Yair Shimron

Sounds from the Garden of Eden

How Vocal Expressions Evolved into Language

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CONTENTONOW

In memory of my father Binyamin Shimron
and my mother Marta Shimron

To Frida

"Naturally, nobody would have engaged in such research if there wasn't a creature called Odradek. At first glance, it looks like a flat star-shaped spool for thread."

Franz Kafka, The Cares of a Family Man

Table of Contents

Chapter 1
Primordial Circumstances

Tibetan Dancer Apron, 19th Century

The Magic of Words

A human makes a sound, a loud one or a soft one, a long one or a short one, or beats a container, or blows into a tube, making a sound. He may beat hard, and blow long blows, or beat mildly

and blow briefly. Making music is an intellectual activity. Music can be performed quickly or slowly, by closing or opening holes. There are dozens of ways to play instruments. Each musical sound is distinct, with a perceptible separation between each one. Each sound is resolved when, at a certain moment, it meets the musician's and his listeners' needs. Once the musician feels he has exhausted the resolution of a sound, he tries to refine the distinction by introducing other sounds, which either contrast or compliment the previous ones. These forms of contrast or complementation might be natural ones, yet trial and error may yield other, unexpected forms.

A word stimulates thought because of its focus, distinction, and resolution. It allows us to evolve our distinctions to maximum resolution, which is keener than our senses allow. No sight or sound is capable of making the fine distinctions of words. Words allow us to break free from the limitations of our senses. The word, no matter how it is produced or received, creates the impression of an intellectual microscope. By using words, humans define issues, penetrating them, and, in a sense, understanding them. In this way of understanding, putting limits of words, we generate knowledge. The "what is it?" question, for instance, is answerable because we have an understanding of a word; it is either "this word" or "that word". Words enable a sense of knowing where there is no actual knowledge.

1. The Scientific Approach

The present work attempts to portray, in a **scientific manner**, the prehistory of Language. For the last thirty years, the evolution of Language has engaged many scholars in a variety of fields such as linguistics, biology, psychology, anthropology,

and philosophy. Thousands of articles and hundreds of books are being printed to expand the knowledge and understanding of it. However, only a little actual progress has been made towards a reasonable explanation of the evolution of vocal expression into language. The research literature deals mostly with gathering data and clarifying the necessary preconditions of language development. Nevertheless, participants in this discussion believe that someday the evolution of language will be concretely and credibly described.

Yet, many prominent scientists believe the origin of human language is inaccessible, and therefore, cannot be considered the subject of scientific research. This approach was demonstrated recently, in quotations from two leading researchers, in reports on the origin of language in the *New York Times*. Ray Jackendoff is quoted as saying, "The problem of talking about the evolution of Language in any detail is that there is no evidence. It's pure speculation". The best-known linguist for the last fifty years, Noam Chomsky, is quoted as saying, "This task intrigues people because it's about us, but this doesn't make it a scientific question. It may be important for us to know where we came from, but if we cannot answer this question scientifically, we cannot answer it. If you want to tell stories, well then, tell stories". (Quoted from the *New York Times*, May 18, 2002).

Two main propositions can be deduced from these statements:

1. There is no evidence of the evolution of Language, and therefore, one can **never** get beyond hypotheses.

2. This is not a scientific question since we have no scientific

means to answer it, and therefore, anything said about it is meaningless.[1]

In absolute contradiction to these two illustrious scholars, the answer should be:

1. There definitely is evidence of the evolution of language, detailed to a reasonable extent. To find this evidence, one must shed light on the necessary facts, and once facts are clarified, we are beyond mere hypotheses.

2. Since we have evidence, we also have the scientific means to answer this question, since a subject does not become worthy of scientific research automatically, but because there are researchers trying to examine it who are following scientific procedure. This procedure consists simply of looking for and shedding light on facts. The question concerning the origin of language is just another researchable question, like those concerning the origin of the universe, the origin of life, and the evolution of the wings of birds or bats.

In all these cases, the challenge is finding as many facts as possible, because in no field of study have all the facts been

1 Recently, Chomsky, and three associates (Bulhois, Bervick, Tetersal, 2014), presented an article attempting to explain the origin of Language evolutionarily. The writers argue, relying on archeological findings of jewelry and other artifacts made about one hundred thousand years ago, that Language emerged about 70 to 100 millennia ago, and remained unchanged since then, and that communication did not play a substantial part in the evolution of Language. The article disregards nearly any suggestion of evolution of language being closely associated with that of hominid species. This book is entirely dedicated to explaining why these arguments are totally incorrect.

discovered. Yet, nobody claims the search for the origin of the universe is not scientific, although the researchers have no hard facts, and even the facts used to describe its origin are vague hypotheses. For example, the Big Bang theory enjoys a broad consensus, yet some of the major evidence which led to this consensus, such as the galaxies' expansion, or the background radiation, may have other explanations, which are actually suggested, though supported only by a few theorists.

The successful transformation of two of the extremities of a dinosaur-genus reptile or a mouse-like mammal into wings is in the same category of scientific questions as the origin of Language. The known facts are the existence of certain animals, and the hypothesis that evolution took place, led by animals, which are now extinct, to assume the form of currently known animals. Relying on these two essentially different facts, researchers gather large quantities of other data, initially considered irrelevant, but now indicating a long, detailed history. During the research, some parts of the story are found to be incorrect, and are removed, to be replaced by new details. Thus, the story becomes more sophisticated and accurate, until some day, one might claim it to be complete.

This is also the case of the origin of language. There is a modern phenomenon, namely human language, spoken by humans who have evolved, according to a hypothesis of evolution, from animals that no longer exist.

This book aims to present the most significant facts relevant to the history of speech. Aware of the need to avoid groundless hypotheses, the writer has **supported his arguments primarily with well-established facts**, and has

eschewed using as secondary evidence hypotheses, which are not well founded.

Though we will only describe the emergence of language in outline, the pattern that emerges will appear inevitable. Anybody questioning our major contention will need to provide evidence not just against our history of speech, but also against human evolution, on which our story is based.

The question concerning the origin of language has a better factual answer than the questions about the origin of the universe or the evolution of wings. The outline description presented in these pages relies on Darwinian evolution, and is just as **inevitable** and robust. The principles of language evolution presented here could play a key role in linguistic theories.

The research on a subject can follow various approaches, such as constructing models and running them on computers (e.g., Solan, Edelman, Ruppin, 2002), or intellectual exercises with which the researchers hope to create an intellectual basis for looking into the examined subject (e.g., Dor & Yablonka, 2002; Hurford, 2002). Followers of other approaches try to quantify anything related to the subject, describing it in equations (e.g., generative grammar). Another approach is to gather well-established data on certain subjects and make deductions from these subjects about the subject under examination, in which the data is unknown (e.g., Pinker, *The Language Instinct*; Irit Meir & Wendy Sandler, *Language in Space*). All these approaches help, to an extent, to clarify the field of study, but hardly make any real contribution to explaining the subject of research itself. The only useful approach in language evolution research resembles archeology; you have to dig deep. Models, equations,

intellectual exercises, or analogies associated with the main subject are of no use. They just gather material data related to language.

The materials to be gathered are, first, **voices that are or were used for vocal expression**. In addition to facts, there are also hypotheses, inductively, and almost inevitably concluded from facts. Other factual raw materials are the evolution of species related to human evolution, comparisons between Homo sapiens and other species, both existing and extinct, and similar facts.

Any animal action has an abstract, cognitive aspect. Its cognition breeds actual action, using body parts motion and affecting the world in some way. Lingual actions are carried out with sounds. **Sounds are the raw materials of language, and therefore, of its research**, more than any other aspect of it. Any Language evolution theory must first account for the course of vocal evolution from apish sounds, about five to six million years ago, to human voices.

Our fact-based answers also give us a significant advantage when dealing with certain linguistic dilemmas that are rarely dealt with. Such questions are: why words have certain structure, or why certain sounds are widespread in various languages.

The reader might feel burdened by the above paragraphs. Nonetheless, the author believes he has a story to tell, so lend an ear.

2. The origin.

The riddle of the origin of human language has been haunting thinkers for at least two and a half millennia. The book of Genesis suggests a solution. According to the biblical narrative,

God took all animals to man, who gave them what became their common names. Aristotle referred to man as a "talking animal". An Egyptian king and a Scottish king locked babies in solitary confinement in order to hear, someday, their very first words. The Egyptian king concluded their first word was the Greek word for "bread", while the Scottish one believed the boys spoke very good Hebrew (Zeev Chomsky, *Hebrew Language*).

This riddle kept puzzling scholars, and once the scientific approach grew more popular in Europe, during the late Renaissance, Hebrew came to be believed the original Language, since God revealed the scripture in it.

Many researches dealt with this question during the nineteenth century, and their prevailing attitude was that Language evolved from onomatopoeic expressions, or words imitating natural sounds. Scholars also frequently inquired into what were the earliest words uttered by humans. One of the most popular theories was that they were exclamations. The papers on this subject were so numerous, that in 1862, the French Academy of Sciences forbade submitting any further essays on it. Its English counterpart followed suit (Brunowski & Atter).

After the French Academy banned the subject, the flow of essays on it dwindled, yet the interest in it didn't die out, and new works kept burdening the bookshelves.

The twentieth century saw a new approach. Instead of attempting to answer the question proper, the scholars started looking for answers that seemed not to deal with it directly. Thus, the Nostratic Language theory emerged, according to which all Northern Hemisphere languages originated from one primordial language. Other theories emerged of language

affinities due to verbal and grammatical similarities, not necessarily geographical proximity. There were also theories suggesting a universal grammar, or heritability of language, and genetic surveys supposedly demonstrating the primordial genetic relations of geographically distant populations, and consequently, their languages' affinities.

Since the 1990s, there has been a radical change of approach, as the subject has become increasingly interesting. The change was focused on biological and socio-anthropological aspects of the process. Currently, researchers frequently compare human evolution to animal evolution, in an attempt to answer the main question: under what conditions might have language evolved? (E.g., the books of Bomhard, Greenberg, Chomsky, the compilations *Towards a Genetics of Language*; *Approaches to the Origin of Language*).

In 1986, Moshe Atter's book, *What am I Talking* [in Hebrew], suggested an onomatopoeic (natural sound imitation) theory of the origin of language. This theory revives popular nineteenth century approaches, but introduces the principle of words evolving from human sounds. Atter's book served as the initial impetus for the author of the present book, which is a sequel to and a development of his previous work, *How Language and Hebrew Language were developed.*

3. Factual Evidence.

Several factual lines of evidence and the conclusions drawn from them support the present work. To make for easier reading, and to persuade readers to consider the facts, I shall briefly review my main factual lines of evidence.

1. Humans evolved from chimpanzee-like apes. This

hypothesis is accepted as a scientific fact. **Consequently, the earliest vocal expressions must have resembled chimpanzee sounds**. That is, they were nearly exclusively guttural sounds, with no vowels or consonants. Early vocal expression had almost no disturbances to airflow. During speech, sound is produced in the larynx; yet actual speech sounds are not guttural but result from disturbances to airflow, especially in the front of the mouth. This work will examine and explain the way the sound generation process was changed.

2. Sound expression, speech, or animal sounds **are actions**. Expression results from muscle and organ motions. A child learns to understand words and sentences even before he or she can say a single word. This fact is not evidence that the origin of language is cognition, though the child remembers what he heard, just like what he saw or smelt. Until the child learns how to use his/her speech organs, he cannot express anything, just as he cannot draw what he sees until he trains his hands to use drawing instruments. Thus, the evolution of all speech components can only be described as part of the evolution of the functions of speech organs.

3. Apish expression, as accepted, has no symbolism. Rather, it **is analogous to animals' emotions and feelings**, while most of the human speech is based on symbolic expression. Here, we shall explain the transformation from analogous to symbolic expression, demonstrating that symbolism is less instrumental in **expression structure change**, though it is essential to human speech.

4. The basic unit of animal sound expression and of speech **is the utterance, or meaning unit**. An utterance may be a shout, a word, a sound of surprise, or a sentence. A meaningless sound is not an utterance. Parts of utterances are not meaning units, and therefore, sounds are not utterances. Since humans, like chimpanzees, make sounds to express something, **utterance preceded sound**, and consequently, the development of utterances, or meaning units, and with them, of **symbolism**, preceded that of sounds.

5. Consonants and vowels evolved because of sound expression development, not because of upright posture or larynx anatomy. Consequently, the phonetic structure of speech is not essential, but accidental.

6. The evolution of **speech** in the sound expression system **preceded and preconditioned the evolution of morphological and physiological system**. Any explanation of the evolution of human anatomy, ignoring the essential role played by vocal expression evolution is deficient, as one can see from the enlargement of spinal canal from the backbone to the thorax, during the transformation from Homo erectus to Homo sapiens, as well as the increased number of nerves connected to the tongue. Such enhancement of the nerves was necessary for the breathing performance peculiar to speech and the refinement of tongue contacts. The outer and middle ear anatomy in the hominid called Homo heidelbergensis, a later stage of Homo erectus, who lived over half a million years ago, long before the emergence of Homo sapiens, resembled that of modern human, and was distinctly different from that of

the chimpanzee. Scientists claim it to have a sound frequency distinction capability very similar to that of modern humans. The vocal tract of this hominid was found to resemble that of the Neanderthal, who is currently believed to have been capable of generating the same sounds as Homo sapiens (Martinez et al., 2012).

7. The evolution of sound expression into speech was gradual and extended over a very long period. It started during the transformation to bipedalism, and its earliest stages took millions of years. The fact that the anatomy of early hominids such as Homo habilis and Homo erectus did not allow speech like that of modern humans, does not rule out the possibility of primitive speech. **The development of currently known speech took place during the last few tens of thousands of years, and the evolution of languages, mostly, during the last few millennia.**

8. Starting from a certain evolutionary stage, approximately when first sounds appeared, the evolution of speech needs to be examined, predominantly, with linguistic tools. At that stage, speakers already had numerous symbolic expressions, and the main processes affecting the expression system performance result from its comprehensive structure, rather than from social or biological constraints. From then on, speakers nearly completely abandon apish expression.

God measuring the world with a compass, Bible Moralisee 1250

4. What are we looking for?

It seems appropriate, before presenting the answers to the question of how Language came into being, to answer two preliminary questions:

1. What are we looking for? What is the essence of language?
2. When was the starting point of Language, the one before which there was something different from language? For example, can Biblical Hebrew, or the language of Sumerian and early Egyptian inscriptions, be considered primitive languages?

We shall answer the first question with a mere statement, since any attempt to explore it profoundly means trespassing into the

depths of philosophy, which is outside the scope of the present work. Philosophy spends a great deal of effort attempting to find the essence of Language, and it would be no exaggeration to say this is a major philosophical problem. But the author's approach and the limits he sets to his discussion do not permit dwelling on this subject. Since we are dealing with the evolution of speech, we may define Language through speech, ignoring the wider field of Language.

So, let us begin our statement by defining "spoken language". **"It is an extensive category, or system, of human acts of expression, making and giving meaning, by regular sound patterns, which go beyond the enactor's body, and therefore are inertial patterns, out of which, meaning can be produced".** It is worth stressing that speech is an act, similar in principle to any other human act. This fact is often forgotten, though anyone trying to generate speech without operating the same system of nerves, brain, and muscles used when one wants to work with one's hands, bend, or walk is doomed to fail. **The role of meaning is key**, as is the inertness of speech form. Inertness, that is, the dissociation of the meaningful form from the body generating it, is essential to understanding the essence of language, and is demonstrated by writing. The brain's inner Language is a particular aspect of linguistic capability, and it seems to result from the brain's capability of reflecting the outer world, and reflecting vocal expression as a special part of the outer world. This aspect of Language is addressed in another chapter.

Meaning is the very core of Language. It is the essence of any act, either of a human or of any living thing. Any step, hand-movement, or eating become meaningful by being