

Origins and the Evolution of Communication

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Abstract

Language has deeply shaped our world, and has not strongly and substantially cut the bonds between chimpanzee and man. The origin of language probably goes back to a period in which man had already perfected upright walking and had freed his hands and arms from the ground for locomotion. This happened thanks to a contemporary morphological evolution of mouth, palate muscles, tongue, larynx, pharynx and epiglottis, the fundamental muscles for phonation. There is no doubt that chimpanzees have the intelligence for forming mental representations of objects and manipulating them. There is an interesting psychological evolutionary theory which postulates that courtship and sex could have played an important role in the evolution of communication and language in apes and humans.

Keywords: Evolution, language, apes, humans

Introduction

Let us start with some insightful ideas of Lev Vygotskij (1966):

“Thought and words develop along different ways, one independently to the other. Thought and words do not have an original link. When this link does appear, it modifies itself, and grows during the development of both thought and of the words.”

Substantially, this means that thought and language have quite different genetic roots.

When referring to Wolfgang Kohlers' experiments (1925) with chimpanzees in Tenerife Vygotskij later added:

“ The discoveries, using tools, making tools or finding different strategies to solve problems may without doubt be a light form of thought, and they all belong to a pre-linguistic phase of communication”.

Gestural communication (which exists among monkeys) has a strong communicative function, furthermore it helps humans by enabling them to establish whether an interlocutor is attentive to the communication or not, to control his/her reactions, to foresee his/her intention and, if it is possible, to manipulate it. For sure, a chimpanzee can understand without any difficulty the intentions that are behind an animal or human behaviour (theory of mind). In many respects, apes are far more similar to man than we can ever imagine. What chimpanzees and man have in common is a great sociobiological continuity, self-awareness, consciousness and “ethical” behaviour (de Waal, 1996).

This new communicative modality in our species, the cognitive revolution that is language is ontogenetically achieved by children when they are about 18 months old. That is when they discover that other children could be intentional agents (this is what William Stern (1903) and much more recently Michael Tomasello (1999) and many other scientists have sustained). The intentional agents are humans that have aims and that choose the appropriate behaviour in order to achieve them. The human cooperative communication is based on a psychological structure of shared intention and on a joined attention.

Now, the main point is: when did Language begin to emerge?

There are three fundamental hypotheses:

The first hypothesis considers the very remote origin of language, an origin substantially gestural with a minimal integration of sounds. This hypothesis could place the human language in the common ancestors between chimpanzees and our species, millions of years ago (Tobias, 1996-2003). The second hypothesis instead postulates a more recent origin of language. It might have emerged with the origin of our species, *Homo sapiens*, not before 35 thousand years ago, during the Early Paleolithic era, so much so that Philip Lieberman (1984-2000) believes that Neanderthal man did not speak properly and could never have spoken. If he had, for sure, it would have been without the articulation capability of *Homo sapiens*.

The third hypothesis, introduces the idea that a simple form of language, fundamentally gestural, could have been present in a common ancestor between 2 and 1.5 million years ago. According to the linguist Derik Bickerton (1981-1990) this ancestor could have shown a certain communicative ability by some proto-language which was not yet a language (Tartabini e Giusti, 2006; Fitch, 2010).

More about the Origin

The origin of language probably goes back to a period when man had already perfected the upright walking and had freed his hands and arms from the task of locomotion. Later on the use of hands helped to enrich the meaning of combined gestures with very rough emitted sounds that were still not a proper language but would become one. Substantially the language could evolve not by conferring a mimetic-gesticulation enrichment to the hands, but first by freeing them and afterwards by involving them in activities which were more and more communicative or linguistic. Anyway, language and mimetic-gesticulation should not be considered an antithetical but a complementary phenomena. Those capabilities did permit the manifestation of behaviour distinguishing us from all other primates. Those capabilities consented man to pass from a communication constituted fundamentally of hand gestures, accompanied by a very expressive facial mimicry, to the use of simple sounds leading to the use of the first words.

All this obviously happened thanks to a contemporary morphological evolution of the mouth and the palate muscles, tongue, larynx, pharynx and epiglottis, that are the fundamental muscles for phonation of course (Duchin, 1990; Lieberman, 2000).

In fact, the evolution of the cortical areas and the enlargement of the brain, do not seem to be important for the origin and development of the human language. To this end, the enlargement of the brain seems to be unimportant. It did not determine the main diversity between man and chimpanzee. The differences have to be found elsewhere.

What is also interesting is that some scientists (first of all, Stephen Jay Gould)(1977) insisted that the evolution of the larynx and the evolution of its functions are an “exaptation” (Gould and Vrba, 1982). An exaptation, as we already know it, is an evolutionary phenomenon that allows structures which at present do certain functions in the present, to later become competent for other new functions: for example, the larynx which at the beginning of its evolution was only a band of muscles around the glottis simply controlling the entrance of air into the lungs, later on it evolved in order to create something really new, indeed it was able to make sounds, that is the sounds of words.

Sexual Behaviour in the Bonobo (*Pan paniscus*)

What does the human language have to do with the sexual behaviour of the bonobo? First of all, we are talking about the bonobo because its sexual activity has inspired an interesting hypothesis on the evolution of sexual activity in man. According to a psychological evolutionary theory, sexual behaviour is tied, far more than we expect, to the language we normally use as an instrument or as a strategy to approach and court a partner, and eventually to have a sexual relationship with her or him (Kano, 1992).

Even if the principles and the evaluation to select a partner depend on the reciprocity of the male and female gender, we human beings often utilize language in order to succeed. We often do it quite unconsciously. We do it without narcissism or for empty pride, but substantially to spread unconsciously but profitably our genetic patrimony.

Without doubt we can neither court nor establish a loving relationship in absolute silence. Furthermore, we do not do all those things just for pleasure, for ostentation or for frivolity.

Man in any society has always risen socially and obtained a more elevated role mostly through his oratorical capability. Language has become more and more a social index for man's intrinsic intellectual abilities. Man, more than chimpanzees, can associate aesthetical play with the use of language. Wealth, loquacity, dialectics, and the semantic value of words could represent fundamental instruments for a speaker in order to have a successful conclusion. All those instruments constitute a kind of "peacock's tail" where colours, shape, beauty, and the dimension of the tail are substituted by words, lexicon, rhyme, prosody, and so on of the man who speaks. One successful conclusion could be sexual reproduction, as the evolutionary psychologists David Buss (1995) and Geoffrey Miller (2000) have sustained. Substantially, the evolution of human communication should be seen in function of sexual exhibition, intellectual and functional ability and then as a linguistic instrument. According to this perspective with apes we could have far more things in common than not in common. Moreover apes court one another (however they do it without the use of language) and also they intend to spread their genetic patrimony and keep their community life stable.

The American Sign Language (ASL)

Between the 60s and the 80s of the last century, some American scientists (for instance, Allen and Beatrix Gardner) (1975-1988-1989) showed the capability of some chimpanzees to communicate with man using a symbolic language of sign, that is to say the American Sign Language (ASL): an important artificial language. In the ASL signs possess a structural identity similar to propositions. The ASL is an instrument of non-verbal communication whose use can be learnt just as a normal child slowly learns the use of words. Sign language can be transmitted from ape to another and over generation, just as cultural behaviour can be transmitted.

Tetsuro Matsuzawa (1994), a Japanese primatologist, discovered in a group of chimpanzees living in the wild forest of Bossou, in Guinea, the manifestation of a marked intelligence, creativity and a great capability to transfer from one individual to another information until this information becomes a cultural patrimony of the entire community. We are talking about stone-tools used by the chimpanzee whose hand flexibility enables them to hammer nuts and develop other skills in order to manage these difficult tasks. In fact, Peter Richerson and Robert Boyd (2005), two American scientists, sustain that we are the result of our genes, but also the result of our culture too. Chimpanzees are the result of their culture as well. The cumulative cultural evolution well established for humans, should also be valid for chimpanzees.

Coming back to sign language, what is important is that between Signs (or gestures) and thought there is a close link, more than between words and subjected thought. Indeed this gives value to the hypothesis of the gestural origin of language (manual gestures) rather than have it originate from sound alone. The scientists William Stokoe (1960), David Armstrong (1999), Sherman Wilcox (1992) (Armstrong, *et al.*, 1995) and recently Michael Corballis (2002) contributed to the theory that language itself originated in manual gestures. They sustain that gestures are the most probable candidate to be the precursors of articulate language. People gesticulate when they talk and gesticulation is an important vehicle of information. Indeed this information is often not transmitted by articulate language.

Moreover we should not confuse articulate language with vocalization. We know what language is. Vocalization is something different. It is schematic and emotional. Vocalization in fact is immutable, without flexibility and generativity. As regards to generativity, Chomsky (1957) said that it enable speech to generate sentences and to establish a relationship between them in a totally new way (principle of generativity). Vocalization is unable to create recursive sequences from discreet elements that instead are typical of spoken languages and also of the sign language. Arbib, Libel and Pika (2008) in a recent article expressed the idea that human language evolved from natural gestures and not from vocal calls or vocalization (minor system hypothesis). Gestures have an essential role in the evolution of human language as was rightly thought by the French philosopher and *idéologue* Etienne Bonnot de Condillac who expressed this idea in his "Traité des sensations" about 250 years ago (Paris, 1754). His idea was to forsake the problems of the mind's essence to the study of its process and its effects. At that time, not all philosophers agreed with Condillac and in fact, twenty-seven years later Jean Jacques Rousseau published an "Essai sur l'origine des langues" (Geneva, 1781) (posthumous piece) in which he affirms that instead the human language did evolve not from gestures but from the vocalization of animals (Stanzione, 2005).

Conclusion

In order for a language to evolve, analogously to the evolution of making and using-tools, whether it be in man or chimpanzee, it needs to develop both a syntax and universal complex grammar, at least as complex as the movements of the hands during gestural communication. It really seems that the syntax rules of the articulate language, the real rules of languages which are learned very quickly by children, are equal to those rules that must be applied when one builds instruments, however rough they may be, or when it is necessary to solve problems, as Wolfgang Kohler (1925) demonstrated. For instance, grammar and recursivity, at least at the beginning, developed in a general context where words began to emerge after the modification of the oral tract and the following cortical control for the emission of air and sounds. This probably happened when our ancestors left Africa for the first time, 1.9 million years ago (maybe even before). In fact the chimpanzee displays a great variety of behavioural strategies that look like those that belonged to our ancestors.

We should not doubt the intelligence of chimpanzees. Aims, goals and comprehension of cause and effect are not only human prerogatives. These prerogatives, including language, even if it is not articulate, also characterize the intellect and cognition of chimpanzees. The chimpanzee also dominates some, not all, intentional and meta-representational states (even if Daniel Povinelli (2001) argued that chimpanzees have rather little understanding of the physical world) (maybe it is partially true, but this should not be enough to discredit the intelligence of this beautiful animal).

Finally, we have to discredit a legend: monkeys (or chimpanzees) do not imitate man. Instead man imitates monkeys. Monkeys are able to reproduce results without imitating exactly the necessary movements in order to reach the solutions, as they reveal when they think and then communicate what they were thinking with the sign language.

Indeed, without falling into the trap of anthropomorphism, this kind of evolutionary continuity between man and our cousins, exists in empathy, emotions, disdain, shame, intentionality and so on.

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