

**Mario Alinei**  
**Darwinism, traditional linguistics**  
**and the new Palaeolithic Continuity Theory of Language Evolution**

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As the author has shown in previous work, although linguistics as a science was born in Darwin's century, Darwinism's influence on it was superficial and produced the mystifying, but still current, view that language is a living organism, and language change an organic law. Language is, instead, a social artifact with an interface with nature, which is governed by the law of conservation and changes only exceptionally. Since language is innate - as claimed by Chomsky and now demonstrated by natural sciences - and *Homo* was thus born *loquens*, the evolution of language - and all world languages, including Indo-European (IE) - must be mapped onto the entire course of human cultural evolution, in the new framework provided by the Palaeolithic Continuity Theory (PCT).

Key words: Darwinism, historical linguistics, language evolution, Indo-European, Palaeolithic continuity.

## 1. Introduction

In this paper I try to argue that the epistemological framework of traditional historical linguistics with regards to language evolution has always been and still is based on a misconception of Darwinism, and therefore needs a radical revision. The so called *organic linguistic change*, assumed by traditional linguistics as the governing law of language, itself considered as a biological *organism*, should be replaced by the view that language is a social artifact with an interface with nature, and that the only law of language, as of all other social artifacts, is *conservation*, whereas *change is the exception*, occurring only in certain periods and because of external influences. The conclusions of several sciences concerned with the origins and evolution of language also justify, in my opinion, the formulation of a new, interdisciplinary paradigm for the evolution of language and languages, which I have called the Palaeolithic Continuity Theory (PCT), and which elsewhere I have worked out in detail for the Indo-European (IE), Uralic and Altaic languages of Europe (Alinei 1996-2000). The PCT, insofar as it provides us with a general evolutionary framework for all domains that find an expression in language – from grammatical structure to spiritual and material culture -, can also contribute to the development of the EE.

## 2. The influence of Darwinism and its predecessors on the emerging linguistics of the 19<sup>th</sup>-century

Linguistics as a new scientific discipline was born precisely in Darwin's century: the first comparative grammar of an IE linguistic group, the *Deutsche Grammatik* by Jakob Grimm (1785-1863), came out in 1819. August F. Pott (1802-1887), the founder of etymological research, published his *Etymologische Forschungen* in 1833-1836. The publication of the *Grammatik der romanischen Sprachen* by Friedrich Diez (1794-1876) was begun in 1836 and completed in 1843. Franz Bopp (1791-1867), one of the father founders of comparative-historical linguistics, began the publication of his *Vergleichende Grammatik* in 1833, and completed it in 1852, that is seven years before 1859, when Charles Darwin (1809-1882) published his celebrated synthesis. The *Essai de Paléontologie Linguistique* by Adolphe Pictet (1799-1875), another milestone in historical linguistics and in the study of IE, was published it in 1859-1863. And the school of linguists called Neo-Grammarians (initiated by August Schleicher, 1821-1868), to whom linguistics owe the principle of the so called *organic linguistic change* and the *Lautgesetzen* ('laws of phonetic development'), were all active after Darwin, and thus made large use of Darwinian concepts and terms. In short, the 19<sup>th</sup> century was the period which saw the emergence of all sciences of the historical type, including historical linguistics.

Because of this synchronism, it is important to evaluate to which extent the new linguistic science was influenced by Darwinism and by its immediate precedents, a problem which only recently has begun to attract scholarly attention (e.g. Christy 1983, Nerlich 1990). And although at a first glance this influence seems important and deep, on a closer analysis it proves to be either superficial or based on a total misunderstanding of the epistemological nature of the evolution theory. Let us see the evidence for this claim.

### 2.1. The cultural context of the 19<sup>th</sup> century

First of all, it is necessary to remember that the 19<sup>th</sup> century was *not* dominated, culturally, by the emergence of evolutionary theory, but, on the contrary, by a very conservative, theological view of nature, according to which the Bible was the basic source for knowledge, and thus also for science.

As is known (e.g. Daniel 1962, Pinna 1992), Pre-Darwinian scholarship saw the duration of the earth and of life, as well as the beginning of human history, as set down by the Bible. And the text of the Bible, in its authorized version published in England in 1701, included the

results of Dr. John Lightfoot's and bishop James Ussher's earlier calculations, according to the latter of which the universe was created by God on Sunday the 23<sup>rd</sup> of October 4004 b.C., beginning at sunset of the 22<sup>nd</sup>, Adam and Eve were driven out of Eden in the same year, on November 10, and Noah's ark saved living beings from the Flood on May 5, 1491 b.C. Throughout the 19<sup>th</sup> century, and as late as the Victorian era - that is long after Darwin published his book - this was the current view about the origins of the universe. For the same reason, contemporary scholars reduced the entire human prehistory to the so-called *Four Monarchies* - Persian, Assyrian, Greek and Roman. And in the almost 6000 years between the present and the divine Creation in 4004 B.C., nothing short of a catastrophic, supernatural event could explain the process of geological accumulation and change. The biblical Flood provided an exceptionally effective example of such a catastrophe. In short, before the four monarchies there was only impenetrable fog, and before the year 4000 b.C. was the supernatural.

And it was precisely the strength of this belief that caused, in the 19<sup>th</sup> century, a sharp division between contemporary scholars: on the one hand the majority, called Catastrophists, who interpreted the terrestrial documentation in conformity with the Book of Genesis, saw the Flood as an example of supernatural catastrophes, and the biological past of the earth as a succession of supernatural catastrophes, each followed by new acts of supernatural creation. And on the other a minority of scholars, called Uniformitarianists, who studied the earth and life in terms of natural phenomena and natural laws *operating in the present*, and affirmed the natural character of the evolution, and the uninterrupted continuity of species from their origins to the present, in spite of their transformations.

The conflict began in France, where catastrophism was represented by Georges Cuvier (1769-1832), natural historian, geologist and founder of the palaeontology of the vertebrates, and uniformitarianism, then called transformationism, by Jean Baptiste Lamarck (1744-1829), one of the main precursors of Darwin's evolutionism. In England, the main representatives of uniformitarianism was Sir Charles Lyell (1797-1875), who had a great influence on Darwin, and set out his theory in a classic study of the history of science, the title of which is a programme in itself: *Principles of Geology, being an attempt to explain the former changes of the earth's surface by reference to causes now in operation*, published in three volumes in London from 1830 to 1833.

## *2.2. The reaction of linguistics to the polemic between catastrophism and uniformitarianism*

Within this cultural framework, then, the precise question we must address is the following: How did the new historical linguistics react, first to the polemic between catastrophism and uniformitarianism, and then to Darwin's evolution theory? (Christy 1983, Nerlich 1990)

As I have already indicated, this reaction, on the surface, was very positive: most 19<sup>th</sup>-century linguists adhered to uniformitarianism, in the precise sense that they thought it coincided with the mysterious process of change they had discovered as a seemingly constant feature of language. The American scholar William D. Whitney (1827-1894), one of the most intelligent linguists of the 19th century, was one of the staunchest supporters of Lyell, whom he admired and cited many times and by whom he was profoundly influenced. The French scholar Michel Bréal (1832-1915), the founder of semantics as a linguistic discipline, expressed himself frequently in clearly uniformitarianist terms, although he did not refer to Lyell explicitly. The brilliant but superficial Max Müller (1823-1900) was perhaps the first to formulate the uniformitarianist principle in linguistics. As far as we know, only Heymann Steinthal (1823-1899) continued to favour explicitly catastrophism as an explanation of change.

Despite the appearance, however, this adhesion was superficial, and can be seen as a sort

of compromise between the earlier dogmas of theology and the new scientific views of the evolutionists. For what really happened is this: (a) on the one hand the new linguists retained the pre-Darwinian idea that prehistory was an impenetrable mist – coinciding with the so called *antediluvian* period - and refused to take into consideration anything that had to do with it. (b) On the other, they misinterpreted completely the epistemological nature of the evolution theory, by applying it blindly to language, which they mistakenly assumed to be a biological, natural organism. And the combined effect of these two reactions was such as to put historical linguistics on a wrong track, which eventually led to a dead end, where it still finds itself at this very moment.

Let us see these two points in greater detail.

### 2.3. *Influence of catastrophism on linguistics*

The most evident confirmation that 19<sup>th</sup> century linguistics, despite its superficial adhesion to uniformitarianism and Darwinism, refused to open their study to prehistory, retaining instead the pre-Darwinian idea that prehistory was an impenetrable fog, can be found in the censorious decision, taken in 1868 by the new, prestigious Société Linguistique de Paris, to introduce in its statute an article that prohibited the study of linguistic origins. The statute of the SLP did not admit "*aucune communication concernant [...] l'origine du langage*" (*Mémoires de la Société Linguistique de Paris*, 1868, 1: 111; cf. Nerlich 1990: 39). And the date of 1868 proves that this decision was taken with the awareness of, and in opposition to, the new perspectives opened up by Darwinism.

Another piece of evidence of this refusal of prehistory can be found in the choice of the explanatory model for the origin of the main Euro-Asiatic language families, which were, for obvious reasons, the first to be studied by the new linguists: for all Proto-Languages reconstructed by the new linguists were seen to be of recent formation, emerging in Europe or Asia as late as in the Metal Ages, and submerging a sort of antediluvian, unknown and unknowable population. This is true not only of IE, who were seen – and still are both in the traditional model (Gimbutas 1970; 1973; 1977; 1980) and in Colin Renfrew's (Renfrew 1987) – as warlike superior elites, or as the inventors of farming, who obliterated the preceding populations of the continent; but it was true, until two decennia ago, also of Finno-Ugric people, who were seen as invaders in the Iron Age, coming from an unknown area and replacing unknown people; and of the Altaic people, who are still seen as even more recent, Medieval invaders, coming from nowhere and replacing earlier IE invaders, in the typical merry-go-round that characterizes the traditional ethnogenesis of Eurasia. In short, the languages of modern civilizations could not have anything to do with ancient prehistory.

A third aspect of this prehistoric reductionism, and of its flagrant contradiction with Darwinism, can be found in the already mentioned Linguistic Palaeontology, initiated with the homonym publication by Pictet in 1859-1863. Pictet used the term *paléontologie* to indicate a field of studies which he compared, significantly enough, to the studies "*du naturaliste qui étudie les regnes antédiluviens*". Consequently, it is obvious that he was still sailing in the waters of catastrophism. On the other hand, while the name Palaeontology evoked the *antediluvian* fossils of Palaeolithic, all of Pictet's linguistic analyses date the earliest layers of IE lexicon to the Copper, the Bronze and the Iron Age. Which proves, again, that IE palaeontology could not have anything to do with remote prehistory, but only with Metal Ages artefacts and institutions.

In short, in spite of a cosmetic operation meant to demonstrate a superficial adoption of uniformitarianism, there was a continued adherence to the ideology of pre-Darwinian catastrophism.

### 2.4. *Additional influences of political ideology*

Of course, catastrophism was not the only influence that shaped the pseudo-historical scenario's painted for the origin of civilized languages by the first linguists. Many recent studies on history of archaeology, linguistics and ideology have shown that the foundation of scientific IE research in the 19<sup>th</sup>-century was deeply influenced by the contemporary Arian, Pangermanic and colonialist ideology, as first expounded in Count Joseph-Arthur De Gobineau's, *Essai sur l'inégalité des races humaines* (1853-1855) and Houston Stewart Chamberlain's, *Die Grundlagen des XIX Jahrhunderts* (1899), with their emphasis on the racial superiority of the IE people and their inclination to war and conquest (e.g. Poliakov 1974; Römer 1985; Renfrew 1987; Trigger 1989 etc.).

We must not forget, in this context, that the very word Arian was one the basic terms of the emerging historical linguistics. And it might be useful, as a way of example, to read what the French Pictet writes about the Arian race in the opening lines of his already cited book, the title of which was, significantly, *Les origines des Indo-européennes ou les Aryas primitif. Essai de paléontologie linguistique*:

une race destinée par la Providence [...] à dominer un jour sur le globe entier [...] Privilégiée entre toutes les autres par la beauté du sang, et par les dons de l'intelligence... cette race féconde travaillait [...] à se créer, comme puissant moyen de développement, une langue admirable par sa richesse, sa vigueur, son harmonie et la perfection de ses formes. (Pictet 1859-1863: 7)

This kind of ideology made a radical distinction between the IE people and all the savage populations of the world, which were destined to remain such. The autochthonous populations of prehistoric Europe - wholly similar to the savages of the other continents - could not have had anything to do with historic and modern Europeans, and consequently the prehistory of the IE people belonged to a kind of obscure and impenetrable limbo, a sort of scientific substitute for the dogma of creation.

It is this mixture of residual catastrophism and pre-racist ideology that seems to me to characterize much of the linguistic work of the 19<sup>th</sup> century, and which the later generations of scholars came to accept by sheer inertia.

### 2.5. Misinterpretations of Darwinism by the emerging science of linguistics

But the greatest, and at the same most pernicious, influence that Darwinism exercised on the emerging science of linguistics, and which deserves our closest attention, concerns the basic tenet of the evolution theory, namely the principle of gradual and constant evolution of nature, following specific laws. For this principle was applied mechanically to language, on the basis of a total mystification of the epistemological nature of Darwinism, with the consequent assumption that also language was a living organism.

This is, in my opinion, the fatal mistake that 19<sup>th</sup>-century linguistics made, and which has been inherited by linguistics until now: the *reification* of languages into living organisms, each of which has a birth, a life and a death, and it evolves as all natural organisms, following laws that are similar to laws of nature. Laws that have been called - precisely by 19<sup>th</sup> century linguists - *Lautgesetzen* or *phonetic laws*, and which have been assumed as a given of nature, escaping knowledge, precisely as biological change. This is why the most typical principle of the new historical linguistics was and is the so called *linguistic organic change*, and this is also why most 19<sup>th</sup>-century linguists considered themselves as supporter of the principle of uniformitarianism, since the idea that language evolved following natural laws looked exactly like what the uniformitarianists had discovered about nature.

It is, therefore, apparent that the influence on Darwinism on the emerging linguistic science was characterized by two basic misinterpretations of it: (a) On the one hand, the adhesion to the principle of uniformitarianism by linguists was based on the misconception of language as a living organism, whose so called organic change was consequently placed

outside the scope of knowledge and critical study. (b) On the other, while all other historical sciences, geology, biology, archaeology, palaeontology and anthropology, freed from the concept of catastrophism, transformed the antediluvian period into the very object of their study, thus opening its abysmal depths to observation and research, linguistics still regarded prehistory as a period of absolute darkness, and thus totally irrelevant. (c) As a consequence, the organic change of language, unlike geological and biological change, was situated in a chronological horizon which remained in essence still Biblical and postdiluvian. And in this framework the organic clock by which language change was being measured had also necessarily to be extremely rapid, to make things fit.

In short, the whole scenario of the Proto-IE language still unified landing on Europe in the Copper Age with its blitz-invasion, the fantastic rapidity of its change into the different IE languages, and the simultaneous extermination of the savage pre-IEs, all come out of this context, with the addition of the pre-racist, colonialist ideology prevailing in the 19<sup>th</sup> century.

Traditional linguistics thus continued, without wanting or knowing it, the line of pre-scientific *post-diluvian* studies. The enormous, almost infinite chronological span revealed by scientific research, which demolished the Biblical myth of the creation and gave rise to innumerable achievements in the field of geology, biology, genetics, archaeology and all the sciences studying prehistory, has never been really laid open for historical and comparative linguistics. The traditional catastrophistic view arrested the development of historical linguistics at positions typical of the pre-scientific stage of the 19th century, positions which became as dry branches, incapable of rejuvenation and destined simply to fall off.

### **3. Revisiting traditional views about language and language change**

In the light of this historical reconstruction of the period in which linguistics as a science emerged, it becomes then evident that two are the most important revisions that historical linguistics must undergo: (1) the view that language is an organism, and thus changes according to a sort of natural law; and (2) the view that the horizon of language development must be restricted to recent prehistory. Let us review the new conclusions that have been reached about these two points.

#### *3.1. A new view of language change*

As far as language change is concerned, I will summarise my own views about it, based on relevant literature (Alinei 1996-2000; 2004).

First of all, after one and a half century of intense research on the nature of language, it needs no demonstration that language and languages have nothing to do with natural organisms and natural laws. Language as such, and consequently each historical language has, of course, a fundamental *interface* with nature, but it is not a natural organism. Language is, quite evidently, a social artefact, not different, in essence, from any other social artefact, such as money, games, laws, and even houses, tools, clothes, and the like; and, of course, all social artefacts have a fundamental interface with nature. We will see shortly how relevant its interface with nature is to understand the connection between language and prehistoric cultural evolution, but first let us address the question of the nature of language change.

Language does change, of course, but it does in the same way as other social artefacts change. Language change is not different from the changes we observe in money, laws and other institutions, houses and tools. More specifically, *language changes in two distinct ways: lexically and grammatically*. Neither has anything to do with organic change. Lexical change is culture-dependent, and it occurs without changing its grammar. *It is the only change we always experience during our life*. Grammatical change is history-dependent, in the sense that it occurs only in times of social upheaval (the ultimate causes of which can be multiple: climatic, economic, social, political, as well as technological, cognitive, cultural etc.), *as a*

*form of hybridization, and thus as a psycholinguistic adjustment to a differing linguistic model.*

No individual, in normal conditions (i.e. in conditions of social stability), experiences grammatical change in the course of his life. In normal conditions, on the contrary, each of us experiences that her/his language is the same of her/his grand-parent, and is the same spoken by her/his grandchildren. Each of us experiences, in short, the continuity and the conservation of language through five generations: two before and two after ours. The only *law* inherent to language is *conservation*: a law comparable, to a certain extent, to Newton's law of inertia. But the cause of this impossibility to experience linguistic change in the course of one's life must not be attributed to the *slowness* of grammatical change<sup>1</sup>, but simply to the absence of changing factors in what I have defined as a socially normal context.

In periods of social upheaval - as for example the writer himself experienced in Italy at the end of Fascism, with the beginning of democracy and the resulting formidable social adjustments - grammatical change *can* be observed. In that specific context it took the form of low-class or dialect features, until then refused by the previous norm, suddenly becoming part of the new norm. To understand how this works, of course, one has to recall the nature of stratified societies, and their inevitable sociolinguistic reflexes, as illustrated, for example, by Labov's seminal work (e.g. Labov 1965a; 1965b; 1966).

Contrasting *strong encoded languages* to *oral languages* - as suggested by one of my critics - is then certainly necessary: in the first place because of the intrinsic difference between spoken and written language, and the greater susceptibility to change of the former than of the latter; in the second because of the nature of stratified societies, which brings the standard oral norm in close contact with that of spoken urban and regional substandards. And the example suggested by my critic - the disappearance of *ne* in the French negation *ne... pas* (where *pas* 'step' - from Latin *passum* - was originally an emphatic form of the normal pre-verbal negation) - is indeed fitting, being typical of spoken French, and not of its strong encoded version.

To complete the picture, however, we must introduce yet another distinction, for here we are dealing, in fact, with *two* grammatical changes: (a) the *oral* grammatical change bringing about the disappearance of *ne*, which has probably taken place in the *oil* dialect area, centuries ago (cf. all "*ne...pas*" maps of Gillieron's *Atlas Linguistique de la France* (1902-1908), which provide us with a detailed picture of the situation in 19<sup>th</sup> century France), for reasons which I will explain shortly; and (b) the appearance of the same feature in the *spoken* language of the educated French person, which is certainly a more recent phenomenon, and ultimately depends on the swinging of the social pendulum in French society in the last fifty years.

As to the causes of the first oral change, which underlies the second, what should attract our attention as linguists is its ultimate outcome: for what it actually did was to turn the *Latin* type of a *pre-verbal* negation *non est* into a non-Latin *post-verbal* negation *c'est pas*, comparable to the Germanic standard (*is not, ist nicht, is niet, är inte* etc.), to the Welsh oral norm and to the norm of most French dialects and northern Italian dialects: a geographical distribution which represents a classic case of *compact area*. The change, then, can easily be seen as a form of adjustment (i.e. hybridization) by speakers of a Latin type of language to a non Latin type of language, ultimately under the strong influence of a non-Latin social group. And this irrespectively of whether this social group was an intrusive *élite* acting as a *superstratum* on the original language, or an upcoming autochthonous lower class acting on the *élite* as a *substratum*, or a neighbouring peer-group acting as an *adstratum*. Needless to say, such a change does not contradict, but confirms the thesis of the dependency of major

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<sup>1</sup> As assumed, for example, by an anonymous reader of my article.

grammatical changes on external causes.

As to the *tempo* of grammatical change, as I have tried to argue elsewhere (Alinei 1996-2000), everything points to its rapidity, in fact instantaneity, once the social conditions for it have been met. As instantaneous, for example, as is the adjustment to one's own language that any non-English speaker will make when he speaks English, or to one's own substandard or regional standard that any language speaker will make in pronouncing a *new word*<sup>2</sup>. As we know, both adjustments result in an *accent*, which – incidentally – is one of the typical forms of *potential* linguistic change we can observe at will around us. The processes which do involve a time dimension in grammatical change are only its preparation (the social context), as well as its subsequent diffusion and generalization.

In short, grammatical change should not be seen as altering the continuous and steady line of language conservation, resulting from the above mentioned inertia principle of language stability, but as a dramatic and rapid episode, connected ultimately with a social *earthquake* (the causes of which, as I have said, can be multiple), which results in a greater or smaller measure of psycholinguistic remodelling, and is eventually followed by the resumption of the normal stability pattern. A view of language evolution which seems to me perfectly in line with Gould's *punctuated equilibrium* of biological evolution.

### 3.2. *New scenario's of language continuity*

In the light of this new view of linguistic change, the evolution of language and languages ought to be placed in a direct relationship with the human prehistoric evolution, and studied with the proper interdisciplinary tools (Alinei 1996-2000).

The guiding, theoretical principle in this study (for a detailed illustration of which I refer the reader to my main work (idem) ought to be the so called uniformitarianist or actualist principle: *the present is the key to the past*. As is known, this principle – by which the general laws operating in the past are basically the same that operate now - is considered as the foundation of all natural sciences of the *historical* type, such as geology, biology, palaeontology, anthropology and archaeology. However, while for these sciences, after the rejection of catastrophism, the adoption of this principle opened the door to the study of prehistoric past and marked the beginning of their scientific phase, linguistics – as we have seen - never really rejected catastrophism, and therefore still considers the present as totally irrelevant for the study of the prehistoric past, and prehistory as a totally unknown and unknowable universe. The PCT, on the contrary, starting from rigorously uniformitarian premises and discarding all assumptions of catastrophic events such as gigantic language replacements/extinctions on a continental scale, proposes, as a general working hypothesis, the principle of the strict correspondence between the areal distribution of historically attested languages and the original spread of *Homo loquens*.

Support for this claim is easy to find.

Concerning the languages of the Australian aborigines, for example, it is now accepted without a shade of doubt that they are a continuation of those of the earliest inhabitants of the continent, who populated the island 40,000 years ago.

Also with regards to the indigenous languages of the Americas no one doubts that they represent a continuation of the languages of the earliest immigrants, who came to the New World, most likely through the Bering Strait, at a controversial date, but probably not before 23,000 BC.

In the last thirty years, there has also been an important breakthrough in the history of one European population: this is the so called Uralic Continuity Theory (in Finnish: *uralilainen jatkuvuusteoria*), developed in the Seventies by archaeologists and linguists specialised in the

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<sup>2</sup> As, for example, the many regional variations in the phonetic and phonemic shape of the It. word /televizj'one/, which were realized immediately upon the introduction of the new word.



Uralic area of Europe, that is the area of Finno-Ugric and Samoyed languages. While the origins of Uralic people was previously seen in a very recent, Iron-Age invasion, following the traditional catastrophist model, the now current theory claims an uninterrupted continuity of Uralic populations and languages from Palaeolithic: Uralic people would belong to the heirs of *Homo sapiens sapiens* coming from Africa, they would have occupied mid-eastern Europe in Palaeolithic glacial times, and during the deglaciation of Northern Europe, in Mesolithic, would have followed the retreating icecap, eventually settling in their present territories (Meinander 1973; Nuñez 1987; 1989; 1995; 1997; 1998).

These conclusions, concerning language phyla of both the New and the Old World, point then to the basic continuity of present languages from a Palaeolithic *Homo loquens*, and thus to a much greater chronological depth than traditionally thought for the evolution of language and languages.

We must now see if we are justified in formulating our thesis in more general terms, including IE languages (which have always been considered as the testing ground of competing theories), and if we can find support for it in the conclusions of other sciences and disciplines that deal with language origins and with prehistoric evolution.

#### **4. An interdisciplinary survey of converging conclusions on a pre-human origin of language and a much longer evolution of languages**

In recent times, at least five different sciences and disciplines have addressed, from different vantage points and with different approaches, the problem of the origin and evolution of language and languages, and that of demic and cultural continuity throughout prehistory. These five sciences are: (a) general linguistics, (b) palaeo-anthropology, (c) cognitive science, (d) genetics and (e) archaeology.

Of these five sciences, the first three converge towards the claim that language has a pre-human origin –which implies an evolution of languages going from the birth of the genus *Homo* to modern times – i.e. in the order of millions of years. I have called this scenario the *Long PCT* (Alinei 1996-2000). The last two sciences, instead, have reached conclusions about genetic and/or cultural continuity the implications of which do not go beyond Upper or Middle Palaeolithic. They are, nevertheless, relevant for this discussion. I have called this scenario the *Short PCT*. Although, for reasons that will become clear in what follows, I favor the Long PCT, in my work I have shown that also the time depth provided by the Short PCT is such as to require a total revision of our views on the evolution of language and languages (idem).

We will now review these conclusions and see whether, and to which extent, they support our claim.

##### *4.1. General linguistics*

In general linguistics, the central idea of Noam Chomsky's revolutionary theory on the psychological and formal foundations of language is centered upon the claim that *language is innate*. In evolutionary terms, however, the claim that a human faculty is innate implies that its origin must be placed *earlier than the emerging of Homo*: and no linguist or interested scholar, until recently, would have taken such a hypothesis seriously. On the contrary: under the influence of traditional (and still quite current) assumptions about a (very) recent origin of language and languages, the general tendency was to consider Chomsky's innatism incompatible with an evolutionary, Darwinian point of view: "*Chomsky and some of his fiercest opponents agree on one thing: that uniquely human language instinct seems to be incompatible with the modern Darwinian theory of evolution*" (Pinker 1994: 333; cf. Agrawal and Kusumgar 1996; Gontier this volume).

A major breakthrough, however, independently made by scholars specialized in two

entirely different sciences, is at present forcing general linguistics to reconcile Chomsky's innatism with a Darwinian framework, and thus to address the problem of the evolution of language and languages in an entirely new way. My answer to this challenge is the Long PCT.

#### 4.2. Palaeoanthropology

Among natural sciences, palaeoanthropology has probably contributed the most to the breakthrough I have just mentioned. For the last twenty years of discoveries in the field have brought several scholars, among which one of the world leading specialists, Ph. V. Tobias, to conclude that the question now is no longer whether *Homo habilis* spoke (which is now considered as ascertained), but whether the capacity for language was already optionally present in some *Australopithecus*, to become obligatory in *Homo*, as one of his unique traits. As Tobias himself writes:

Several lines of evidence suggest that the rudiments of speech centers and of speaking were present already before the last common ancestral hominid population spawned *Homo* and the robust australopithecines [...] Both sets of shoots would then have inherited the propensity for spoken language. The function would probably have been *facultative* in *A. robustus* and *A. boisei*, but *obligate* in *Homo* (Tobias 1996: 94, author's emphasis).

This conclusion, in my opinion, represents a firm empirical basis for the Long PCT, i.e. for the claim of a pre-human origin of language and for the consequent necessity to view the evolution of language and languages in a new way.

#### 4.3. Cognitive Sciences

On the basis of independent evidence, a similar conclusion has been reached also in the field of cognitive sciences, by Steven Pinker, in his remarkable book on *language instinct*, inspired by Chomsky's theory of language (Pinker 1994): "*a form of language could first have emerged [...] after the branch leading to humans split off from the one leading to chimpanzees. The result would be languageless chimps and approximately five to seven million years in which language could have gradually evolved*" (Pinker 1994: 345). Needless to say, this longer evolution for the *origin* of language automatically implies a much longer chronology for the *following evolution* of language and languages and thus something similar to the Long PCT.

Recently, Chomsky himself has made an important contribution to the debate on the biological foundations of language innatism by distinguishing between a Faculty of Language in a Broad sense (FLB), shared with higher animals, and an FLN (FL in a Narrow sense), uniquely human (Hauser, Chomsky and Fitch 2002). However we interpret it, this proposal too implies the opening to research of the immense space from the origins of *Homo* to the present day, and thus a conception of language and languages evolution identical, in essence, to the Long PCT.

#### 4.4. Genetics

The school founded and led by Luca Cavalli Sforza has made important discoveries about the relationship between genetics and linguistics, which could also be integrated in the view of a much earlier evolution of languages than traditionally thought, though without reaching *Homo*, but only *Homo sapiens sapiens*, and thus within the limits of the Short PCT. These conclusions are: (a) the areal distribution of different genetic markers largely corresponds to that of the world languages (Menozzi et al. 1978 etc., Cavalli Sforza et al. 1988; 1994); (b) language differentiation must have proceeded step by step with the dispersal of Modern Humans (who, as is known, for most geneticists coincide with *Homo sapiens sapiens*) (idem).

Unfortunately, these conclusions have not been elaborated in any significant way by their

authors, not even within the framework of something similar to the Short PCT. In fact, for the specific problem of the origins of IE languages Cavalli Sforza has first attempted to adjust his data to the traditional model of the warlike invasion theory, claiming that the two data converged, and later fully supported Renfrew's model (Ammerman and Cavalli Sforza 1984), without realizing – apparently – that also the latter model, with its *catastrophic* scenario for both European and Asiatic people, clashes with his own claim of a close correspondence between the areal distribution of genetic markers and that of world linguistic phyla.

Nevertheless, even Cavalli Sforza has recently had to surrender to the latest outcome of genetic research, i.e. that 80% of the genetic stock of Europeans goes back to Palaeolithic (e.g. Sykes 2001: 240 ff). As Bryan Sykes' has recently commented: "*The Neolithic farmers ha[ve] certainly been important; but they ha[ve] only contributed about one fifth of our genes. It [is] the hunters of the Palaeolithic that ha[ve] created the main body of modern European gene pool*" (Sykes 2001: 242).

This conclusion represents, in my opinion, a firm basis for the Short PCT.

#### 4.5. Archaeology

In the last three decades, archaeological research has made quite a few revolutionary advances, among which the most well-known is the much higher chronologies of European prehistory, obtained by radiocarbon and other innovative dating techniques. As far as Europe is concerned, the conclusion that interests us the most are:

- (a) There is absolutely no trace of a gigantic warlike invasion, such as to have caused a linguistic substitution on continental scale, as envisaged by the traditional IE theory.
- (b) All Neolithic cultures of Europe are either a direct continuation of Mesolithic ones, or have been created by Mesolithic groups after their Neolithization by intrusive farmers from the Middle East.
- (c) There is every possible evidence for demic and cultural continuity, from Upper Palaeolithic to the Metal Ages. Continuity is now universally considered the basic pattern of European prehistory. Even James Mallory, probably the last archaeologist who defends the IE invasion theory, has had to concede: "*the archaeologists' easiest pursuit [is] the demonstration of relative continuity and absence of intrusion*" (Mallory 1989: 81).

All of this, again, represents a firm basis for the Short PCT.

### 5. The new synthesis: the PCT

On the basis of these converging conclusions, a general PCT on language origin and evolution, worked out in detail as far as its *Short* version is concerned, and in particular with regards to the origins of the IE people, has been proposed (Alinei 1996-2000; 1998a; 2000a; 2001a; 2002; 2003a; 2003b; fc; for other supporters see below), the main points of which are:

#### 5.1. Antiquity and stability of language and languages

*Homo* was born *loquens*. Language and languages appear with *Homo* himself. This is, in essence, the Long PCT. But even if we assumed – with some scholars – that *Homo sapiens sapiens* started to speak a totally new kind of language, i.e. with a total *tabula rasa* with regard to the now ascertained previous language evolution, we would still have to map the evolution of language and languages onto the chronology of the Short PCT: the record of all world languages ought to be classified following prehistoric and historical periodization categories (Palaeo-, Meso- Neolithic, Metal Ages, historical periods), instead of being compressed into a few millennia, as traditionally done, and as even Renfrew's Neolithic theory would oblige us to do. While traditional linguistics, by reifying language and seeing it as a natural organism, had made *change* into a sort of biological, organic law of language development, the extraordinary tempo of it would fit the short chronologies of the recent

invasion or of the earlier Neolithization, the above illustrated view that *conservation is the law* of language and languages, and *change the exception*, caused by major external factors, makes it possible to fit the new, much longer chronologies of language origins and language development with the major ecological, socio-economic and cultural stages that have shaped each area of the globe (Alinei 1996-2000).

### 5.2. *Antiquity of the grammatical differentiation between languages: the hypothesis of an areal and cognitive correlation between lithic technologies and language types*

On the basis of the theory formulated by Jean Piaget (1952; 1954; 1955) and by his precursor Lev S. Vygotsky (1962 = 1934), according to which *action, and not perception, precedes intelligence*, and on the conclusions on developmental cognitive evolution of such authors as Leroi-Gourhan (1964), Parker and Gibson (1979), Holloway (1981; 1983), Holloway and De La Coste-Lareymondie (1982), Leakey and Lewin (1992), Gibson and Ingold (eds) (1993), Gibson (1996), I have advanced – within the scenario of the Long PCT - the hypothesis that the differentiation between the three main, and geographically differentiated, world types of grammatical structure – i.e. (a) *Isolating*, (b) *Inflecting/ Fusional* and (c) *Agglutinative* - might be correlated to the development of the three major, and geographically differentiated, world types of lithic technology – i.e. (a') *Choppers*, (b') *Bifacials (Handaxes)* and (c') so called *Mode I* (later *Leptolithic*) tools. Arguments for this claim are: (1) the close correspondence between *the well-known, complementary world areal distribution of these three types of lithic tools* (e.g. Schick 1994) *and the less known complementary world areal distribution of the three main types of grammatical structure*; (2) the cognitive and operational parallelism between the three types of lithic tools and the three types of lexical structure (Alinei 1996; 1996-2000; 1997e; Nuñez 2002).

For other grammatical changes possibly connected with major technological developments of *later Palaeolithic I* I refer the reader to my main work (Alinei 1996-2000).

A different kind of grammatical differentiation, compatible also with the Short PCT, can be seen in the *grammatical words shared by the languages of a single language phylum*, such as personal pronouns, WH- words, prepositions and the like: for these surely reflect the awakening and developing of human conscience and reality-structuring capacities of speakers of *already separated and independent language phyla*. As a consequence, considerations of the similarities in the lexicon of the grammatical structure shown by some language phyla (e.g. IE, Uralic, Altaic), as well as of the differences between most of the others, point to an oligogenetic or polygenetic model of language origins. These considerations are for example entirely missing in Ruhlen's monogenetic reconstruction (Ruhlen 1994).

### 5.3. *Antiquity and periodization of the lexicon of natural languages*

An important corollary of this new conception and new chronology of language origins and development is that the emerging and formation of the lexicon of all world language phyla and their groups, including IE, should be *periodized* along the entire course of human evolution (following the Long PCT) or from Middle Palaeolithic on (following the Short PCT), instead of being compressed in the recent prehistory, as typical of the traditional theory as well as Renfrew's. The linguistic illustration of this principle fills many of the 2000 pages of my two volumes (Alinei 1996-2000), as well as many of my articles (Alinei 1991; 1992; 1997a; 1997b; 1997c; 1997d, 1998b; 1998c, 2000b, 2001b; 2001c; 2001d) and represents the first detailed linguistic analysis of the IE record in the light of the new chronologies and scenario imposed by scientific advance. We have already seen – in 4.2 - the example of the grammatical words, certainly belonging to the earliest layer of a language (super)phylum. Here are some more examples of the *lexical periodization* applied to IE, and compatible with both the Long and the Short PCT:

(1) In general terms, the Proto-lexicon, i.e. the lexicon common to all languages of a language phylum, as for example IE, forms by definition its earliest layer. As such it ought to be placed in the depth of Palaeolithic.

(2) If IE words for ‘dying’ (coming from Proto-IE *\*-mer*) belong to the Proto-IE lexicon, while for ‘burying’ there are different words in most IE languages, this must be seen as evidence that by the time ritual burying began, in Upper Palaeolithic, IE groups (Celtic, Germanic, Italic, Slavic, Greek etc.) were already differentiated. Similarly, if the name of several wild animals, among which that of the bear (Proto-IE *\*rk̑o-s*), belong to the Proto-IE lexicon, this means that these animals belonged to the cognitive and cultural world of IE pre-religious Palaeolithic hunters. Conversely, the so called *noa* names of the bear (i.e. replacing the tabooed real one) in the Celtic, Germanic, Baltic and Slavic languages, all different from one another, can only indicate that by the time religious concern for hunted animals connected with totemism emerged in Upper Palaeolithic (along with the earliest attestations of bear cult), IE languages were already differentiated (Alinei 1996-2000; 2002; 2003b).

(3) Also words for typical Mesolithic inventions, such bow, tar, fishing tools, carpentry and many others, are different in each IE group, proving that by Mesolithic time IE languages were already differentiated (ibidem).

(4) The sharp, and now at last admitted even by traditionalists (Villar 1996), differentiation of Neolithic farming terminology in the different IE languages, while absolutely unexplainable in the context of Renfrew’s theory, provides yet another fundamental proof that the differentiation of IE languages goes back to remote prehistory.

#### 5.4. Archaeological frontiers coincide with linguistic frontiers

The existence and the stability or mobility of frontiers between prehistoric cultures, in the different periods of prehistory, has been ascertained by archaeology, and is clearly illustrated by archaeological chrono-stratigraphical charts (initiated, as is known, by Gordon Childe (Childe 1925-1957; Burkitt-Childe 1932). These charts can be of significant help to historical linguists because:

(a) Depending on their chronological depth, importance and stability, the cultural frontiers shown by them can be seen as corresponding to linguistic-family frontiers, to linguistic-group frontiers, or to dialect frontiers.

(b) The various geographical sub-areas indicated by the columns of an archaeological chart are not chosen subjectively, but their delimitation is self-generated, i.e. governed by the very specific and exclusive sequence of cultural development, which shapes –as it were– each sub-area, identifying and distinguishing it from the others.

(c) Each cultural sequence, corresponding to a given geographical sub-area, has thus a very distinct and strong cultural *identity*, which could easily be connected, depending on the period and the area involved, with a language family, a language group, or a dialect group. In southern Europe, for example, the Neolithic Cardial Ware can be seen as corresponding to an already differentiated Italic group, and each of its later sub-areas can be interpreted as representing a kind of *dialect* differentiation from the same common *language*. The same can be said for the LBK in Germany, and for similar large cultural units in other areas.

(d) As far as Europe is concerned, the picture revealed by these charts, already evident as soon as the archaeological record permits adequate geographical mapping of cultures (i.e. in the late Palaeolithic and Mesolithic), is one of the formation of large *ethnolinguistic and cultural orbits*. This picture continues also in the early Neolithic, until, beginning in the course of Neolithic, and steadily increasing in the Metal Ages, a fragmentation of each original *orbit* takes place. Some periods of frontier shifting and transitional discontinuity, which are caused by the transitory expansion of elite groups in the late Metal Ages, usually come to an end in subsequent developments, with the reappearing of the previous frontiers.

All of this seems to correspond quite closely with what we should expect if one or more populations speaking one and the same language –such as the Proto-IE or the Proto-Uralic people- had first spread to Europe from Africa, and then had broken up into different groups (*cultural orbits*), as a result of their exposure first to different ecological niches, different social networks and different neighbors, then to waves of intrusive immigrants introducing agriculture and stock-raising in Neolithic, and later, in the Metal Ages, when stratified societies develop, to waves of invading elites of akin or distant groups, speaking cognate or foreign languages.

As examples (for a detailed illustration see Alinei 1996-2000, 2001b, 2002, 2003b, fc.a,b) I will briefly mention here:

(1) the linguistic-phylum frontier between Uralic and IE in the Baltic area coincides with the extremely stable Latvian archaeological frontier separating, from Mesolithic to Chalcolithic, the Kunda, Narva, Pit-and-Comb Ware cultures of the Uralic-speaking area in the North, from the Nemunas 1, Nemunas 2, Globular Amphora, Corded Ware/Boat Axes and Bay Coast cultures of the IE, Baltic-speaking area in the South.

(2) The language frontier between French and German in Alsace coincides with the stable archaeological frontier separating the Neolithic and Chalcolithic cultures of Chassey, Michelsberg, SOM, Vienne-Charente, etc. of the Celtic (now French-speaking) area, from those of the LBK, SBK, Hinkelstein, Grossgartach, Rössen cultures etc., of the now German-speaking area.

(3) The complex of language and dialect frontiers in the Western Alps, respectively between German and Neo-Latin in Switzerland, between Franco-Provençal and *oïl* in Switzerland, between Franco-Provençal and Occitan in France and Italy, and Gallo-Italic in Italy, coincide with the archaeological frontiers separating, in the different Alpine areas, the Cardial/Impresso-derived cultures of the Italic-speaking area from the LBK-derived cultures in Germanic Switzerland. More precisely: on the one hand Cortaillod corresponds closely to the Franco-Provençal dialects, Chassey to Occitan, Lagozza to Gallo-Italic dialects; on the other Pfyn and Rössen corresponds with the Alemannic, Swiss-German dialect area. Moreover, on the Ligurian coast and the Piedmont Alps, the frontier between Occitan and Gallo-Italic dialects corresponds to the prehistoric frontier between Chassey and the VBQ culture of the Po Valley.

(IV) On the steppes of Eastern Europe, a conspicuous and well-known Neolithic-Chalcolithic frontier separates the farming cultures of Bug-Dnestr, Tripolye AI, Tripolye AII, Gorodsk-Usatovo, Corded Ware and Globular Amphora in Ukraine, from the pastoral, horse-raising and horse-riding cultures of Sursk-Dnepr, Dnepr-Donec, Serebny Stog/Chvalynsk, Yamnaya (*kurgan!*) and Catacombs, in the Pontic steppes: this is the frontier that moved Marija Gimbutas to envisage the epochal clash between the peaceful autochthonous non-IE farmers of her *Old Europe*, and the warlike intrusive IE who submerged them. In the light of the PCT and of the available linguistic evidence, instead, this frontier corresponds to an earlier linguistic phylum frontier between an already separated and flourishing eastern Slavic population of farmers to the West, and warlike Turkic pastoral nomadic groups to the East, which would be responsible, among other things, of the two innovations of horse raising and horse-riding.

Linguistically, the new interpretation has the advantage of explaining (a) the antiquity and the quantity of Turkic loanwords *precisely for horse terminology* in both branches of Samoyed, in the Ugric languages, as well as in Slavic languages, and (b), more generally, the quantity of Turkic agro-pastoral terms in South-Eastern European languages, including Hungarian, which would have been brought into its present area precisely by the Turkic *kurgan* culture (Alinei 2003a).

### 5.5. *The main lines of the PCT historical reconstruction for IE*

As far as Europe and IE are concerned, the fundamental lines of the PCT historical reconstruction are:

(1) The *arrival* of IE people in Europe and Asia must be seen as one of the major episodes of the arrival of *Homo (sapiens sapiens?)* in Europe and Asia from Africa, and not as an event of recent prehistory.

(2) The differentiation process of IE languages from the Proto-IE common language, reconstructed by comparative linguistics, as well as that of their already separated branches (Proto-Celtic, Proto-Germanic, Proto-Italic, Proto-Balto-Slavic, Proto-Greek etc.) into their presently *substandard, dialect* varieties, must have taken an extremely long time, and they must have been associated first with the varying episodes of the original migration from Africa, and then – with an increasingly faster tempo as social stratification and colonial wars began - with the varying cultural, social and political stages the new fragmented groups went through in the different settlement areas.

For example:

(a) The *mysterious arrival* of the Celts in Western Europe, obligatory in the traditional theory as well as in Renfrew's – is replaced by the scenario of an early differentiation of Celts, as the westernmost IE group in Europe. Western Europe must of course have always been Celtic, and the recent prehistory of Western Europe - from the Megalithic culture through the Beaker Bell to the colonialist La Tène – must have all been Celtic. Consequently, the duration of the colonial expansion of the Celts was much longer than thought, and its direction was from West to East and not vice versa.

(b) The extremely successful (and sedentary) Mesolithic fishing cultures of Northern Europe must be attributed to already differentiated Celtic, Germanic and Baltic people, besides to Uralic people.

(c) The continental Germanic area must have extended, before the deglaciation, from the Alps to the icecap, including what are now the Frisian islands and part of the British islands. After the deglaciation, in Mesolithic, it expanded to Scandinavia (where its earlier, Mesolithic stage is still best preserved), and its first Neolithic appearance was the LBK. While the conspicuous fragmentation of the LBK, caused by the complexity of the recent prehistory of the area, is reflected by the rich dialect picture of Germany and of the contiguous Germanic-speaking countries, the much simpler prehistory, and the completely different geographic context of Scandinavia, made it possible for much of the language original characters to be preserved.

(d) What is now called the Romance area - closely corresponding to the area of the Epigravettian Palaeolithic culture, of Mesolithic cultures such as Castelnovian and Sauveterrian, and of the Impresso/Cardial culture of Neolithic - instead of representing solely the remnant of Roman imperialism, must now be seen as mainly an original Italic (or Italic, or Ibero-Dalmatic) linguistic area, in which several proto-languages akin to Latin, besides Latin and the other Italic languages, were spoken (besides Alinei 1996-2000, see also 1991, 1997cd, 1998b, 1998c, 2000b, 2001b, 2001c), and for the speakers of which the Latin of Rome must have been an (easy to learn) superstrate. Rumanian appears to be an intrusive language, introduced in Neolithic times into the Slavic area by Impresso/Cardial farmers coming from Dalmatia (Hamangia culture).

(e) The totally absurd thesis of the so called *late arrival* of the Slavs in Europe must be replaced by the scenario of Slavic continuity from Palaeolithic, and the demographic growth and geographic expansion of the Slavs can be explained, much more realistically, by the extraordinary success, continuity and stability of the Neolithic cultures of South-Eastern Europe (the only ones in Europe that caused the formation of *tells*) (Alinei 1996-2000, fc.b).

### 5.6. *A short history of the PCT*

In the Nineties, three archaeologists and three linguists, all independently from one another, presented a new theory of IE origins, which is similar to the Uralic continuity, in that it claims uninterrupted continuity from Palaeolithic also for IE people and languages. The three archaeologists and prehistorians are the American Homer L. Thomas (Thomas 1991), the Belgian Marcel Otte (Otte 1994; 1995), one of the world major specialists on Middle and Upper Palaeolithic, and the German Alexander Häusler, a specialist in the prehistory of Central Europe (Häusler 1998; 2003). The linguists are, besides the writer (Alinei 1996, 2000), Gabriele Costa (Costa 1998; 2000; 2001; 2002; 2003), and Cicero Poghirc (Poghirc 1992). Two more linguists are now working on the same line (Ballester 1999; 2000; 2001, *fc.*, Cavazza 2001), and more have expressed their general assent (Benozzo 2002; Contini 2000; Le Du 2003; Simoni Aurembou 2002). The PCT can also list illustrious predecessors among IE specialists, such as the German H. Kühn (1934), the Bulgarian Vladimir I. Georgiev (1966) and the Italian Marcello Durante (1977). Recently, an international group of scholars have opened a website ([www.continuitas.com](http://www.continuitas.com)) devoted to the PCT.

## 6. Conclusion

It should be clear by now that though the PCT has been worked out in detail only for IE, Uralic and Altaic languages, it aims at becoming the *general paradigm for the origin and the evolution of all of the world language phyla, and thus for language as such*. If then the PCT can be regarded as successful, not only in its results but also in its methods of seeking evidence in archaeology, (palaeo)anthropology, historical sciences, genetics and cognitive sciences; if, in other words, the PCT can function as a general framework applicable to all domains that find a direct or indirect expression in language, then it ought to contribute also to the development of a more general and philosophical theory such as the EE, which Nathalie Gontier has defined as “*a general framework based upon evolutionary thinking that is applicable to all domains and products of this evolution*” (Gontier this volume). Two of the conclusions illustrated in this paper seem to me to encourage this optimism: the conceptual parallelism between the PCT and Gold’s general *punctuated equilibrium* theory; and the prospect of a cognitive and operational parallelism between the formation of the human basic grammatical structures and the production of the earliest human lithic tools.

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