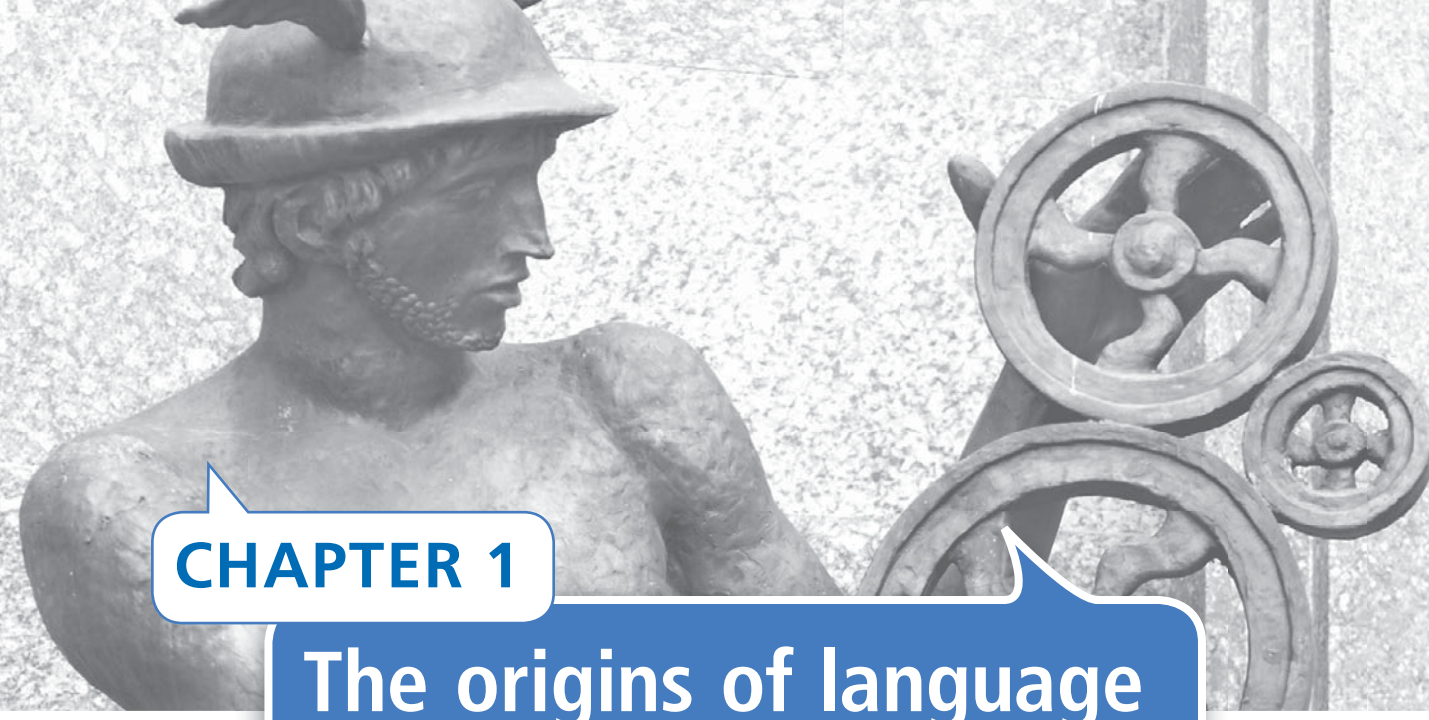

CHAPTER 1
The origins of language

The suspicion does not appear improbable that the progenitors of man, either the males or females, or both sexes, before they had acquired the power of expressing their mutual love in articulate language, endeavoured to charm each other with musical notes and rhythm.

Darwin (1871)

In Charles Darwin's vision of the origins of language, early humans had already developed musical ability prior to language and were using it "to charm each other." This may not match the typical image that most of us have of our early ancestors as rather rough characters wearing animal skins and not very charming, but it is an interesting speculation about how language may have originated. It remains, however, a speculation.

We simply don't know how language originated. We do know that the ability to produce sound and simple vocal patterning (a hum versus a grunt, for example) appears to be in an ancient part of the brain that we share with all vertebrates, including fish, frogs, birds and other mammals. But that isn't human language. We suspect that some type of spoken language must have developed between 100,000 and 50,000 years ago, well before written language (about 5,000 years ago). Yet, among the traces of earlier periods of life on earth, we never find any direct evidence or artifacts relating to the speech of our distant ancestors that might tell us how language was back in the early stages. Perhaps because of this absence of direct physical evidence, there has been no shortage of speculation about the origins of human speech.

The divine source

In the biblical tradition, as described in the book of Genesis, God created Adam and "whatsoever Adam called every living creature, that was the name thereof." Alternatively, following a Hindu tradition, language came from Sarasvati, wife of Brahma, creator of the universe. In most religions, there appears to be a divine source who provides humans with language. In an attempt to rediscover this original divine language, a few experiments have been carried out, with rather conflicting results. The basic hypothesis seems to have been that, if human infants were allowed to grow up without hearing any language around them, then they would spontaneously begin using the original God-given language.

The Greek writer Herodotus reported the story of an Egyptian pharaoh named Psammetichus (or Psamtik) who tried the experiment with two newborn babies more than 2,500 years ago. After two years of isolation except for the company of goats and a mute shepherd, the children were reported to have spontaneously uttered, not an Egyptian word, but something that was identified as the Phrygian word *bekos*, meaning "bread." The pharaoh concluded that Phrygian, an older language spoken in part of what is modern Turkey, must be the original language. That seems very unlikely. The children may not have picked up this "word" from any human source, but as several commentators have pointed out, they must have heard what the goats were saying. (First remove the *-kos* ending, which was added in the Greek version of the story, then pronounce *be-* as you would the English word *bed* without *-d* at the end. Can you hear a goat?)

King James the Fourth of Scotland carried out a similar experiment around the year 1500 and the children were reported to have spontaneously started speaking Hebrew, confirming the king's belief that Hebrew had indeed been the language of the Garden of Eden. It is unfortunate that all other cases of children who have been discovered living in isolation, without coming into contact with human speech, tend not to confirm the results of these types of divine-source experiments. Very young children living without access to human language in their early years grow up with no language at all. This was true of Victor, the wild boy of Aveyron in France, discovered near the end of the eighteenth century, and also of Genie, an American child whose special life circumstances came to light in the 1970s (see Chapter 12). From this type of evidence, there is no "spontaneous" language. If human language did emanate from a divine source, we have no way of reconstructing that original language, especially given the events in a place called Babel, "because the Lord did there confound the language of all the earth," as described in Genesis (11: 9).

The natural sound source

A quite different view of the beginnings of language is based on the concept of natural sounds. The human auditory system is already functioning before birth (at around

seven months). That early processing capacity develops into an ability to identify sounds in the environment, allowing humans to make a connection between a sound and the thing producing that sound. This leads to the idea that primitive words derive from imitations of the natural sounds that early men and women heard around them. Among several nicknames that he invented to talk about the origins of speech, Jespersen (1922) called this idea the "bow-wow" theory.

The "bow-wow" theory

In this scenario, when different objects flew by, making a Caw-Caw or Coo-Coo sound, the early human tried to imitate the sounds and then used them to refer to those objects even when they weren't present. The fact that all modern languages have some words with pronunciations that seem to echo naturally occurring sounds could be used to support this theory. In English, in addition to *cuckoo*, we have *splash*, *bang*, *boom*, *rattle*, *buzz*, *hiss*, *screech*, and of course *bow-wow*.

Words that sound similar to the noises they describe are examples of **onomatopeia**. While it is true that a number of words in any language are onomatopoeic, it is hard to see how most of the soundless things (e.g. "low branch") as well as abstract concepts (e.g. "truth") could have been referred to in a language that simply echoed natural sounds. We might also be rather skeptical about a view that seems to assume that a language is only a set of words used as "names" for things.

The "pooh-pooh" theory

Another of Jespersen's nicknames was the "pooh-pooh" theory, which proposed that speech developed from the instinctive sounds people make in emotional circumstances. That is, the original sounds of language may have come from natural cries of emotion such as pain, anger and joy. By this route, presumably, *Ouch!* came to have its painful connotations. But *Ouch!* and other interjections such as *Ah!*, *Ooh!*, *Phew!*, *Wow!* or *Yuck!* are usually produced with sudden intakes of breath, which is the opposite of ordinary talk. We normally produce spoken language as we breath out, so we speak while we exhale, not inhale. In other words, the expressive noises people make in emotional reactions contain sounds that are not otherwise used in speech production and consequently would seem to be rather unlikely candidates as source sounds for language.

The social interaction source

Another proposal involving natural sounds was nicknamed the "yo-he-ho" theory. The idea is that the sounds of a person involved in physical effort could be the source of our language, especially when that physical effort involved several people and the

interaction had to be coordinated. So, a group of early humans might develop a set of hums, grunts, groans and curses that were used when they were lifting and carrying large bits of trees or lifeless hairy mammoths.

The appeal of this proposal is that it places the development of human language in a social context. Early people must have lived in groups, if only because larger groups offered better protection from attack. Groups are necessarily social organizations and, to maintain those organizations, some form of communication is required, even if it is just grunts and curses. So, human sounds, however they were produced, must have had some principled use within the life and social interaction of early human groups. This is an important idea that may relate to the uses of humanly produced sounds. It does not, however, answer our question regarding the origins of the sounds produced. Apes and other primates live in social groups and use grunts and social calls, but they do not seem to have developed the capacity for speech.

The physical adaptation source

Instead of looking at types of sounds as the source of human speech, we can look at the types of physical features humans possess, especially those that are distinct from other creatures, which may have been able to support speech production. We can start with the observation that, at some early stage, our ancestors made a very significant transition to an upright posture, with bi-pedal (on two feet) locomotion, and a revised role for the front limbs.

Some effects of this type of change can be seen in physical differences between the skull of a gorilla and that of a Neanderthal man from around 60,000 years ago. The reconstructed vocal tract of a Neanderthal suggests that some consonant-like sound distinctions would have been possible. We have to wait until about 35,000 years ago for features in reconstructions of fossilized skeletal structures that begin to resemble those of modern humans. In the study of evolutionary development, there are certain physical features, best thought of as partial adaptations, which appear to be relevant for speech. They are streamlined versions of features found in other primates. By themselves, such features wouldn't guarantee speech, but they are good clues that a creature with such features probably has the capacity for speech.

Teeth and lips

Human **teeth** are upright, not slanting outwards like those of apes, and they are roughly even in height. Such characteristics are not very useful for ripping or tearing food and seem better adapted for grinding and chewing. They are also very helpful in making sounds such as *f* or *v*. Human **lips** have much more intricate muscle interlacing than is found in other primates and their resulting flexibility certainly helps in making sounds like *p*, *b* and *m*. In fact, the *b* and *m* sounds are the most widely

attested in the vocalizations made by human infants during their first year, no matter which language their parents are using.

Mouth and tongue

The human **mouth** is relatively small compared to other primates and can be opened and closed rapidly. It is also part of an extended vocal tract that has much more of an L-shape than the fairly straight path from front to back in other mammals. In contrast to the fairly thin flat tongue of other large primates, humans have a shorter, thicker and more muscular **tongue** that can be used to shape a wide variety of sounds inside the oral cavity. In addition, unlike other primates, humans can close off the airway through the nose to create more air pressure in the mouth. The overall effect of these small differences taken together is a face with more intricate muscle interlacing in the lips and mouth, capable of a wider range of shapes and a more rapid and powerful delivery of sounds produced through these different shapes.

Larynx and pharynx

The human **larynx** or "voice box" (containing the vocal folds or vocal cords) differs significantly in position from the larynx of other primates such as monkeys. In the course of human physical development, the assumption of an upright posture moved the head more directly above the spinal column and the larynx dropped to a lower position. This created a longer cavity called the **pharynx**, above the vocal folds, which acts as a resonator for increased range and clarity of the sounds produced via the larynx and the vocal tract. Other primates have almost no pharynx. One unfortunate consequence of this development is that the lower position of the human larynx makes it much more possible for the human to choke on pieces of food. Monkeys may not be able to use their larynx to produce speech sounds, but they do not suffer from the problem of getting food stuck in their windpipe. In evolutionary terms, there must have been a big advantage in getting this extra vocal power (i.e. a larger range of sounds) to outweigh the potential disadvantage from an increased risk of choking to death.

The tool-making source

In the physical adaptation view, one function (producing speech sounds) must have been superimposed on existing anatomical features (teeth, lips) previously used for other purposes (chewing, sucking). A similar development is believed to have taken place with human hands and some believe that manual gestures may have been a precursor of language. By about two million years ago, there is evidence that humans had developed preferential right-handedness and had become capable of making

stone tools. Wood tools and composite tools eventually followed. Tool-making, or the outcome of manipulating objects and changing them using both hands, is evidence of a brain at work.

The human brain

The human **brain** is not only large relative to human body size, it is also **lateralized**, that is, it has specialized functions in each of the two hemispheres. (More details are presented in Chapter 12.) Those functions that control the motor movements involved in complex vocalization (speaking) and object manipulation (making or using tools) are very close to each other in the left hemisphere of the brain. That is, the area of the motor cortex that controls the muscles of the arms and hands is next to the articulatory muscles of the face, jaw and tongue. It may be that there was an evolutionary connection between the language-using and tool-using abilities of humans and that both were involved in the development of the speaking brain. Most of the other speculative proposals concerning the origins of speech seem to be based on a picture of humans producing single noises to indicate objects in their environment. This activity may indeed have been a crucial stage in the development of language, but what it lacks is any structural organization. All languages, including sign language, require the organizing and combining of sounds or signs in specific arrangements. We seem to have developed a part of our brain that specializes in making these arrangements.

If we think in terms of the most basic process involved in primitive tool-making, it is not enough to be able to grasp one rock (make one sound); the human must also be able to bring another rock (other sounds) into proper contact with the first in order to develop a tool. In terms of language structure, the human may have first developed a naming ability by producing a specific and consistent noise (e.g. *beer*) for a specific object. The crucial additional step was to bring another specific noise (e.g. *good*) into combination with the first to build a complex message (*beer good*). Several thousand years of development later, humans have honed this message-building capacity to a point where, on Saturdays, watching a football game, they can drink a sustaining beverage and proclaim *This beer is good*. As far as we know, other primates are not doing this.

The genetic source

We can think of the human baby in its first few years as a living example of some of these physical changes taking place. At birth, the baby's brain is only a quarter of its eventual weight and the larynx is much higher in the throat, allowing babies, like chimpanzees, to breathe and drink at the same time. In a relatively short period of time, the larynx descends, the brain develops, the child assumes an upright posture and starts walking and talking.

This almost automatic set of developments and the complexity of the young child's language have led some scholars to look for something more powerful than small physical adaptations of the species over time as the source of language. Even children who are born deaf (and do not develop speech) become fluent sign language users, given appropriate circumstances, very early in life. This seems to indicate that human offspring are born with a special capacity for language. It is innate, no other creature seems to have it, and it isn't tied to a specific variety of language. Is it possible that this language capacity is genetically hard-wired in the newborn human?

As a solution to the puzzle of the origins of language, this **innateness hypothesis** would seem to point to something in human genetics, possibly a crucial mutation, as the source. This would not have been a gradual change, but something that happened rather quickly. We are not sure when this proposed genetic change might have taken place or how it might relate to the physical adaptations described earlier. However, as we consider this hypothesis, we find our speculations about the origins of language moving away from fossil evidence or the physical source of basic human sounds toward analogies with how computers work (e.g. being pre-programmed or hard-wired) and concepts taken from the study of genetics. The investigation of the origins of language then turns into a search for the special "language gene" that only humans possess.

If we are indeed the only creatures with this special capacity for language, then will it be completely impossible for any other creature to produce or understand language? We'll try to answer that question in Chapter 2.