

# Introduction: What is Language?

What is language? This is a difficult question since by “language” we might mean many different things. Consider, for example, the *use* of language. In this sense, language clearly plays a central, pervasive role in family and social relations, culture, politics, religion, many forms of artistic expression, and so on. Just imagine what our lives would be like without language. It also seems that we use language not only to “express” our ideas to one another, but in the very process of thinking (that is, organizing, and perhaps even *having*, our concepts/thoughts/ideas to begin with). Indeed, it is no exaggeration to say that, more than any other attribute, language distinguishes humans from all other species.

It is another remarkable fact of nature that every human comes to know (becomes a “native speaker” of) a language. Even more amazing is the fact that, as much scientific research suggests, the ‘language’ of a 3 year old child is not significantly different from that of an adult (at least assuming some reasonable level of abstraction and taking into account some independent differences). How can this be possible, given the profound complexity of the knowledge involved? To answer these sorts of questions we are naturally led to us to focus our attention not so much on language use, but on the knowledge of language that underlies the ability to use it. We might, then, state the following as one of our general research questions:

☞ What does one ‘know’ when one knows a language?

Someone who knows a language knows:

- what a linguistic sound is;
- that certain (sequences of) linguistic sounds are possible in their language, whereas others are not;
- that certain linguistic sounds (or sequences of sounds) in their language correspond to particular meanings (= knowledge of ‘morphemes’ and ‘words’);
- the ways in which simple morphemes or words can be combined to form more complex words;
- the ways in which words can be combined to form “multi-word” expressions, phrases, and how phrases can combine to form sentences;
- whether or not a given expression is, or *is not*, a sentence in their language;
- the possible meaning(s) of words, phrases and sentences, such as complex words, phrases and sentences

Here are a few examples illustrating knowledge of what the possible phrases and sentences are:

- (1) a. The old man died.  
b. \*Old died man the.
- (2) a. the old man  
b. \*man old the
- (3) a. Most students in the class did well on the exam.  
b. \*The in exam did class students most the on well.
- (3) a. John is easy to please.  
b. It is easy to please John.  
c. John is eager to please.  
d. \*It is eager to please John.
- (4) a. He appeared to Mary to like himself  
b. \*He appeared to Mary to like herself  
c. \*He appealed to Mary to like himself  
d. He appealed to Mary to like herself
- (5) a. No one believes **that John is clever**.  
b. No one believes **John is clever**.  
c. **That John is clever** is believed by no one.  
d. \***John is clever** is believed by no one.

## Infinity and Linguistic Knowledge

- (1)
  - a. This is a very old book.
  - b. This is a very, very old book.
  - c. This is a very, very, very (...) old book.
  
- (2)
  - a. This is a picture of John.
  - b. This is a picture of a picture of John.
  - c. This is a picture of a picture of a picture ... of John.
  
- (3)
  - a. This is a picture of John's mother.
  - b. This is a picture of John's mother's mother.
  - c. This is a picture of John's mother's mother's ... mother.
  
- (4)
  - a. This is the house that John built.
  - b. This is the floor that is in the house that John built.
  - c. This is the cheese that was on the floor that is in the house that John built.
  - d. This is the mouse that ate the cheese that was on the floor that is in the house that John built.
  - e. This is the cat that killed the mouse that ate the cheese that was on the floor that is in the house that John built.
  - f. This is the dog that chased the cat that killed the mouse that ate the cheese that was on the floor that is in the house that John built.
  - g. This is the man who owns the dog that chased the cat that killed the mouse that ate the cheese that was on the floor that is in the house that John built.

- (5) a. John is clever.  
b. Bill thinks that John is clever.  
c. Tom heard that Bill thinks that John is clever.  
d. Harry knows that Tom heard that Bill thinks that John is clever.  
e. Sue found out that Harry knows that Tom heard that Bill thinks that John is clever.  
f. Mary is angry that Sue found out that Harry knows that Tom heard that Bill thinks that John is clever.  
g. George was told that...

## Competence versus Performance

“What’s one and one and one and one and one and one and one and one and one and one and one?”

“I don’t know,” said Alice, “I lost count.”

“She can’t do Addition,” the Red Queen interrupted.

Lewis Carroll, *Through the Looking-Glass*

Linguistic (grammatical) competence is what an individual knows about his or her language, such as whatever sort of rules or principles make the grammatical sentences above grammatical and the ungrammatical ones ungrammatical, or that allow for an infinite number of possible grammatical sentences. Keep in mind, however, that even highly educated adults are not consciously aware of the sorts of linguistic knowledge that constitute their linguistic competence. In cognitive science,

knowledge of this sort, namely knowledge that is not directly accessible by way of introspection, is called **tacit knowledge**.

Linguistic performance, on the other hand, refers to the actual use of this knowledge in speech production/comprehension, writing an email, or perhaps even just the process of thinking about what you are going to do after this class. As we have seen above, speakers of a language have knowledge that allows them to produce or understand sentences of any length. That is, in terms of competence, there is no limit as to how long a sentence can be. In terms of performance, however, there are all sorts of limits. For example, we may simply lose track of what we are saying (or what is being said) due to (short-term) memory limitations, or we may get bored and stop talking/listening. Another, indeed obvious, fact is that performance requires physical energy, which is finite, as is life itself for that matter. Even when producing very simple expressions, speakers sometimes make what are called **performance errors** (or more informally, slips of the tongue). As mentioned in passing above, many researchers believe that the linguistic competence of even very young children is not all that different from that of adults. Of course, very young children cannot speak exactly like adults, but this may have more to do with differences in performance ability than in competence.

## What is grammar?

The grammar of a language is the (competence) system underlying our knowledge of the sounds, sound patterns, basic units of meaning (morphemes), how words are built from morphemes, how to combine words to form larger expressions (sentences), how to interpret the meanings of sentences, and so on. In this sense, grammar and language can really be thought of as the same. When linguists talk about language in this way, that is, as a **mental grammar**, internal to the minds of individual humans, they often use the technical term **I-language**, where 'I' is intended to stand for *internal*, *individual*, and *innate*. The implication is that language, again, *in this sense*, is not something that humans invented but rather is biological capacity of some sort, genetically rooted in us. In sum, *individual* humans are born with an *innate internal* capacity for language, an I-language or, in other words, a mental grammar.

The study of mental grammar is in some sense *descriptive*, since the goal is to discover and describe the specific linguistic knowledge that is naturally in the minds of individuals. However, we would also like to understand the very nature of this knowledge, how it arises in the minds of individuals, and so on. In other words, when making a theory (or model) of I-language/mental grammar, we strive for it to be explanatory as well as descriptively adequate. One level of standard for explanatory adequacy, for example, might be that the theory/model is able to account for the ways in which human children acquire knowledge of language.

I-language/mental grammar *defines* a body of linguistic information and provides a way of mapping this information to external performance systems, namely, the systems regulating speech production/perception (or their equivalents in sign language) and our systems of conceptual and intentional “thought.” As we will discuss extensively in this class, I-language/mental grammar can be said to be **representational-computational** in nature. In our scientific theory/model of I-language/mental grammar, we will postulate many **discrete** mental objects and levels of linguistic representation. These objects/levels of representation are organized and manipulated by various computational algorithms (rules, processes, mapping procedures, and so on). One of our main goals is to discover what these representations and computations are.

For example, a **sentence** may correspond to one such discrete object/level of mental representation. The building blocks of sentences are **words**. Words may consist of one or more **morphemes**. Morphemes relate a representation of **meaning** to a representation of **sound**. Presumably, mental representations of sounds and meanings are also encoded in terms of discrete **linguistic features** of some sort or another. In the following weeks, we will go from sounds, to morphemes, to words, to sentences, trying to understand the nature of mental linguistic entities and the computational operations that apply to them.