

## Galley Proof in “The Sociocultural Origin of Languages”

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### ABSTRACT

The sociocultural origin of languages has not ceased to concern linguists, anthropologists, anatomists, neuroscientists, and paleontologists, since among the characteristics that differentiated society from groups of animals, one of the main ones was their ability to speak. However, the greatest difference between languages and the language of animals was the intrinsic relationships between languages, societies and cultures, since we biologically shared more than 98% of our genes with chimpanzees. Languages served as excellent instruments of expression and communication of cognitive development in Sapiens groups, within prehistoric speech communities. Cognitive control was manifested in the lateral prefrontal lobe of the brain, although it was connected to other areas. These processes contained many phases and aroused the curiosity of many scientists. The most important contributions were the investigations on the general structure of the languages, and the insistence on its most primitive forms and more general manifestations. In addition, it was undeniable that the most primitive structures (phonological and syllabic) were the simplest and served as a basis prior to the most complicated ones. The simple structures were the ones that the child first acquired, during his learning of the language of adults.

**KEYWORDS:** Linguistic history, Intrinsic relationships between languages, societies and cultures, Upper Paleolithic, *Homo sapiens*, The oral record of languages.

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### I. INTRODUCTION

The hypothesis of the history of linguistics as a succession of paradigms was more adequate to the linguistic facts and to the very continuity of history, than a substitution of models. One of the most assiduously held principles in historical linguistics was the theory of the regularity of linguistic change. If all linguistic change implied generational variation, the homogeneous models of linguistic change (neogrammatic, functionalist and generative) were unrealistic and inadequate.

Our working hypothesis on the origin sociocultural of languages has been a new historical sociolinguistics project on a critical reconstruction of the appearance of languages that differentiated the sapient society from animal groups, more adjusted to an empirical application of primitive linguistic change (pre- and protolinguistic), based on anthropological, sociological and cultural determinants. An early version of this article was published in *IOSR-JHSS*, 27, 11, 9 (2022), 13-27.

In the precedents of the history of the written record of languages, I. J. Gelb (1952: 47-53) alluded to the fact that just as languages were derived from the imitation of sounds, writing developed from drawings that imitated real objects or beings on the rocks, from the earliest Paleolithic times to the present day, by means of petrograms (if they were drawn or painted) and petroglyphs (if they were carved or engraved), although from its earliest stages rather simple linear or geometric signs appeared .

The primitive drawings did not constitute writing, because they were not part of a conventional system of signs. The writing was not more than 5,000 years old, if by writing the resource for the expression of linguistic elements was understood, by means of conventional visible signals. Painting was found at the root of all writing, not only because all current primitive writings had a pictorial character, but also because all the great oriental systems (Sumerian, Egyptian, Hittite, Chinese, etc.) were originally authentic. pictorial writings. Of course, all these writings had, from their earliest stages, signs that did not resemble paintings, but rather linear or geometric signs, which were the schematic result of the paintings themselves.

In our case, if *Homo habilis* developed the precedent for writing by imitating the figures of real objects or beings, in the Upper Paleolithic *Homo sapiens* derived the precedent of *ma-ma materialization*, by imitating the nasal sound produced by suckling the infant. Phonological differentiation was in its beginnings as uncertain and unstable as semantics, but the first distinctive phonological elements appeared with a simple syllabic structure, although there was not yet a proper syntax.

The study of more general and primitive phonological and syllabic structures led to a better understanding of the evolutionary chain, which began with inarticulate sounds, onomatopoeia, and duplications. Languages appeared when hominid groups learned the use of a sound complex in a specific situation, as a conventional symbol applied to certain identification and recognition. The development of family transmission of the mother tongue implied a process of social, cultural and acculturation diffusion, and the intrinsic relationships between language, society and culture, which are essential coordinates in current research on linguistic variation and change between the different social groups, within the various speech communities (see U. Weinreich, W. Labov and M. I. Herzog, 1968; F. Gimeno, 2019; A. Cece and F. Gimeno, 2020).

## **II. SOCIOCULTURAL ORIGIN OF LANGUAGES**

As a historical evolutionary process and natural selection, the sociocultural origin of languages has not ceased to worry linguists, anthropologists, anatomists, neuroscientists and paleontologists, since they have always been interested in knowing when and how the sounds used in languages began to be articulated. The communication. One of the main characteristics that differentiated society from groups of animals consisted in their ability to speak. Languages were excellent instruments of expression and communication of cognitive development in the sapient society, within prehistoric speech communities. Biological inheritance was a set of anatomical and physiological characteristics that facilitated the acquisition and use of languages, since we shared more than 98% of our genes with chimpanzees.

Cognitive control manifested itself with an increase in cortical areas (prefrontal and temporo-parietal) and a reduction in the occipital lobe. These processes contained many phases, and aroused the curiosity of many scientists. Linguistic double articulation was one more application of human cognitive abilities, the creation of distinctive signs without independent meaning (phonemes and intrinsic distinctive features) and signs with their own meaning (lexemes and morphemes). The samples discovered in the archaeological record of the upper paleolithic allowed the anthropological, sociological and cultural reconstruction of the sapient society of the prehistoric speech communities.

The most important contributions were to be expected from investigations into the general structure of languages, and from the insistence on their most primitive forms and their most general manifestations. In addition, it was undeniable that the most primitive structures (phonological and syllabic) were the most general, and served as a basis prior to the most complicated ones. Languages were a hierarchical system, where the complicated presupposed the simple, thus, for example, the voiced consonants implied the existence of the deaf ones, or the closed syllables implied the open ones. Simple structures were first acquired by the child, during his learning of the language from adults, and stood out the excellent contributions of C. F. Hockett (1958/1962), B. Malmberg (1966) and R. Jakobson (1962, 1970). In addition, we will comment on the contribution of generative syntax and research on the appearance of the human chin and the mandibular morphology of *homo sapiens*, chimpanzees and Neanderthals.

The innate character of language was exclusive to mammals and birds. Animal language was the set of signals used in communication between groups, as simple manifestations of a specific behavior, which expressed emotional and evocative states, and except in the cases of the bee and the dolphin, they were not descriptive. Languages were one of the manifestations of the symbolic activity of man to represent things, ideas and facts through sounds, gestures, attitudes, behaviors, signs or objects, which were their substitutes.

This faculty was not characteristic of the human species, thus, for example, Professor K. von Frisch showed that bees were able to symbolize the duration of a flight and their orientation in relation to the sun, by the nature, rhythm and orientation of their wanderings on the honeycomb. It was plausible that ants had a similar means of communication, with the lateness of the social life to which they had arrived, and it was probable that a good number of social animals had analogous modes of communication, but languages differed from those means. more for its complex structure than for its vocal character. In addition, the languages were learned, and not objects of hereditary transmission, like the language of animals. The problem of the sociocultural origin of languages was confused with that of the beginnings of humanity.

## **III. ANTHROPOLOGY AND LINGUISTICS**

In the history of languages as social semiotics and the interpretation of meaning, the sociologist M. A. K. Halliday (1978: 12-30) posed a better understanding of languages as objects, if we interpret it in light of the investigations of those for whom languages were a tool for investigations of an entirely different kind. In that sense, we had to proceed from the outside in, with the interpretation of languages by reference to their place in the social process, in terms of the infinitely complex network of potential meanings that constituted cultures. There is no doubt that the human brain evolved to its present form through the process of human beings communicating with each other, and this perspective was very important from an evolutionary point of view.

Instead of considering the group as a set of individuals and hereditary roles, the human being through languages was no longer just a biological specimen, but was integrated into a set of complex relationships

(society), where linguistic exchange determined its position and configuration as a component of a culture, as well as playing many roles at once. Instead of having developed in its genetic makeup a set of concrete universal models of language, what the child possessed was the capacity to process some highly abstract kinds of cognitive relationships that were supported (among other things) by the language system. The specific properties of languages were not innate, and therefore the child depended more on his environment (on the language he heard in his environment, together with the contexts in which it was used) for the good learning of his mother tongue.

R. Jakobson (1962) on "Why *mama* and *papa*?" responded to the conclusion of G. P. Murdock (1959), in a Seminar at the Center for Advanced Study in the behavioral Sciences (later published in *Anthropological Linguistics*, 1, 9, 1-5), on parental kin terms in a large number of languages. This American anthropologist collected 1,072 terms, and excluded forms such as *dad* and *mom*, considering that they could be borrowings. His conclusion was that the purpose of the research was simply to present data that confirmed the test hypothesis: a remarkable convergence in the structure of parental kin terms in all historically unrelated languages. And he wondered if linguists now that the facts had been established could not "clarify the theoretical principles that accounted for them."

R. Jakobson's response was that he agreed to contribute his article to the question. The child originated his childhood world within an alien world of adults, and his behavior was the result of an interaction between these two worlds. In the same way, the behavior of adults regarding the upbringing and education of children was a result of the interaction between both worlds. Some of such children's forms crossed the boundaries of kindergartens, and entered the general use of adult society, as well as building a specific children's section into the standard vocabulary. Specifically, the language of adults generally adopted the infantile forms that designated each of the older members of the nuclear family. Frequently these intimacy-tinged and emotive words coexisted with more general and abstract terms exclusively of adult kinship. So, for example, in English *mama* (*mamma*, *mammy*, *ma*, *mom*, *mommy*) and *papa* (*pap*, *pappy*, *pa*, *pop* or *dada*, *dad*, *daddy*) differed in their use of the parent terms *mother* and *father*.

In Indo-European the learned parental designations *mater* and *pater* were configured on the infantile forms with the help of the suffix *-ter*, used for various kinship terms. Children's inventions were accepted for further communication in the child-adult verbal relationship only if they expected children's linguistic requirements, and thus followed the general line of any superficial variants. Specifically, the phonological field of kinship terms turned out to be "rigorously limited". The underlying principles of the successive stages of children's language acquisition enabled us to interpret and clarify the 'language contrast parallels' in the structure of such terms throughout the world.

Consonant clusters occurred in no more than 1.1% of the 1,072 kin terms tabulated by Murdock, and children's speech in its early stages did not use consonant clusters, but only consonant-vowel combinations. Such combinations were almost constant in *mama-papa* words, and pure vowel stems were exceptional: only three among the tabulated instances. Plosive and nasal consonants predominated in kinship terms. According to Murdock's tabulation, the plosives and nasals were close to 85% of the non-syllabic ones. The exact ratio could not be established, because all the non-sibilant fricatives were grouped together with the corresponding stops. Labials and dentals prevailed over velars and palatals. Over 76% of all tabulated terms included a labial or dental, as opposed to over 10% with velar and palatal. Widely the vowels, especially /a/, were predominant.

Thus, the children's names for mother and father, as the first meaningful units to appear in children's speech, were based on the polarity between the optimal consonant (the plosive) and the open vowel. The principle of maximum contrast responded to the constituents common to most of the terms *mama-papa*. Like the order of these constituents, the sequence "consonant + vowel" appeared to be almost obligatory. During the prelinguistic period of infant development, many of the pure syllables consisted of a vowel sound followed by a consonantal articulation. The most natural order of sound production was that of an opening of the mouth followed by its closing. However, syllable reduplication appeared as a resource in infant forms, particularly in kinship terms, and in early word units in infant speech. Obviously, the reason for such a duplication was explicable.

The most spectacular results of Murdoch's research were in the distribution of nasal and oral consonants among the kinship terms: 55% of the terms designating 'mother' and only 15% of those relating to 'father' they belonged to the nasal class (*m*, *n*). Thus, the traditional statements that "the mother was usually named with an *m*-form, and the father with a *p*-, *b*-, *t*- or *d*-form obtained illustrative statistical corroboration". The terms *mama-papa* were, therefore, children's words, and they adjusted to the evolutionary character of children's speech, just as neither their penetration into national languages nor their international diffusion invalidated their basic conformity. However, the complete exclusion of *mama*- and *papa*-like forms from Murdock's sample appeared to be rigorously superfluous, unless the related languages clearly demonstrated their autochthonous origin.

Nevertheless, he recommended that the interesting sample of the eminent anthropologist deserved to be continued and developed, and a wide field was open for productive joint research by linguists, anthropologists, and experts in mental and developmental behavioral psychology. Subsequently, R. Jakobson (1979) himself

returned to the issue of the appearance of languages, in which the transition from pre-human groups to society should be considered, which has been included in a later section.

#### IV. GENERAL PROPERTIES OF LANGUAGES

In the Spanish translation of the fourth edition of his *Curso de lingüística moderna*, C. F Hockett (1958/1962: 547-76) added chapter LXIV ("The position of man in nature"), on research with the data available from what relationship did languages have with the position occupied by man in nature. He alluded to the fact that man was the only species that possessed the faculty of language, and no other living species could reasonably be attributed to having had that faculty before, and having lost it later. During the Holocene period (the last 30,000 years or so), *Homo sapiens* was the sole representative of the genus *Homo*. In the Pleistocene (from about 700,000 to around 30,000 years ago) another species existed, *Homo neanderthalensis*, whose remains were found in Europe, the Middle East, and central Asia. Like homo sapiens, it had an extremely large brain. Now, man was not the only animal capable of establishing some kind of communication, and it had to be described how languages differed from the different types of communicative behavior displayed by other non-human or pre-human species.

Now, despite the variation that different languages showed in many aspects, they all had in common (as communication systems) a series of basic characteristics or properties that did not occur together in any of the known non-human communication systems, although only one or the other was given separately. The general properties of languages were the following fifteen: 1) *vocal-auditory pathway*, 2) *radiated transmission and directed reception*, 3) *rapid evanescence*, 4) *interchangeability*, 5) *total feedback*, 6) *specialization*, 7) *semanticity*, 8) *arbitrariness*, 9) *discreet character*, 10) *displacement*, 11) *duality*, 12) *productivity*, 13) *cultural transmission*, 14) *prevarication* and 15) *reflexivity*.

Furthermore, he drew up a table indicating whether each of these properties also occurred in the communication systems of the described animals (dance of the bee, sexual behavior of the stickleback fish, feeding of the young seagull and cries of the seagull). gibbon) against languages and instrumental music, as a Western cultural tradition. Almost all mammals (except the giraffe) produced vowel sounds. In general, then, the vocal-auditory pathway constituted (compared to other varieties of communication pathways, for example, the kinetic-tactile-chemistry in bees, auditory but not vocal in some insects) a characteristic characteristic of the mammals. The mechanisms of sound production and perception in birds were so similar that they invited the term vocal-auditory to be applied to birdsong as well. It was highly doubtful that the auditory-vocal system of any animal except man made distinctive use of vowel timbre.

In order for an organism to participate in a communication system, the conventions of that system had to be established in some way in that organism. There were two mechanisms that made it possible. One was the *genetic* mechanism: an individual's genes, inherited from their parents, governed that individual's growth pattern and behavior patterns. The other mechanism was cultural transmission. The human being, when he was born, did not speak any language. The language he later came to speak was the one used by the people around him, whether it was the language of his biological ancestors or not, and if it was not, without affecting in the least the degree of skill with which he would speak it, nor the time it took to learn it. If, as occasionally happens, a creature was raised in complete isolation or among animals, it learned no language.

Three conclusions could be drawn from the above: 1) human genes were not specific to the particularities of any language, but rather permissive of any and all; 2) human (and only human) genes were a necessary, but not sufficient, condition for language acquisition, and 3) the role of genetics was not limited to being passively permissive: the human phenotype also comprised a strong positive impulse toward participation in the communicative exchange of society, an impulse that could only be frustrated by the most complete isolation.

The role of genetics in language was limited to this. In addition, in the continuity of linguistic habits from generation to generation, the other mechanism mentioned, tradition, intervened mainly. All traditional behavior was *learned*, but not all learned behavior was traditional. For it to be, there also had to be *teaching* by other individuals of the *same* species, imparted through behavior that was not exclusively or mainly genetically determined, but had in turn been *learned* from previous teachers.

Tradition (defined in this way) was obviously not a human prerogative. However, it seemed most probable that, at least in land mammals and birds, genetics and tradition work in constant dialectical complementation, without in any case one of them being the entirely responsible mechanism. The tradition was transformed into *cultural transmission*, when the use of symbols had a wide intervention in the transmission of traditional habits: the first thing that began to be acquired was the communication system of the speech community, and all subsequent learning, both from the rest of that system, like all the rest of "culture", was carried out not only by direct demonstration and experience, but also (in large part) in terms of the communication system.

For a communication system to function effectively in this way, it must have the properties of semanticity, arbitrariness (and therefore discreteness), displacement, productivity, and probably also transmission by tradition. The definition of cultural transmission and the essential features of a communication system that would make it possible in the way we have done it was equivalent to affirming that only *homo sapiens*, as far as

we know so far, had culture. Of the fifteen properties of languages, productivity, displacement, duality, and cultural transmission could be considered as the essential or basic properties of any linguistic system, and if it were not for them, languages would not be truly distinguishable from hominoid communication in general. From an evolutionary point of view, they were presumably the last properties to appear, in a system that was already characterized by all the other non-derived properties.

In addition, he outlined the successive steps of evolutionary progress that led from protohominoids to our first truly human ancestors. As soon as the hominids had attained the upright posture, the bipedal gait, the use of the hands to manipulate, carry, and manufacture implements, and the languages, had *become* a society. The changes had occurred about a million years ago. The subsequent growth of the brain, attested by the fossil remains, was that the hominid brain grew steadily, from *ca.* 750,000 years to about 40,000 years ago. Fossil evidence indicated that the human diaspora originated from East Africa, and humans exhibited surprisingly little racial diversity, and the same surprising lack of variety was revealed in certain aspects of languages.

Almost every type of articulation that worked in one language also appeared in several other languages, without any significant geographical correlation. Phonological systems showed far less variety than any linguist could easily devise. Such uniformity precluded the independent invention of duality and modern articulatory movements in two or more parts of the world: the fundamental developments must have occurred only once and then spread.

True diversity was found only in the most superficial aspects of languages, just as in the other phases of human life in which tradition (and not genetics) evidently represented the most important mechanism of cultural change and adaptation. Human evolution was thus completed before the Diaspora, establishing a state of affairs in which all further change and adaptation could take place within wide limits, traditionally and not genetically. The diversity of human races was so small that the languages and cultures of all speech communities (however different) were elaborations of a single inherited "common denominator".

## V. PRIMITIVE LANGUAGE AND INFANT LANGUAGE

B. Malmberg (1966: 149-81) alluded to the hypothesis according to which the human being evolved from lower animals has been generally accepted, through a long process of selection and adaptation. Said theory necessarily implied an evolution of the communication and contact possibilities of the sapient group (and before it, of the different hominids), from a simpler means of expression to more complex forms. Also the simple structures were those that the child first acquired during his learning of the language of the adults. Now, linguistic primitivism is sometimes found in some types of words that, due to their phonetic structure, seem to have belonged to the most primitive layer of languages and to the expression needs of all men.

So, for example, he quoted the article by R. Jakobson (1962), and made us realize the enormous extension of names for 'father' and 'mother' in the languages of the world, identical or similar to our *dad* and *mom*. It might seem obvious that in some cases those words must have been borrowed from one language to another. However, with a simple syllabic structure and with sounds containing respectively *p* and *m* (sometimes also *t* and *n*), they appeared in so many places that it must be assumed that they arose without the collaboration of the normal paths of linguistic borrowing, and they responded more well at a very broad and primitive linguistic level.

Moreover, he adduced figures with exposure of lexical material from a number of different languages (Sanskrit, Greek, Latin, English, German, Swedish...), which contained roots of the words in question. These lists showed that the *dad-mom types* were not reduced to the meanings of 'father' and 'mother', but were also found again as names for a series of concepts that had in common the fact of referring to the most basic needs and the most primitive vital manifestations of the child and the individual: the mother, food, sleep, natural needs, etc.

In addition, it should be remembered that the semantic boundaries of the concepts that the child possessed were not yet very clear. For the infant, the concepts 'mother-food-breast' formed a complex of unidentified content to which was linked an expressive labio-nasal sound (created in the very act of suckling) that gradually became a symbol, thus, for example, in the child's language, *mam-mam*, *nam-nam*, etc. The root *ma(m)* thus became a symbol of 'mother' (*ma-má*, *ma-dre*), of 'food' (cf. English *meat*, Swedish *mat*, French *manger*, etc.), of 'breast' (Latin *mamma*, Spanish *mama*, French *mamelle*, with diminutive suffix).

In the Indo-European languages to designate 'father' and 'mother' we found the infant roots *pa-* and *ma-* (which appeared reduplicated in *papá* and *mamá*), on which they were formed, by adding a suffix *-ter*, the normal words *pater* and *mater*, from the phonetic and grammatical point of view. From there came the Latin *pater* and *mater*, which in turn gave, thus, for example, in Italian and Spanish *padre* and *madre*, in French *père* and *mère*, etc. The root designating 'father' appeared in Germanic languages with initial *f* (English *father*, German *Vater*, Swedish *fader*, etc.), since Indo-European *p* passed to *f* in them. This evolution made the word in question lose all trace of its original infantile character. The same happened, in principle, with the evolved vocalism of 'madre' (English *mother*, German *Mutter* and Swedish *moder*), compared to that of the original word.

Only 1.1% contained any consonant cluster of any kind. Exclusively vowel roots were also rare. 76% of all the terms contained a labial (*p - b - m*) or a dental (*t - d - n*) and 10% a velar or palatal (*k - g - n*), followed,

in almost all cases, for a vowel. Thus, from the point of view of historical evolution, the names of the unidentified semantic complex that was closest to the child were based almost entirely on the existing polarity between the optimal consonants (the stops) and the open vowels. In the pre-linguistic chirping of the child, the repetitions of elements of this type occupied an important place (*ma-ma, pa-pa, na-na, ta-ta, etc.*).

Likewise, the distribution of nasal and oral consonants among the kinship terms showed that 55% of the terms designated the 'mother', and only 15% of those relating to the 'father' belonged to the nasal class (*m, n*). There was, then, a clear tendency towards the nasal in the group of terms for the designation of 'mother'. If we add to this the large number of formations with a nasal between the concepts of 'food', 'breast' and the like, the association between pre-linguistic expressions with a nasal and this semantic field so central to the young child was clear, and how the first fundamental phonetic distinctions and the first words were created. Similar associations between unidentified expressive sounds and the most primitive needs and functions occurred in human prehistory, just as the first (as yet unarticulated) linguistic symbols of society were of this kind.

In this primitive lexical material, therefore, it was possible to glimpse a first sign of differentiation between words with a nasal and words without a nasal. The nasal opening (with the fallen soft palate and air outlet through the nose) was the only one possible when suckling. And words with a nasal had, more frequently than non-nasals, a reference to 'mother-suck-food'. In all languages there were layers of words that belonged to different primitive expression needs, such as onomatopoeia and other imitative formations, frequently of an infantile type and built on the basis of the most general and fundamental phonological structure models: a nasal or plosive (*m* or *p*), together with a generally open vowel, that is, the simplest possible syllabic structure repeated an indefinite number of times.

The great extension of this type of words that the world's languages showed did not depend on kinship or vocabulary borrowing, but on the fact that they were simple structures that underlay all linguistic systems, and on the primitive levels of communication human, where the types in question arose, which used exclusively these simple linguistic structures. The coincidences depended only on this and on the imitative character of said type of words, but they were not yet completely arbitrary signs. A young child's *mam-mam-mam* with reference to food (and secondarily to mother) was on the borderline between unstructured expressive sounds and phonologically constructed linguistic sign. In expressive sounds, the first distinctive element was the nasal, and the intermediate opening, in principle, was just a consequence of that.

The primitive opposition between the nasal *m-* (*ma-ma-ma*) and the non-nasals *p/t* (*pa-pá, ta-tá, etc.*) constituted the earliest indication of phonologization, that is, of a systematic use of a sound effect in order to differentiate meanings. Phonological differentiation was in its beginnings as insecure and unstable as semantic (cf. the vacillations between nasal and non-nasal, as well as those of a series of more or less related meanings: 'mother'-'tit', 'mother'-'woman', etc.). In describing these primitive, pre- and proto-linguistic expressive means, it was quite clear that we were using our best knowledge as a point of reference.

## VI. RELATIONS BETWEEN LINGUISTICS AND THE SOCIAL AND NATURAL SCIENCES

R. Jakobson (1970: 50-73) stated that the question about the origin of languages was excluded by neogrammarians, since languages were considered a physical result of some supposed "phonetic laws", but currently the appearance of languages it had to be confronted with the transformations that marked the transition of pre-human groups to society. When we passed from the anthropological sciences to biology, the different types of human communication were no longer more than a simple piece of a much vaster field of study, which we will call the modes and forms of communication used by multiple living beings. We were faced with a crucial dichotomy: not only languages, but all communication systems used by humans (and implicating the underlying role of languages to all) differed markedly from the communication systems used by animals that were not endowed with the word, because each communication system in man was correlated with language, and in the general network of human communication it was language that occupied the first place.

Verbal signs were clearly distinguished from all types of animal messages by the following several essential properties: a) the power of imagination and creation proper to languages; b) its ability to handle abstractions and fictions, as well as to deal with objects and events far away in space and time, contrary to the *hic et nunc* of the signals emitted by animals, and c) the structural hierarchy of the constituent elements of languages, called "double articulation", that is, the division between properly distinctive (phonological) units and significant (grammatical) units, and also a no less essential subdivision of the grammatical system into words and phrases. The number of different signals emitted by an animal was very limited, so that the totality of the different messages was equivalent to its code.

The move from "zoosemiotics" to the human word was a great qualitative leap, contrary to the old behaviorist belief, according to which there was a difference of degree and not of nature between languages and animal language. However, the continuity of evolution could not be suppressed, and a systematic comparison of languages and the other semiotic structures and activities of man with the ethological data on the means of

communication of all other species will make it possible to delimit these two domains more strictly. as well as delve into the study of their homologies and their no less important differences.

The traditional opposition between languages and animal communication, which was seen as an opposition between cultural and natural phenomena, resulted from a clumsy oversimplification. The *nature-culture* dichotomy posed an extremely complex problem. The further down the scale of organized beings we went, the more nature dominated education, but even the lower animals were capable of learning. The discovery of new cultural behaviors, both of an instrumental or technological or social nature, in chimpanzees and other higher primates, has questioned the entire problem of human cultural uniqueness, and has made it possible to verify the continuum between non-human "paraculture" and human culture (see J. Sabater, 1978).

The acquisition of the language by a child was also subjected to the conjugated action of nature and education, just as its innate character was the necessary basis for acculturation. However, the relationship between the two factors was reversed: in the child it was acquisition that was the determining factor, while in the offspring it was heredity. The child could not begin to speak if he did not have contact with speakers, but as soon as this contact was established (whatever the language of his environment) he acquired it, provided he had not exceeded the age of seven, while any other additional language could be learned during adolescence or maturity. In other words, the learning of the initial communication system (both by men and by animals) was only possible between two chronological limits of maturation. The undeniable fact that the word was a universal and exclusive property of man demanded a deep study of the biological preconditions of languages. The research in question has increasingly studied divergent development which was the opposite of the convergent trend in communication diffusion, and acted as a powerful counterpart to diffusion.

In the course of the last hundred years, a large number of important universal features in the phonological and syntactic structure of languages have been discovered. Among the innumerable languages of the world, it was evident that there was no particular variety, whose structural characteristics went against the innate aptitudes of the child to master them, in the course of progressive learning. Languages have been, as biologists said, "species-specific." In all children there were innate tendencies to learn the oral register of their family environment, and no existing phonological or syntactic rule exceeded the capacities of the infant. The question of knowing to what extent the inherited power to apprehend, adapt and appropriate the oral record of the elders implied the supposed innate character of a universal grammar was utterly futile, and belonged to pure speculation. It was evident that the inherited and acquired structures were closely related to each other, which influenced and completed each other.

Like any plastic social instrument that tended to maintain its dynamic balance, languages have revealed their self-regulation and self-direction properties. The rules of implication that have governed the constitution of the mass of phonological and grammatical universals, and have subtended the typology of languages, have been largely inherent in the internal logic of linguistic structures, and have not necessarily presupposed "genetic instructions" specials. "The adaptive nature of communication," rightly stressed by modern biologists, was manifest in the behavior of higher and lower organisms that adapted to each other in their ecological environment, or inversely adapted that environment to their needs. One of the most impressive examples of the ability to make intense continuous adjustments was that of the child who learned his language by creative imitation, together with his parents and other adults.

The beginner resorted to all the essential expedients to master the language: initial simplification by selecting the elements that were most accessible to him, progressive degree of approximation to the total code, experimentation with metalinguistic glosses, various forms of cooperation between teacher and taught, as well as insistent demands for learning and instruction. Everything absolutely contradicted the naive references to "the absence of any need for language teaching", or to parents who had no means of explaining the language to their children. However, the question of genetic patrimony has been raised from the moment in which the very bases of languages have been addressed.

The spectacular discoveries made fifty years ago in the field of molecular genetics were presented by the researchers themselves in terms borrowed from linguistics and information theory. The extraordinary degree of analogy between the system of genetic information and that of verbal information fully justified the title of the work by G. Beadle and M. Beadle (1966), *The language of life*: the deciphering of the DNA code revealed that we possessed a language much older than hieroglyphs, a language as old as life itself, a language that was the most alive of all. The latest works on the progressive deciphering of DNA showed the quadrilateral language inscribed in the nucleic acid molecules, which taught us that all genetic information was contained in coded molecular messages, that is, in its linear sequences of "code words" (*codons*).

The old notion of gene (integral structure that was compared to the beads of a rosary) was succeeded by that of a sequence of four elements repeated by permutations. Since our letters were merely superficial variants of phonological structure, it was best to directly compare the subunits of the genetic code with the minimally distinctive units (phonemes and intrinsic distinctive features). All the information transmission systems, the genetic code and the verbal code were, therefore, the only ones that were founded on the use of discrete elements

that (in themselves) were devoid of meaning, but that served to constitute the minimum significant units (lexemes and morphemes), that is, entities endowed with a meaning that was their own in the code in question.

The genetic code, the first manifestation of life, and (on the other hand) languages, the universal attribute of humanity, thanks to which it made its capital leap from genetics to civilization, were the two fundamental memories, where information was stored transmitted by ancestors to their descendants: molecular inheritance and verbal heritage, a necessary condition of cultural tradition. Furthermore, if biologists understood that the indispensable diversity of all individual organisms, far from being fortuitous, represented a universal and necessary phenomenon proper to living beings, linguists, for their part, recognized the creative character of languages in the variability limitlessness of individual speech and in the infinite diversity of verbal messages. For linguistics as for biology, stability and variability resided in the same structure, and they implied each other.

Given that heredity itself was essentially a form of communication, and that the universal architecture of the verbal code was certainly a molecular heredity of all *homo sapiens*, it was legitimate to ask whether the isomorphism of these two different codes (the genetic and the verbal) could be explained. by a simple convergence, due to similar needs, or if the foundations of the manifest linguistic structures, superimposed on molecular communication, would not have been modeled directly on the structural principles of this. The molecular hereditary order had no incidence on the various variables of the formal and semantic constitution of each language. However, individual talk had a certain aspect that allowed us to presume the possibility of genetic endowment. In addition to the intentional information that took on multiple forms, our speech carried with it inalienable and unalterable characteristics that had their main origin in the lower part of the vocal apparatus, that which was located between the abdomen-diaphragm region and the pharynx.

Likewise, a link could be established between three universals in exclusively human phenomena: 1) the manufacture of secondary utensils destined to build other primary utensils; 2) the appearance of purely distinctive phonological elements, but used to build meaningful units (morphemes and words), and 3) the incest taboo, decisively interpreted by anthropologists as the condition *sine qua non* of a more general exchange of sexual partners, and therefore an expansion of kinship, as well as the conclusion of economic, cooperative and defensive alliances.

In short, this mechanism served to create a solidarity among men that transcended the family. In fact, these three innovations were all translated by the introduction of pure auxiliaries and secondary utensils, which were used to build the necessary utensils for the foundation of society and its material, verbal and spiritual culture. The idea of secondary utensils rested on a mediate and abstract principle, and their appearance under the three mentioned aspects must have been the most important stage in the passage from "animality" to the purely human spirit. The rudiments of these three fundamentally similar attributes must have been born in the same paleontological period, and the oldest discovered specimens of utensils (such as burins), intended for the manufacture of other tools, allowed us to conjecturally assign a time to the sociocultural origin of the oral record of languages.

In particular, the fact that an articulated language was necessary to formulate the rules of incest (which inaugurated exogamy) made it possible to specify the place of the appearance of languages in the evolutionary chain. The distinctions between the authorized consorts and the individuals with whom the union was prohibited as "incestuous" were governed by a naming system that could not be applied, except by subjects capable of using the languages. Likewise, one could presume the importance of languages for the development and diffusion of tool making.

## VII. EVOLUTION AND ANALYSIS OF GENERATIVE SYNTAX

Within the application of the generative syntax of Spanish, F. d'Introno (2001: 13-28, 375-8) stated that there were several theories about the origin of languages, but they could be summarized in two: 1) that of evolution multiregional (*Homo erectus* left Africa approximately one million years ago, and spread throughout the world, where in each region the species that gave rise to current humans developed), and 2) that of African Eve (after the departure of *Homo erectus*, there was another exit from Africa: that of the current man who spread throughout the world).

In the north of Spain, one of the richest regions in the world in paleontological remains, there was evidence of the presence of *Homo* (*Homo antecessor*) from about 800,000 years (in Atapuerca), of the Neanderthal from about 100,000 years and of modern man, since about 40,000 years. Approximately, for 20,000 years it produced rock art (in the caves of Altamira and Busto Castillo) and artifacts, including musical instruments. The first theory of the genetic evolution of man suggested a gradual development, from *Homo erectus* to modern man. The second hypothesis pointed to a modest evolution before present-day man, and then a change or revolution with the development of a language gene.

Anatomical evidence showed that the human skull increased over time and was distinct from the skull of chimpanzees and pre-*Homo erectus* hominids, in which the occipital part was smaller and the frontal part was larger. Broca's zone did not appear in the skull of chimpanzees. In *Homo sapiens*, the larynx was closest to the



nasal cavity in the first few months, then lowered to where it was in the neck of an adult. This change allowed the enlargement of the oral and laryngeal cavity, and a greater development of the number of sounds.

Archaeological evidence showed that there was a qualitative and quantitative change with *Homo sapiens*, in social and technical development: art, music, religion, and languages. These changes became a part of their genetic inheritance. Biological evidence suggested in studies on mitochondrial DNA that the man descended from an ordinary woman who lived in Africa (the so-called African Eve). Classical genetic studies showed that there were two fundamental groups that diverged quite a bit: African and non-African. The latter was later divided into Southeast Asian (which included Pacific Islanders) and North-Eurasian (which included Caucasians, Northeast Asians, and Amerindians). This classification supported the fact that there were two groups of *homo sapiens*: those that remained in Africa and those that left Africa, with the creation of a non-African group that spread throughout the world, diversifying into the different groups mentioned.

The linguistic evidence seemed to lean towards the hypothesis of an abrupt genetic change, and languages were probably the clearest feature of the cognitive difference of *Homo sapiens*, as a characteristic that differentiated it from other *Homos* (hominids and primates). The empiricist hypothesis that the child was a *blank slate* that learned its language by imitation, generalization and analogy did not make sense, but was the result of some innate linguistic principle.

Languages were part of our genetic code, which allowed it to acquire a language, that is, to develop a vocabulary (lexicon), form sentences with words (syntax), pronounce words and phrases (phonetics and phonology), understand words and sentences (semantics) and recognize and generate sentences that were grammatical, as well as recognize and reject those that were ungrammatical (linguistic principles and conditions). This knowledge, called linguistic competence, was achieved thanks to the innate faculty of languages and the data that stimulated linguistic development, and made it possible to select among the elements, traits, rules, principles and universal conditions those that were typical of the acquired language. This knowledge was accompanied by others, like this, for example, how and when each word or sentence was used, and a series of other phenomena that were not directly deducible from universal grammar, and that we could call exceptions.

From this point of view, the syntax of a language was the set of elements, features, rules, principles and conditions, extracted from universal grammar, which determined how words were combined to form sentences. In the rule and linkage model, N. Chomsky (1982) stated that the new generative syntax made it possible to reformulate the theory from a new perspective, since it was presented as a highly articulated system of a modular nature, in which various subsystems of rules and above all from principles they cooperated to predict the form, structure and interpretation of sentences.

In the minimalist model, N. Chomsky (1995) proposed that a theory on the faculty of languages should obey a principle of economy that would avoid redundancies, derivations, and superfluous derivational steps, or with symbols that would not have an impact on interpretive *interface* systems. However, many researchers have rejected the assumption of innate languages and universal grammar, since a simple working hypothesis had to have a validation, and it was not enough, if there was no statistical confirmation or rejection of the intrinsic relationships between the language, society and culture, as well as acculturation, from a representative and significant sample (see W. Labov, 1972; H. López Morales, 1989; F. Gimeno, 1990; F. Gimeno and M. V. Gimeno, 2003; F. Gimeno (coord), 2021).

### VIII. DEVELOPMENT OF THE STRUCTURES OF THE ORAL CAVITY

The accurate investigations of A. Bermejo *et al.* (2019, 2021) suggested that the chin was one of the anatomical characteristics of the human being that (together with the lack of the brow ridges of the frontal bone) better defined the sapient groups, compared to the chimpanzee groups, due to the appearance of the oral record due to the persistent action of the “ mentalis ” muscle on the mandibular symphysis, in the context of the masticatory and phonatory process. The morphology of the bony structure of the mouth was decisive in the freedom of movement of the tongue and lips. In his first article, 20 skulls of adult individuals and mandibles of sapient humans were compared with 12 skulls and mandibles of chimpanzees, in which 37 mandibular variables were measured. The conclusion was that there were anatomical differences between the jaws of *homo sapiens* and chimpanzees and could be related to the development of the oral record in the former.

Subsequently, A. Bermejo *et al.* (2022) have established a comparative and anatomical description with the fossil remains of the jaws of 8 Neanderthal individuals from the La Sima de Las Palomas site (Torre Pacheco, Murcia), where 7 anthropometric variables have been measured, in order to define their position in the development of the oral record. Its antiquity was between 130,000 and 40,000 years. The structures of the oral cavity of modern humans were conditioned during their development by three factors: 1) bipedalism, which required changes in the relationship between the larynx, pharynx, and oral cavity; 2) oral habits, in which the tongue acted as a mold to form the palate and occupy the palatal space, and 3) genetic habits. Jaw structure has been linked to chewing and swallowing, but speech function could have had many more determinants.

The mean values of the variables measured in the Neanderthal groups were closer to the chimpanzee group than to the sapient groups, who had all their variables with significant differences compared to those of the chimpanzee and Neanderthal groups. From an anatomical point of view, an arrangement of the three groups should be considered, with the chimpanzee and the Sapiens at the extremes, and the Neanderthal between them, although closer to the chimpanzee. The results obtained at the three levels (mandibular lingual mold, chin and mandibular condyle) were surprisingly consistent. Although the tongue and its various tissues were not fossilized, the hard mineralized structures that surrounded it were fossilized, and they gave us exquisite and precise information about their shape.

## IX. CONCLUSIONS

1. The sociocultural origin of languages has not ceased to worry linguists, anthropologists, anatomists, neuroscientists, and paleontologists, since among the characteristics that differentiated society from groups of animals, one of the main ones consisted of their ability to speak. However, the biggest difference between languages and the language of animals was the intrinsic relationships between language, society and culture, since we biologically shared more than 98% of our genes with chimpanzees. The languages served as excellent instruments of expression and communication of the cognitive development in the Sapiens groups, within the prehistoric speech communities. Cognitive control manifested itself in the lateral prefrontal lobe of the brain, although it was connected to other areas. These processes contained many phases and aroused the curiosity of many scientists. The most important contributions were the investigations on the general structure of languages, and the insistence on their most primitive forms and more general manifestations. In addition, it was undeniable that the most primitive structures (phonological and syllabic) were the simplest and served as a basis prior to the most complicated ones. The simple structures were those that the child first acquired, during his learning of the language of the adults.

2. All the languages and cultures of the speech communities were the result of an inherited product, and human evolution was completed before the diaspora from Africa in successive waves. The acquisition of the language by a child before the age of seven was also subjected to the conjugated action of nature and education, as well as its innate character was the necessary basis for social and cultural diffusion and acculturation. The child could not begin to speak if he did not have contact with speakers, but as soon as this contact was established, he acquired it, while any other additional language could be learned during adolescence or maturity. The social and cultural variation of the languages was ancient, and it was found in the subsequent social and cultural diffusion of the languages, with the proliferation of the most superficial variants (phonology and morphology), where all changes took place within their traditions.

3. The first conclusion of the American anthropologist G. P. Murdock was that the purpose of his research was to present data that confirmed the hypothesis of the test: a remarkable convergence in the structure of parental familial terms in all historically unrelated languages. And he wondered if linguists now that the facts had been established could "clarify the theoretical principles that accounted for them." R. Jakobson's response was that he agreed to contribute his article (1962).

The most spectacular results of Murdoch's research were in the distribution of nasal and oral consonants among kinship terms: 55% of the terms designating 'mother' and only 15% of those referring to 'father' belonged to the class nasal (*m*, *n*). Thus, the traditional statements that "the mother was usually named with an *m*- form, and the father with a *p*-, *b*-, *t*-, or *d*- form obtained fundamental statistical corroboration." The terms *mama-papa* were, therefore, children's words, which adjusted to the evolutionary character of children's speech, and neither their penetration into national languages nor their international diffusion invalidated their basic conformity. However, the complete exclusion of forms resembling *mama* and *papa* from Murdock's sample was strictly superfluous, as long as the related languages clearly demonstrated their autochthonous origin.

4. However, B. Malmberg's answer was more specific and adjusted to some empirical principles on the primitive linguistic change, from the enormous extension in the languages of the world of the denominations for 'father' and 'mother', since that the appearance of a simple syllabic structure and with sounds that respectively contained *m* and *p* in so many places responded to a very broad and primitive linguistic level. What's more, the lists showed that the *papá-mamá* types were not reduced to the meanings of 'padre' and 'madre', but were also found again as denominations for a series of concepts, which had in common the fact of referring to the most elementary needs, and to the most primitive vital manifestations of the child and the individual: the mother, food, sleep, natural needs, etc.

For the infant, the concepts 'mother-food-breast' formed a complex of unidentified content to which was linked an expressive labio-nasal sound (created in the very act of suckling) that gradually became a symbol. The root *ma* (*m*) thus became a sign of 'mother' (*ma-má*, *ma-dre*), of 'food' (cf. English *meat*, Swedish *mat*, French *manger*, etc.) and of 'chest' (Latin *mamma*, Spanish *mama*, French *mamelle*, with diminutive suffix).

5. In the Indo-European languages to designate 'father' and 'mother' we found the infant roots *pa*- and *ma*- (which appeared reduplicated in *papá* and *mamá*), on which they were formed, by adding a suffix *-ter*, the

normal words *pater* and *mater*, from the phonological and grammatical point of view. From there came the Latin *pater* and *mater*, which in turn gave, thus, for example, in Italian and Spanish *padre* and *madre*, in French *père* and *mère*, etc. The root designating 'father' appeared in Germanic languages with initial *f* (English *father*, German *Vater*, Swedish *fader*, etc.), since Indo-European *p* passed to *f* in them. This evolution made the word in question lose all trace of its original infantile character. The same happened, in principle, with the evolved vocalism of 'madre' (English *mother*, German *Mutter* and Swedish *moder*), compared to that of the original word.

There was, then, a clear tendency towards the nasal in the group of terms for the designation of 'madre'. If we add to this the large number of formations with a nasal between the concepts of 'food', 'breast' and the like, the association between pre-linguistic expressions with a nasal and this semantic field so central to the young child was clear, and how the first fundamental phonetic distinctions and the first words were created. Similar associations between unidentified expressive sounds and the most primitive needs and functions occurred in human prehistory, just as the first (as yet unarticulated) linguistic symbols of society were of this kind.

6. In this primitive lexical material, it was possible to glimpse, therefore, a first sign of differentiation between words with a nasal and words without a nasal. The nasal opening (with the fallen soft palate and air outlet through the nose) was the only one possible when suckling. And words with a nasal had, more frequently than non-nasals, a reference to 'mother-suck-food'. In all languages there were layers of words that belonged to different primitive expression needs, such as onomatopoeia and duplications, frequently of an infantile type and built on the basis of the most general and fundamental phonological structure models: a nasal or plosive (*m o p*), together with a generally open vowel, that is, the simplest possible syllabic structure repeated an indefinite number of times.

The great extension of this type of words that the world's languages showed did not depend on kinship or vocabulary borrowing, but on the fact that they were simple structures that underlay all linguistic systems, and on the primitive levels of communication human, where the types in question arose, which used exclusively these simple linguistic structures. The coincidences depended only on this and on the imitative character of said type of words, but they were not yet completely arbitrary signs. A young child's *mam-mam-mam* with reference to food (and secondarily to mother) was on the borderline between unstructured expressive sounds and phonologically constructed linguistic sign. In expressive sounds, the first distinctive element was the nasal, and the intermediate opening, in principle, was just a consequence of that.

7. The primitive opposition between the nasal *m-* (*ma-ma-ma*) and the non-nasals *p/t* (*pa-pá, ta-tá*, etc.) constituted, then, the earliest indication of phonologization, that is, of a systematic use of a sound effect in order to differentiate meanings. Our working hypothesis on the reconstruction of the sociocultural origin of the languages that differentiated the society of the groups of animals, based on anthropological, sociological and cultural determinants, was confirmed, and was more in line with an empirical application on primitive linguistic change (pre- and protolinguistic). If in the Lower Paleolithic the *homo habilis* developed the precedent of writing, in the imitation of the shapes of real objects or beings, the *homo sapiens* derived the precedent of the *ma-ma* materialization, in the imitation of the nasal sound produced by the infant suckling.

Phonological differentiation was in its beginnings as uncertain and unstable as semantics, but the first distinctive phonological elements appeared with a simple syllabic structure, although there was not yet a proper syntax. The enormous extension in all languages of *mama* 'mother' and *papa* 'father' responded to that broader and more primitive stage of the Upper Paleolithic (in which consonants were original carriers of meaning), as well as to the most elementary and vital manifestations of the infant Languages appeared when hominid groups learned the use of a sound complex in a specific situation, as a conventional symbol applied to certain identification and recognition.

8. We subscribe to the link proposed by R. Jakobson between three universals in exclusively human phenomena: 1) the manufacture of secondary utensils destined to build other primary utensils; 2) the appearance of purely distinctive phonological elements, but used to build meaningful units (morphemes and words), and 3) the incest taboo, decisively interpreted by anthropologists as the condition *sine qua non* of a more general exchange of sexual partners, and therefore an expansion of kinship, as well as the conclusion of economic, cooperative and defensive alliances.

These three innovations introduced pure auxiliaries and secondary utensils, which were used to build the necessary utensils for the foundation of society and its material, verbal and spiritual culture. The idea of secondary utensils rested on a mediate and abstract principle, and their appearance under the three mentioned aspects must have been the most important stage in the passage from "animality" to the purely human spirit. The rudiments of these three fundamentally similar attributes must have taken birth in the same interstadial period of Würm II-III (between 40,000 and 35,000 BC), and it allowed us to assign a time to the sociocultural origin of the oral record of languages.

9. The oldest of the seven eastern systems of written record was the Sumerian, with evidence from southern Mesopotamia around 3100 BC. In the course of the last hundred years, a large number of important universal features in the phonological and syntactic structure of languages have been discovered. Among the

innumerable languages of the world, it was evident that there was no particular variety, whose structural characteristics went against the innate aptitudes of the child to master them, in the course of progressive learning.

In all children there were innate tendencies to learn the oral register of their family environment, and no existing phonological or syntactic rule exceeded the capacities of the infant. The question of knowing to what extent the inherited power to apprehend, adapt and appropriate the oral record of the elders implied the supposed innate character of linguistic universals was utterly futile, and belonged to pure speculation. It was evident that the inherited and acquired structures were closely related to each other, which influenced and completed each other.

10. The investigations of A. Bermejo *et al.* (2019, 2021) suggested that the chin was one of the morphological characteristics of the human being that (together with the lack of the brow ridges of the frontal bone) better defined the sapient groups, compared to the chimpanzee groups, due to the appearance of the oral record due to the persistent action of the “ mentalis ” muscle on the mandibular symphysis, in the context of the masticatory and phonatory process. In his first article, 20 skulls of adult individuals and mandibles of sapient humans were compared with 12 skulls and mandibles of chimpanzees, in which 37 mandibular variables were measured. The conclusion was that there were anatomical differences between the jaws of homo sapiens and chimpanzees and could be related to the development of the oral record in the former.

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11. Among other social and cultural facts, the greater brain development and improvement of the sapient society determined the formation of the human chin, the only mammal that obtained it and the best difference between these and chimpanzees, from a simple syllabic structure that it contained the labio-nasal sounds *m* and *p*, which must have evolved simultaneously with the cognitive development of the brain. The animal language of chimpanzee groups (as sets of individuals and hereditary roles) was a set of signals used in communications within their corresponding groups, as manifestations of specific behavior. However, through languages, *homo sapiens* was no longer just a biological specimen, but integrated into society, where linguistic exchange determined its position and configuration as a component of a culture. The biggest difference between languages and the language of animals was, therefore, the intrinsic relationships between language, society and culture, since we biologically shared more than 98% of our genes with chimpanzees.

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