



Chapter 1

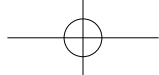
Properties of Language

1. Introduction—Nature or Nurture?

When we reflect on the nature of language, one of the basic questions that we tend to ask is whether language is a natural ability of human beings. What is a natural ability, then? Well, walking can be seen as a natural ability of humans. When a baby is about 12 months old, it begins to develop the ability to walk without explicit instructions from adults. Similarly, most species of birds develop the ability to fly as they mature. The walking of humans and the flying of birds are abilities that come about naturally to individuals of the human species and most birds species respectively. On the other hand, a person's ability to play the piano or to do arithmetic must be taught, so must an elephant's ability to waltz or a parrot's ability to say "hello". We might just as well reformulate our initial question as whether language is an ability comparable to humans' walking/birds' flying or to humans' piano-playing/elephants' dancing.

No one would deny that "learning" plays a very important part in a child's mastery of a particular language, be it English, Chinese, or Navajo. The crucial question is whether children are born with "blank sheets" in their head as far as language is concerned or whether they are "hard-wired" with certain fundamental aspects of the structure of language that enable them to pick up the language around them effortlessly.

To put it in a more technical way, is language partly due to *nature* or is it wholly due to learning or nurture? This so-called **nature-nurture** controversy has been discussed for centuries. For example, it was the topic of one of



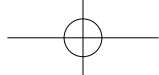
Plato's dialog, *Cratylus*. A commonly held view among the ancient Greeks, expressed by Socrates in this dialog, is that at some ancient time there was a "legislator" who gave the correct, natural name to everything, and that words "echoed" the essence of their meanings.

Despite all the contrary evidence, the idea that the earliest form of language was initiative, or "echoic", was maintained up to the 20th century. Called the bow-wow theory, it claimed that a dog was designated by the word *bow-wow* because of the sounds of its bark. A parallel view states that language at first consisted of emotional ejaculations of pain, fear, surprise, pleasure, anger, and so on. A similar proposal that the earliest manifestations of language were "cries of nature" was proposed by Jean Jacques Rousseau in the middle of the 18th century.

The nature-nurture controversy was brought up again in the late 1950s by two prominent scientists of that time, B. F. Skinner, a Harvard psychologist, who wrote *Verbal Behavior*, and Noam Chomsky, then a young linguist at MIT. Skinner claims in his book that language can be "explained as a set of habits gradually built up over the years". In his view, no complicated innate (天赋的) or mental mechanisms are needed. All that is necessary is systematic observation of the events in the external world, which prompts the speaker to utter sounds.

Skinner's hypothesis concerning the nature of language is based on his work with rats and pigeons. He has proved that, given time, rats and pigeons could be trained to perform an amazing variety of seemingly complex tasks, provided two basic principles were followed. Firstly, the tasks must be broken down into a number of carefully graduated steps. Secondly, the animals must be repeatedly rewarded.

Chomsky makes two major criticisms of Skinner's work. Firstly, the behavior of rats in boxes is irrelevant to human language. Secondly, as Chomsky puts it, Skinner fundamentally misunderstands the nature of language. But what is there about language that makes it so special? There are a large number of human activities such as learning to drive or learning to knit which seem to be learnt in the same way as bar-pressing by rats. Why



not language as well? We next turn to examine some of the **design features** (设计特征) of language to answer the question whether language is **species-specific**, that is, exclusive to humans.

2. The Nature of Language

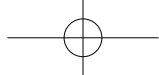
What is language? It proves to be no easy matter to provide a precise definition of language. The following definition turns out to be quite loose: The faculty of language consists in man's ability to make noises with the vocal organs and marks on paper or some other material, by means of which groups of people speaking the same language are able to interact and cooperate as a group. This definition does not seem to hold because the use of vocal organs or marks on some material is neither exclusive to humans nor a necessary condition for human communication.

A more plausible way of defining language is to ask what are the features that are essential to human communication. Linguists have proposed different lists of such features, called the design features of language. While the exact number of such features differs from one version to another, linguists agree that such features, as a whole set, do not occur in animal communication. That is to say, they are characteristic of human communication alone. In what follows, we are going to examine five such features, namely creativity, arbitrariness, duality, displacement and structure-dependence.

2.1 Creativity

Any language permits its users to produce new sentences never spoken before and to understand sentences never heard before. This property is referred to as the “creative aspect” of language use (also known as **productivity or openness**).

This “creative ability” is due to the fact that language use is not limited to stimulus-response behavior. Even some involuntary cries like *ouch* are constrained by one's own language system (in Chinese people will cry 哎哟 instead), as are the filled pauses that are sprinkled through conversational



speech—*er* or *uh* or *you know* in English; 啊, 这个, 就是说, 你知道吧, etc., in Chinese.

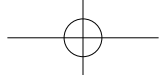
In principle, it is impossible to memorize all the possible sentences in a language. For every sentence in the language a longer sentence can always be formed and theoretically there is no limit to the length of any sentence and therefore no limit to the number of sentences. Take the following famous rhyme in English for example:

Example 1

- a) This is the house.
- b) This is the house that Jack built.
- c) This is the malt that lay in the house that Jack built.
- d) This is the dog that chased the cat that killed the rat that ate the malt that lay in the house that Jack built.

With a simple sentence such as the one in 1a) “This is the house”, it is possible to add an embedded attributive, resulting in 1b) “This is the house that Jack built”. The same process can be repeated, giving rise to 1c) and 1d). In fact, there is no limit to the number of cycles for the process to stop and therefore no limit to the length of the sentence. All human languages permit their speakers to form indefinitely long sentences. In this lies the creativity of human language, something that no animal communication system shares.

Not only are sentences unlimited in their length, the same structural repetitiveness is also found in words and phrases. For example, there is no limit to the number of syllables a word can have, even though words in English normally consist of one to five syllables. The word *unestablishmentarianism* is often cited to show that, in theory, there is no limit to the length of a word. The same is true with groups of words. A noun, for example, can be modified by an unlimited number of adjectival, prepositional and participial modifiers as attested by the phrase taken from a recent article from *Herald Tribune*: *many irreplaceable antiquities looted from the National Museum during the chaotic fall of Baghdad*. In this phrase the noun *antiquities* is flanked by five different modifiers and there is no stopping for further modifiers to be added.

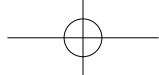


Another important aspect of language creativity is manifested by the constantly expanding expressions of new ideas. Each day the world around us offers new technologies, inventions, discoveries and concepts. Language is such that it finds little difficulty in coming up with expressions to describe this changing world. Words such as *nuke*, *hacker*, *dirty bomb* or *SARS* are added to our everyday vocabulary with scant notice. The word *nuke*, for example, is an informal way of talking about nuclear warheads and could only come into existence when the world had become shadowed by the threat of a nuclear war in the last 50 years of human history. The story of the word *hacker*, used in the sense of an illegal intruder into other's computer files, is even more recent. The newly-coined compound *dirty bomb* refers to a crude nuclear device for a possible terrorist attack. It made its first appearance only after the 9.11 attack on the World Trade Center in 2001. The acronym *SARS*, standing for Severe Acute Respiratory Syndrome, entered into newspaper headlines in the spring of 2003 when the deadly virus caught Asia and the rest of the world in a hysteria and almost paralyzed the world economy.

2.2 Arbitrariness of linguistic signs

Language is a symbolic system, making use of signs. The most commonly used medium for language is the utterances we produce or hear others produce. There are of course other substitute media for language, for example gestures used in sign languages by the deaf or orthography in writing. Whichever form language happens to take, it is an essential property of linguistic signs that they stand for something else, and the relationship between a linguistic sign and what it stands for is an arbitrary one.

Let us just concentrate on the oral form of language. The union of form (sounds) and meaning (concepts) of a word is as inseparable as the two sides of a coin. Knowing a language means, at least in part, knowing how to pronounce the words in that language and knowing what they mean. Such knowledge must be stored in the long-term memory of the users of the language. If you are a speaker of English, you will know that the word *dog* is pronounced [dɒg] and that it refers to a particular type of domestic animal.



You will also know that the word *house* is pronounced [haʊs] and that it refers to a building for people to live in. However, these words are incomprehensible to people who don't speak English. Even when they hear how these words are pronounced, the phonetic shapes of the words will not provide them with any clues to the meanings the words stand for because the union of sound and meaning is arbitrary. That is to say that there is no necessary or natural link between the sign and the meaning it represents. The union of sound and meaning is formed entirely on the basis of convention.

In every language there are a small number of words that are exceptional to the principle of arbitrariness we have just discussed. **Sound symbolism** is the term used to capture this phenomenon, which is found in all languages. The term refers to those words whose pronunciation suggests the meaning. One group of such words is called **onomatopoeia** (拟声词) whose phonetic forms are based on imitations of natural sounds. For example, in English a dog *barks*, a cat *mews*, a duck *quacks* and a horse *neighs*. Yet even in these cases, the sounds differ from one language to another, reflecting the particular sound system of the language. A Chinese dog 汪汪叫, a Chinese cat 喵喵叫, a Chinese duck 嘎嘎叫, and a Chinese horse 嘶鸣. In English, one says *cockadodledoo* to represent the rooster's crow, but in Chinese it becomes *ou-ou-ou*, with different tones used to indicate the varying pitches of the crow.

Sometimes particular sound sequences seem to suggest that they are related to particular concepts. For example, in English many words beginning with *gl* relate to sight, such as *glare*, *glint*, *gleam*, *glitter*, *glossy*, *glance*, *glimmer*, *glimpse*, and *glisten*. However, such words are a very small part of any language, and the *gl* sound may have nothing to do with "sight" in another language, or even in other words in English, such as *gladiator*, *glucose*, *glory*, *glycerin*, *globe*, etc.

In their daily environment, people also encounter signs that are non-arbitrary in nature. Traffic lights and road signs are good examples in this respect. Following are some road signs widely used in China and abroad:

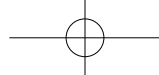


Figure 1



Figure 2



Figure 3



Figure 4



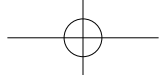
Figure 5

Even without much training, can you guess the meanings of the above signs? I would say yes, for Figure 1 just so clearly means “go straightforward”, Figure 2 “turn left”, Figure 3 “turn right”, Figure 4 “go straightforward and turn left”, and Figure 5 “go straightforward and turn right”. Now what makes the meanings of these road signs so obvious? It is because the signs themselves resemble the meanings they try to capture to a certain degree. In other words, the relationship between these road signs and their meanings is not arbitrary but natural.

The motivation for using non-arbitrary road signs is easy to understand. The direct link between these signs and their meanings makes it possible for everyone to grasp the messages behind the signs immediately, even if one does not speak the language of the local community. Other examples of non-arbitrary signs include the siren of an ambulance or a police car (the sharpness and high pitch of the noise immediately puts you on alert), figures on the doors of bathrooms in public places, instructions for electric appliances, etc.

2.3 Duality

Duality or double-articulation means that language is organized into two layers: the basic sound units of speech, such as [l], [ɑ:], [k], which are normally meaningless by themselves, but become meaningful when combined into sequences such as [lɑ:k] (i.e., *lark*). Other communicative systems invented by human also share this feature of duality. The Morse code used in radio communication is one such example. The feature of duality makes it possible for language and, for the same reason, radio communication as well, to produce an infinite number of messages with only a limited number of basic templates. There are normally no more than 50



basic sound units in a language, yet the number of words in a language is unlimited. The Morse code only uses two signals represented by a dot and a dash and it is capable of sending and interpreting almost any messages you can think of.

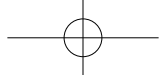
2.4 Displacement

By displacement we mean that language enables human beings to share information on events that take place beyond their immediate environment. Unlike communications among animals, communications among human beings are not confined to the here and now. Linguists use the term **displacement** to describe this capacity of human language to refer to things far removed in time and place. You might hear one of your classmates say things such as “XXX was knocked down by a bicycle in front of the dormitory building yesterday afternoon. He is now in hospital. I will go to visit him after class”. Or “XXX told me he dreamt he was kidnapped by ET. I think he must have read too much science fiction”. Well, so what? Isn't this most simple and natural? Before you jump to a hasty answer, think of your dog or your cat: Your dog will never be able to talk with your neighbor's dog about things not happening here and now, no matter how clever it is; and neither will your cat.

It is due to this displacement feature of language that we can comment on things that happened 2000 years ago in the Spring and Autumn Period and foresee things that will happen in the future, say the 2008 Olympic Games. We can also discuss an event that took place in a foreign country or in a remote area in China. In our everyday life, we tend to take it for granted that we can easily achieve this using language. Now try to act out the following messages without the help of language:

Example 2

- a) Confucius was born around 551 BC and died around 479 BC.
- b) In 2008 the 29th Olympic Games will be held in Beijing.
- c) Iraq is in the midst of a civil war, the country's former Prime Minister, Iyad Allawi, tells the BBC.



How did you feel? It's difficult, if not totally impossible, isn't it? I hope from now on you can start to appreciate how much language can do to bridge the temporal-spatial gap for us.

2.5 Structure-dependence

By structure-dependence, we mean that the composition and production of utterances is not merely a question of stringing together sequences of words randomly. Rather every sentence has an inaudible internal structure which both the speaker and the hearer understand.

Suppose someone trying to learn English encounters the following two sentences:

Example 3

- a) President Clinton has backed off his original idea that Social Security's future should be assured for 75 years.
- b) Has President Clinton backed off his original idea that Social Security's future should be assured for 75 years?

His first guess on the rules for the formation of questions in English might be that English has a rule which says "In order to form a question, place the word *has* to the beginning of the sentence". This might work for some sentences such as

Example 4

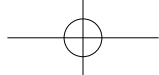
- a) Pet has hurt herself.
- b) Has Pet hurt herself?

But we soon run into difficulties with this account, for when coming across sentences like 5a) below, forwarding the word *have* won't yield the correct question form.

Example 5

- a) The decision could have large effects.
- b) *Have the decision could large effects?

Looking at the Clinton sentence again, the learner might make a second guess: "In order to form a question in English, bring the third word from the left to the beginning of the sentence." Again, this might work for a small group



of sentences. For example,

Example 6

- a) The alligator has escaped.
- b) Has the alligator escaped?
- c) The government is wooing foreigners in part because it thinks South Korean firms need western managerial skills and accounting standards.
- d) Is the government wooing foreigners in part because it thinks South Korean firms need western managerial skills and accounting standards?

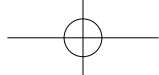
Yet it is quite accidental that this rule can produce some correct sentences, for in most cases following this rule will only produce ill-formed questions, as shown in the following examples:

Example 7

- a) Skunks are smelly.
- b) *Smelly skunks are?
- c) The rebels, who still control roughly half the country, all have had to accept that outright military victory is impossible.
- b) *Who the rebels, still control roughly half the country, all have had to accept that outright military victory is impossible.

From the above examples, we can see that rules based on simple mechanical procedures that ignore the internal structures of sentences prove to be a dead end. To return to example 3a) “President Clinton has backed off his original idea that Social Security’s future should be assured for 75 years”, in order to arrive at the correct question form for this sentence, the learner must recognize that in the sentence, *President Clinton, has backed off his original idea, that Social Security’s future should be assured for 75 years* each behaves as a unit of structure. The number of words within each unit is irrelevant, so no amount of counting will produce the right result for question formation.

In all the above examples (which represent a subgroup of sentence types in English), questions are formed by moving the first auxiliary verb



immediately following the first syntactic unit (a subject NP in this case) to the beginning of the sentence, as shown below:

Example 8

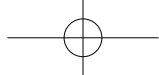
a) President Clinton	<i>has</i>	backed off...
b) Pet	<i>has</i>	hurt herself.
c) The decision	<i>could</i>	have large effects.
d) The alligator	<i>has</i>	escaped.
e) The government	<i>is</i>	wooing foreigners...
f) Skunks	<i>are</i>	smelly.
g) The rebels, who still..., all	<i>have</i>	had to accept...

Structure-dependent operations as shown in the above examples prove to be far more complicated than simple mechanical rules. All of us, who have had years of experiences of learning English as a foreign language, should remember the difficulties we encountered when wrestling with the grammatical rules of English. Yet, amazingly, all children, in their acquisition of their first language, seem to know automatically that language involves structure-dependent operations. How do they manage to achieve this?

Initially, one might expect that children go through a difficult period trying to figure out the structural rules of their first language, just as some of us did when we started learning English in our secondary schools, but that is not the case. A two-year-old child seems to comprehend and master the use of language structures with little efforts. This type of phenomenon has led linguists to suggest that humans may have an innate knowledge of the properties of language.

3. Linguistic Competence and Linguistic Performance

Speakers must possess knowledge of a language in order to communicate successfully with other members of the same language community. For instance, if you are a speaker of English and you hear your friend say: "Hurry up, we are leaving!" you would probably react instantly by saying something like "I am coming". To understand the utterance made by your friend, you need to know the meaning of each individual word



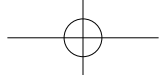
and phrase in the utterance, such as *we*, *are*, *leaving*, and *hurry up*, how they are pronounced and how they are structured. To be able to respond appropriately, you also need to know how to structure and organize your own idea and communicate it to your friend.

So what do we mean when we say that someone is a competent user of a language? We mean that he/she has stored in his/her long-term memory knowledge of the words and phrases of that language, what those words and phrases mean and how they are pronounced and structured. Without such linguistic knowledge, one is unable to communicate with other people in a particular language.

However, having the linguistic knowledge of a language is different from the actual performance of using that language in natural communication. The former is usually referred to as **linguistic competence** (语言能力), and the latter **linguistic performance** (语言行为). Our linguistic performance may be affected by a number of other factors such as physical environment, emotional stress or the state of health. Suppose one day you have caught a cold and have lost your voice temporarily. In this case, your knowledge of language, or your linguistic competence, is left intact, although you are likely to come across difficulties in communicating orally with other people. That is to say, your linguistic performance will be affected to a certain degree. In everyday speech, our utterances are replete with *erms* or *uhs* (in English) and 嗯 or 啊 (in Chinese). We also have a lot of false starts and pauses. All these are considered to be part of our linguistic performance, which is considered imperfect and separated from our linguistic competence, which captures our internal systematic knowledge of language.

4. Descriptive Grammar and Prescriptive Grammar

Linguistic grammar, or the internal systematic knowledge of language, normally operates beyond the reach of our conscious mind. It is up to efforts of linguists to explicate this body of knowledge. To the extent that the linguist's description is a true representation of the speakers' linguistic capacity, it will be considered a successful model of the language. Such a model is usually



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referred to as a **descriptive grammar** (描述性语法). It does not tell us how we should speak; it only describes our basic linguistic knowledge. It explains how it is possible for us to speak and understand, and it tells what we know about the sounds, words, phrases, and sentences of our language.

“Language purists” believe that language change is corruption and that there are certain “correct” forms that all educated people should use in speaking and writing. They wish to prescribe rather than describe the rules of grammar, which has given rise to the writing of **prescriptive grammars** (规定性语法).

With the rise of capitalism in Europe, a new middle class emerged who wanted their children to speak the dialect of the “upper” classes. This desire led to the publication of many prescriptive grammars. In 1762, an influential grammar called *A Short Introduction to English with Critical Notes* was written by Bishop Robert Lowth. The following examples, taken from the book, were intended to show that the sentences in the left column are wrong and the correct forms should be like that provided in the right column.

I don't have *none*.

I don't have *any*.

You *was* wrong about that.

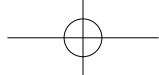
You *were* wrong.

Mathilda is fatter than *me*.

Mathilda is fatter than *I*.

As one writer put it in the early 20th century, “There seems to have been in every period in the past, as there is now, a distinct apprehension in the minds of very many worthy persons that the English tongue is always in the condition approaching collapse and that arduous efforts must be put forth persistently to save it from destruction.”

Linguists object to prescriptivism for a number of reasons. Two of the major reasons are: 1) Prescriptive views are elitist views in that they assume that the linguistic grammars and usages of a particular group in society (usually the more affluent and with political power) are the only correct ones; 2) prescriptivists seem to have little knowledge of the history of language and less about the nature of language. They fail to recognize that all dialects are rule-governed and that what is grammatical in one language may be



ungrammatical in another (equally prestigious) language.

5. Summary

We started this chapter by raising a basic question: Is language partly due to nature or is it wholly due to learning or nurture? This is usually referred to as the nature-nurture controversy and has been discussed for centuries.

We then turned to examine some of the design features of language to answer the question whether language is species-specific, that is, exclusive to humans. Altogether five design features were discussed in some detail, namely creativity, arbitrariness, duality, displacement and structure-dependence.

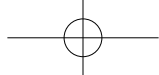
By creativity we mean that any language permits its users to produce new sentences never spoken before and to understand sentences never heard before. By arbitrariness we mean that the relationship between a linguistic sign and what it stands for is arbitrary. As far as spoken language is concerned, the union of sound and meaning is formed entirely on the basis of convention.

Duality or double-articulation means that language is organized into two layers: the basic sound units of speech which are normally meaningless by themselves, and the meaningful sequences made up of those basic sound units.

Displacement refers to the fact that language enables human beings to share information on events that take place beyond their immediate environment.

By structure-dependence, we mean that the composition and production of utterances is not merely a question of stringing together sequences of words randomly. Rather every sentence has an inaudible internal structure which both the speaker and the hearer understand.

When we say that someone is a competent user of a language, we mean that he/she has stored in his/her long-term memory knowledge of the words and phrases of that language, what those words and phrases mean and how



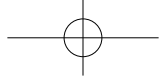
they are pronounced and structured. This body of linguistic knowledge is usually referred to as linguistic competence, which is distinct from linguistic performance, i.e., the actual performance of using a language in natural communication.

A descriptive grammar does not tell us how we should speak; it only describes our basic linguistic knowledge and explains how it is possible for us to speak and understand. A prescriptive grammar, on the other hand, prescribes the rules that people should follow in speaking and writing.

Exercises

1. It was pointed out in this chapter that a small set of words in languages may be onomatopoeic. *Ding-dong*, *tick-tock*, *bang*, *zing*, *swish*, *plop* are such words in English. Can you make up a list of ten such words in Chinese or any other language that you know? Test them on your friends to see if they are truly non-arbitrary as to sound and meaning.
2. Which of the following do you think are *not* universals of language and why?
 - a. writing systems;
 - b. arbitrarily related forms and meanings;
 - c. articles (words like *a* and *the*);
 - d. grammatical rules that determine which sentences are well formed;
 - e. methods to enlarge the vocabulary;
 - f. words for *sidewalk*, *adultery*, *desert*, *mountain*;
 - g. words for kinship terms that refer to parents, siblings, in-laws, and so on;
 - h. prefixes;
 - i. ways to combine sentences or phrases or words into complex units;
 - j. pronouns.

(Fromkin & Rodman 1983: 31)



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