1 The Origins of Language

The first person to set foot on the continent of Australia was a woman named Warramurrungunji. She emerged from the sea onto an island off northern Australia, and then headed inland, creating children and putting each one in a specific place. As she moved across the landscape, Warramurrungunji told each child, "I am putting you here. This is the language you should talk! This is your language!"

Erard (2016)

This origin story from the Iwaidja people of Australia, illustrated in the painting above, offers an explanation of not only where language came from, but also why there are so many different languages. Among the English-speaking people, there have been multiple attempts to provide a comparable explanation, but not much proof to support any of them. Instead of a belief in a single mythical earth mother, we have a variety of possible beliefs, all fairly speculative.

We simply don't have a definitive answer to the question of 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, hence the multiple speculations. Closest to the Iwaidja story are tales of gods blessing humans with the power of language.

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, it is Sarasvati, wife of Brahma, who is credited with bringing language to humanity. 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. About a century later, the Mogul emperor Akbar the Great also arranged for newborn babies to be raised in silence, only to find that the children produced no speech at all. It is unfortunate that Akbar's result is more in line with the real-world outcome for children who have been discovered living in isolation, without coming into contact with human speech. 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 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 breathe 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 Musical Source

Part of the problem with the discussion of natural sounds is the assumption that they were used to create "words." However, before we utter words, we can produce a wide range of sounds that aren't word forms at all. Let's go back to the observation that human infants can process sounds early on, and then soon begin to produce sounds in a way that may provide some clues to how language developed. There is a prolonged period in early infant development during which adults and infants interact via single sounds then through more extended sound sequences as the child uses intonation as a means of non-verbal communication. For some scholars, this is consistent with the idea that musical ability developed before the ability to create words. One famous scholar, Charles Darwin, made the following proposal in 1871:

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

The idea that early humans spent their time trying "to charm each other" may not match the typical image that we have of our early ancestors as rather rough characters wearing animal skins and certainly not very charming. However, setting "charm" aside, we do have evidence that intonation, and hence the ability to create melody, develops in the human infant before other aspects of language. We might say that our first musical instrument was the human voice, or more specifically, control of the vibration of the vocal folds. Control of the respiratory system to produce extended sound was also required.

Studies of newborn infants have found that they can recognize the intonation of their mother's voice and orient to that voice more than any other. They also show a preference for the intonation of their mother's language, even when spoken by others. These observations suggest that early humans may indeed have learned and used melody to express themselves before they added words to their songs. However, other creatures, from songbirds to humpback whales, also produce songs. We have to wonder what prompted humans to go beyond melody and develop a more elaborated means of interacting with each other. One motivation may have been the need to cooperate.

The Social Interaction Source

A source that Jespersen (1922) nicknamed the "yo-he-ho" theory involves the utterance of sounds in physical effort, or more specifically, the sounds needed to coordinate a physical activity involving several people. So groups of early humans might have developed not just songs, but some distinct grunts and curses that were used when 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. Sounds, then, would have some principled use in the social interaction of early human groups. This is an important idea involving the uses of humanly produced sounds. It does not, however, reveal the origins of the sounds produced. Apes and other primates live in social groups and use grunts and social calls, but they have not 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 may have supported speech production. We can start with the observation that, at an early stage, our ancestors made a major transition to an upright posture, with bi-pedal (on two feet) locomotion. This really changed how we breathe. Among four-legged creatures, the rhythm of breathing is closely linked to the rhythm of walking, resulting in a one pace – one breath relationship. Among two-legged creatures, the rhythm of breathing is not tied to the rhythm of walking, allowing long articulations on outgoing breath, with short in-breaths. It has been calculated that "human breathing while speaking is about 90% exhalation with only about 10% of time saved for quick in-breaths" (Hurford, 2014: 83).

Other physical changes have been found. The reconstructed vocal tract of a Neanderthal man from around 60,000 years ago suggests that some consonant-like sound distinctions were possible. Around 35,000 years ago we start to find features in fossilized skeletal structures that resemble those of modern humans. In the study of evolutionary development, there are certain physical features that are streamlined versions of features found in other primates. By themselves, such features would not 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. They are also much smaller. 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 more of an L-shape than the 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) 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. 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. 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.

A recent study kept track of specific activity in the brains of experienced stonecutters as they crafted a stone tool, using a technique known to have existed for 500,000 years. The researchers also measured the brain activity of the same individuals when they were asked to think (silently) of particular words. The patterns of blood flow to specific parts of the brain were very similar, suggesting that aspects of the structure of language may have developed through the same brain circuits established earlier for two-handed stone tool creation.

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 bring another rock (other sounds) into 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 consistently using one type of noise (e.g. *bEEr*). 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 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 is not tied to only one specific variety of language. Is it possible that this language capacity is genetically hard-wired in the newborn human?

The Innateness Hypothesis

As a solution to the puzzle of the origins of language, the **innateness hypothesis** would seem to point to something in human genetics, possibly a crucial mutation or two, as the source. In the study of human development, a number of gene mutations have been identified that relate to changes in the human diet, especially those resulting in an increase in calorie intake, possibly tied to the ability to digest starch in food and a substantial increase in glucose production. These changes are believed to have enhanced blood flow in the brain, creating the conditions for a bigger and more complex brain to develop. We are not sure when these genetic changes might have taken place or how they 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 biology and genetics. The investigation of the origins of language then turns into a search for the special "language gene" that only humans possess. In one of the tasks at the end of this chapter (Task G on page 10), you can investigate the background to the discovery of one particular gene (FOXP2) that is thought to have a role in language production.

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 will try to answer that question in Chapter 2.

Study Questions

1 When did written language develop?

2 When can we say the human auditory system has begun working?

3 What did Darwin think early human communication was first based on?

4 What two things did early humans need to take control of in order to produce intonation?

5 What percentage of human breathing while speaking normally consists of in-breaths?

6 What is the difference between the position of the larynx in humans and other primates?

7 Why are interjections such as *Ooh!* or *Yuck!* considered to be unlikely sources of human speech sounds?

8 What is the basic idea behind the "bow-wow" theory of language origin?

9 Why is it difficult to agree with Psammetichus that Phrygian must have been the original human language?

10 Where is the pharynx and how did it become an important part of human sound production?

11 Why do you think that young deaf children who become fluent in sign language would be cited in support of the innateness hypothesis?

12 With which of the seven "sources" would you associate the following quotation?

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

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 What are the arguments for and against a teleological explanation of the origins of human language?

D The Danish linguist Otto Jespersen, who gave us the terms "bow-wow" and "pooh-pooh" for theories about language origins, dismissed both of these ideas in favor of another theory. What explanation did Jespersen (1922, chapter 21) favor as the likely origin of early speech?

E In the study of the relationship between brain, tools and language in human development, two distinct types of stone tools are typically mentioned. They are described as Oldowan tools and Acheulean tools. What is the difference between them, when were they used, and which of them was investigated in the recent study involving blood flow in the brain, as described in the chapter?

F 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?

G When it was first identified, the FOXP2 gene was hailed as the "language gene." What was the basis of this claim and how has it been modified?

H In his analysis of the beginnings of human language, William Foley comes to the conclusion that "language as we understand it was born about 200,000 years ago" (1997: 73). This is substantially earlier than the dates (between 100,000 and 50,000 years ago) that other scholars have proposed. What kinds of evidence and arguments are typically presented in order to choose a particular date "when language was born"?

I What is the connection between the innateness hypothesis, as described in this chapter, and the idea of a Universal Grammar?

Discussion Topics/Projects

I 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.)

II A connection has been 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 Beaken, 2011.)

Further Reading

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