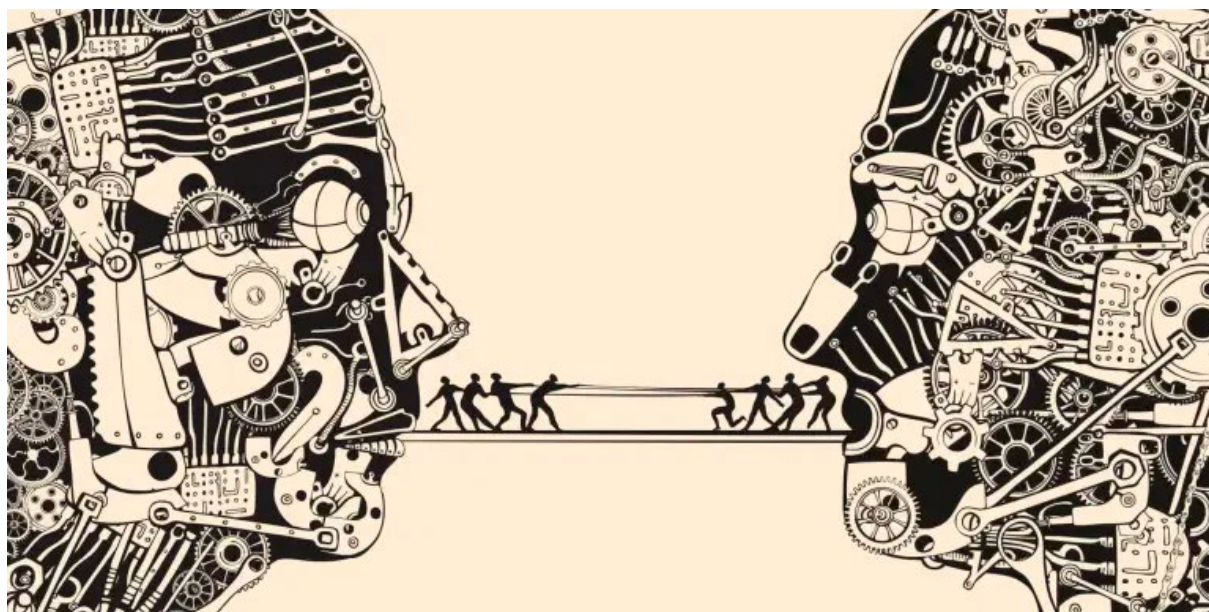


A short review about the origin of language and writings

Contri Anna* and Spagna Cecilia*

*Bachelor Degree in Speech and Language Therapy, Padova University



The mystery of linguistic evolution does not only start with a lack of evidence; outside of engraved tablets we have no records or tapes dating back to 4,000 BCE. But during the last few centuries a lot of people have asked themselves: how men started to talk with a proper language made of real words instead of primitive sounds and how cavemen converted drawings into letters to form words, phrases and, at the end, sentences and stories. One of the greatest linguists that tried to give a proper response to this question is the American linguist and philosopher Noam Chomsky. Noam Chomsky had the great merit of intuiting and then substantiating the thesis that: our language skills are determined by an innate "Universal Grammar", that is, a general schematism, a system of categories, rules and principles that govern the behavior of every language, and enable it to be produced or generated (V. J. Cook and Mark Newson, 2007). In this article we will try to explain

some of the most credited theories, which however are not completely demonstrated, due to the enormous difficulty to date back something immaterial, such as Language.

In order to investigate the language, the study of some animal species and their communicative evolution has been used first, which only provides an anatomical explanation on the evolution of the larynx without justifying how humans, or in this case animals, came to verbal communication and how they did it. What has been noted, however, is that different animals use symbolic and referential language just like humans: the bee's dance, the monkey's cry to sound an alarm, different depending on the type of danger (Marc D. Hauser, Charles Yang, Robert C. Berwick, Ian Tattersall, Michael J. Ryan, Jeffrey Watumull, Noam Chomsky and Richard C. Lewontin, 2014). Such languages, however, do not enjoy specific morphosyntax, let alone high complexity like human language, so such

a close correlation cannot be explained by the mere comparison: human-animal.

Further studies have attempted to study the emergence of language by drawing parallels between phylogeny and ontogeny and noting that several anatomical developments occurring in the infant have also occurred in a similar manner in the evolution of humans (Stephen C. Levinson and Judith Holler, 2014).

Of great significance, both phylogenetically and ontogenetically, was the transition from being quadrupedal to bipedal and the consequent vertical development of the spine with globular growth of the skull. Other relevant factors were: the opposable thumb, the development of voluntary respiration attached to the use of intercostal muscles (500,000 years ago-Homo Heidelbergensis, probably the first to exploit the vocal canal), but also the transition from nomadic to sedentary. All these factors allowed humans to use their eyes to observe mouth movements, manipulate objects and construct new ones, thus creating the need for naming, creating calls and warnings of danger while hunting to save their fellows. All of these evolutionary features can also be seen in the child from 6 months to the first year of life when, as a result of his psycho-motor development, he begins to give rise to the first proto-conversations, probably just as occurred in human evolution.

Before arriving at vocalizations, it was assumed that humans mostly used their hands with which they made gestures, perhaps even accompanied by vocalizations. Similarly, infants around 8 months of age also began to use the gesture of "pointing", which over time is combined with increasingly complex vocalizations until they become words. Over time then hominids began to be more and more economical, thus going on to synthesize more and more of their vocalizations until they created smaller gestures and vocalizations that could be combined with each other to create gradually more and more complex meanings with a small and finite number of smaller units (Kim Sterelny, 2012).

The big question in the matter, however, remains the fact that there is no similarity between words and its referent, and that is why it is then difficult to explain how humans were able to make such associations, seemingly so far apart.

The following language shaping it is another enormous question mark, which is going to be explored, because the uniqueness of human language suggests some basis in human biology, in the form of uniquely human capacity or predisposition for acquiring and using combinatorial, compositional communication. But the precise form of any individual's linguistic system depends on social learning: we use the language of our linguistic community, and acquire that language through immersion in the rich linguistic environment that community provides. Languages evolve as a result of their learning and use, and that process of cultural evolution shapes the evolution of the capacity for language. If we are interested in how culture shapes the evolution of cognition (for language or other behaviors), we need to understand both how cognition shapes culture, and how this in turn allows culture to reshape cognition, either through gene-culture co-evolution or acquired biases in learning.

Existing work from evolutionary linguistics shows that biases in cognition and communication shape linguistic systems and offers an explanation for some of the fundamental structural properties of language; co-evolutionary work shows how this process might in turn drive the evolution of those cognitive capacities. The evolution of linguistic systems therefore provides a fascinating test case for exploring how biology and culture interact on evolutionary timescales to shape cognition (Kenny Smith, 2020).

In addition to research in the historical field, efforts were also made to find biomolecular correlations to this evolution. One example dates back to 2002, when the so-called "language protein" was discovered: FOXP2, without which there is a clinical picture of dyspraxia (articulatory difficulty, serialization of speech, difficulty in vocalic learning, struggle in semantic learning). However, this protein obviously cannot be the only one that makes the whole complex system work, as even a mutation and/or lack of it still allows us to achieve certain levels of language comprehension and/or production. Furthermore, there is no evidence whether this protein was missing in hominid brains or not. The only thing that is known is that this protein changed from modern humans compared to

Neanderthals, but more research is needed to draw more reliable conclusions.

If for the origin of vocal language there is a lot of missing information, about the invention of writing there is a proper timing line.

It is generally accepted that the ability of writing a language was independently invented in at least two places: in Mesopotamia, by the ancient Sumerian around 3000 BCE and in Mesoamerica around 600 BCE. Although the two of them look quite different, the Egyptian hieroglyphs instead have a similarity in concepts and in the oldest attestation to the Mesopotamian cuneiform script. This suggests that the idea of writing may have come to Egypt from Mesopotamia.

Writing systems are distinguished from other possible symbolic communication as they previously require knowledge of the spoken language in order to understand the text. Conversely, other symbolic systems such as painting, maps and mathematics do not require any prior knowledge of the spoken language. Every human community has a language, a feature considered by many to be an innate condition of mankind. The great advantage of writing systems is their ability to maintain a persistent record of information expressed, which can be retrieved independently from the act of formulation. On the other hand, once they have been created, writing systems change much slower than their spoken counterparts, so they often preserve features and expressions no longer present in spoken language. Studying the origins of writing, it has been demonstrated that the invention of writing was not an immediate event, but a long evolution preceded by the appearance of symbols.

The conventional transition from “proto-writing” to true writing follows a series of developmental stages. Everything started from the image writing, glyphs which directly represent objects and ideational situations or ideas. In relation to this system, the following sub-stages of development can be distinguished:

Mnemonic: glyphs mainly as a reminder;

Pictographic: glyphs that directly represent an object or an objective situation;

Ideographic: glyphs representing an idea;

Transitional: glyphs that not only refer to the object or idea they represent, but also refer to their name;

Phonetic system: glyphs that refer to sounds or speech symbols regardless of their meaning;

Logogram: glyphs representing an entire word;

Syllabic: glyphs representing one syllable.

As we have pointed out, during the Bronze Age (3400-1100 B.C.) writing emerged gradually in many cultures around the world. From cuneiform writing of the Sumerian, to Egyptian hieroglyphs, Chinese logograms and the writing of Olmechi in Mesoamerica.

Cuneiform writing:

The original Sumerian writing descended from an ancient system used to represent the exchange of commodities. By the end of IV millennium B.C., in order to record the numbers and keep accounts, Sumerian started using a circular stylus to impress marks on a bar made of soft clay. The different angulation of the signs was aimed at distinguishing different numbers. This technique gradually moved to a more sophisticated level by tracing pictographic glyphs that indicated also what kind of commodities had been counted. Around 2600 B.C. cuneiform writing began to represent the syllables of Sumerian language which then became a general writing system for logograms, syllables, and numbers. From the 26th century B.C., this system was adapted to the Akkadian language, and from there into others like the Hurrian language is the Hittite one.



Cuneiform tablet: administrative account concerning the distribution of barley and emmer (3100-2900 BCE)

Egyptian hieroglyphs:



Detail of "The Book of the Dead" of Queen Nedjmet, papyrus, Egypt, 21st Dynasty (1070 BC)

Writing was fundamental in keeping the Egyptian empire cohesive over the centuries and literacy was reserved exclusively to elite groups. Only people of a certain rank were allowed to study, for example ministers of religion, Pharisees and military authority. The hieroglyphic system was difficult to learn and during the centuries it may have been deliberately made even more complex to allow only a few the use and thus maintain social status.

Mesoamerica script:



Photograph of the sculpted face of the Aztec Calendar Stone, or Piedra del Sol. Museo Nacional de Antropología, Mexico City

Between the numerous different pre-Columbian scripts of Mesoamerica, the only one

that appears well developed and fully deciphered is the Maya one. The first inscriptions that seem to be attributable to the Maya are dated III century B.C., and they continued to be used continually until shortly after the arrival of the Spanish conquerors in the XVI century (Ignace J Gelb, 1963).

Ancient Semitic alphabet:

The first pure alphabet, intended as a mapping of single symbols to single phonemes, emerged around 1800 B.C. in Egypt and it was called "abjad". This innovative representation of the language had been developed by workers of Semitic origins, but it remained marginal for several centuries due to the institutional solidity of the Egyptian hieroglyphs.

Gradually the Phoenician alphabet gave rise to aramaic alphabet and to the Greek one. From the history of the Greek alphabet, it is clear that the Greeks borrowed the Phoenician alphabet and adapted it to their own language. The letters of the Greek alphabet are the same as those of the Phoenician alphabet, and both alphabets are structured in the same order.

Greek is, in turn, the model of all modern alphabets of Europe. The most widespread descendant of the Greek was the Latin alphabet. The Italic scripts, in fact, inspired the runic alphabet which formed the basis of English writing (Clodd, Edward, 1910; W. Andrew Robinson 1995).

On the origin of writing there are several theories, which have sought to investigate the turning point that led humans to feel the



The Modern Hebrew Alphabet

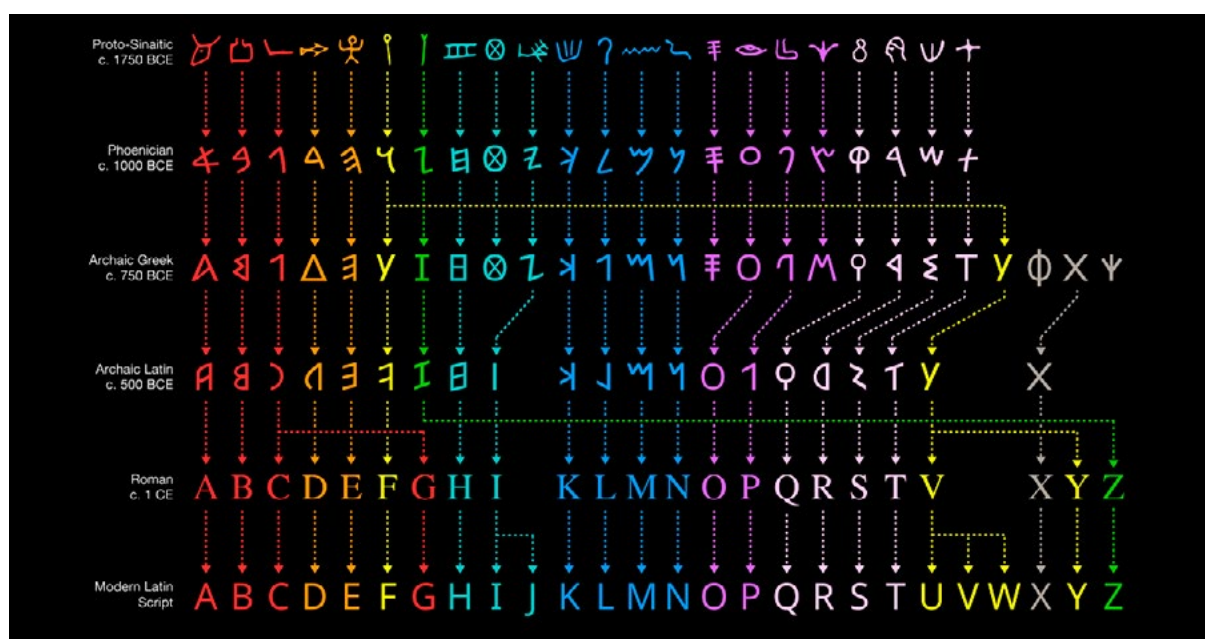
need to invent signs that could then be converted into what we know today as words.

One of the earliest theories about the origin of writing dates back to the first half of the

1900s. The American archaeologist Ignace Jay Gelb states that writing originated with the depiction on clay tablets of pictograms. Over time these pictograms would evolve into ideograms, or drawings intended to express meanings that had affinities with those objects and then be synthesized to such an extent that they became letters and, later, words.

In later years new theories were proposed, which in today's scientific landscape have become more prominent. First among them is

"How writing came about" by Denise Schmandt-Besserat, a French professor and archaeologist. Schmandt-Besserat proposes as the point of origin of writing the objects of administration, and not objects of everyday use, as in the theory proposed by Geld. Writing would therefore arise out of pure administrative needs, for the purpose of recording the transaction that took place, preserving a record of it for the predetermined time (Denise Schmandt-Besserat, 1992).



Letters evolution's scheme

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