see from Table 14-5 that the number of case endings was reduced from five in Old English (*-es*, *-e*, *-as*, *-a*, *-um*), to three in Middle English (*-es*, *-e*, and *-en*), to two in Modern English (*-s*, *-'s*, *or -s'*). Because only plural and possessive are marked in Modern English, the function of a noun is dependent on its position in a sentence—that is, its word order. In Old English, and to a somewhat lesser degree in Middle English, the case ending would tell you the function of the word; word order had little or no importance. In Old English, if the word *stanum* (dative plural) appeared in any position in a sentence, it would be the indirect object or the object of a preposition because of the case marker *-um*. Because there are no dative case markers in Modern English, prepositions take on greater importance than they did in previous stages of English.

Another way that Modern English is different from Old English is that Old English, like Modern German, distinguished gender. For instance, the third-person singular demonstrative nominative pronoun had three forms: /se/ was the masculine form, /pæt/ was the neuter form, and /seo/ was the feminine form. In Modern English, we have only one form of the third-person singular demonstrative pronoun, *that*, regardless of case or gender. These examples are only a sample of syntactic changes that have taken place in English.

TABLE 14-5 Reduction of case endings from Old to Modern English

Declension of *stan* (*stone*)

	Old English (Masculine)	
	Singular	**Plural**
Nominative case	stan	stan-as
Genitive case	stan-es	stan-a
Dative case	stan-e	stan-um
Accusative case	stan	stan-as

	Middle English	
	Singular	**Plural**
Nominative case	ston	ston-es
Genitive case	ston-es	stone (or -es)
Dative case	ston-e	ston-en (or -es)
Accusative case	ston	ston-es

	Modern English	
	Singular	**Plural**
Nominative case	stone	stone-s
Genitive case	stone-'s	stone-s'
Dative case	stone	stone-s
Accusative case	stone	stone-s

You may want to review the definition of case and the functions of each case in Chapter 5.

EXERCISE 3 Syntactic changes in English

Do some Internet research on syntactic changes in English. Start by taking a look at this site: www.answers.com/topic/declension-in-english.

1. How have pronouns changed from Old English to Modern English?

2. Find other syntactic changes that have occurred in the history of English.

Semantic and sociocultural changes

One type of semantic change is lexical semantic change, which was discussed under morphological change. Because morphemes carry meaning, changes to morphemes are often also changes in meaning. There are other broader types of semantic shifts that can occur in a language. For example, what is included in a specific domain might be changed. For instance,

up until the 1970s medical professionals generally classified homosexuality in the domain of illness, and in the subcategory (hyponym) mental and emotional disorders. In 1973, the American Psychiatric Association removed homosexuality from their manual, which listed it as an illness. In 1975, the American Psychological Association supported that decision. The redefinition of homosexuality as an "alternative lifestyle" and not an illness involved a lexical semantic change by removing the [+illness] semantic property from the definition.

Sociocultural changes are changes in culture that lead to changes in language, or changes in a language that contribute to changes in culture.

The change of what is in or out of a semantic domain is dependent on **sociocultural changes**. Sociocultural changes are changes in a culture that influence changes in a language, or changes in a language that contribute to changes in the culture. Changing definitions of homosexuality were due, in part, to the broader concerns for civil rights of the 1960s and 1970s, and new scientific data about human sexuality. In turn, the new definition of homosexuality led to additional social changes that allowed homosexual people to adopt children and, more recently, to marry. In the domain of the law, something that is illegal might become legal (an increase in the maximum speed for motor vehicles on interstate highways, for instance), or something that is legal might become illegal (a decrease in maximum speed). Changes in speeding laws might occur because of a society's concerns for fuel conservation or traffic accident deaths.

Another example of sociocultural and semantic change in English is in the use of the word *man*, the suffix *-man*, and certain personal pronouns. In the 1960s and 1970s, there was a conscious attempt to eliminate sexism in English. Some of those changes have indeed taken place. One change is the elimination of the use of the word *man* for all of humanity. Anthropology is no longer defined as the study of man, but the study of humans. Another change is the elimination of the suffix *-man* or *-men* for occupations. Where there were once *postmen*, *policemen*, *firemen*, *salesmen*, and *chairmen*, there are now *postal workers*, *police officers*, *firefighters*, *sales associates*, and *chairpersons* (or just *chairs*). The semantic property [+man] has been removed from these words and phrases.

The personal pronouns *he*, *him*, and *his* are also no longer used by most American writers to refer to people in general. In the past, it was common to say something like:

> It is the student's responsibility to know the date for each test, so he should consult the course outline for those dates.

This sentence would now most likely be worded as:

> It is the student's responsibility to know the date for each test, so he or she should consult the course outline for those dates.

Perhaps an even better way to write the sentence that would avoid gender completely would be to pluralize it:

> It is the students' responsibility to know the date for each test, so they should consult the course outline.

These were not random changes. Removing gender references from the English language was a response to the changing roles that women play in American society. Women could not even vote in federal elections until 1920. The role of women throughout most of American and world history in Western and most other cultures was to perform domestic and reproductive duties. Women were to "love, honor, and obey" their husbands, who were perceived as the "breadwinners" and protectors. Today, women can generally pursue the same occupations that men can (including many previously male-only roles in the military and police agencies), and women and men ideally have the same legal rights. The change from masculine-oriented language to gender-neutral language reflects the changing roles of women in American and other

Western societies. Does the change itself have a feedback effect on culture? The answer is yes. Research says that when a reader sees a sentence such as

> Man developed domestication of plants and animals 10,000 to 12,000 years ago

the reader perceives males, not males and females, as developing domestication.[7]

Of course, there is still sexism in the English language. In sports, the term "man-to-man" defense is still used by many women's basketball teams, instead of "person-to-person" defense. Also, sports announcers compare women's sports events to men's events, but generally do not do the reverse.[8] Nowhere is sexism in language more evident than in humor and in certain forms of music. Women are often degraded in humor about dumb blondes, Jewish American princesses, or despised mothers-in-law. In some rap music, women are labeled "bitches" or "whores."

How long does it take a language to change?

The answer to this question is that there is no concrete answer. Language contact and linguistic isolation affect the potential rate of language change. Because these things vary for different languages and for the same language at different times, no absolute statements about the rate of change can be made. Also, some cultures resist certain types of language change, such as sound changes. For instance, the French have a government institution, the Académie française (the French Academy), that replaces foreign words that have entered the French language with French-sounding words, many of which have no phonetic similarities to the words they replace. The lexicon of a culture that emphasizes change, such as American culture, will expand faster than a more conservative culture. In the United States and many other cultures, new technologies, new social trends, and new ideas require many new words.

Lexicostatistics is a technique of developing hypotheses about the historical relationship between languages and dialects, including when those languages and dialects diverged from each other based on a quantitative analysis of cognates.

Core vocabulary is made up of 100–200 words that represent concepts thought to be universal to all or most languages.

Glottochronology is the study of the amount of time that sister languages have been separated from their mother language. It uses a calculation of the amount of change that would take place in core vocabulary over a specific amount of time.

There are methods to estimate how long daughter languages have been separated from a mother language. One of these methods is **lexicostatistics**. In its modern form, it was first suggested by linguist Morris Swadesh (1909–1967), and is based on a statistical analysis of cognates in language. The premise is that the more cognates there are, the greater the relationship among the languages. Swadesh did not compare all words in a language, but a list of 100 or 200 words that he called **core vocabulary**. This core vocabulary is made up of words that represent concepts thought to be universal to all or most languages. Some of these concepts are *blood*, *eye*, *skin*, *cloud*, *red*, *leaf*, *star*, *wet*, *I*, *you*, *man*, and so on. Swadesh took this one step further when he and his colleagues developed **glottochronology**, a rate of change for the core vocabulary.

Swadesh studied languages that were known to be linked historically, such as Latin and the Romance languages. Using lexicostatistical techniques, he established that daughter languages would lose 14 percent of the cognates that they inherited from the mother language every 1000 years. So, after 1000 years of separation, all daughter languages would retain 86 percent of the cognates. After another 1000 years, they would lose 14 percent of the 86 percent, retaining 74 percent of the cognates inherited from the mother language. Every 1000 years, 14 percent of the cognates would have naturally changed to a degree that they were no longer recognized as cognates, or they would have been replaced with borrowed words from other languages due to contact.

Swadesh initially established the rate of change on languages for which he could study the historical record of change. This rate of change is analogous to the rate of radioactive decay for

[7]Janet B. Parks and Mary A. Robertson, "Development and Validation of an Instrument to Measure Attitudes toward Sexist/Nonsexist Language," *Sex Roles* 42 (March 2000), 415–438.
[8]Janet B. Parks and Mary A. Robertson, "Influence of Age, Gender, and Context on Attitudes toward Sexist/Nonsexist Language: Is Sport a Special Case?" *Sex Roles* 38 (March 1998), 477–494.

radioisotopes of the elements or to a genetic mutation rate of DNA. Based on the techniques pioneered and developed by Swadesh and others, time separations for most of the daughter languages of various proto-languages have been calculated. The proposed date for the split of Proto-Indo-European into its ten language families is put at about 5000–6000 years ago.[9]

The concepts of lexicostatistics and glottochronology remain controversial. Many linguists do not think that a simple statistical analysis of cognates will yield an accurate picture of relatedness. For instance, let's say three daughter languages have retained 60 percent, 60 percent, and 50 percent, respectively, of the cognates of a proto-language. This might lead one to believe that the first two languages are more closely related to each other than either is to the third. But the third language might possess fewer cognates because it had more contact with foreign languages than the other two, not because it is "genetically" less related or more distantly related to the other two languages. Most linguists also doubt that there is a constant 14 percent loss of cognates for all languages.

So where were the people who spoke Proto-Indo-European located? Evidence for the location of the Proto-Indo-Europeans has come from both linguistic and archaeological evidence. Again, looking at cognate sets gives evidence for the location of these people. This time, instead of looking at Swadesh's core vocabulary, scholars examined sets of words that might specifically indicate location. This search included words that had to do with climate, physical characteristics of the landscape, types of trees, types of wild and domestic animals, and types of artifacts. For instance, there are no cognate sets in these languages for such things as *tiger*, *camel*, *monkey*, *palm*, *desert*, *rice*, *gold*, *iron*, *ocean*, or *ship*. However, there are cognates for such things as *snow*, *cold*, *winter*, *oak*, *birch*, *willow*, *bear*, *wolf*, *beaver*, *otter*, *deer*, *horse*, *sheep*, *goat*, *pig*, *cow*, *herd*, *wheel*, *axle*, *timber*, *yoke*, *wagon*, *oxen*, *seed*, *weave*, and *sew*.

Various scholars who have examined the items on a list that includes the earlier noncognate/cognate comparison have concluded that the homeland of the Proto-Indo-Europeans was in eastern Ukraine. For instance, Paul Friedrich discovered that a large number of the cognates for different types of trees refer to trees that are thought to have been present in eastern Ukraine about 5000 years ago.[10]

Archaeological evidence seems to confirm the Ukrainian origin of the Indo-European languages. Marija Gimbutas (1921–1994) and others found that the Kurgan mound builders, who lived in Ukraine 5000–6000 years ago, had cultural artifacts and a cultural system that reflected the cognates common to Indo-European languages. For instance, the Kurgans had domesticated horses and cattle, they herded and farmed, and they had wagons. They wove cloth and lived in a climate that was cold and snowy during the winter.[11]

The Kurgans also began to migrate from eastern Ukraine between 4000 and 6000 years ago into Europe and the Middle East. One hypothesis is that they completely or partially replaced the indigenous languages of the people they conquered. Some people might have been saved from the advances of the Kurgans by virtue of their isolation. Perhaps it is for this reason that the Basque language, spoken by people in the eponymous remote, mountainous region of Spain, does not belong to the Indo-European group of languages.

Not everyone agrees with this scenario. Archaeologist Colin Renfrew believes that the origins of Proto-Indo-European culture occurred somewhat earlier than 5000–6000 years ago. His evidence indicates an origin in Turkey about 6000–7000 years ago. He sees the spread of Proto-Indo-European accompanying the spread of agriculture from this area to other areas of Europe and the Middle East.[12] Other researchers also subscribe to this **farming-language dispersal hypothesis**. For instance, archaeologist Peter Bellwood has proposed that

The **farming-language dispersal hypothesis** is the idea that ancient languages such as Proto-Indo-European were spread as farming people moved into new lands.

[9] Philip Baldi, *An Introduction to the Indo-European Languages* (Carbondale: Southern Illinois University Press, 1983), 12.
[10] Paul Friedrich, *Proto-Indo-European Trees: The Arboreal System of a Prehistoric People* (Chicago: University of Chicago Press, 1970), 168.
[11] Marija Gimbutas, "An Archaeologist's View of PIE," *Journal of Indo-European Studies* 2 (1975), 293–295.
[12] Colin Renfrew, *Archaeology and Language: The Puzzle of Indo-European Origins* (London: Cape, 1987).

the Austronesian languages dispersed from Madagascar to Easter Island originated from a proto-language that spread from China to Taiwan, and then on to Polynesia.[13]

Although both linguistic and archaeological reconstructions of languages and cultures are not considered by most linguists and archaeologists to be exact, they do provide an approximation of cultural and linguistic history and prehistory. But these hypotheses are limited, especially in estimating time separation. Even if we accept the basic premise of glottochronology, the reduction of cognates over time makes it impossible to suggest older origins of proto-languages beyond 7000–10,000 years ago. At that time, there are not enough cognates to make an estimate, and some things that may appear to be cognates may in reality be accidental similarities. So, one must be skeptical of claims that Proto-World is 100,000–200,000 years old, and even more skeptical of reconstructed words of a Proto-World language (see Box 14-1).

Researchers in the field of computational linguistics are attempting to use computer models to explore language change and the historical relationship between languages (see Chapters 2–8). Computer models may help us discover various processes underlying language change and language relationships. These models might also allow linguists to more precisely measure the influence of various factors that affect language change.

For instance, recent quantitative modeling has led to the idea that some classes of words—such as numerals, pronouns, and some adverbs—are more "conservative" than other classes of words. However, some commonly used nouns and verbs might also have a long life. One study suggested that some words in Eurasian language families that were used up to 15,000 years ago might still be recognizable today. These might include *I*, *we*, *who*, *man*, *mother*, *to hear*, and *to pull*.[14] Of course, without a time machine, it would be hard to establish the validity of such a hypothesis.

The spread of Englishes

One thing we do not need a time machine for is to discover that English is declining in terms of the number of people who speak it as a first language, but that varieties of English are being spoken by an increasing number of people worldwide as a second language. The drop in people speaking English as a first language is the result of increases in the populations of people speaking Mandarin (and other Chinese dialects), Hindi, and Arabic, plus the increases in populations in many other areas of the world. Birth rates in the United States, Canada, Great Britain, Australia, and other places where English is the native language tend to be lower than in many other areas of the world. In the 1950s, about 9 percent of the world's population spoke English as a native language; by 2050 it is estimated that this will drop to about 5 percent.[15]

Although the percentage of native speakers of English is declining relative to the total world population, the number of people throughout the world speaking some variety of English as a second language is increasing. Some researchers estimate that in 2017 between 1.5 billion and 2 billion people spoke English as a native language, a second language, or a foreign language.[16]

The transformation of English as a language with few speakers in a small "corner" of the world to an international language began with the expansion of the British Empire into the Americas, Asia, Africa, India, and Oceania in the seventeenth century. The prominence of Britain in industry and technology continued the spread. Then, mostly after World War II, the

[13]Peter Bellwood and Colin Renfrew, eds., *Examining the Farming/Language Dispersal Hypothesis* (Cambridge: McDonald Institute for Archaeological Research, 2002).

[14]Mark Pagel, Quentin D. Atkinson, Andreea S. Calude, and Andrew Meade, "Ultraconserved Words Point to Deep Language Ancestry across Eurasia," *Proceedings of the National Academy of Sciences of the United States of America* (*PNAS*), 110 (May 21, 2013), 8471–8476, www.pnas.org/content/early/2013/05/01/1218726110.full.pdf+html.

[15]David Graddol, "The Decline of the Native Speaker," in D. Graddol and U. H. Meinhof, eds., *English in a Changing World* (AILA Review 13) (London: Association Internationale de Linguistique Appliquée, 1999), 57–68.

[16]See www.statista.com/statistics/266808/the-most-spoken-languages-worldwide.

attractiveness of the economic power and culture of United States propelled English to most parts of the Earth. American and British movies, television, and other forms of entertainment became popular and were distributed worldwide. The United States became a main center for scientific research, and, as of 2012, about 80 percent of the science journals of the world are printed in English. The language of education increasingly became English, with university students (especially graduate students) in many parts of the world being required to speak English. In virtually all countries, airline pilots and commercial ship captains use English to communicate to their home bases. International corporations use English as their company language.

In the 1980s, the personal computer and the Internet became the new emissaries of the English language. Because the idea for and original development of the Internet occurred in the United States, most of the original data on the Internet was in English. In 1990, approximately 90 percent of online information was posted in English. That figure has steadily declined as more people from around the world post information on the Internet in languages other than English, but English is still the most used language on the Internet according to many sources.[17]

The predominance of English on the Internet as well as in education, commerce, politics, and other fields is one factor in creating a world social class system. Those who do not speak or read English are relegated to a lower social status in the world because they do not have access to much of the information that is necessary to succeed economically in the twenty-first century. Of course, that might change in the future if another language dominates in the areas that are necessary for economic success.

New jargons

At the same time that more people in the world are using some version of English to communicate internationally, new jargons are emerging (see Chapter 8). Because of the often extreme specialization of people in various professions and the emergence of new areas of knowledge, an increasing number of specific vocabularies are understood by relatively small numbers of people. So, for instance, a person specializing in bioinformatics (the use of computer databases to analyze, compare, and propose hypotheses about genetic information) may have a vocabulary that even many biologists will not understand. Words and phrases such as *contig*, *expressed sequence tag* (*EST*), *open reading frame* (*ORF*), and *oligo* are used in bioinformatics.[18]

This is just one example of a newer jargon that has joined other jargons, such as that for linguistics. Even though the jargon of bioinformatics is English, it and other jargons are as foreign to most English speakers as any foreign language.

Summary

Like all of the elements of a culture, language changes over time. Historical linguistics is the study of this change and of the relationships among languages. Sir William Jones was the first person to systematically describe family-like relationships among languages. Using the comparative method of analyzing cognates in different languages, his work indicated that the ancient languages Sanskrit, Latin, and Greek derived from the same mother language. These three languages, and now about 442 other living languages as well as many extinct languages, are said to have developed from Proto-Indo-European, a reconstructed language from about 6000 years ago. A family tree diagram or a wave diagram can display the relationships among languages of a proto-language. Both of these graphic representations of language relationships have their deficiencies, but taken together they give a good picture of how languages within a proto-language or modern language family are related.

[17]See www.internetworldstats.com/stats7.htm.

[18]See http://digitalcommons.imsa.edu/cgi/viewcontent.cgi?article=1000&context=bioinfo_course for the meaning of these items.

Jacob Grimm contributed to historical linguistics by showing how changes in language can be regular and systematic. Grimm's law showed that certain natural classes of sound in Proto-Indo-European systematically shifted to other sounds in Germanic languages, including English. Other linguists have discovered numerous other regular sound shifts not only in Indo-European languages but also in other language groups. Grimm's law is an example of unconditioned sound change—that is, one that occurs throughout a language. Every Proto-Indo-European /p/ changed to /f/ in Germanic languages. Actually "every" is an exaggeration; many unconditioned changes have exceptions. In addition to unconditioned changes, there are conditioned changes. A conditioned change occurs when a sound in a mother language changes to another sound in a daughter language, but only under specific conditions, such as to assimilate to surrounding sounds.

Some linguists have suggested that proto-languages can be grouped into more and more inclusive groups, such as macrofamilies. The most inclusive category would be Proto-World, which would be the mother language of all modern languages. Linguists are skeptical about this idea because it is unlikely that a proto-language as old as Proto-World could be reconstructed. Also, not all linguists agree that all modern languages derived from a common source (monogenesis). Some linguists believe that there were separate early languages that separately gave rise to modern languages (polygenesis).

Language change does not only involve sound change. Languages can change morphologically, syntactically, and in how they reflect cultural values.

Some linguists have attempted to use techniques such as lexicostatistics and glottochronology to estimate the rate of language change and the amount of time since the separation occurred between a mother language and daughter languages. Although all of these methods are questionable as to their reliability and validity, a partial consensus has arisen that Proto-Indo-European was spoken until about 5000–6000 years ago. However, some researchers believe it might have been spoken up to 1000 or so years before that.

While many languages are disappearing, new languages or new varieties of languages are appearing. Many of these are based on the spread of English throughout the world. As English spread with the expansion of the British Empire and then with the predominance of United States culture, numerous pidgins and creoles were formed and continue to form. With the emergence of new areas of knowledge and professional specialization, specific vocabularies, called jargon, have formed.

Suggested reading

Bellwood, Peter and Colin Renfrew, eds., *Examining the Farming/Language Dispersal Hypothesis*, Cambridge: McDonald Institute for Archaeological Research, 2002.

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Crowley, Terry, *An Introduction to Historical Linguistics*, 4th ed., Auckland: Oxford University Press, 2010.

Crystal, David, *English as a Global Language*, 2nd ed., Cambridge: Cambridge University Press, 2003.

McWhorter, John, *The Power of Babel: A Natural History of Language*, New York: Times Books/Henry Holt, 2001.

Stanlaw, James, *Japanese English: Language and Culture Contact*, Hong Kong: Hong Kong University Press, 2004.

Websites

Association of Computational Linguistics: www.aclweb.org. This includes numerous links to relevant resources.

Ethnologue: www.ethnologue.com. This has perhaps the most extensive database on the world's languages. It is also a source for language research software, a bibliography with 12,000 entries on linguistics and related topics, and other valuable resources.

European Commission: http://ec.europa.eu/public_opinion/archives/ebs/ebs_243_en.pdf; http://ec.europa.eu/education/official-languages-eu-0_en. These sites contain data on the languages spoken by member nations of the European Union (EU).

ielanguages.com: www.ielanguages.com/eurolang.html. This website, hosted by Dr. Jennifer Wagner, lists European languages and provides brief comparative analyses.
International Association for World Englishes Inc. (IAWE): www.iaweworks.org. This organization focuses on global issues relating to language, literature, and pedagogy.
KryssTal: www.krysstal.com/ langfams.html. This provides information on most of the language families of the world and a bibliography of books on this topic.

Review of terms and concepts: historical linguistics

1. Historical linguistics is the study of _____ and _____.
2. The _____ model shows a proto-language splitting abruptly into a number of daughter languages that appear to have no further contact with each other.
3. The _____ model shows the relative relationship of languages with a series of more and less inclusive circles around a group of languages.
4. The family tree model implies several things about how languages change over time. Two of them are represented by the _____ hypothesis and the _____ hypothesis.
5. One of the techniques of the comparative method is to look for words in different languages that have the same meaning and are very similar in their phonetic structure. Such pairs or sets of words are called _____.
6. Sometimes the phonetic characteristics of words in an ancestral language are very similar to that in daughter languages, except that some sounds have uniformly changed from one sound to another in the daughter language. Such a change is called a _____.
7. A proto-language is a _____ language.
8. The first in-depth study of a regular sound shift was accomplished by _____, who showed how certain consonants changed in the _____ daughter languages from what they had been in Proto-Indo-European.
9. The sound shifts in number 8 involved _____ (number) natural sound classes.
10. The shifts mentioned in number 9 were from what Proto-Indo-European classes of sound to what Germanic classes of sound?

    _____
11. The name given to the hypothetical language that some linguists believe to be the first human language is _____.
12. The concept that all languages arose from a single origin is called _____ as opposed to _____.
13. One problem with reconstructing any language that existed before about 10,000 years ago is that _____ any recognizable _____ to compare.

14. The Great Vowel Shift involved _____ (Old, Middle, or Modern) English long vowels that shifted in Modern English to _____.
15. An unconditioned sound change is a change from one sound in a mother language to another sound in a daughter language. This change, sometimes with exceptions, will occur in _____.
16. A conditioned sound shift only occurs in _____.
17. The example we have used for morphological change involves irregular forms being replaced by the most frequent or regular form. This process is called _____.
18. Three syntactic changes that have occurred as Old English changed to Modern English are _____, _____, and _____.
19. The statistical analysis of cognates is called _____.
20. _____ was a pioneer in both the answer to number 19 and glottochronology.
21. All linguists today believe that the lexicons of all languages change at the rate of 14 percent per 1000 years _____ (true or false).
22. The name of a group who lived about 5000–6000 years ago has been suggested as the original Indo-European group of speakers. That group is the _____, who lived in _____.
23. Colin Renfrew believes that the origin of Indo-European languages was about _____ years ago, in _____ (area of the world).
24. Six reasons for the spread of English throughout the world are:

    _____

    _____

    _____

    _____

    _____

    _____
25. The specific vocabulary for a professional specialization is called _____.
26. Words such as phoneme, morpheme, and grapheme are part of the _____ of the profession of _____.

APPENDIX A

Answers to reviews of terms and concepts

Chapter 1 Introduction: the nature of communication

1. behavior that affects the behavior of others by the transmission of information
2. change
3. communication
4. lexicon (words), grammar (rules to combine sounds, words, sentences, etc.)
5. rules
6. phonology, morphology (or morphological rules), syntax, semantics
7. subconsciously
8. linguistic competence
9. linguistic performance
10. mind (brain)
11. through speech, signing, and writing
12. hearing, speech
13. synchrony
14. false
15. direction, distance, quality (*Note*: They can also communicate other things such as wind velocity and the concentration of sugar in a food source!)
16. the olfactory (sense of smell), pheromones
17. redundancy
18. shorter, can serve more functions, longer, function for limited purposes, such as in mating rituals
19. false
20. broad scope
21. openness, productivity
22. infinite, is not
23. discrete
24. arbitrary
25. the ability to communicate about things not directly in front of the sender and/or receiver
26. prevarication
27. stimulus-bound, non-stimulus-bound
28. chimpanzee, ASL
29. gorilla, more
30. false
31. Herbert S. Terrace
32. the apes were responding in a stimulus-response manner; the Clever Hans effect was a factor (also see the criticisms mentioned in the chapter)
33. true
34. Broca's area, Wernicke's area
35. left
36. See text.

Chapter 2 Phonetics: the sounds used in languages

1. acoustic, auditory, articulatory
2. respiratory, digestive tracts
3. voiced, voiceless
4. impeded
5. or little closure or obstruction
6. it is oral, bilabial, a stop, a consonant, or voiced
7. a. nasal cavity
   b. lips
   c. teeth
   d. alveolar ridge
   e. hard palate
   f. soft palate (velum)
   g. uvula
   h. epiglottis
   i. trachea
   j. vocal fold
8. [m], [n], [ŋ]
9. velum, lowered
10. aspirated
11. a. palatal affricate
    b. dental fricative
    c. alveolar nasal
    d. alveolar lateral
    e. labiodental fricative
    f. palatal glide
12. sibilants, hiss
13. continuants
14. voiced
15. which resonance chamber(s) are used, the shape of the oral cavity, lip rounding and spreading
16. tongue
17. nasal consonants
18. false
19. They are high or mid-back vowels produced with lip rounding.
20. a vowel made up of two sounds—a monophthong and a glide
21. suprasegmental
22. intonational, tone (or tonal)
23. one
24. meaning, part-of-speech (lexical category)
25. perceived juncture

Chapter 3 Phonology: the sound patterns used in languages

1. the intrinsic systems used to organize speech sounds
2. allophones of the phoneme /t/
3. different phonemes
4. minimal pair
5. predictable (also obligatory and subconsciously made)
6. complementary distribution, allophones of the phoneme /k/
7. free variation
8. nasalization, manner assimilation, obligatory
9. different phonemes
10. false; minimal pair analysis is only one method of establishing the phonemes of a language.
11. any trait that distinguishes one linguistic unit from another
12. the sum of all of its distinctive features; these features are simultaneously produced
13. feature matrix

14. a. [ŋ], b. [u], c. [v]
15. natural class, voiceless stops
16. write rules for entire classes of sound, instead of for each individual sound; it also allows us to see relationships between sounds more easily
17. obligatory
18. single feature of a single phonetic segment
19. voice, manner, and place
20. optional phonological processes
21. they are often more radical; they involve style of speaking; they change the pronunciation of a word that is pronounceable in its original form
22. unmarked
23. redundancy

Chapter 4 Morphology: words and how they are formed

1. morphemes
2. phoneme
3. three
4. free morpheme (root), free morpheme (root), bound morpheme (inflectional)
5. change part of speech (lexical category), change meaning
6. They serve grammatical functions such as marking plurality (number), possession, progression, time, and so on.
7. nine
8. false
9. allomorphs
10. false (The choice of allomorphs is rule-governed and obligatory.)
11. it can be attached to many different roots including new roots that are coined
12. closed
13. analytic and synthetic
14. fusional, agglutinating, and polysynthetic (see text for differences between them)
15. compounding, acronym formation, foreign word borrowing, clipping, blending, derivation, back-formation, using people's names, and trade names used generally (see the text for explanations)
16. See text.

Chapter 5 Syntax: the larger patterns of language

1. language units that are larger than words
2. a unit of a sentence
3. In traditional grammars: subject, predicate; in many modern grammars it would be a predicate, arguments, and sometimes adjuncts
4. simple sentence
5. simple sentences (independent clauses)
6. an independent clause
7. two
8. a dependent clause, an independent clause
9. compound-complex sentence
10. a. ASD
    b. PSD
    c. ACD (Jack went up the hill and Jill went up the hill.)

   d. ACE
   e. ASI
   f. AC-XE
   g. ASD
   h. PSD
   i. ACI
11. any constituent of a clause
12. noun phrase, verb phrase, adjective phrase, adverbial phrase, and prepositional phrase; examples will vary with each student.
13. See glossary definitions.
14. a limitation on the use of a morpheme
15. Hierarchal structure of language refers to the fact that one constituent of a sentence is often a part of another constituent. The most general constituent is the sentence, and the most specific constituents are individual morphemes.
16. Answers will vary.
17. Rules that explain the linear word order and the hierarchical structure of language.
18. A grammar that allows for the generation of any and all sentences
19. The recursive property of language allows the repeated application of a rule so that people can embed one syntactic category endlessly within another.
20. A rule that relates an actual utterance to its underlying meaning
21. Deep structure is an abstract level of language representing basic meaning. The surface structure is what is actually said.
22. movement, deletion, insertion, substitution
23. the sequence of words and the relationship between words conforms to the syntactic knowledge (rules) of fluent speakers of a language, and if the sentence contains all of its required components
24. whether or not you have heard that utterance before. The grammaticality of an utterance does not depend on whether you understand the words in the utterance or not. Grammaticality does not depend on factualness. Grammaticality of an utterance is not based on whether or not the utterance makes sense.

Chapter 6 Semantics: the study of meaning

1. the meaning of linguistics expressions such as morphemes, words, phrases, clauses, and sentences
2. symbol
3. learned
4. index
5. the meaning of words
6. lexicon or dictionary
7. referent
8. image; typical
9. prevaricated
10. abstract concepts
11. the relationship
12. each speaker; each sentence
13. semantic properties
14. + and –
15. semantic property analysis
16. phonemes
17. a semantic domain
18. markedness

19. less
20. more
21. most often the unmarked, simple version of a word has the semantic property of maleness
22. more marked
23. hyponyms, synonyms, homonyms, antonyms
24. hyponyms
25. synonyms
26. paraphrase or restate
27. first definition in the dictionary
28. the shade of meaning
29. homonyms (or homophones)
30. polysemous
31. antonyms
32. complementary pairs
33. gradable pair
34. relational opposites
35. the structure of sentences
36. contradictions
37. oxymorons
38. anomalous utterances
39. metaphors
40. idioms
41. entailment
42. presupposition

Chapter 7 Pragmatics: how language is used and the effect of context on meaning

1. pragmatics
2. speaker, referent
3. force, language
4. pronouncing, sentencing, betting, warning, quitting, promising, and more
5. politeness theory
6. strategy
7. universal, agree
8. face
9. positive face
10. negative face
11. positive politeness
12. negative politeness
13. false
14. face threatening acts
15. discourse
16. discourse analysis
17. shift the referent
18. indexicality
19. presuppositions
20. quantity, quality, relevance, manner
21. the cooperative principle
22. implicature
23. relevance
24. quantity

25. manner
26. quality
27. False
28. indirect speech, irony, sarcasm, nonliteral utterances

Chapter 8 Sociolinguistics: language and society

1. idiolect
2. language (or speech) community
3. Standard American English (SAE)
4. BBC English
5. region
6. Nahuatl, the Aztec language
7. phonological variation (free variation)
8. /s/ deletion
9. *y'all* (plural)
10. plural verb
11. social
12. British
13. /t/ for /θ/, the /r/, /ɔy/
14. language of their masters, African languages
15. in school or while conducting business or working in the white community
16. code switching
17. /r/ and /l/ deletion
18. another word that begins in a consonant
19. vowel
20. /t/, /d/
21. deletion, aspect
22. deleted, contracted
23. aspect
24. indirect questions
25. man of words
26. phonological system, word order
27. twelve, five
28. cognates
29. negative word, negative
30. code switching
31. lingua franca
32. pidgin
33. superstrate, substrate
34. creole, nativization
35. registers
36. formal, informal
37. contractions
38. formal, informal
39. jargon
40. males, females
41. under different circumstances, differing rates
42. indirect language
43. tag questions
44. false

Chapter 9 Linguistic anthropology: language and culture

1. linguistics, anthropology
2. cultural anthropologist
3. 7097, 1537, extinction
4. Mandarin, Spanish
5. changing into something else; dying out totally or almost totally due to the genocide of the people who spoke the language or to ethnocide.
6. Answers will vary, but it might influence their access to educational opportunities, jobs, promotions, political positions and influence, social mobility, and so on.
7. Answers will vary. (See the text for explanations.)
8. Language must be studied as it is embedded and entwined in its culture. It is not a neutral code that objectively describes the surroundings and events. It is intrinsically biased to encourage its speakers to classify and order the world in a specific way.
9. linguistic relativism, linguistic relativity
10. cultural
11. cultural
12. within
13. equally, equally, equally, equally
14. environment
15. inferior, ignorant savages
16. linguistic
17. consistent and comprehensible
18. Sapir–Whorf hypothesis
19. self-reinforcing
20. system
21. important, not important
22. determine, weaker, influences
23. habit, accustomed
24. culture
25. mock language
26. enculturation
27. important
28. identity
29. personal name, clan or other group name, gender, social class, educational level, and any other way the individual is socially and cultural categorized.
30. self-fulfilling prophecy
31. gender and clan
32. They are helpless and don't understand.
33. carry messages to people of higher status
34. They look them in the eye, talk to them, using a simplified version of the language ("baby talk"), carry on pretend conversations, and try to interpret the meaning or intention of sounds and gestures.
35 history, culture, common language
36. political influence and power, access to educational resources, and economic success. (Other factors could also be listed.)

Chapter 10 Language acquisition: how children (and others) learn language

1. r-complex; drives and instincts
2. limbic system; screaming and the crying of young children

3. neo-cortex, Broca's, Wernicke's
4. Noam Chomsky; Eric Lenneberg
5. innateness hypothesis
6. sucking, eating, grasping objects, walking, talking
7. not biologically based
8. universal grammar
9. language acquisition device
10. critical period hypothesis
11. poverty of the stimulus
12. reinforcement hypothesis
13. interactionist hypothesis; constructivism
14. cooing; babbling
15. complete or undivided phrases; holophrastic stage
16. telegraphic speech
17. overgeneralize
18. the words that people are able to use; the words people are able to understand when they hear them
19. whole object; parts or attributes
20. overextension
21. they were learning a language in which all male relatives were called by the same kinship term.
22. underextension
23. overextending
24. pronouns; shifts
25. two languages are learned at the same time
26. sequential bilingualism
27. one lexicon and one set of semantic rules for both languages
28. constructing different phonological systems, lexicons and semantic systems
29. make mistakes that correspond to the mistakes of monolingual children in each language
30. intellectual; pronunciation; grammar; vocabulary
31. interferes
32. fossilization

Chapter 11 Sign language: the language of the Deaf community

1. speech, hearing
2. mental, lexicon, grammar
3. See text.
4. false
5. universal
6. an icon
7. true
8. as a *lingua franca*, for hunting, and by the deaf
9. manual English
10. different
11. true
12. ten
13. in much the same way
14. predictable, in pronunciation
15. function signs

16. signing, speech, lip reading
17. true
18. phonology
19. TAB (tabulation), SIG (signation), DEZ (designator), ORI (orientation or palm orientation)
20. phonemes
21. the region of the hand that contacts the body, the orientation of the hands with respect to each other, and nonmanual signals
22. nonmanual grammatical signals
23. movements of the brows, mouth, shoulders, head, and body
24. unmarked
25. See text.
26. true
27. three-dimensional space
28. NMGSs such as facial behaviors and other body movements
29. origin and development of a new language
30. register differences

Chapter 12 Writing systems: the graphic representation of language

1. logographic, syllabic, and alphabetic
2. logographic
3. linguistic units
4. logosyllabic
5. the invention of symbols that had conventional meaning
6. when symbols come to represent sounds
7. the rebus principle
8. false
9. Chinese
10. word or concept
11. 5000
12. tradition; the fact that people speaking different forms of Chinese are able to understand each other through writing
13. CV
14. grapheme
15. phonemes
16. false
17. the different rates of change for speech and writing
18. clarify homophones
19. spelling pronunciation
20. iconic
21. descriptive-representative, identifying-mnemonic
22. false
23. abstract, writing
24. 5100 years ago, Sumer, logosyllabic
25. Semitic, Northern Semitic Syllabary
26. Greeks
27. Johannes Gutenberg
28. Gutenberg Bible, 1455 CE
29. See text.
30. See text.

Chapter 13 Nonverbal communication: communicating without words

1. any communication that occurs between people, usually within each other's presence, by means other than speech, writing, or the signs of a sign language
2. kinesics
3. there is a highly patterned synchrony between an individual's own movements and speech and that of those who the person is communicating with
4. emblem
5. illustrator
6. adaptor
7. emblem (emblematic display)
8. affect display and facial emblem
9. face
10. cross-cultural studies, studies of blind children, studies of nonhuman primates, and brain imaging studies
11. regulators
12. adaptors
13. fear, anger, happiness, sadness, surprise, disgust/contempt
14. regulating the flow of communication, monitoring feedback, reflecting cognitive activity, expressing emotions, and communicating the nature of the interpersonal relationship
15. emblems; adaptors
16. remove material from the fur or hair; communicate reassurance and affection; dominance patterns
17. paralanguage
18. proxemics
19. 18 inches; intimate space; invisible wall
20. full lips, unblemished and smooth skin, and lustrous hair, waist-to-hip ratio in women, and body symmetry in both genders
21. color, sound, lighting, objects, and the placement of objects in a room

Chapter 14 Historical linguistics: the history of languages

1. language change; the relationship between different languages
2. family tree
3. wave
4. regularity, relatedness
5. cognates
6. a regular sound shift or an unconditioned sound change
7. reconstructed
8. Jacob Grimm, Germanic
9. three
10. voiced aspirated stops to voiced unaspirated stops; voiced stops to voiceless stops; voiceless stops to voiceless fricatives
11. Proto-World
12. monogenesis, polygenesis
13. there may not be; cognates
14. Middle; other long vowels and diphthongs
15. all phonetic environments
16. specific phonetic environments
17. analogy

18. loss of inflectional (case) endings, emphasis on prepositions, an increase in the importance of word order
19. lexicostatistics
20. Morris Swadesh
21. false
22. Kurgans, eastern Ukraine
23. 6000–7000, Turkey
24. See text.
25. jargon
26. jargon, linguistics

APPENDIX B

Answers to selected exercises

Chapter 1

End-of-chapter exercises

2. Among other characteristics, all communications systems have a sender, a receiver, a channel (or channels) of communication, a code, and feedback possibilities.
4. Linguistic competence is all of the knowledge of a language's grammar and lexicon that an individual has stored in the brain. Most of this knowledge is subconscious. Linguistic performance is the actual production of an utterance.
6. A lexicon is composed of all of the meaningful units of a language. A personal lexicon is all of the vocabulary stored in the brain. A grammar is the set of rules used to combine the lexical items in a standard way.
8. Humans can communicate through language using speech, writing, or sign language.
10. Although some researchers believe that some birds, such as Alex, can be taught some elements of language (in the broad sense of what language is defined to be), most researchers consider birds to be mimicking—that is repeating what they hear without understanding.
12. See Table 1-1.
14. The Clever Hans effect refers to subtle, mostly subconscious, cuing of a nonhuman or human subject.

Chapter 2

Exercise 1

1.	b. [m]	d. [v]	f. [č]	h. [g]	j. [ð]	
4.	b. [v]	d. [r]	f. [š]	h. [č]	j. [z]	
	l. [p]	n. [b]	p. [d]	r. [ǰ]	t. [n]	
	v. [ð]	x. [š]				
5.	b. [v]	d. [p]	f. [g]	h. [n]	j. [k]	
	l. [ð]	n. [z]	p. [l]	r. [k]	t. [r]	
6.	b. [h]	d. [ð]	f. [ŋ]	h. [ŋ]	j. [θ], [ŋ]	l. [θ]

Exercise 2

1.	b. anger	d. ~~w~~ho	f. philosophy	h. teethe
	j. com~~b~~	l. ~~k~~night		

Exercise 3

1.	b. /ə/	d. /æ/				
2.	b. /æ/	d. /e/	f. /ɔ/	h. /ʊ/	j. /ɛ/	l. /i/
4.	b. /ay/	d. /aw/	f. /ɔy/	h. /ay/	j. /ɔy/	l. /aw/

Exercise 4

4.	b. hád	d. hót rod	f. bláck	h. gréen

End-of-chapter exercises

2. a. /ækt/
   b. /rɔy/
   c. /fətig/
   d. /maws/
   e. /ritrit/
   f. /mæsk/
   g. /vasəlet/
   h. /naw/
   i. /pɔn/
   j. /pʊt/
   k. /siž/ or /siǰ/
   l. /mošən/
   m. /day/
   n. /dɛləkɛt/
   o. /ay/
4. See text.

Chapter 3

Exercise 1

2. a. They are allophones of the phoneme /l/.
   b. They are in complementary distribution.
      [l] occurs in the initial position before a front vowel.
      [ɬ] never occurs in the position of [l]. It occurs in the initial position before a central or back vowel and in the final position.
4. free variation; examples will vary

Exercise 2

2. a. [i] does not fit. The rest of the sounds share the following features: [+back, +round]
   b. [p] does not fit. The rest of the sound share the following features: [+sonorant, –nasal]
   c. [v] does not belong here. The rest of the sounds are characterized by the following: [+consonantal, –sonorant, –continuant, –strident]

Exercise 3

2. The obligatory phonological process is devoicing. Nasals are devoiced in word final position. [m] and [m̥] are allophones of the phoneme /m/; [ŋ] and [ŋ̊] are allophones of the phoneme [ŋ]; [n] and [n̥] are allophones of the phoneme /n/.
4. The phonological rule is called *g*-deletion. /g/ is deleted when it occurs before a nasal consonant that is in the final position of a syllable. But when the nasal is not in the final position of the syllable, the /g/ is pronounced. (There are exceptions).
6. The optional phonetic process is called insertion. The insertion of /p/ makes the words in question easier to pronounce.

End-of-chapter exercises

2. In English, vowels are long when they occur before voiced consonants and at the end of words. This is an obligatory process.

Chapter 4

Exercise 1, Part A

b. *infirm* –in + firm B + F
   in- is a prefix meaning "not"
   firm means (in this case) "well" or "strong"
d. *reformers* re + form + er + s B + F + B + B
   re- is a prefix meaning "anew"
   form is a free morpheme meaning "to build"
   -er is a suffix that changes a verb into a noun (an agent)
   -s is the plural suffix

f. *actor* act + or F + B
act means to perform
-or changes a verb into a noun. It also functions to mark the word as masculine.

h. *ducklings* duck + ling + s F + B + B
duck refers to an animal
-ling is a diminutive meaning "young"
-s is the plural marker

j. *boysenberry* boysen + berry B + F
This is a problematic form. It is clear that berry is a free morpheme. But since "boysen-" does not occur in another form, can the word be broken in the way shown? Most linguists say yes. From a logical point of view, we know that "boysen-", "cran-", and "huckle-" describe different types of berries; therefore, they do have meaning. They must be attached to *berry*, so, therefore we call these forms bound.

Exercise 1, Part B

2. *hot dog* noun
adj noun
Note: Compounds may appear as two separated words. The reason *hot dog* is considered a compound word is that it is grammatically not a phrase. That is, a hot dog is not a dog that is hot, but a type of food. Compare this to a word like *greenhouse*. A greenhouse is not necessarily a house that is green, but a place to grow certain types of plants. *Hot dog* and *greenhouse* are formed in a conceptually similar way.
4. *bunkhouse*—noun/noun noun
6. *into*—prep/prep prep
8. *takeover*—verb/prep noun
10. *workman*—verb/noun noun
12. *empty-handed*—adj/adj adj
Note: This hyphenated word is a compound for the same reason that *hot dog* is. See number 2 above.

Exercise 2

b. *running* run + ing F + BI
-ing is called the progressive.
Note: The double "n" is a spelling convention. It is not necessary to account for the second "n" in the example. The morphemes involved are *run* and *-ing*.

d. *action* act + ion F + BD
-ion changes the part of speech.

f. *comes* come + s F + BI
-s is the third-person singular marker

h. *unfriendly* un + friend + ly BD + F + BD
Both *-un* and *-ly* are derivational: *-un* changes the meaning of the word and *-ly* changes the part of speech.

j. *lovable* love + able F + BD
-able changes the part of speech.

l. *banana* banana F
Note: Just as the concepts *word* and *morpheme* are not synonymous, the concepts *morpheme* and *syllable* are not synonymous. For instance, *banana* is a three-syllable word consisting of one free morpheme, whereas *love* is a one-syllable word consisting of one free morpheme.

n. *quicker* quick + er F + BI

p. *semicircle* semi + circle BD + F

r. *Aaron's* Aaron + 's F + BI

t. *happily* happy + ly F + BD

Exercise 3

2. /d/, /t/, and /əd/
   a. /d/ is added to words ending in voiced sounds with the exception stated in c.
   b. /t/ is added to words ending in voiceless sounds with the exception stated in c.
   c. /əd/ is added to alveolar stops. The /ə/ is inserted because English speakers do not distinguish between long and short consonants as they do between long and short vowels. An English speaker would not distinguish /ret/ from /rett/ or /klawd/ from /klawdd/. Therefore, the /ə/ is inserted to form /retəd/ and /klawdəd/.
4. In Spanish, male forms usually end with an *-o* and feminine forms end with an *-a*. However, if the masculine form ends with a consonant, the feminine form still ends with an *-a*. If the masculine root ends with an *-a*, then the word can be both masculine and feminine. The situation can be even more complex: some Spanish words have fixed gender that has nothing to do with actual male or femaleness.

   The article that would be "the" in English has two forms in Spanish: *el* and *la*. A noun preceded by *el* is masculine (*el amigo* is a male friend) and a noun preceded by *la* is feminine (*la amiga* is a female friend).

Exercise 4

2. a. *reformer* This word shows the agglutination process in that it is made up of several morphemes that each has its own meaning or function.
   b. *her* This word shows the inflectional process. *Her* carries several bits of information—feminine, singular, third person, and possessive.
   c. *pneumonoultramicroscopicsilicovolcanokoniosis* Because it is so long (perhaps the longest word in the dictionary), this word might appear to be based on the polysynthetic principle. Although it has this characteristic to some degree, it is not a sentence in and of itself. It would be best classified as the result of agglutination.
   d. The word *will* as in "I will go" is best described as following the analytic pattern. *Will* indicates the future as a word. Similar types of concepts in English are indicated by bound morphemes.

Exercise 5

2. a. skunk (from Algonquian Indians)
   b. typhoon (from Chinese)
   c. sonata (from Italian)
4. All are English words coined in the past 125 years (or have taken on new meanings in that time).
6. The names of celestial bodies, new products, streets, buildings, new manufacturing processes, clothing, and others are often named for people.

Exercise 7

2. The word *round* can be most lexical categories. The lexical category is determined not by the spelling of a word, but by its use in a sentence. This includes its place in the word order of the sentence.

End-of-chapter exercises

2. To derive the name of the language, *-in-* is added to the name of the ethnic groups. It is added after the first sound unless that sound is a vowel. In the case of an ethnic group that begins with a vowel sound, the affix is added as a prefix. Note that when *-in* is added after the first consonant it cannot be properly called a prefix or suffix. It is in these cases an **infix**, added in the middle of the word. English has no true infixes, although some

linguists maintain that alternations such as man/men come close to being the result of infixes. In this case, the root would be *m—n* and the infix *-a-* would be added to make the root singular and *-e-* to make it plural. Note that the root would not be a free morpheme or any usual form.

3. a. clipping (from *photograph*)
   b. derivation (*re-* added to *make*)
   c. acronym (self-contained under-water breathing apparatus)
   d. compounding (*black* and *bird*)
   e. acronym (radio detection and ranging)
   f. foreign word borrowing (Italian)
   g. trade name
   h. proper name (named for General Burnside)
   i. back formation (from *sculptor*)
   j. trade name
   k. blending (mistake and happening)
4. A. determiner (article)
   B. noun (common, concrete, count)
   C. verb (intransitive)
   D. preposition (single word)
   E. adjective (limiting)
   F. noun (common, concrete, count)
   G. pronoun (personal)
   H. verb (modal)
   I. adverb (positive degree)
   J. verb (linking)
   K. adjective (descriptive)
   L. part of verb "to go"
   M. verb (intransitive)
   N. preposition (single word)
   O. determiner (article)
   P. noun (common, concrete, count)
   Q. adjective (descriptive)
   R. noun (common, concrete, count)
   S. determiner (qualifier)
   T. noun (common, concrete, count)
   U. noun (common, concrete, count)
   V. determiner (qualifier)
   W. pronoun (possessive)
   X. verb (transitive)

Chapter 5

Exercise 1

2. In d., the subject of the sentence is understood as *you*. Sentence e. is a passive. What was the object of the verb in the active sentence of Exercise 1b (the clown) becomes the subject of the passive sentence.
4. a. simple
   b. simple
   c. complex
   d. compound
   e. complex
   f. complex
   g. compound-complex
   h. compound
6. a. *Jill's house*—subject
      the market—object of the preposition
   b. *All guns*—subject
   c. *It*—subject
      Shane—subject of the dependent clause
      dinner—object of the preposition
   d. *You* (understood)—subject
      home—object of the verb
   e. *large cars*—subject
      more gas—object of the verb
8. a. *ran after the car*
   b. *died*
   c. *has taken five tests*

10. a. *the blue*
    b. *a fat yellow*
    c. *quite upset*
12. *at noon*
    with a machine
    before the prices go up

Exercise 2

1b.

The	rabbit	quickly	jumped	into	the	big	hole.
Det	N	Adv	V	Prep	Det	Adj	N

1d.

The	boy	will	do	the	homework.
Det	N	Aux	V	Det	N

Exercise 3

2. a. S → NP Aux VP
      NP → Det N
      VP → V PP
      Aux → Tense
      PP → Prep NP
   b. S → NP Aux VP
      NP → N
      Aux → Tense
      VP → V
   c. S → NP Aux VP

      $$\text{NP} \rightarrow \left\{ \begin{matrix} \text{Pro} \\ \text{Det Noun} \end{matrix} \right\}$$

      Noun → N pl
      Aux → Aspect
      VP → V NP

Exercise 5

2. a. structural ambiguity—Does the prepositional phrase *in my pajamas* refer to the speaker or to the elephant?
   b. lexical ambiguity—*Bear* could mean "give birth to" or "tolerate."
   c. structural ambiguity—Does the adjective *hot* also apply to *turkey*?
   d. part-of-speech ambiguity—*Polished* could be an adjective describing Bill's shoes or a verb referring to Bill's action in the past.
   e. part-of-speech ambiguity—Are *shoots and leaves* nouns referring to the food that the panda eats or are they verbs referring to the actions of the panda after eating? This could also be considered structural ambiguity since the sentence could be clarified by the use of punctuation or restructuring; it is also lexical ambiguity in the sense that *shoots* and *leaves* each have more than one meaning.
   f. part-of-speech ambiguity—Is *flies* a noun referring to an insect or a verb referring to the action of the fruit? As with e. above, it is also lexical ambiguity in the sense that the word *flies* has more than one meaning.

End-of-chapter exercises

2. a. Yes, "the dog" from the second sentence.
   b. Yes, "and" as a conjunction to combine the two sentences.
   c. The dog with big teeth bit the ball and ran into the house.
4. Answers will vary.

Chapter 6

Exercise 2

1. a. I
   b. You
   c. He
   d. We
   e. They
2. Answers will vary but the following are some possibilities:
   a. You may be going shopping but . . .
   b. I like what you are wearing.
   c. Bruce was stuck in traffic on DeSoto Ave. so . . .
   d. My boyfriend and I are studying tonight so we can't come to your party.
   e. Heidi and Aldo just came back from the Toyota dealer.

Exercise 3

2. a.

	Woman	**Girl**
[adult]	+	–
[female]	+	+
[human]	+	+

b.

	Mother	**Father**
[adult]	+	+
[male]	–	+
[parent]	+	+

c.

	Sister	**Brother**
[adult]	±	±
[male]	–	+
[have same parent(s)]	+	+

d.

	Car	**Bicycle**	**Motorcycle**	**Bus**	**Truck**
Provides transportation	+	+	+	+	+
4 wheels	+	–	–	+	+
Motor	+	–	+	+	+
Passengers	+	–	–	+	–
Freight	–	–	–	–	+
Commercial	–	–	–	+	+

e.

	Cat	**Dog**	**Goldfish**	**Parakeet**	**Hamster**
Animal	+	+	+	+	+
Mammal	+	+	–	–	+

Pet	+	+	+	+	+
Carnivore	+	+	–	–	–
Cage/bowl	–	–	+	+	+
Makes noise	+	+	–	+	–

Exercise 4

1. These are the answers given by most of the students in our classes:
   a. Man
   b. Woman
   c. Woman
   d. Man
   e. Man
   f. Woman
   g. Man
   h. Man
   i. Man
   j. Man
2. Possible answers:
   a. Female doctor or lady doctor (although that term can also mean a gynecologist)
   b. Male nurse
   c. Male kindergarten teacher
   d. Lady professor
   e. Lady lawyer
   f. Male secretary
   g. Female CEO
   h. Female construction worker
   i. Lady farmer
   j. Female firefighter

Exercise 6

1. Automobile
2. Flower
3. Tools
4. Possible answers for North Americans might be: (clothes) washing machine, dryer, dishwasher, refrigerator, stove.
5. Possible answers for North Americans might be: apple, orange, peach, cherry, strawberry, blueberry, pineapple.
6. Possible answers for North Americans might be: sofa, couch, chair, table, bookcase, bed rocker, end table, coffee table.

Exercise 8

1. Homonym pairs may vary by region and pronunciation. Possible answers are:
   a. Read/reed
   b. Caret/carrot
   c. Berth/birth
   d. Bare/bear

2. Answers will vary.
3. Homonyms are words that sound the same and may be written the same, but they are derived from different root words. A polysemous word may have many meanings, but the word is derived from a single root word.

Exercise 10

Answers will vary.

Chapter 7

Exercise 2

1. Social meaning:
   a. The speaker sounds like a cowboy.
   b. The speaker sounds like a Valley girl, i.e. a teenage girl from California.
   c. The speaker sounds like a hippie, i.e. a college student from the 1960s.
   d. The speaker sounds like a surfer, i.e. a teenage boy from California.
   e. The speaker sounds like an older person.
   f. The speaker sounds like a computer geek.
2. Answers will vary, but the sentence pairs should contain adjectives and adverbs that express opposite feelings about the same referent. An example could be:
   The young lady was chatty, animated, and delightful.
   The young woman talked so much I couldn't get a word in edgewise.
3. Answers will vary. In the example of the linguistics joke we can imagine the student in the back of the class using nonverbal communication—posture, paralanguage, emblems, illustrators—to convey the negative comment.

Exercise 3

1A. Negative politeness. Shirley's negative face is her desire not to be interrupted in the thing that she is currently doing. Joe's request recognizes that fact.

1B. Positive politeness. Shirley sees that Joe is potentially uncomfortable, but might not want to point it out, so she offers a solution without forcing Joe to make a request.

2A. Positive politeness. This shows friendly concern for a person without invading their choices (the person could say "No thank you").

2B. Neither type of politeness. A statement like this is sometimes called a bald on-record act. It can be a face threatening act, but might also be performed among people who know each other well or as an expected act between people of unequal status, such as a parent talking to a child.

Exercise 4

1. a. The person you are speaking to does not know Barbara, and does not know your relationship to her or where she lives.
   b. I don't know what you are planning to do during your time off on Saturday and/or Sunday and I'd like to plan to do something with you.
   c. There are things at the snack bar that I think you might want that I'm willing to bring to you. Another possible implicature is that I'm simply being polite in asking you, but I really don't expect you to say yes.
   d. The person you are speaking to knows Max, so you don't need to explain who Max is and where he is going.
2. a. Jane, Jane's family, Jane, John, John
   b. John, John,
   c. Alex, Alex
   d. Jane, Alex, Jane
   e. Jane, Alex, Jane

3. a. a, the, a
   b. a, the
   c. a, the, the, the,
   d. a, a, a, the, the, the

Exercise 6

1. Relevance—Even though the question calls for a yes or no answer, the parent has a condition (doing homework) to add to the mix.
2. Quantity—unless this is a very small town with only one road. Someone asking for the nearest gas station probably needs specific instructions on how to get there in the shortest amount of driving.
3. Manner—All that's needed to answer the question is the date. The rest is superfluous—although perhaps demonstrating affective meaning!
4. Quantity—It's a part of an informal greeting ritual.
5. Quantity—Your parent isn't just greeting you but actually wants to know what (mischief) you've been up to. You haven't given enough information.
6. Answers will vary, but should mention the difference between greeting rituals and actual requests for information, and the difference between the conversation of friends and the communication between parents and children.

Chapter 8

Exercise 2

1. a. Answers will vary, but some of the repeated phrases include:
   - One hundred years
   - Freedom/free at last
   - I have a dream
   - Go back to (state name)
   - Let freedom ring

These repeated phrases include the most important points of the speech.

   b. A few examples of the alliteration include:
   - symbolic shadow . . . stand . . . signed . . . seared . . . segregation . . . shameful
   - sweltering summer
   - dignity and discipline
   - dark and desolate

The state names rhyme; other sentences end with the same word, such as "hope," "ring," and "dream." These rhymes and alliterations provide emphasis.

   c. Some of the sources referenced are the speeches of Abraham Lincoln, the Bible, the song "America" ("My Country 'Tis of Thee"), the Constitution, and the Declaration of Independence. These would all be familiar to the African American community. They would be keenly aware of the irony of the guaranteed liberty, justice, and "inalienable rights" which had not been available to them.
   d. One of the most important metaphors initially is the comparison of civil rights to a bad check. Also, others include:

   - segregation as an island
   - freedom as a bell that rings
   - a plan for the future as a dream
   - heat as oppression; water as the cure

   e. There is no AAE grammar or phonology; there is a rhythmic intonation in the delivery.

2. Answers will vary depending on the literary work chosen. The student should include a copy of the lyrics or text; they should support their statements with examples from the text.

Exercise 4

1. Answers will vary according to the article or conversation the student chooses to analyze.
2. Students should notice that more contractions are allowed in pronunciation than in writing.

   a. I'm studying linguistics. I'm studyin' linguistics.
   b. I'll be going to the store today. I'll be goin t'th'store t'day.
   c. I'm going to a party tonight. I'm goin t'a party t'night.
   d. I'm going to dance at the party. I'm gonna dance at th'party.
   e. I have a large dog. I 'ave a large dog.
   f. I've been working a long time. I bin workin' a long time.
   g. We would've been late if we stopped for coffee. We'd a bin late if we stopped fr coffee.
   h. He won't need a coat today. He won' need a coat t'day.
   i. You don't have enough money. Ya don' 'ave enough money.
   j. That is not going to happen. That's not going to happen. That's not gonna happen. Ain't gonna happen.

3.

a. I'm	/aym/or /am/
b. I'm not	/aym nat/or /am nat/
c. You're not	/yr nat/
d. He's	/hiz/
e. They're	/ðer/
f. I'm going to	/am gʌnə/
g. I'll have	/al av/
h. I didn't	/ay dɪnt/
i. I've	/ayv/
j. I haven't	/ay avnt/

4. Answers will vary.

Chapter 9

All exercises in this chapter involve students doing their own research and analysis, so all answers will vary.

Chapter 10

All exercises in Chapter 10 are based on students doing interviews and making observations. The answers will vary.

Chapter 11

Selected end-of-chapter exercises

2. Answers will depend on the emblems you listed in answer 1. An example of an answer would be that, for the "V" emblem, the TAB is in front of the signer's body (ø), DEZ is the victory hand spread (V), and the SIG is away from body (⊥).
4. Yes, facial expressions and postural changes are always important in ASL communication. They supply meaning at all levels; direct meaning, inflection, emotion, punctuation, and so on.

6. A delivery system is a way of conveying linguistic information (language) to others. ASL is a delivery system that is not dependent on hearing or speech.
8. People who use ASL can communicate all of their needs, emotions, and information linguistically without speech and hearing. ASL is a language just as much as English is a language. It displays openness, productivity, displacement, arbitrariness, and the other design features of language.

Chapter 12

Exercise 2

2. a. any
   b. I am empty.
   c. You are cagey.
   d. I envy you.
   e. to excess
   f. orchid
   g. toucans (the birds)
   h. You are a cutie.
4. There are many, and each student's list will differ. A couple of common names are La-Z-Boy Chairs and U-Haul Trucks.
6. A rebus is a type of writing where individual symbols (letters, pictures, and numbers) are used to represent words. The main limitation is that it takes so many different symbols to write a long message. The meaning of all of these symbols must be learned. Some, like  to represent the word *I* or *eye*, are easy, and most people who speak English would have no problem interpreting the symbol. However, the symbol  used in Exercise 1 might be more problematic. First, the artist's skill will partially determine what the reader interprets. Second, the reader's knowledge and ability to figure things out from context will play a role. The drawing was supposed to be a female sheep—a *ewe*, which is pronounced the same as *you*. Third, many abstract concepts are difficult to depict in rebus writing.

   Syllabic writing uses symbols to represent syllables, not whole words (unless they are monosyllabic words). When syllabic symbols represent one-syllable words, the effect is similar to a rebus. Syllabic writing is limited because most languages would need hundreds or thousands of symbols to be represented graphically in this way. The number would, however, be less than with a pure rebus system. Also, syllabic writing cannot differentiate between homophones (words that sound alike but have different meanings). It takes a rebus to do that.

Exercise 3

2. a. This is a classroom.
   b. Want really good grades? Then do your homework.
   c. They started slow, but picked up speed.
   d. English approaches the ideal of one grapheme for one phoneme with such letters as f, r, v, and m.
4. They are homophone problems. Sentences a. and b. are ambiguous. In some contexts they may be correct. However, if the *principle* in sentence a. refers to a person, it should have been spelled *principal*. And if *piece* in b. refers to "the general quiet and calmness," it should have been spelled *peace*. In sentence c., the *to* is clearly wrong. It should have been *two*.

Chapters 13 and 14

For these chapters answers will vary depending on each student's research.

APPENDIX C

Fieldwork exercises

Exercise 1 Observing and analyzing linguistic behavior in dyadic (two-way) interactions

Linguistic behavior is one of the most common behaviors that we perform and observe. Yet unless this behavior is carefully scrutinized, most of its characteristics remain mysterious or at least unanalyzed. Linguists, anthropologists, psychologists, sociologists, and other behavioral and social scientists are interested in language for what it can tell us about human nature. The first step in knowing about anything is careful observation. When one is watchful, it is remarkable what can be "seen." The following simple observational exercises should help focus your attention on some of the complexities of language.

The ethics of fieldwork: Do not record people without their permission. Especially, do not record people in private conversations without their knowledge. Do not record children without their parents' permission.

Part A: collecting data

1. Record conversations between the combinations of people listed below. (*Note:* Not all students will have access to all of these pairings.)
   a. Two children four to six years of age
   b. Two teenagers
      - male–male
      - female–female
      - male–female
   c. Two adults
      - male–male
      - female–female
      - male–female
   d. Two people in as many combinations as you wish.

   Examples: An older male talking to a younger female; a child explaining the same thing (like the plot of a movie or book) to a parent or to another child; a person in a wheelchair talking to a person not in a wheelchair, and so on.

   Note: Since this exercise is time consuming, you might want to work in groups. After having read the entire exercise, assign various tasks to different individuals. Then pool the data in order to answer Part B.
2. You can attempt to record conversations in progress (at school, at home, at friends' houses, at a party, and so on) or you can set up the situation. Put two people together and ask them to discuss some topic.
3. You will be using ten-minute segments of conversations, so you should record each dyad for at least this length of time.

Data sheet

Dyadic interaction: ten minutes

Note: Photocopy as many copies of this sheet as you need.

Instructions: Interactants will be labeled as "A" and "B." Answer all questions.

1. Age (approximate if you need to):

   Interactant A _____ Interactant B _____

2. Sex:

   Interactant A _____ Interactant B _____

3. Physical appearance (general remarks):

   Interactant A

   _____

   _____

   _____

   _____

   Interactant B

   _____

   _____

   _____

   _____

4. Speaking time. (Using a stopwatch, note each time an interactant begins and ends a stretch of speech. Then add the total time each person spoke.)

   Time for interactant A _____/ ten minutes

   Time for interactant B _____/ ten minutes

   Percent of time interactant A spoke _____

   Percent of time interactant B spoke _____

   Percent of time *no one* spoke _____

5. Number of times interactant A interrupted interactant B _____

   Number of times interactant B interrupted interactant A _____

6. Number of times an interactant performed the following type of "act" in relation to the other interactant:

   A questioning B _____ B questioning A _____

   A demanding from B _____ B demanding from A _____

   A instructing B _____ B instructing A _____

   A correcting B _____ B correcting A _____

7. Number of times person referred to:

	Interactant A	Interactant B
Past event	_____	_____
Future event	_____	_____

8. Number of times person asks for clarification of some point.

   Interactant A _____ Interactant B _____

If the interaction included the beginning or ending of the interaction, answer questions 9, 10, and 11.

9. Who had the first word? Who had the last word?

   First word (initiated interaction) _____

   Last word (closed interaction) _____

10. Who initiated the interaction? How?

    _____

    _____

    _____

11. Who closed the interaction? How?

    _____

    _____

    _____

12. General comments:

    _____

    _____

    _____

Part B: analyzing data

Exercise 1 is just that, an exercise. You will probably not have gathered enough evidence to make valid generalizations. But we are not going to let that stop us. Again, as an exercise, look for regularities in your data. Of course, the more data you collected the better generalizations you can make. If your instructor allows it, follow the suggestion in Part A and pool your information with several other students to give you a larger database.

1. What generalizations can be made about the age of interactants? That is, how do people of different age combinations speak differently to each other?

   _____

   _____

   _____

   _____

2. What generalizations can be made about different sex-gender combinations of interactants?

   _____

   _____

   _____

   _____

3. Could you notice any effects that the physical appearance of interactants had on the communication?

4. Who spoke the most? The least? That is, in a dyadic relationship, did you find that men speak more than women, or vice versa? Do children speak more or less than the adults they are communicating with? Analyze all your data in this manner.

5. Who interrupted whom the most often? How did gender, age, or other factors affect this?

6. What generalizations can you make about the nature of the interactants and the type of "speech acts" (as described in number 6 of Part A) they performed?

7. Humans are the only animals for which communication about past and future events is common. What does your data show about this?

8. What correlations can you make between asking for clarification and the nature of the interactant?

The following three sections of the exercise have to do with who is "in control" of the interaction.

9. Could you see any consistencies in who opened and closed an interaction and how it was done?

10. Did age have anything to do with this?

11. Did gender have anything to do with this?

12. General comments:

Exercise 2 Comparing human and nonhuman communication

This exercise requires a trip to the zoo or somewhere else where a group of nonhumans can be found.

Part A: nonhuman communication

Choose a group of nonhumans to observe. It is best if the number in the group is under about seven individuals, but includes males, females, and young.

Section I

1. Where was the study conducted? _____
2. Type of animal _____

3. Number, age, and sex of animals:

   _____ young males

   _____ young females

   _____ adult males

   _____ adult females

4. Description of surroundings:

   _____

   _____

   _____

   _____

Section II

Choose one individual and note how that individual interacts with the others in the group. After doing this for ten minutes, choose another individual as your subject and follow its interactions. Do this four or five times. You are looking for how the individuals communicate with each other. Note each time they vocalize, touch, gaze, or sniff at each other. Be as specific as you can be in describing each behavior. A sample data collection form is reproduced at the end of this appendix.

Part B: human communication

Choose a group of humans to observe. Again, don't choose a group that is too large for you to quickly familiarize yourself with the individuals of the group. You might use a group of children interacting among themselves as well as with their adult overseers, or people at a party, school, family gathering, shopping mall, restaurant, and so on.

Section I

1. Where was the study conducted?
2. Number of people and their age and sex:

   a. _____ b. _____ c. _____

   d. _____ e. _____ f. _____

   g. _____ h. _____ i. _____

3. Description of surroundings:

   _____

   _____

   _____

Section II: repeat the instructions for Part A, Section II

Part C: analysis

1. What mode of communication seemed to be predominant in the nonhuman group?

2. What mode of communication seemed to be predominant in the human group?

3. Did the humans or nonhumans seem to use a greater variety of communication behaviors? Explain.

4. What types of things did each group seem to be communicating about? (Of course, you are not expected to understand the animals' communication system in any specific way, but you might be able to make some general guesses as to whether a specific communicative act related to dominance, territoriality, sexual responsiveness, fear, affection, and so on.)

5. General comments:

Data Sheet

SUBJECT _____

List members of group other than subject	Nature of interaction

GLOSSARY

Accent A way of pronouncing words that identifies one speaker of a language as speaking differently from another speaker of the same language.

Acoustic phonetics The study of the physical properties of sound.

Acronyms Words that are formed from the first letter or letters of more than one word.

Adaptors Kinesic behaviors that satisfy personal needs, such as nervousness, and are not meant to communicate.

Adjective phrase A phrase that is headed by an adjective but might also include an adjective **modifier** (an element that adds a property to another lexical item). Adjective phrases modify nouns.

Adjuncts Optional elements of a sentence. They add information that is not essential to the meaning of the predicate.

Adverb phrase A phrase that acts as a modifier of a verb.

Affect displays Kinesic behaviors that communicate the real or faked emotional state of the communicator.

Affective meaning The meaning of an utterance that conveys the emotions of the speaker.

Affix A bound morpheme that can be added to a root.

African American English (AAE) One of several names for the varieties of English used in the African American community.

Agglutinating language A type of synthetic language in which each bound morpheme adds only one specific meaning to the root morpheme.

Allomorph A variation of a morpheme.

Allophone A variation of a phoneme. Different allophones of a phoneme occur in different and predictable phonetic environments.

Alphabetic writing A system of writing in which each symbol, ideally, represents one specific phoneme.

Alveolar ridge The hard ridge behind the upper front teeth.

Analogy A process by which one form of a word (or other linguistic phenomenon) is used as the model for constructing another word or structure.

Analogy or **analogous change** The process whereby a dominant linguistic pattern in a language replaces exceptions to that pattern.

Analytic (or **isolating**) **language** A language in which most words are single morphemes.

Anomalous utterances Utterances that include words in which the semantic properties do not match.

Antonyms Words that are opposite in one of their semantic properties.

Arbitrary In relationship to language, means that the features of a language, such as words, have no direct relationship to their meaning.

Archaeology The study of cultures through their discarded material.

Arguments Necessary elements of a sentence used to complete the meaning of the predicate.

Articulation The production of speech sounds by the movement of the speech organs.

Articulators The organs of speech.

Articulatory phonetics The study of the production of speech sounds.

Aspiration The amount of air that is produced upon the release of a stop.

Assimilation An obligatory phonological process that makes it easier to pronounce combinations of sounds by making those sounds share a distinctive feature that one of the sounds would not have in other environments.

Auditory phonetics The study of how sounds are received by the ear and decoded by the brain.

Babbling The verbalization made by babies beginning at four to six months of age, which alternates consonants and vowels, such as *bababa*, *gagaga*, *mamama*.

Back-formation The process of forming a new word through analogy by removing an affix or what appears to be an affix from that word.

BBC English The prestige variety of British English, so called because the British Broadcasting Corporation uses it.

Binary system A classification system in which a feature is either present or absent.

Blend A word that is the result of the process of blending.

Blending The process of taking two or more words (compounding), clipping off parts of one or more of the words, and then combining them.

Bound morpheme A meaningful grammatical unit that cannot occur alone.

Broad transcription (phonemic transcription) A transcription that represents the idealized sounds (phonemes), which are actually classes of sounds (made up of allophones) rather than physically real speech sounds.

Broca's aphasia A condition caused by damage to Broca's area of the brain and characterized by problems in the production of speech and loss of some grammatical understanding of language.

Broca's area of the brain The area that controls the larynx, lips, tongue, and other areas of the digestive and respiratory systems involved with oral and facial fine motor skills in the production of speech.

Calls Usually relatively short vocal signals that communicate a variety of messages. A variety of other species might respond to the calls of a given species.

Case A characteristic of nouns, pronouns, and adjectives (in some languages) that indicates their function within a sentence and their relationship to verbs and other words in the sentence.

Change in syllabicity Process that involves an alternative pronunciation of a syllable from an idealized pronunciation.

Cherology The term formerly used for the phonology of sign language.

Clever Hans effect The name given to the fact that a nonhuman's or human's behavior might be influenced or directed by subtle and often unintentional cues of others. In terms of experimentation, these cues might reflect a researcher's expectations of what the results of the experiment should be.

Clipping The process of deleting a section of a word to create a shortened form.

Closed classes of words (also called function words) The types of words (such as prepositions and pronouns), the growth of which is very limited.

Closed-form compound A compound word with no space or hyphen between the different roots.

Code A complex pattern of associations of the units of a communication system. In language, those units could be sound units; meaningful units, such as words; or meaningful units that are larger than words, such as phrases, clauses, and sentences.

Code switching Deliberately changing from one manner or style of speaking to another.

Cognates Similar words in two or more different languages that were derived from a similar root language and may have similar meanings.

Cognitive-functional linguistics Proposes that language acquisition is not a separate process of a child's development, with a distinct language acquisition device in the brain, but rather a result of the child's general cognitive and intellectual development.

Color terminology The words in a language that describe segments of the color spectrum. Color terms in English include words such as *red*, *blue*, *green*, *white*, and *yellow*.

Communication Any behavior that affects the behavior of others by the transmission of information.

Comparative method A procedure that involves looking at similarities in languages to determine the degree of relationship between those languages and to reconstruct ancestral (proto-) languages.

Complement A element of an utterance that provides additional information about the head of a phrase.

Complementary distribution Each of a series of sounds occurs in different phonetic contexts, and these sounds never contrast with each other. Phones that are in complementary distribution are allophones of the same phoneme.

Complementary pairs Antonyms that express a binary relationship, such as *male/female*.

Complex sentence One that contains a simple sentence and one or more dependent clauses.

Compound A word made up of two or more roots.

Compound-complex A sentence that has two or more independent clauses and at least one dependent clause.

Compounding Creating a word with more than one root.

Compound sentence One that is made up of at least two simple sentences joined by a coordinating conjunction; in writing, punctuation can substitute for the conjunction.

Conditioned sound change A type of sound change that takes place only in certain phonological environments.

Connotation An affective meaning for a word or morpheme.

Consonant A speech sound that is produced when the airstream is constricted or stopped (and then released) at some place along its path before it escapes from the body.

Consonant cluster reduction The rule for reducing a consonant cluster to a single consonant. In SAE, rule applies to clusters in the word final position that are followed by a word beginning in a consonant; in AAE, it occurs when the following word begins with a vowel or a consonant.

Constituents The units being combined to create larger syntactic constructions.

Constructivism Another name for the **interactionist hypothesis.**

Contact sign A signing system that is analogous to oral pidgin languages and is used by signer and interpreter to communicate about specific things.

Contradictions Utterances in which the semantic properties of one word are in direct opposition to those of another.

Conversation repair The attempt to revise or expand an utterance when the speaker senses that the listener has not understood.

Co-occurrence restriction A limitation on the use of a morpheme.

Cooing The first verbal sounds that babies make, consists of sounds that are all vowels, such as *ahh*, *ooh*, *æhh*, *iiih*.

Cooperative principle The principle that is the basis for the maxims of conversation, and assumes that each person is trying in good faith to communicate and understand.

Copula The coupling verb and is most often forms of the verb *to be*.

Core vocabulary The set of 100–200 words that represent concepts thought to be universal to all or most languages.

Corpus (plural *corpora*) A collection of linguistic information used to discover linguistics rules and principles.

Corpus callosum The main connection between the two hemispheres of the brain; it facilitates communication between them.

Creole language A language that is created when a pidgin language is passed on to the next generation and becomes the first language of a community.

Critical period hypothesis This proposes that the language acquisition device ceases to function and the ability to acquire language with native fluency declines as childhood progresses, disappearing after the age of puberty.

Cultural anthropology The subfield of anthropology that studies the way people in various cultures live.

Cultural relativism A basic tenet of cultural anthropology; it is the idea that a culture is consistent and comprehensible within itself.

Culture A type of behavior that is learned rather than innate; it is patterned behavior that is transmittable from person to person and through time, primarily by language.

Culture shock The disorientation and anxiety that occurs when social expectations are not met.

Daughter language, mother language, sister language Types of relationship in the family tree model of language relationships.

Daughter languages derive from a mother language; different daughter languages are sister languages with respect to each other.

Decode To react to a message in a way that reflects the reason that the sender encoded it.

Deep structure Refers to a highly abstract level of language that represents the basic meaning of a sentence.

Deixis Refers to words that shift reference, that change meaning according to the context and/or the speaker.

Delivery system of language The way in which knowledge of language (linguistic competence) is used to send a message. The three basic ways of delivering a message linguistically are speech, writing, and sign language.

Denotation The referential meaning of a word or morpheme, often the first meaning listed in a dictionary.

Dependent clause One that has a subject and predicate but cannot stand alone as a simple sentence. It depends on an independent clause to make it complete.

Dependent or **dependents of a phrase** All the parts of a phrase that are not its head.

Derivation The process of forming a new word by adding a derivational affix.

Derivational morphemes Bound morphemes that change the meaning or lexical category of a word.

Derived phrase marker A phrase marker after transformational rules have been applied.

Descriptive syntax or **descriptive grammar** The mostly subconscious rules of a language that one uses to combine smaller units into sentences. The terms also refer to the study of these rules.

Descriptive-representative A depiction that has a lifelike (emblematic) relationship to what it represents.

Determiner A word used before a noun to indicate whether the noun refers to something that is specific or general.

Devoiced A sound is devoiced if it loses its voiced feature because of a voiceless sound or sounds in its phonetic environment.

DEZ (designator) In sign language, the handshape of a sign.

Diachronic linguistics Meaning "through time," this is another name for historical linguistics.

Diacritics or **diacritic marks** Notations added to the main phonetic symbol to clarify details of pronunciation.

Dialect (or variety) The shared, unique linguistic characteristics of a language community.

Diffuse To move out from one place to another.

Diffusing (diffusion) The process whereby a cultural item moves from one geographic area to another.

Diphthong A double vowel sound that begins with one sound and gradually moves into another sound or glide.

Discourse A series of connected utterances, such as a conversation, story, lecture, or any other communication event.

Discourse analysis The process of discovering the rules of discourse.

Discrete signal A signal that does not blend with other signals.

Displacement The ability to communicate about things at times other than the present and to communicate about things not directly in front of the sender and/or receiver.

Distinctive In linguistics, the term refers to units that contrast; that is, change meaning when substituted for each other. Phonemes are distinctive; allophones are not.

Distinctive feature A basic building block of the phoneme or, more specifically, any trait that distinguishes one phoneme from another.

Dominant condition A grammatical rule describing the fact that if only one hand of a two-handed sign moves, the nonmoving hand can only be in one of six handshapes.

Double negation The use of more than one negative word to negate a sentence. See also **multiple negation**.

Duration How long a phone lasts.

Egressive sounds Speech sounds produced by expelling air from the lungs.

Emblems (speech-independent gestures or **autonomous gestures)** Movements of the hands, arms, face, or other parts of the body that have a very specific meaning and are not as dependent on speech as other kinesic behaviors.

Emic Categories and concepts that have meaning to the people being studied. An emic study attempts to discover what things have meaning to the people being studied.

Encode To put a message into code.

Entailment A relationship between utterances where if utterance A is true then utterance B is also true.

Epiglottis A membranous flap that covers the glottis during swallowing and prevents anything that is swallowed from entering the lungs.

Eponyms Words formed from people's names.

Ethnocentrism The act of judging other cultures by the standards of your culture; it is also the belief that your culture is superior to other cultures.

Ethnographer Another word for a cultural anthropologist who studies and writes about cultures.

Etic A study done by a cultural outsider using categories and concepts that might not have meaning to the people being studied.

Etymology The study of the history of words.

Existential *it* The existential *it* in AAE replaces the existential *there* in SAE.

Expletives Taboo words that express affective meaning.

Face In the context of politeness theory, face is one's sense of self-esteem and dignity in social contexts.

Facial emblem Kinesic behavior that usually has a very specific meaning, such as a smile meaning happiness; it does not have to accompany speech to be understood.

Family tree model Language relationships assume a "genetic" relationship among languages in a language family in that all languages in the family derived from a common ancestor called a proto-language.

Farming-language dispersal hypothesis The idea that ancient languages such as Proto-Indo-European were spread as farming people moved into new lands.

Feature matrix Lists sound segments (or other phenomena) along the horizontal axis, and features on the vertical axis.

Fingerspelling Different handshapes represent different letters of the alphabet. Words of an oral language can be spelled directly.

The force of language The power of language to affect and create the social world of the speaker.

Fossilization In linguistics, this is the ingrained use of the first-language characteristics, and results in the "foreign accent" of second-language learners after the age of puberty.

Free morpheme A meaningful grammatical unit that can stand alone.

Free variation A condition in which phonetically different sounds (phonemes or allophones) may occur in the same environment without changing meaning.

Fundamental frequency The rate at which the vocal folds (cords) vibrate in speech.

Fusional language (also called **inflectional language)** A type of synthetic language in which one bound morpheme may convey several bits of information.

Gaze To look at something or someone.

Geminate A phone with a duration about twice that of the same phone pronounced with a short duration: a long consonant or vowel.

Gender The learned complex of masculine or feminine behaviors as defined by culture.

Generative grammar A finite set of rules that could hypothetically produce (generate) an infinite number of utterances.

Glottis The space (opening) between the vocal folds.

Glottochronology The study of the amount of time that sister languages have been separated from their mother language. It uses a calculation of the amount of change that would take place in core vocabulary over a specific amount of time.

Gradable pairs Antonyms, such as *big/little*, that are part of a larger set of related words and express the concept that one of them is more, whereas the other is less.

Grammar The system (pattern) of elements (such as words) and of the rules of phonology, morphology, syntax, and semantics inherent in a language. The term also refers to the study of those elements and rules.

Grammatical (well formed) A sentence in which the sequence of words conforms to the syntactic knowledge (rules) of native speakers of a language.

Graphemes Alphabetic symbols.

Great Vowel Shift An unconditioned sound change that altered all Middle English long vowels.

Greeting rituals A special kind of discourse that are not at all important for the information they convey, but are important for their social function.

Grimm's law (also called **first Germanic sound shift)** A principle proposed by Jakob Grimm which described a systematic phonological change from certain Proto-Indo-European consonants to different consonants in daughter languages.

Griot A learned elder in an African village who has memorized the oral history of the community in a sort of epic poem.

Haptics The study of touching behavior.

Hard palate The bony section of the roof of the mouth.

Head of a compound Similar to its topic, that is, the main, most general, or core meaning of the compound. The head also determines the grammatical function of the compound.

Head of a phrase The word that determines the syntactic or phrasal category of that phrase.

Heteronyms Homographs that are not pronounced the same. The words *tear* (water in the eye) and *tear* (to rip) are heteronyms.

Hispanic English (HE) The many varieties of English spoken by Americans of Hispanic descent.

Historical linguistics (also called **comparative linguistics)** The study of how languages change over time and the relationship among different languages.

Holophrases One-word utterances with which a toddler expresses an entire sentence.

Holophrastic stage The stage of language acquisition in which a child uses holophrases.

Home signs Signs invented by deaf people and their relatives to help communicate about everyday items and activities.

Hominin Refers to modern humans and to the ancestors of modern humans that go back in time more than 6 million years.

Homographs Words that differ in meaning but are spelled the same. They might or might not differ in how they are pronounced. The words *rose* (a flower), and *rose* (to get up) are homographs that are pronounced the same. The words *tear* (water in the eye) and *tear* (to rip) are homographs that are not pronounced the same.

Homonyms Words that differ in meaning, are pronounced the same, and might or might not be spelled the same. The word pairs *rose/rose* and *might/mite* are homonyms.

Homophones Words that sound the same but differ in meaning and spelling.

Hyphenated compounds Compounds that have a hyphen or hyphens between the different roots of the compound.

Hyponyms More specific words that constitute a subclass of a more general word.

Identity A person's sense of self—who they believe that they are in terms of ethnicity, gender, biological features, social class, political affiliation, age category, occupation, and place of birth or current residence.

Iconic sign A sign that resembles what it represents.

Identifying-mnemonic representations Visual aids that are used to make calculations or are meant to identify or remind the viewer of a specific person, event, song, legend, or trail.

Idiolect An individual's personal, individual way of speaking.

Idioms Utterances in which there is a contradiction between the meaning of the parts of the utterance and the entire utterance.

Illustrators Nonverbal behaviors that accompany speech and serve to clarify or emphasize what is being said.

Imitation hypothesis This proposes that children acquire language by imitating the people around them.

Implicature A meaning that is implied or implicated, rather than stated directly.

Independent clause A clause that is also a simple sentence.

Index A signifier that is in some way directly connected to what it signifies. It might be causally or physically connected to what it signifies.

Indexicality The property of words and expressions that "point" to their referents, as in an index. **Deictic** words derive their meaning by indexicality.

Indirect language The use of statements rather than commands, and hints and suggestions rather than orders. It is used by everyone at various times and circumstances.

Indirect question This occurs when the order of a question is revised into the word order for declarative statement.

Inflectional morphemes Bound morphemes that do not change the essential meaning or lexical category of a word. They change grammatical functions (other than lexical category).

Ingressive sounds Speech sounds that are produced by sucking air into the mouth.

Innateness hypothesis This proposes that children have the innate capacity to differentiate phonemes, extract words from the stream of language, and process grammar.

Interactionist hypothesis This postulates that children acquire language by their innate language abilities to extract the rules of the language from their environment and construct the phonology, semantics, and syntax of their native language.

Interdental fricatives /ð/ and /θ/ in many varieties of AAE are replaced by /d/ and /t/, and in other varieties by /v/ and /f/.

Intonation contour The overall pitch of an utterance, sometimes represented by a line drawn over the utterance that traces the change in pitch.

Intonation language (intonational language) Different intonation contours change the syntactic function of sentences that are otherwise the same.

Jargon The in-group expressions of a profession, sport, hobby, or field of expertise.

Juncture A real or perceived pause within a series of phones.

Kinesics The formal study of communicating with body movements.

Kinship terminology The words in a language that describe family relationships. Kinship terms in English include *mother*, *father*, *brother*, *sister*, etc.

Language This term, in its narrowest sense is, for most linguists, a uniquely human cognitive system used to produce and understand precise meaningful utterances.

Language (or speech) community A group of people who live, work, socialize, and communicate with one another.

Language acquisition device (LAD) The theoretical area of hardwiring in the brains of children that propels them to acquire language.

Language family A group of languages derived from the same ancestral language.

Larynx (voice box) The uppermost part of the trachea that contains the vocal cords, or folds, and is one of the main sound-producing organs.

Latin languages (also called Romance languages) The languages that make up the language family derived from Latin and the languages with which Latin mixed.

Lax vowels Vowels that show less tension and constriction; they are usually shorter in duration than tense vowels.

Lexical ambiguity or polysemantic ambiguity The situation in which a word or phrase can refer to more than one meaning.

Lexical categories Major grammatical classes into which words (not morphemes) can be divided.

Lexical semantics The branch of semantics that deals with the meaning of words.

Lexicon The mental dictionary, the vocabulary each person has stored in the brain that contains the definitions of all the words that person knows. A lexicon for a specific language is a list of all the morphemes that are used in that language to form words.

Lexicostatistics A technique of developing hypotheses about the historical relationship between languages and dialects, including when those languages and dialects diverged from each other based on a quantitative analysis of cognates.

Limbic system The part of the human brain that is similar to the mammalian brain.

Linear word order The specific sequence that different types of words follow.

Lingua franca A common second language used for business and other communication needs by people speaking different first languages.

Linguistic anthropology A branch of anthropology that focuses on, among other things, how language influences thought and experiences. It uses the methodologies of linguistics and anthropology to comparatively study the interrelationship between language and culture and how language influences social life.

Linguistic competence The (mostly) subconscious knowledge of language that allows a speaker to create a potentially infinite number of messages.

Linguistic determinism or the strong version of the Sapir–Whorf hypothesis linguistic relativity This holds that language compels people to think according to linguistic categories.

Linguistic performance The application of linguistic competence to actually producing an utterance.

Linguistic relativism The idea that each language is consistent and comprehensible within itself and must be studied as a unique system.

Linguistic relativity (also known as the Sapir–Whorf hypothesis) This proposes that people of different cultures think and behave differently because the languages they speak force or influence them to do so.

Logograms (sometimes called ideograms) The written symbols that represent a concept or word without indicating its pronunciation.

Logographic writing (word-writing) In logographic writing (word-writing), the symbols stand for whole words or morphemes.

Logophonetic A writing system that uses predominantly logographic symbols, but also includes symbols (or elements of the logographic symbol) that represent sound.

Logosyllabic A logophonetic system that includes both logographic and syllabic representations.

Looking glass self The human characteristic of building a concept of self through interpreting what we believe are the perceptions that others have of us and the behavioral reactions others take toward us.

Mammals A class of animals in the subphylum of vertebrates. Humans are mammals, along with chimpanzees, baboons, dogs, cats, and about 4000 other species.

Man of words A person in the African or African American community who is respected for his oratorical skills.

Manner assimilation Making a string of sounds easier to pronounce by making one of them conform to the manner of articulation of the other.

Manually coded English (MCE) A variety of invented forms of signing based on oral English grammar, with the signs, most of which are borrowed from ASL, directly representing English words.

Marked sounds More complex, less common in the language, and learned by children later than unmarked sounds.

Markedness As it relates to phonetics, it is a contrast in complexity and rarity of sounds. As it relates to semantics, it is the concept that some words or morphemes are more common or usual than others.

Maxim of manner The speaker will be brief, concise, and clear.

Maxim of quality The speaker will say only what he or she believes to be the truth.

Maxim of quantity The speaker will say neither more nor less than is required.

Maxim of relevance The speaker will say only what is appropriate for the topic.

Maxims of conversation The cultural expectations that guide people when they are conversing.

Metaphors Anomalous utterances in which two dissimilar items are symbolically considered to be similar.

Minimal pair Two forms (words, phrases, sentences) that differ in meaning, contain the same number of sound segments, and display only one phonetic difference, which occurs at the same place in the form.

Minimal set More than two forms (words, phrases, sentences) that differ in meaning, contain the same number of sound segments, and display only one phonetic difference, which occurs at the same place in the form.

Mock language The use of the phonology or the lexicon of a foreign language or non-standard dialect to "make fun of" or distance oneself from the speakers of that language.

Monophthong A single vowel sound.

Monophthongization A phonological rule that shifts the pronunciation of a diphthong to a monophthong.

Morphemes The smallest units of meaning. This means that morphemes cannot be broken down further and remain meaningful.

Morphological changes Changes in the words of a language; they include changes in the meaning of words, the addition of new words, and analogy.

Morphological rules Rules used to construct words from their component parts.

Morphological typology The study and classification of language based on how morphemes create words.

Morphology The study of the structure and classification of words and the units that make up words.

Morphophonemic rules Rules that specify which allomorph of a morpheme will be used in a specific phonetic environment.

Multiple negation A characteristic of AAE and many other varieties of English. The negative word can appear before the noun, verb, and modifiers. See also **double negation**.

Mutual gaze This occurs when people are looking at each other.

Narrow transcription (phonetic transcription) The actual sounds that a person utters in as much detail as possible.

Nasal cavity The passageway in the nose.

Nation A group of people who share a history and culture, including a common language.

Nativization When a language that had not been anyone's native language becomes the native language for a generation of speakers.

Natural class A subset of the total set of phonemes that shares a small number of phonetic (distinctive) features, which distinguishes the class from other natural classes. Natural classes play a significant role in phonological regularities (rules).

Negative face The desire to not be distracted or imposed upon.

Negative politeness The act of avoiding intrusion into such things as a person's privacy or personal space.

Neocortex The largest part of the human brain; it is where the language skills reside. This is the area that contains Broca's area and Wernicke's area.

Neologisms Newly formed words.

New information Information that the speaker believes is being introduced to the listener for the first time.

Node A point in a tree diagram where branching occurs.

Noninflecting language A language with no (or few) inflectional morphemes.

Nonverbal Not language. Nonverbal communication is any communication that is not conveyed through speech, writing, or sign language.

Nonverbal communication Any communication that occurs between people, usually within each other's presence, by means other than spoken or written words or the signs of a sign language.

Northern Semitic Syllabary A group of primarily syllabic writing systems developed by Semitic peoples from earlier logophonetic systems.

Noun phrase (often called nominal phrase) A phrase that does the work of a noun.

Obligatory phonological process A rule that most native speakers of a specific language apply to make a string of phonetic units easier to pronounce and perceive.

Old (given) information Information that the speaker has previously introduced or believes the listener knows.

Onomatopoeia The phenomenon that occurs when words supposedly imitate natural sounds.

Open classes of words (or content words) Types of words (such as nouns, adjectives, verbs, and adverbs) that grow in number in a language.

Open-form compound A compound that has spaces between its roots.

Openness The ability to add new words, phrases, or other meaningful units to a language.

Optional phonological process A pattern that is applied by individuals or groups of individuals and is not necessarily characteristic of most native speakers of a language; it is stylistic.

Oral cavity The space or passageway in the mouth.

Orthography The spelling and writing system of a language.

Overextension Occurs when a child acquires the definition of a word and applies it too broadly.

Overgeneralization Occurs when children acquire a morphological rule and then apply it too broadly.

Overlapping distribution Characteristic of different phones that appear in most of the same phonetic environments. Unlike complementary distribution, phones in overlapping distribution are different phonemes (not allophones), and therefore substituting one for the other changes the meaning of an utterance.

Oxymorons Phrases that combine contradictory words.

Palm orientation or simply **orientation (ORI)** The direction that the palm faces in sign language.

Paralanguage The system of nonverbal but vocal cues that accompany or replace language.

Parameter The parameter of a sign is any feature or type of feature of the sign.

Paraphrase To restate an utterance using synonyms for some of the original words.

Participant observation is the practice used by a cultural anthropologist, or ethnographer, of living within a group and studying their culture by participating in it.

Part-of-speech ambiguity A situation when a word in an utterance could be interpreted as belonging to different lexical categories; for instance, the word could function as either a noun or a verb.

Parts of speech A system of grammatical categories for classifying words according to their usage or function.

Performative sentences The utterances that perform speech acts.

Pharyngeal cavity The space or passageway in the throat.

Pheromone A chemical that is secreted by one individual and acts from a distance on another individual to alter that individual's behavior.

Phone or **phonetic unit** or **segment** An actual speech sound produced by the vocal tract that is perceived as an individual and unique sound, different from other such sounds.

Phoneme A perceived unit of language that signals a difference in meaning when contrasted to another phoneme.

Phonetic segment or **phone** A speech sound that is perceived as an individual and unique sound, different from other such sounds.

Phonetics The study of speech sounds: their physical properties, the way they are received and decoded by the brain, and the way they are produced.

Phonetization The process whereby logographic symbols come to represent sounds.

Phonological system The phonological system of a language is the grammar (pattern) of sounds of that language.

Phonology The study of the sound system of a language; that is, what sounds are in a language and what the rules are for combining those sounds into larger units. Phonology can also refer to the study of the sound systems of all languages, including universal rules of sound.

Phonotactics An area of phonology that studies what combinations of phonemes are allowed (or conversely restricted) in the formation of syllables, consonant clusters, and sequences of vowels.

Phrasal verb A verb phrase consisting of a verbal base and a verbal particle. It can have an idiomatic or special meaning.

Phrase Any constituent of a clause.

Phrase marker or **phrase structure tree** A tree diagram that specifies the function of each constituent of an utterance.

Phrase structure rules specify how constituents of an utterance are arranged and what constituents can occur as parts of other constituents (the hierarchical structure of a sentence).

Physical anthropology The subfield of anthropology that focuses on the evolution of humans, studying the fossil record of human ancestors, human biological variation, and living and fossil nonhuman primates.

Pictogram (pictograph) A logographic symbol that is a simplified, picture-like representation of the thing it represents.

Pidgin languages Simplified languages developed for use in specific interactions, such as business, service, and trade. They developed when people who had no common language came into contact.

Pitch The perception of fundamental frequency evaluated on a scale from high to low.

Place assimilation In place assimilation, adjacent sounds are made to agree in their place of articulation.

Politeness theory A concept that proposes to explain how people deal with or remedy affronts or possible affronts to their dignity or face.

Polysemous Words that have more than one meaning.

Polysynthetic language A synthetic language in which each word is equivalent to a whole sentence in other languages.

Positive face The act of seeking to be admired by and approved of by the communicators.

Positive politeness An act that occurs when we engage people in a way that lets them know that we enjoy being with them and feel comfortable with them.

Poverty of the stimulus A hypothesis proposed by Chomsky that accounts for the ability of children to acquire patterns of language for which they have not heard examples. It supports the innateness hypothesis, the theory that children are born with universal grammar and certain abilities to acquire language hardwired into the brain.

Pragmatics The study of the effect of context on meaning.

Predicate The predicate of a sentence in traditional grammar is a comment or assertion made about the topic. In most modern grammars, the predicate is seen as an element that assigns a property to another elements in a sentence or helps relate other elements to each other, thereby completing the meaning of the predicate. (see **Arguments** and **Adjuncts**)

Prefix An affix added to the beginning of a root.

Prepositional phrase A phrase headed by a preposition. It can function to modify a noun phrase or a verb phrase.

Prescriptive syntax or **prescriptive grammar** The concept that there is a correct and an incorrect way to speak, write, or sign.

Prestige dialect The variety of a language spoken by the high-status people of a society.

Presupposition The semantic aspect of an utterance which implies the existence of something that is either real or prevaricated. In a discourse it is the set of assumptions that the speaker makes

about the listener's knowledge or circumstances. These assumptions are necessary in order to make an utterance meaningful.

Prevarication In the linguistic sense, this refers to the ability to communicate about things that are not verifiable, things for which there is no empirical proof.

Primates An order in the class of mammals that includes humans, apes, monkeys, tarsiers, and prosimians.

Productive vocabulary The words that a person is able to use.

Productivity The ability to produce messages that one has never produced before and to understand messages that one has never heard or seen before.

Proto-Indo-European The proto-language from which many linguists assume that about 144 modern and extinct languages of Europe, western Asia, and parts of India were derived.

Proto-language An ancestral (parent) language from which it is assumed that many languages were derived.

Proxemics The study of the social use of space—the study of the patterns of the use of space to convey messages and how this usage differs from culture to culture.

/r/ and /l/ deletion One of the phonological characteristics of some varieties of African American English.

r-coloring of a vowel The phenomenon in which a vowel partially takes on the sound qualities of an *r* sound that follows it, and the vowel frequency is lowered.

R-complex The part of the human brain that is similar to the reptilian brain.

Rebus principle The process by which symbols which once stood for whole one-syllable words become symbols for those syllables, not the words they once represented.

Receptive vocabulary The words that a person is able to understand.

Recursion A property of language that allows for productivity by permitting the repeated application of a rule, so that people can embed one syntactic category endlessly within another, such as noun phrases within noun phrases or sentences within sentences.

Reduced vowel (also called Schwa) An unstressed and often central vowel that is a shorter version of a similar sounding but longer vowel.

Redundancy When more information than necessary under ideal conditions is present. For instance, when a vowel is nasalized in English, it indicates that it precedes a nasal consonant. If a person doesn't hear the nasal consonant clearly, he or she might be able to predict its presence from hearing the nasalization of the vowel.

Referent The actual concrete item or concept to which a word refers.

Referential meaning The referential meaning of an utterance describes the referent, an action, or a state of being.

Registers Styles of speech that are appropriate to the situation, the level of formality, and the person being spoken to.

Regularity hypothesis The idea that numerous similarities in languages indicate that the languages derive from a mother language (see **Relatedness hypothesis**).

Regulators Kinesic behaviors that shape or influence turn-taking in speech and listening.

Reinforcement hypothesis This postulates that children acquire language by positive reinforcement when they produce a grammatical utterance and by being corrected when they don't.

Relatedness hypothesis The idea in the family tree model that assumes that numerous similarities in languages indicate that languages derive from a mother language.

Relational opposites Antonyms that express a symmetrical relationship between two words, such as *parent/child*.

Root A morpheme, usually but not always a free morpheme, that serves as a building block for other words and carries the main meaning of those words.

Schwa (also called reduced vowel) An unstressed mid-central vowel that is a shorter version of a similar sounding longer vowel. In the word *rumba* [rʌmbə], the [ə] can be seen as a reduced variant of the full vowel [ʌ].

Self-fulfilling prophecy A positive or negative expectation, prediction, or assumption communicated about a person (or event) that may influence a person to act in a way consistent with such feedback, resulting in those expectations to be realized (fulfilled).

Semantic domain A set of words that share semantic properties.

Semantic properties The elements of meaning that make up the lexical entry of the word in the speaker's mind.

Semantic property analysis The process of breaking down the domain into its component parts. By using the + and – system again, we can determine other words that may belong in this domain.

Semantics The study of the meaning of linguistics expressions such as morphemes, words, phrases, clauses, and sentences.

Semiotics The study of signs and symbols as they function in communicative behavior. Studies in semiotics are undertaken in many fields—including semantics, pragmatics, syntax, computer science, art—as well as in any other field that studies human behavior.

Sense The extended meaning of a word or phrase that, in context, clarifies the referent.

Sentence A string of words that is grammatically complete with at least two components, a subject and a predicate.

Separate systems hypothesis This proposes that infants exposed to two or more languages differentiate the languages from the very beginning, constructing different phonological systems, lexicons, and semantic systems.

Sequential bilingualism When a child acquires a second language after having begun to acquire a first language.

Sex The biological aspect of being male or female.

Shifting referents Referents that are different for each speaker and each sentence. Pronouns have shifting referents.

SIG (signation) In sign language, the type of motion used in a sign.

Simple sentence A sentence with one subject and one predicate.

Simultaneous bilingualism When a child acquires two (or more) languages from birth.

Singleton An individual phone with a duration about half as long as a geminate.

Slang words Newly coined words or those that have never been completely accepted in formal speech.

Social meaning The information in an utterance about the social identity of the speaker.

Sociocultural changes Changes in culture that lead to changes in language, or changes in a language that contribute to changes in culture.

Sociolinguistics The study of how language and social factors, such as ethnicity, social class, age, gender, and educational level, are related.

Soft palate (velum) The back, fleshy section of the roof of the mouth that is movable and closes off the nasal cavity during swallowing.

Songs Longer and more complex sequences of sound that, in birds, are usually associated with attracting a mate. Songs are species specific.

Sound change The change of one or more distinctive features of a sound to another feature or features.

Sound spectrograph An instrument used to analyze sound by producing a visual record of sound in terms of the time duration of the sound, its frequency (number of occurrences within a specific unit of time), and its amplitude (degree of loudness).

Specifier Makes the meaning of the head of a phrase more precise.

Speech acts Actions performed by an utterance, such as daring, questioning, or betting.

Speech-related gestures (also called **co-speech gestures)** Kinesic behaviors that coordinate with and accompany speech. Speech-related gestures include illustrators and regulators.

Spelling pronunciation The process by which a word is pronounced as it is spelled, even if that pronunciation was not the original or intended pronunciation. This often occurs for foreign words that enter a language.

Standard American English (SAE) The variety of American English used in business, education, and the media.

Stimulus diffusion The process by which an idea, but not the actual cultural item, spreads from one geographical area to another.

Stimulus-bound Behavior that occurs only as a result of a specific environmental trigger (occurrence).

Stress To make emphatic or more prominent.

Structural ambiguity (or **syntactic ambiguity)** A situation when the constituents of an utterance can be arranged in more than one way, yielding more than one meaning.

Structural semantics The branch of semantics that deals with the meaning of utterances larger than words; how the structure of sentences contributes to meaning.

Subject The subject of a sentence is the topic of the sentence.

Substitution frame A form that has a "slot" that can be filled in with different items, and is used to identify different phonemes.

Substrate language The native language of the subordinate people learning the dominant language; they retain many of the syntactic features of this language.

Suffix An affix added to the end of a root.

Superfamilies or **macrofamilies** Groups of proto-languages.

Superstrate language The dominant language; a large part of the vocabulary of a pidgin language comes from this language.

Suprasegmentals or **prosodic features** Characteristics of speech that can distinguish words, phrases, or sentences that are otherwise identical in their phonetic segments. Suprasegmentals are associated with stretches of speech larger than an individual phonetic segment.

Surface structure An actual utterance that can be broken down by conventional methods of syntactic analysis.

Syllabic consonants Nasal or liquid consonants that can take the place of vowels as the nucleus of a syllable in certain words.

Syllabic writing Each symbol represents one syllable.

Symbol Something, a word, a gesture, or other representation that signifies or represents something else that is not intrinsically (causally) related to the symbol. In other words, the symbol is an arbitrary representation of what it represents.

Symmetry condition In sign language, this refers to two-handed signs that move, for which the designator (DEZ) for both hands must be the same.

Synchronic linguistics The study of a language at a given point in time.

Synchrony The connection and relationship between two or more things that occur at the same time.

Synonyms Words that have similar meanings and share the same semantic properties.

Syntactic changes Changes in the rules for structures larger than words.

Syntax A level of grammar that specifically refers to the arrangement of words and morphemes in the construction of sentences.

Syntax The set of rules a person uses to form units of language larger than words. The term syntax also refers to the study of those rules.

Synthetic language A language that uses bound morphemes to affect the meaning or mark the grammatical function of a free morpheme.

TAB (tabula) In sign language, the location where the sign is made.

Taboo words Slang words that have cultural rules restricting their use. Some of these are for bodily functions and body parts.

Tag questions Short questions like "*isn't it?*" and "*don't you?*" that are added to the end of declarative statements.

Telegraphic speech Occurs as children begin adding more words to their two-word sentences.

Tense vowels Produced with more tension and more constriction of the vocal tract than lax vowels; they are usually of longer duration.

Theory of mind The ability to characterize and predict the mental states of others.

Tone A specific change in pitch that functions in tonal languages to distinguish words that are made up of the same segments.

Tone language (tonal language) Pitch difference in the same string of phones will change the meaning of that string.

Topicalization A kind of movement transformation that creates a derived sentence with a different focus or emphasis than the basic sentence.

Total communication teaching A teaching philosophy in which instruction is given for as many channels and types of communication as possible.

Trachea (windpipe) A tube that extends from the voice box to the lungs.

Transformational grammar A finite set of rules that could hypothetically produce (generate) an infinite number of utterances.

Transformational rules (T-rules) Rules that relate the spoken form of sentences (surface structure) to their underlying meaning (deep structure).

Tree diagram An illustration in the form of an upside down tree shape that shows the constituents of an utterance, with the most general at the top and more specific constituents at the bottom of the tree.

Two-word stage Begins sometime after eighteen months of age when children begin combining words into two-word utterances.

Typology A branch of linguistics that studies the structural similarities of languages.

Unconditioned sound change A sound change that appears to have happened spontaneously and everywhere (with few exceptions) in a language.

Underextension When a child acquires the definition of a word and applies it too narrowly.

Ungrammatical (ill-formed) A sentence in which the sequence of words does not conform to the syntactic knowledge (rules) of fluent speakers of a language.

Unitary system hypothesis This proposes that infants exposed to two or more languages begin by constructing one lexicon and one set of semantic rules to encompass both languages.

Universal grammar (UG) The system involving phonemic differences, word order, and phrase recognition that is the basis for the theory of the innateness of language acquisition.

Unmarked sounds More basic, more common in the language, and learned by children earlier than marked sounds.

Utterance A stretch of speech between two periods of silence or a potential (perceived) silence. An utterance does not have to be a complete sentence.

Uvula The fleshy lobe at the back of the roof of the mouth.

Verb aspect The completeness or duration of the action.

Verb deletion The rule for verb deletion in AAE allows the verbs to be deleted if they can be contracted in SAE.

Verb phrase Tells you something about the subject. It includes a verb and can include an auxiliary verb, direct or indirect object, and modifiers.

Verbal Language: speech, writing, or sign language.

Verbal base The main part of the verb.

Verbal particles Prepositions that co-occur with some verbs and can appear to the left or right of the direct object noun phrase.

Vocal folds (vocal cords) A muscular pair of elastic folds, which can be moved into various degrees of openness.

Voice assimilation When a sound comes to agree with a surrounding sound in its voicing.

Voiced sounds Speech sounds that are produced, in part, by the vibrations of the vocal folds.

Voiceless sounds Speech sounds that are produced when the vocal folds are apart and the airstream flows from the larynx with minimal or no vibrations.

Vowel A speech sound produced without constriction or stoppage.

Wave model A model of language relatedness which attempts to deal with some of the weakness of the family tree model. It characterizes a specific language change as spreading out from a central point in a manner similar to the ripples created when a small object is thrown into water. Changes spread at different rates. Some changes reinforce other changes and others interact to create additional change.

Weaker version The weaker version of linguistic relativity holds that language influences people to think in certain ways according to linguistic categories.

Wernicke's aphasia A condition caused by damage to Wernicke's area of the brain, characterized by speech that includes lexical errors and nonsense words.

Wernicke's area of the brain One of the areas of the brain that is involved with the comprehension of speech and the selection of lexical items.

Writing A graphic (visual) representation of units (morphemes, syllables, phonemes) of speech.

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