1 The origins of language

Chewing, licking and sucking are extremely widespread mammalian activities, which, in terms of casual observation, have obvious similarities with speech.
MacNeilage (1998)

We don't usually think of speaking as similar to chewing, licking and sucking, but, like speaking, all of these actions involve movements of the mouth, tongue and lips in some kind of controlled way. So, perhaps this connection is not as improbable as it first sounds. It is an example of the type of observation that can lead to interesting speculations about the origins of spoken language. They remain, however, speculations, not facts. We simply don't know how language originated. We suspect that some type of spoken language 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. In this chapter, we will consider the merits of some of those speculations.

The divine source

In the biblical tradition, 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.

An Egyptian pharaoh named Psammetichus tried the experiment with two newborn babies more than 2,500 years ago. After two years in 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 a 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 started speaking Hebrew. 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. (We will consider the case of one such child later in chapter 13.) If human language did emanate from a divine source, we have no way of reconstructing that original language, especially given the events in a city called Babel, "because the Lord did there confound the language of all the earth", as described in the book of 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 suggestion is that primitive words could have been imitations of the natural sounds which early men and women heard around them. When an object flew by, making a CAW-CAW sound, the early human tried to imitate the sound and used it to refer to the thing associated with the sound. And when another flying creature made a COO-COO sound, that natural sound was adopted to refer to that kind of object. 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 forms such as *bow-wow*. In fact, this type of view has been called the 'bow-wow' theory of language origin. While it is true that a number of words in any language are **onomatopoeic** (echoing natural sounds), it is hard to see how most of the soundless as well as abstract things in our world 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.

It has also been suggested that 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!*, *Wow!* or *Yuck!*, are usually produced with sudden intakes of breath, which is the opposite of ordinary talk. We normally produce spoken language on exhaled breath. Basically, 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.

One other natural sound proposal has come to be known as 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 had to be coordinated. So, a group of early humans might develop a set of 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 theory is that it places the development of human language in some social context. Human sounds, however they were produced, must have had some principled use within the social life 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 have 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 would not necessarily lead to speech production, but they are good clues that a creature possessing such features probably has the capacity for speech.

Teeth, lips, mouth, larynx and pharynx

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* or *b*. The human **mouth** is relatively small compared to other primates, can be opened and closed rapidly, and contains a smaller, thicker and more muscular **tongue** which can be used to shape a wide variety of sounds inside the oral cavity. 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 delivery of sounds produced through these different shapes.

The human **larynx** or 'voice box' (containing the 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 cords, which acts as a resonator for increased range and clarity of the sounds produced via the larynx. 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 sound distinctions) to outweigh the potential disadvantage from an increased risk of choking to death.

The human brain

In control of organizing all these more complex physical parts potentially available for sound production is the human **brain**, which is unusually large relative to human body size. The human brain is **lateralized**, that is, it has specialized functions in each of the two hemispheres. Those functions that control motor movements involved in things like speaking and object manipulation (making or using tools) are largely confined to the left hemisphere of the brain for most humans. It may be that there is an evolutionary connection between the language-using and tool-using abilities of humans and that both are involved in the development of the speaking brain. Most of the other approaches to the origins of speech have 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 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 evolution 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.

Study questions

1 With which of the four types of 'sources' would you associate the quotation from MacNeilage at the beginning of the chapter?
2 What is the basic idea behind the 'bow-wow' theory of language origin?
3 Why are interjections such as *Ouch!* considered to be unlikely sources of human speech sounds?
4 What special features of human teeth make them useful in the production of speech sounds?
5 Where is the pharynx and how did it become an important part of human sound production?
6 Why do you think that young deaf children who become fluent in sign language would be cited in support of the innateness hypothesis?

Research tasks

A What is the connection between the Heimlich maneuver and the development of human speech?
B What exactly happened at Babel and why is it used in explanations of language origins?
C The idea that "ontogeny recapitulates phylogeny" was first proposed by Ernst Haeckel in 1866 and is still frequently used in discussions of language origins. Can you find a simpler or less technical way to express this idea?
D What is the connection between the innateness hypothesis, as described in this chapter, and the idea of a Universal Grammar?

Discussion topics/projects

I A connection is sometimes proposed between language, tool-using and right-handedness in the majority of humans. Is it possible that freedom to use the hands, after assuming an upright bipedal posture, resulted in certain skills that led to the development of language? Why did we assume an upright posture? What kind of changes must have taken place in our hands? (For background reading, see chapter 5 of Beaken, 1996.)

II In this chapter we didn't address the issue of whether language has developed as part of our general cognitive abilities or whether it has evolved as a separate component that can exist independently (and is unrelated to intelligence, for example). What kind of evidence do you think would be needed to resolve this question? (For background reading, see chapter 4 of Aitchison, 2000.)

Further reading

Two introductions to the study of language origins are Aitchison (2000) and Beaken (1996). The funny names (e.g. 'bow-wow' theory) for some of the

earlier ideas come from Jespersen (1922). On ‘natural cries’, see Salus (1969), on the connection between tool-use and language, see Gibson & Ingold (1993), on the innateness hypothesis, see Pinker (1994), and for arguments against it, see Sampson (1997). Haeckel’s ideas are explored in Gould (1977). Other interesting approaches to language origins are presented in Bickerton (1990), Corballis (1991), Deacon (1997), Dunbar (1996), Jablonski & Aiello (1998) and Lieberman (1991, 1998).