# INTRODUCTORY TOPICS OF LINGUISTICS

Edited with Notes by

**Takanori Hayasaka**

and

**Yukio Toda**

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# はしがき

20 世紀後半になって，一大発展をみた学問分野のひとつに言語学が挙げられる．ノーム・チョムスキーによる変形文法（後の変形生成文法，生成文法）の提唱以来，「言語」に関するさまざまな謎の追求がなされてきた．また，おりから「国際化・情報化・異文化間コミュニケーション」などということばが巷に氾濫する昨今，「言語」に関する様々なことがらは，言語学者のみならず，一般人も大いに関心を寄せるところとなりつつある．

言語とは何か，言語の仕組みはどうなっているのか，人間はどのようにして言語を獲得することができるのか，人間はどのようなメカニズムにより言語を不自由なく使用することができるのか，人間に専有的に備わっているとされる言語能力とはどのようなものか，言語がわかるとは一体どんなことなのか，言語表現は，人間の頭の中でどのような過程を経て理解されるのか，コミュニケーションがうまくゆく（あるいは，うまくゆかない）とはどんなことなのか，人は一般に，英語とか日本語とかいう個々の言語の相違に目を向けがちであるが，すべての言語は，人間言語という点で何らかの共通点があるのではないか・・・などなど，知るべきことがらは多い．

本書は，Stefanie Jennedy, Robert Poletto, & Tracey L. Weldon (eds.) (1994): Language Files (sixth edition)—Materials for an Introduction to Language & Linguistics—, Ohio State University Press. からの抜粋である．原著はオハイオ州立大学言語学科の “Introduction to Language” という科目用の資料である．第 6 版まで版を重ねながら練り上げられた原著は，14 の単元から成り，それぞれの単元は 3 ないし 11 の「ファイル」と呼ばれる単位から成り立っている．言語に関するあらゆる領域をカバーする大著である。特定の理論に偏ることなく，また，平易な英文で書かれた記述は極めて明快である．全 92 のファイルの中から，「言語」に関して，最も基本的と思われる 15 のファイルを選んで本書の 15 の章とした。また，原著には，演習問題が

付されているファイルがあるが，それはほぼそのまま本書にも採用している．15 章に限定したのは，ページ数の関係もあるが，1 章につき 2 講義を費やし，年間 30 講義で終えるという大学の年間授業回数との関連からであるが，1 章につき 1 講義をあてて，15 講義で終えるというセメスター制にも対応できるであろう．本書は，大学，短期大学の言語学・英語学概論などのテキストとして適切であることはもちろんであるが，一般英語講読用テキストとしても使用できるであろう．

注をつけるに際しては，必要最小限のものにとどめ，特定の理論に偏らないように心がけ，また専門的になりすぎないように努め，わかりやすい表現を心がけた．本書により，我々が日常当然のこととして使用している「言語」というものの基本的な特徴と仕組みに関する知的関心を大いに高めていただきたい．

最後に，本書の企画から版権の取得，編集にご尽力いただいた，英宝社の宇治正夫氏，橋本稔寛氏のお二人に深甚なる謝意を表する．

1997 年 8 月 16 日

編 注 者

# Contents

# INTRODUCTORY TOPICS OF LINGUISTICS

# Chapter 1

# Arbitrariness in Language

It is generally recognized that the words of a language and the pieces that make up these words represent a connection between a group of sounds, which give the word or word piece its form, and a meaning. For example, the word for the inner core of a peach is represented in English by the sounds we spell as *p, i,* and *t,* occurring in that order to give the form pit. The combination of a form and a meaning connected in this way gives what may be called a **linguistic sign.**

An important fact about linguistic signs is that, in the typical instance in a language, the connection between form and meaning is **arbitrary**. The term *arbitrary* here refers to the fact that the meaning is not in any way predictable from the form, nor is the form dictated by the meaning. The opposite of **arbitrariness** in this sense is **nonarbitrariness**, and the most extreme examples of nonarbitrary form-meaning connections are said to be iconic. Iconic forms are directly representational of their meanings (for example, a "No Smoking" sign that has a large red X through a cigarette). Moreover, the connection in such cases is not a matter of logic or reason, nor is it derivable from laws of nature.

Thus the fact that the inner core of a peach may be called a *stone* or even a *seed* as well as a *pit* points to arbitrariness in the above example, for if the connection between the form and the meaning here were nonarbitrary (because the form determined the meaning,

or vice versa), there should only be one possible form to express this meaning. Also, there is nothing intrinsic in the combination of the sounds represented by *p, i,* and *t* that suggests the meaning 'inner core of a peach', for the same sounds combined in a different order have an entirely different meaning in the word spelled *t-i-p*.

Arbitrariness in language is shown by other considerations. For instance, it is usually the case that words with the same meaning have different forms in different languages and that similar forms express different meanings. Thus, what is *water* in English is *eau* in French, *Wasser* in German, *shui* in Mandarin Chinese, and so on. And the same form (pronounced like the English name *Lee*) means 'bed' in French (spelled "lit"), marks a question in Russian, and means 'meadow' or 'side sheltered from the wind' in English (spelled *l-e-a* and *l-e-e* respectively), as well as being an English proper name. If there were an inherent, nonarbitrary connection between form and meaning in all languages, with the meaning being determined by the form, then such cross-linguistic differences should not occur.

Similarly, the pronunciation of particular words can change over time. For instance, from a variety of evidence, including their spelling, we know that words such as *wrong, knight,* and *gnaw* must have had an initial *w, k,* and *g* respectively at some point in the history of English, and have thus undergone a change in their pronunciation, i.e., in their form. If we hold to the view that the form-meaning connection is determined and nonarbitrary, and if we further suppose that the original pronunciations of these words reflected this inherent and nonarbitrary relationship between form and meaning, then how can we maintain this inherent connection when the pronunciation changes without any accompanying changes in meaning? The relationship between the form and meaning of a word, therefore, has

to be arbitrary in order to allow for the inevitable changes it may undergo.

It is clear, therefore, that arbitrariness is the norm in language, at least as far as the basic relationship between the form of a word and its meaning is concerned. At the same time, though, it turns out that there are many nonarbitrary aspects to language. Again, to focus just on vocabulary and the form-meaning connection (though nonarbitrariness can be found in other domains of language), notice that a small portion of the vocabulary of all languages consists of items whose forms are largely determined by their meanings. Most notable and obvious are the so-called **onomatopoetic** (or **onomatopoeic**) words, i e., words that are imitative of natural sounds or have meanings that are associated with such sounds of nature.

Examples of onomatopoetic words in English include noise-words such as *bow-wow* for the noise a dog makes, *moo* for a cow's noise, *splat* for the sound of a rotten tomato hitting a wall, *swish* or *swoosh* for the sound of a basketball dropping cleanly through the hoop, *cockadoodle-doo* for the noise a rooster makes, and so on. Further examples include derivatives of noise-words, such as *cuckoo*, a bird name derived from the noise the bird makes; *babble*, a verb for the making of inarticulate noises derived from the perception of what such noises sound like; *burble*, a verb for the making of a rushing noise by running water derived from the sound itself, and so on. In all of these words, the matchup between the form of the word and the meaning of the word is very close: the meaning is very strongly suggested by the sound of the word itself.

Even in such onomatopoetic words, however, an argument for arbitrariness is to be found. While the form is largely determined by the meaning, the form is not an exact copy of the natural noise; roosters, for instance, do not actually say *cockadoodle-doo*—Eng-

lish speakers have just arbitrarily conventionalized this noise in that form. Moreover, when different languages imitate the same sound, they have to make use of their own linguistic resources. Different languages admit different sound combinations, so even the same natural sound may end up with a different form in different languages, though each of the forms is somewhat imitative. For example, a rooster says *cockadoodle-doo* in English but *kukuku* in Mandarin Chinese, even though (presumably) roosters sound the same in China as in America. If there were an inherent and determined connection between the meaning and the form of even onomatopoetic words, we would expect the same meaning to be represented by the same sounds in different languages. Thus, the strongest evidence for nonarbitrariness, namely, the existence of onomatopoetic words, is not quite so strong after all; in fact, comparison of such words in different languages can be used to argue *for* a degree of arbitrariness in linguistic signs. To make this point more clearly, we give below eleven natural sounds that are represented by onomatopoetic words in eight languages. The similarity among them is expected, owing both to the nature of the words and to the possibility of borrowing between geographically neighboring languages; still, the variation is also great.

In what may perhaps be considered a special subcase of onomatopoeia, it is often found that certain sounds occur in words not by virtue of being directly imitative of some sound but rather by simply being evocative of a particular meaning; that is, these words more abstractly suggest some physical characteristics by the way they sound. This phenomenon is known as **sound symbolism**. For instance, in many languages, words for 'small' and small objects or words that have smallness as part of their meaning often contain a vowel which is pronounced with the tongue high in the front part

**Cross-linguistic Examples of Onomatopoeia**

| *Sound* | *English* | *German* | *French* | *Spanish* | *Hebrew* | *Arabic* | *Chinese* | *Japanese* |
|---|---|---|---|---|---|---|---|---|
| Dog barking | [bawwaw] | [vawvaw] | [wahwah] | [wawwaw] | [hawhaw] | [ʕawə] | [wāwwāw] | [wāwa] |
| Rooster crowing | [kakə-dudl̩du] | [kikəʀiki] | [kokoʀiko] | [kikɾiki] or [kokoɾoko] | [kikuʀiku] | [kikikiːs] | [kuku] | [koke-kokko] |
| Cat meowing | [miaw] | [miaw] | [miaw] | [miaw] | [miaw] | [maw-maw] | [meaw] | [niaw] |
| Cow lowing | [muː] | [mu] | [møː] | [mu] | [mu] | [ʕuː] | [mo] | [moːmoː] |
| Sheep bleating | [baː] | [meː] | [beː] | [beː] | [mɛ̃ːmɛ̃ː] | [maːʔ] | [mɛ̃mɛ̃ː] | [mɛːmɛː] |
| Bird chirping | [twit-twit] | [pip] | [kwikwi] | [pippip] | [tswits-tswits] | [zæg-zæg] | [čiči] | [čiči] |
| Bomb exploding | [bum] | [bum] or [vʀum] | [bʀum] | [bum] | [bum] | [bõm] | [bõŋ] | [bāŋ] |
| Laughing | [haha] | [haha] | [haha] | [xaxa] | [haha] | [qahqah] | [haha] | [haha] |
| Sneezing | [aču] | [hači] | [ačum] | [aču] | [apči] | [ʕats] | [hačüː] | [hakšõŋ] |
| Something juicy hitting a hard surface | [splæt] | [pač] | [flæk] | — | [flox] | [ʔax] | [pyaʔ] | [guša?] |
| Clock | [tɪktak] | [tɪktɪk] | [tɪktak] | [tɪktak] | [tɪktak] | [tɪktɪk] | [tiktɔk] | [čɪktakɯ̟] |

of the mouth, which we will represent by the symbol [i]. This occurs in English *teeny* 'extra small', *petite* and *wee* 'small', and dialectal *leetle* for 'little', in Greek *mikros* 'small', in Spanish diminutive nouns (i.e., those with the meaning 'little X') such as *perrito* 'little dog,' where *-ito* is a suffix indicating 'little', and so on. Such universal sound symbolism—with [i] suggesting 'smallness'—seems to be motivated by several factors: first, the high, front vowel [i] uses a very small space in the front of the mouth, and second, [i] is a high-pitched vowel and thus more like the high-pitched sounds given off by small objects. Thus the use of [i] in 'small' words gives a situation where an aspect of the form, i.e., the occurrence of [i], is determined by an aspect of the meaning, i.e., 'smallness,' and where the form to a certain extent has an inherent connection with

the meaning, even though not directly imitative in any way. We may thus characterize the appearance of [i] in such words as somewhat iconic—the "small" vowel [i] is an icon for the meaning 'small(ness)'.

In addition to such universal sound symbolism, there are also cases of language-particular sound symbolism, in which some sound or sequence of sounds can come to be associated in a suggestive way with some abstract and vague but often sensory-based meaning. For example, in English, words beginning with *fl-*, such as *fly, flee, flow, flimsy, flicker,* and *fluid,* are often suggestive of lightness and quickness. Also, there are many words in English that begin with *gl-* and refer to brightness (such as *gleam, glisten, glow, glint, glitter,* and *glimmer*), as well as a group of words signifying a violent or sudden action that all end in *-ash* (such as *bash, mash, crash,* and *flash*). In all such groups, an identifiable aspect of the form relates in a nonarbitrary way to the meaning.

Even in such cases, however, arbitrary aspects are again identifiable. Thus there are words which have the appropriate sequences of sounds but do not fit into the group semantically, such as *glove* and *glue* with respect to the *gl-* group, or *sash* and *cash* with respect to the *-ash* group. There are also words with appropriate meanings that do not fit in formally, such as *shine* or *hit*; note too that the English word *small* does not contain the "small" vowel [i], but instead a relatively "open" or "large" vowel (think about what a dentist or doctor might tell you to say in order to get your mouth open wide, and compare that to the vowel of *small*). Also, from a cross-linguistic perspective, it turns out that other languages do not (necessarily) have the same clustering of words with similar meanings and a similar form. For example, the Greek words for 'fly', 'flee', 'flow', and 'fluid' are *petó, févγo, tréxo, iγró* respectively,

showing that the *fl-* sound symbol is an English-particular fact and so cannot be a matter of a necessary and inherent connection between form and meaning.

All in all, these examples show that nonarbitrariness and **iconicity** have at best a somewhat marginal place in language. At the same time, though, it cannot be denied that they do play a role in language and moreover that speakers are aware of their potential effects. Poets often manipulate onomatopoeia and sound symbolism in order to achieve the right phonic impression in their poetry; for example, Alfred Tennyson in his poem *The Princess* utilized nasal consonants to mimic the noise made by the bees he refers to:

> The *moan* of doves in i*mmem*orial el*ms*
> And *mur*m*uring* of i*nnum*erable bees

Similarly, the successful creation of new words often plays on sound symbolic effects; for instance, the recently coined word *glitzy*, meaning (roughly) 'flashily and gaudily extravagant', fits in well with the group of English words discussed above with initial *gl-*. It seems, therefore, that even though arbitrariness is the norm in language and is an important distinguishing characteristic separating human language from other forms of communication, an awareness of nonarbitrary aspects of language is part of the linguistic competence of all native speakers and thus is worthy of study by linguists.

## Chapter 2

# The Innateness Hypothesis

How is it that a child does not, in its desire to communicate, merely imitate the sounds and words around it but actually seeks out patterns and hypothesizes and tests rules? No adult teaches the child that language is systematic and rule-governed; most adults are not consciously aware of this fact themselves. The Active Construction of a Grammar Theory asserts that language ability is innate in humans. That is, humans are genetically predisposed to learn and use language (though not any particular language, of course). Babies are born with the knowledge that languages are patterned and with the ability to seek out those patterns. Humans may have even innate knowledge of some core of characteristics common to all languages, such as the concepts of "noun" and "verb." These basic features are called *linguistic universals*, and the (probably inborn) set of characteristics shared by all languages is known as **universal grammar**. No one knows exactly what the contents of universal grammar are, though this is currently an active area of research in linguistics.

The claim that linguistic ability is innate in humans is supported by the work of the biologist Eric Lenneberg. He has studied animal behavior and has developed a list of characteristics that are typical of innately determined behaviors. Such behaviors will be present in all normal individuals of a species, whereas learned behaviors will not be. Walking, for instance, is a behavior for which humans are genetically predisposed, but playing the piano or riding a bicycle

must be specifically learned. Is talking like walking, or is it like playing the piano?

To answer this, let's examine Lenneberg's characteristics of biologically controlled behaviors. If language acquisition has each of these characteristics, we can safely assume that it is a genetically triggered behavior.

1. The behavior emerges before it is necessary.
2. Its appearance is not the result of a conscious decision.
3. Its emergence is not triggered by external events (though the surrounding environment must be sufficiently "rich" for it to develop adequately).
4. Direct teaching and intensive practice have relatively little effect.
5. There is a regular sequence of "milestones" as the behavior develops, and these can usually be correlated with age and other aspects of development.
6. There is likely to be a "critical period" for the acquisition of the behavior.

[from Aitchinson 1976, adapted from Lenneberg 1967]

Consider the first criterion. In what sense is language necessary? From a biological standpoint, language is a behavior that has encouraged the survival and predominance of the human species. Each individual needs the ability to use language to enable it to take care of other basic needs. But children ordinarily begin to speak a language between the ages of twelve and twenty-four months, long before their parents have stopped providing them with the necessities of life. So language is a behavior that emerges, like walking, well before a child has to fend for itself.

Language is likewise neither the result of a conscious decision nor

triggered by external events. Children decide whether or not they want to learn to play baseball or checkers, but they never make a choice about acquiring a language; it's just something that all children do. Before a child can acquire a behavior such as playing the piano, certain external events must occur. The child must see and hear a piano, and typically must be taught fingering techniques, how to read music, and so on. Language, on the other hand, is not learned because something special has happened to trigger this learning. The child is spoken to by its caretakers and hears the conversations of others, but needs no other external stimulus to begin the process of analyzing language and constructing a grammar.

Doesn't intensive teaching help children learn language? Surprisingly, it has no positive effect at all. In the first place, children don't necessarily perceive their mistakes just because an adult points them out. Second, there is evidence that "coaching" by adults can have a relatively detrimental effect on children's language skills. Consider two possible types of responses that an adult might have to a child's utterances. On the one hand, the adult might correct the child's errors or expand upon what the child said; for instance, if a child says *Red ball!* the response might be *Yes, that's a red ball.* On the other hand, the child could receive normal, conversational feedback. Thus *Red ball!* might bring the response *Do you want to play with it, Mitch?* Studies have shown that children who primarily received corrections or expansions as responses were slower in the acquisition of language skills than children who received novel utterances as responses to their own speech.

Finally, innate behaviors have a **critical period** associated with their emergence. Unfortunately, this term is not very well defined in the literature. It has been commonly described as a period of time in an individual's life during which a behavior—in this case *lan-*

*guage*—must be acquired. It seems that we need to differentiate between two *critical periods*. One lasts from birth to about age two, during which time a child needs exposure to language in order to develop the brain structures necessary for language acquisition and acquiring native speaker competence. The second "critical period" is said to last from about the age of ten years to sixteen years, during which time individuals can still easily acquire a language, but not with native competence. How can we tell whether there really are such critical periods associated with language acquisition? To prove this we would have to show that language skills could not be acquired normally if the learning began after the first period had ended. This could be accomplished by depriving a child of any linguistic input for the first years of its life, but obviously it would be highly unethical to submit any child to such treatment. However, there are at least two sources of information available to linguists which support the claims that there are these critical periods for language acquisition.

The first sort of support for the **critical-age hypothesis** comes from children who, due to unfortunate circumstances, were exposed to little or no language in their early life. When these children were discovered, researchers attempted to help them acquire language. The success of these attempts depended largely on the age at which the children were discovered.

The second involves comparing the acquisition of a second language by children and by adults. Adults find it much more difficult to learn languages than children do. People who have learned a language as an adult almost always have an "accent," indicating that they have not acquired the phonological rules of the second language perfectly. They may also find the syntactic and other rules difficult to master completely. Children, however, can acquire a second (or

third) language easily and completely as long as they have enough input from those languages. This ability tapers off somewhere between ten and sixteen years of age. We will consider two such cases.

1. Genie was found in 1970 when she was nearly fourteen years old. She had been abused and isolated since the age of twenty months. When first discovered, Genie was completely silent. Thereafter her language acquisition was extremely slow, and although she did learn to speak, her speech was quite abnormal. She was able to memorize many vocabulary items, but her expressions were formulaic and of a type such as *what is X* and *give me X*.
2. Isabelle was discovered in 1937 at the age of six and a half. Her mother, who was deaf and could not speak, had kept her isolated but had not otherwise mistreated her. Isabelle then began lessons at Ohio State University, and although her progress was at first slow, it soon accelerated. In two years her intelligence and her language use were completely normal for a child her age.

The linguistic abilities of these children suggest that humans can learn language normally only if they are exposed to a language by a certain age. This evidence is corroborated by the evidence from second language acquisition, which also indicates that there is a critical period for language acquisition; this critical period appears to extend from birth to approximately puberty.

To conclude, children are apparently "preprogrammed" to learn language. This innate linguistic ability enables children to analyze the language of their environment and to create and refine their own grammars until they can understand and produce the full range of utterances that adults can produce.

## Chapter 3

# Theories of Language Acquisition

As we see throughout this book, language is both complex and systematic. It is composed of many layers such as phonology, or morphology, and so on, each of which contains sets of rules, and elements manipulated by those rules. It should be clear by now that a speaker's linguistic competence consists of much more than just knowing a list (however long) of words. A speaker's knowledge of language is made up not only of words but also of elements of other "sizes" (sounds and morphemes, for instance), and rules for combining all of these. This knowledge enables him or her to understand and produce sentences he or she may never have heard or uttered before. Thus, given that a speaker's grammar consists of linguistic elements and rules, we can understand the infinite productivity of language. How does a child learn a language? If knowing a language were simply a matter of knowing a lot of words, language acquisition would just be a process of figuring out what the words are and memorizing them. Instead, children must acquire a grammar with all its components and rules. How do children learn these rules? For instance, how do they learn to make the plural of some nouns by adding [-s] as in *cats*, others by adding [-z] as in *dogs*, and still others by adding [-əz] as in *houses*? How do they learn that the morpheme *un-* (meaning *not*) attaches to adjectives to form other adjectives having the opposite meanings? How do they learn to compose a sentence from a noun phrase and a verb phrase? Rules, unlike words,

are never explicitly stated, so the child cannot just memorize them. They must somehow figure them out on their own—a remarkable intellectual feat.

Various theories have arisen which attempt to account for how children acquire language. We will consider three of these: the *Imitation Theory,* the *Reinforcement Theory*, and a third which has no standard name but which we will call the *Active Construction of a Grammar Theory.* The **Imitation Theory** claims that children learn language by listening to the speech around them and reproducing what they hear. According to this theory, language acquisition consists of memorizing the words and sentences of some language. The idea that acquiring a language is a process of learning to imitate the speech of others is at least partly true. Because of the largely arbitrary nature of the connection between the way a word sounds and what it means, children cannot guess what the words of their target language are. They must hear those words used by other speakers and then reproduce or "imitate" them. Furthermore, this theory helps explain the fact that children learn the language that is spoken around them by parents, caretakers, and others, no matter what the language of their ancestors may have been. Thus a Korean child (for instance) will speak Korean if raised in a Korean-speaking environment, but Arabic if raised in an Arabic-speaking environment, or Swahili if raised in a Swahili-speaking environment, and so on. In other words, a child's genetic makeup has nothing to do with which language the child will acquire.

Unfortunately, however, the Imitation Theory explains little else of what we know about language acquisition. Consider that children's speech differs from adult norms: it is full of "errors" of many types. A two year old might say [nænə] for adult [bənænə] *banana* or a three year old might say *"Mommy tie shoe."* Proponents of the

theory could account for this by claiming that language is difficult to master, and so a child's first attempt at reproducing various words or sentence structures will not be perfect. This is not surprising since learning to speak needs much practice. Learning to speak is like learning to walk. A child has to learn how to coordinate the movements of the legs, to know when it will be safe to lift one foot off the ground without falling down, and so on. A child's speech is very different from adult's speech is because children are still in the process of learning how to coordinate the different articulatory movements to produce a certain sound or sequence of sounds that they aim at producing. For example, stressed syllables are easier to hear and imitate, whereas the consonant cluster [ts] in a word like *puts* is difficult to produce.

But the theory cannot account for the fact that the mistakes children make are largely predictable and consistent from child to child. For example, four-year-old English speakers often say *hitted* or *goed* rather than *hit* or *went*, even though they have never heard an adult use these forms. Moreover, no child will produce such random mistakes as forming the past tense of a verb by adding a /-z/ in one instance, prefixing an /l-/ in another or cutting off the final segment whenever in the third instance. As we shall see, the mistakes children make reveal a great deal about the grammatical system underlying their speech. However, the Imitation Theory does not recognize the existence of such a system, since it claims that children are simply imitating what they have heard in the speech of others.

The Imitation Theory alone also cannot account for the fact that even when a child attempts to repeat an adult's utterance, it is often unable to do so accurately. Consider the following exchanges, which are typical of young children trying to imitate an adult:

Adult: He doesn't want a drink.
Child: He no want drink.

and

Adult: That's the dog's toy.
Child: That dog toy.

In fact, the child's imperfect imitations exhibit regular patterns because they reflect the child's internal grammar. For a child at a particular stage of linguistic development, *He no want drink* is the grammatical way of expressing *He doesn't want a drink.* However, the Imitation Theory fails to acknowledge that a child has any sort of grammar that includes rules for combining words and other elements in systematic ways.

The most serious fault of the Imitation Theory is that it cannot account for how children and adults are able to produce and understand new sentences. If a child learned only by imitation, the only way it could understand a sentence is if it had heard it before. However, we know that there is an infinite number of possible sentences in any language, and speakers (even children) are able to understand and produce completely novel utterances. Speakers do not store whole sentences in memory; they store words and syntactic rules. The Imitation Theory cannot explain the fact that children acquire these rules even though they are never explicitly expressed by other speakers.

**The Reinforcement Theory** asserts that children learn to speak like adults because they are praised, rewarded, or otherwise reinforced when they use the right forms and are corrected when they use wrong forms. The claim that parents and other caretakers frequently correct their children's grammatical mistakes and praise their correct forms is unfounded. Such corrections seldom happen,

for although parents often do correct their children, their corrections generally have more to do with the accuracy or truth of a statement and not its grammatical form. Adults also correct children's grammatical sentences if they are not true. Thus, *The dog wants to eat* may receive the response *No, the dog doesn't want to eat* if the dog has just finished its dinner, whereas the sentence *Robin goed to school today* may receive the response *Yes, he did* if Robin did go to school that day.

The Reinforcement Theory is also contradicted by the fact that even on the rare occasions when adults do try to correct a child's grammar, the attempts usually fail entirely. Consider the following conversation:

| | |
|---|---|
| Child: | Nobody don't like me. |
| Mother: | No, say "nobody likes me." |
| Child: | Nobody don't like me. |

(repeated 8 times)

| | |
|---|---|
| Mother (now exasperated): | Now listen carefully! Say, "Nobody likes me." |
| Child: | Oh! Nobody don't likes me. |

Notice that although the child does not form negative sentences in the same way the adult does, the child's utterances follow a pattern just as the adult's do. The child's way of forming negative sentences involving *nobody* is completely regular: every such sentence contains *nobody* + a negative auxiliary verb for example, *Nobody can't spell that* or *Nobody won't listen*. The child must possess a rule that defines this pattern, but the rule is not the same as that in the

grammar of an adult. Note, though, that in the last repetition the child imitates the adult correctly by saying *likes* instead of *like*. The Reinforcement Theory cannot explain where the child's rule came from or why the child seems impervious to correction.

The **Active Construction of a Grammar Theory** holds that children actually invent the rules of grammar themselves. Of course, their inventions are based on the speech they hear around them; this is their input or data for analysis. Children listen to the language around them and analyze it to determine the patterns that exist. When they think they have discovered a pattern, they hypothesize a rule to account for it. They add this rule to their growing grammar and use it in constructing utterances. For example, a child's early hypothesis about how to form the past tense of verbs will be to add /ed/. All past tense verbs will then be constructed with this rule, producing forms such as *holded* and *eated* alongside *needed* and *walked*. When children discover that there are forms in the language that do not match those produced by this rule, they modify the rule or add another one to produce the additional forms. Eventually, the child has created and edited his or her own grammar to the point where it matches that of an adult's. At this point there are no significant discrepancies between the forms produced by the child and those produced by the adults around him or her. However, the child has a complete working grammar all along, even before it is essentially adultlike. The child uses this grammar to produce utterances; when those utterances differ from adult speech, they are reflecting the differences in the grammar underlying them.

This theory explains what the Imitation and Reinforcement Theories cannot explain alone. Within this framework children's mistakes are expected to occur and to follow nonrandom patterns, because the child is forming utterances according to grammatical rules, although

the rules are often different from those adults use. For the same reasons, this theory predicts that children will fail to imitate adult forms accurately even when they are reinforced by adults when the rules for producing such forms are different from the rules the child has devised.

## Chapter 4

# The Sounds of Speech

Although languages can in principle use modes of communication other than sound (for instance, visual signals) to convey meaning, it is nevertheless true that most human languages are spoken. This may not be an accident: some theorists have claimed that using the vocal apparatus for language freed human hands to engage in other activities and thus had survival value in the evolution of the species. **Phonetics** is the study of speech sounds, which are known more technically as **phones**.

A whole chain of activities is involved in communicating meaning by sound. First of all, a speaker encodes meaning into sounds, which he or she produces using the tongue, lips, and other articulatory organs. These sounds are transmitted through the air to reach the hearer. Then the hearer perceives them through auditory processes, finally translating them back into meaning. There are therefore three aspects to the study of speech sounds: **articulatory phonetics**, the study of the production of speech sounds; **acoustic phonetics**, the study of the transmission and the physical properties of speech sounds (such as intensity, frequency, and duration); and **auditory phonetics**, the study of the perception of speech sounds.

The study of articulatory phonetics has had the longest history among the three subbranches of phonetics; it was already fairly developed by the nineteenth century. In the popular musical *My Fair Lady,* based on Bernard Shaw's play *Pygmalion*, the eccentric pro-