

LANDMARKS ALONG THE PATH OF LANGUAGE EVOLUTION

Albert F. H. Naccache

Beirut, Lebanon.

anaccash@nidal.com

* *

This paper reports impressionistic first sightings of two landmarks in the evolution of the human linguistic communication system, as glimpsed at through a still-in-development sociocognitive interpretative grid applied to the Late Upper Paleolithic and Neolithic data base from the Northern Mashriq (Levant and Mesopotamia, or Fertile Crescent). More than the exploration of new territory, the aim of this exercise is to probe the prospects and heuristic value of looking at the whole history of human language as that of an ongoing evolutionary process synchronized with general human social and cultural evolution.

It is not arrogance that led me to write ‘new territory,’ but the neglect of the Late Upper Paleolithic and Neolithic time periods in the fields of language studies.

The dominant view about “one of the all-time favourite enigmas of science: the origins of language” (Gómez, 1998, 76) is the “discontinuity view,” which implies a sudden evolutionary leap between animal communication and human language. In this view, human language is the proprietary mark of *Homo sapiens sapiens*, and its evolution was completed with the appearance of our species. As a result the last 40,000 years are seen not to make much inroads on evolutionary time, but, as far as language is concerned, to fall within the province of ‘language change.’ On the other hand, the maximum useful range of comparative Historical Linguistics reconstructions is usually considered not to exceed 10,000 years in theory (Aitchison, 1996), and is quite a bit less in practice—4,000 B.C. for Proto-Indo-European and Proto-Semitic.

If abided by, these strictures would leave nearly the whole Upper Paleolithic/Neolithic horizon outside of the range of linguistic studies (Dixon, 1997). But how fundamental are these strictures to Historical Linguistics and Language Evolution?

Historical Linguistics has traditionally tried to reconstruct the phonology and to a lesser degree the morphology of dead human languages while assuming that those would have been fully formed exemplars of “language as we know it,” isomorphs of those we share with the Macedonian swineherd and the head-hunting savage of Assam (Hodge, 1991; Trask, 1996). The formalization of Linguistics during the 20th century has moved Historical Linguistics from center to periphery of language studies, and the field is now threatened to bog down in “a kind of latter-day scholasticism” if it does not face to the challenge of extending the reach of its “reconstruction” method and does not engage in “bold and invigorating new directions of research” (Ehret, 1999, 93). This is already happening, and the idea is entertained that the changes human language went through during the last 12 to 20,000 years are evolutionary changes (Renfrew et al., 1995; Renfrew and Nettle, 1999; Renfrew, McMahon & Trask, 2000). We are therefore invited to take advantage of the conjunction of the wealth of the North Mashriqian archaeological data base and of the world’s longest and best attested “language family,” the Mashriqian (Semitic) group of linguistic instances.

The reasons for excluding from the ambit of Language Evolution the relatively recent past are not theoretical, but arose with the practice of the field. Language Origins studies were long banned from scientific discourse for lack of relevant data and theories. And it happened that, some 40 years ago, when these started to become available and the field was

reborn as Language Evolution, it is Formal Linguistics that initially attracted the revitalized field, and not Sociolinguistics—maybe because of the pioneering role Chomskyan Linguistics played in the Cognitive Sciences. Now Formal/Chomskyan Linguistics, with its “all-or-none” UG and LAD, is congruent with—even calls for—models of a sudden origin for human language, such as would hypothetically result from a phylogenetically-late, punctual, “selectively advantageous genetic mutation” (Klein, 2000, 18).

The alternative, that “language developed to its modern form very gradually—adding a few hundred words and a few new bits of grammar every few millennia—going from rudimentary to primitive to post-primitive to pre-modern to modern” (Dixon, 1996, 4), has not received much attention, and is treated by some of its most convincing proponents as so evident as not to be worth more than stating (Lamb, 1998, 285-291). Even the most sustained effort to correlate language evolution with a sociocultural context uses a rather flat historical perspective (Givón, 1979).

Such a situation was understandable till recent times, given that the parent field of Human Evolution was solidly behind the “Sudden and Recent Human Origins” paradigm (Brace, 1995), which assumes that language’s evolution was essentially completed in one step with the appearance of *Homo sapiens sapiens*. But archaeological finds have now dealt this paradigm a death-blow (McBrearty and Brooks, 2000; Balter, 2002; Henshilwood, 2002; Boëda, forth.), and we have improved perspectives from which to re-examine the question.

* *

Ong wondered “what does it mean to grow up in a language which has only five thousand speakers or less, and has never had more so far as we know?” (1977, 40). To prepare ourselves to explore this question we need to relativize our immersion in a language we share with nearly a billion native and non-native speakers and/or writers, and whose lexicon of more than a million words we process both orally and visually and now store in the ether. Many of our fundamental assumptions about the way the world works, such as those involving the concepts of origins, essences, permanence and purposefulness, are simply artifacts of language that “make it difficult to discuss evolution in an accurate way” (Blinkhorn, 2001), and not only in Physics or Biology, but especially when using language to reflect upon the evolution of language itself (Brace, 2000, 323).

Chuang Tzu already intuited that language is not a “thing-in-itself” but the result of a social practice when he wrote that “a thing is called by its name through the constant application of the name” (Book II, 4). But we had to wait twenty five centuries for a theoretical statement of that position. This happened in 1916, when Meillet criticized the strictures Saussure imposed on the study of language, “strictures that, by separating linguistic change from the *external conditions on which it depends*, deprived language from reality, reducing it to a necessarily inexplicable abstraction” (Meillet, cited in Brixhe, 1997, 26 -my translation and emphasis). It then took fifty years of accumulating data to allow the development of sociolinguistics as a practical discipline, and another half century of further accumulation to render realistic the extension of this approach to the whole time-frame of human language evolution.

One of the developments making this possible is that Cognitive Sciences, the interdisciplinary enterprise devoted to understanding the mind, is finally dealing with a long-ignored insight (Marx’s 1848 “Theses on Feuerbach”). As a result, it is moving away from many decades of reliance on purely internal computational terms (Neuman and Bekerman, 1999), to an acknowledgment of the mind as both embodied and culturally embedded (Chiel and Beer, 1997; Clark and Chalmers, 1998; Tomasello, 1999). This movement damps Cognitive Sciences’ resonant harmony with the analytical apparatus of Formal Linguistics,

diminishing the appeal of this last and thus widening the possibility of looking at human cognition, including language, as historical and evolving phenomena.

Another facilitating development is taking place across the “Darwinian Chasm” (Trigger, 1998) with the surfacing of an alternative to the stifling polarization of the students of Human Culture between “Darwinian Rejectionists” and “Darwinian Reductionists,” or between the many in the Biological and Social Sciences for whom it is a totally futile pastime to try to explain—supposedly—uniquely human attributes like culture using Darwinism, and those who see formal isomorphisms between Culture and Biology, and apply biological models to the evolution of human behavior, societies, cultures and language (on the last, see: Nowak and Krakauer, 1999; Nowak, Plotkin and Jansen, 2000; Nowak and Komarova, 2001). For the budding alternative the bio-socio-cultural mechanisms responsible for specific human behavior, including language, are naturally and progressively emerging from the overall processes of biological evolution (for general overviews: Jablonka, Lamb and Avital, 1998; Salthe, van de Vijver and Delpos, 1998; Carroll, 2000; for human cognitive evolution: Donald, 1991; Brace, 1995; Smith and Szathmáry, 1995; Renfrew and Scarre, 1998; for the specific emergence of language: Givón, 1979; Hattiangadi, 1987; Lamb, 1998; Tomasello, 1998).

* *

The still-in-development framework presented here will hopefully contribute to this alternative. It is referred to as *sociocognitive* because it attempts to weave together answers to both Gamble’s call for looking at the whole of human prehistory through a unified social interpretative grid, since “social life was the heart that kept the varied systems beating, whether or not change occurred” (Gamble, 1999), as well as Tomasello’s hint to the advantages to be gained by considering human cognition in the wider historical time frame, because of this later “distinctive forms of cultural inheritance involving material and symbolic artifacts that accumulate modifications over time” (Tomasello, 1999, 202).

A first paper identified eight nested and successively emerging “Modes of Evolution” (MoE), gradual elaborations of the Basic “random variations under environmental sanction” neo-Darwinian Mode, each characterized by a significant addition to the reproductive processes controlling the life cycles of organisms with progressively more extended phenotypes, from bacteria to human societies (Naccache 1999), while barely pointing at the subtending mechanisms. A companion paper traced in somehow more details the *successive* individual contributions to the emergence of the biocultural potential enabling the advanced human communication systems, first of the “Socio-cultural” MoE, which governs the “nurturing” life cycles of whales, elephants and great apes, then of the “Extra-somatically-Enhanced Socio-cultural,” which arose with the *Hominids*, and finally of the “Tinkering” MoE, specific to *Homo* (Naccache, nd).

When we get to the Late Upper Paleolithic in the Northern Mashriq, up to 12,500 generations (250,000 years) had elapsed since *Homo sapiens* had acquired the bio-morphological potential for its highly sophisticated communication systems, one of whose expression we call Language, and since prehistoric human societies had been *jointly* governed by the three above-mentioned MoE. At that point in time, the rate of cultural accumulation, though still in the initial flat part of its presumably sigmoid growth curve, had quickened and we can hope to catch one by one, as they emerge, the social structures and cultural practices indicative of specific stages in the progressive construction of human cognition, including language. This is arguably an easier task than the reverse one of attempting to unravel the social construction of the human cognitive structures starting from the much more complex modern situation (Bourdieu, 1970).

In the following lines we will flesh out the definition and illustrate the progressive elaboration of the mechanisms of the three above-mentioned MoE's. The cognitively-relevant socio-cultural patterns thus revealed should allow us glimpses at two landmarks in language evolution. A companion paper will use the same data base and time period as the present one to further explore the conditions making possible the ratcheting mechanisms of cultural accumulation (Naccache, forth.).

* *

The mechanisms of life cycles' reproduction are not general laws, but taxonomic generalizations made in order to help in classifying the available data into meaningful patterns. They do not act in a vacuum, according to some pre-ordained stage in evolution, but are the expression of specific organization of specific, demographically well-circumscribed and historically defined populations. We refer to such self-sustaining, independent grouping of people as "World-System," for its implied bounded-ness, even though the concept is currently defined at a much higher level (Chase-Dunn and Hall, 1997, 27-40), and even though "Habitus," with its emphasis on independent systems of socially acquired dispositions (Bourdieu, 1970), or "Culture," in the archaeological usage of the term, could do equally well. We do this for the easy association of World-System with World-View, the overall cognitive potential of such a group of humans.

Narratives, whose earliest illustrations appears in the present data base, were developed to tell stories, and are poor tools for describing complex systems such as World-Systems or World-Views, even the relatively small-scaled ones prevailing in prehistorical times. For technical reasons we cannot use the alternative for representing the socio-demographic aspects of World-Systems, maps arranged in a chronological historical Atlas as shown in the poster version of this paper presented at the Harvard conference, but will intimate them through narration. Thankfully, in the case of the Pre-Classical Historical, Chalcolithic, Neolithic and Upper Paleolithic of the Northern Mashriq, constructing the maps would simply be a matter of compiling results provided by the archaeologists' diligence (Henry, 1992; Aurenche and Kozlowski, 1999; Rothman, 2001; Stein, 2000 etc.).

If we were to do that, we would see, superimposed on the slowly changing environmental morphology of the Northern Mashriq, with its clearly delineated four major vegetation zones (Miller, 1998), enduring adapted human modes of production and of land occupation supporting a long-term geo-cultural social morphology (Aurenche et Kozlowski, 1999). The relatively detailed, coherent and near continuous picture of human presence in the Northern Mashriq would allow such maps to track the rise in population density, social differentiation, interaction and complexity from low density hunter-gatherer populations of the Early Upper Paleolithic, through the "First Age of Abundance," the first permanent settlements, the first agricultural villages, the first pastoralists, the first cities, the first empires and down to the "classical" period, when the once independent Northern Mashriqian World-System had become a small province of a World-System extending from the Indus Valley to the Atlantic shores.

One incidental advantage of such maps would be their potential usefulness as a background to a traditional Historical Linguistics approach to the prehistory of the Mashriqian (Semitic) linguistic instances. The maps for the historical period would show the congruence between the social morphology and the sociolinguistic picture as we know it at present (Garbini and Durand, 1994), making it easy to construct a sociolinguistic Atlas for the Northern Mashriq 3,000-300 B.C. The maps for the prehistoric period would show that the geo-cultural morphology was conserved at least until the PPNB Neolithic, which, together with the known conservatism of the Mashriqian instances as attested over five millennia of

history, would provide a solid socio-historical base for assigning to ancestral social groups ancestral forms of the linguistic instances attested among their descendants. For example, it would be a relatively safe bet to postulate that, given the social, cultural and geographical continuity between the pastoralists in Badiyat esh-Sham (the Syrian steppe) from 7,000 B.C. down to the historical periods, the speech of the early steppe populations must have been an antecedent form of that attested during the first half of history, which is now referred to as Amorritic. Furthermore, armed with the various epigraphical attestations of Amorritic “proper” during the IInd M.B.C., of its descendants during the Ist M.B.C., and its predecessors of the IIIrd M.B.C., we would be uniquely placed to constructively engage in a traditional Historical Linguistics comparative reconstruction of the speech forms of those early pastoralists, whose grammatical code could be envisioned as being on the basic Mashriqian model, however much on the messy side of the continuum of increasing elaboration and streamlining displayed by the historical process. However, this approach assumes continuity, and therefore stumbles against the deep discontinuities that accompanied the transition from mobile hunters-gatherers to settled populations, that is, it could not, on theoretical grounds, be pushed farther back than the appearance of pastoralists.

To get back to our present inquiry, such socio-geographical maps would succinctly carry the needed information about the specific human population context that sustained the World-View we would like to explore. So, after asking the readers to keep this implied context in the back of their mind’s-eye view, we undertake the even more impressionistic task of describing the World-View it supported, and this through a definition and description of its constitutive element, the Tinkering Mode of Evolution, nested in the Extra-somatically Enhanced Socio-cultural MoE, itself nested in the Socio-cultural MoE.

On its own, prior to the emergence of its two nested modes, the Socio-cultural MoE describes the mechanisms governing the reproduction of the nurturing behavior of a few species of long-lived social mammals among the whales, elephants and great apes. It emerged when the social behavior and life-history of a species made possible an extension to the parent-offspring life cycle setup consisting in a multi-generational “Social Memory” shared by a group. The content of Social Memory, though still embodied in individual phenotypes and depending on their direct interactions for its transmission, became sustained by a social group as a whole, and not by an individual phenotype alone. The Social Memory of a group could therefore outlive each of its individual carriers, preserving through the generations the group communicative social rituals, and insuring the perpetuation of the group-specific epigenetic process that nurtures the continuously interpreting minds of infants and then juveniles into adults socialized in the specific ways of their group.

Social Memory encompasses at least three kinds of group-specific social communication: kinesthetic, musical and linguistic. We are concerned here only with the intra-group linguistic component. The ‘intra-group’ mention is necessary, because not only is our ‘inter-species’ communication system still largely identical to that of the chimpanzees or bonobos, but we revert to even older components of the primate communication system in initial ‘intra-species’ contacts between members of different linguistic groups. We see the linguistic component through the lenses of the mutually compatible and complementary Functional approaches of “cognitive neuro-linguistics” (Givón, 1998), “neurocognitive linguistics” (Lamb, 1998), “Emergent Grammar” (Hopper, 1998) and “systemic functional linguistics” (Halliday and Matthiesen, 1999, specially 602-618). For these approaches “*there is no such unit as language*” (Lamb, 1998, 41), and even the grammatical code is seen as a “set of sedimented conventions” (Hopper, 1998, 164). Here we will follow Givón’s classification (1998) and consider that the linguistic component of Social Memory contains

the following relatively independent interconnected components: 1) the Cognitive Representation System, made up of the Conceptual Lexicon, Propositional Information, and Multipropositional Discourse, and 2) the Communicative Code System, made up of the Peripheral Sensory-motor Codes and the Grammatical Code.

Even though the linguistic components of Social Memory leave no direct archaeological traces (the anatomical basis of the peripheral sensory-motor codes had long been established), they had been shaped by the nested mechanisms of the Extra-somatically Enhanced Sociocultural and the Tinkering MoE, both of which depends on artifacts that archaeology can and does recover. Therefore we will be groping at the state of elaboration of human language during prehistory through its shaping mechanisms.

The Extra-somatically Enhanced Sociocultural MoE appears archaeologically 2.5 Million years ago with the first lithic cultures, which gave the Hominid phenotype a power-enhancing and durable “Extra-somatic Extension” that could be shared across generations. The incorporation of this extension to the life-cycle setup greatly increased the Hominids’ potential ability to interact with their environment, while favoring and requiring augmented and intensified parental behavioral interventions in the organic and behavioral growth of the offspring. With time, the greatly diversified and refined lithic industries had been incorporated in highly intricate patterns with bone, wood, fiber and skin working industries. By the Epipaleolithic world-wide the Extra-somatic Extension covered such different headings as hunting, gathering, food-processing, warring, sheltering, clothing etc. The Northern Mashriqian archaeological data base allow us to see in details its ever-accelerating further accretion and transformation.

After nearly five million years of coevolving under the Socio-cultural MoE, during the last half of which the Extra-somatic extension played its enhancing role, humans started to intentionally manufacture artifacts carrying specific references to social memories shared by a group, i.e., symbolic messages. These symbol-bearing inorganically-supported artifacts constitute the emerging “Exosomatic Social Memory,” whose semi-autonomy from individual human phenotypes—they still needed to be “read” or activated in, or by, an individual—progressively relaxed the social and chronological contiguity conditions required for the transmission of messages between their makers and their readers, simultaneously increasing the load-bearing capacity of Social Memory. This distinct new extension to the Hominid life-cycle setup ushered in the Tinkering MoE, whose initially slow accretion can be followed in human societies, from its earliest attestations some 400 to 250,000 years ago, through the emergence of arbitrary local cultural “fashions” of the Mousterian lithic industry, to the mobiliary art, depictions, friezes, personal decorative items, etc. of the Paleolithic and on to our global World-System. The Tinkering MoE, nested within the Extra-somatically Enhanced and the Socio-cultural MoE, had ratcheted and developed at a remarkably similar pace everywhere until some 20,000 BP. Even though separated by continents, small human groups/World-Systems all over the major population centers of the planet had qualitatively quite similar technologies until then.

The progressive accretion of both the Extra-somatic Extension and the Exosomatic Social Memory, as seen in the data from the Northern Mashriq mainly during the Epipaleolithic and Neolithic, can be jointly used to infer stages in the elaboration of the linguistic aspects of Social Memory.

* *

To start with, we need estimates of human populations during this period, as a background and independently of demography’s potential role as a causal factor. To get a rough order of magnitude, we take the Levantine numbers as representative of the overall

trend in the Northern Mashriqian World-System. In the Levant we detect a slow doubling of hunter-gatherer population levels during the Upper Paleolithic, following first a categorical change in small animal predation and a surge in bird exploitation, which started about 40,000 BP, then a great increase in exploitation of lagomorphs, starting about 20,000 BP (Stiner, 2001). By the early Natufian, roughly 11,000 BP, the total population of the Levant is estimated at ~5,000 people. Then the shift from a nomadic to a settled life reduced birthing interval, and the development of farming and pastoralism increased the carrying capacity. As a result the total Levantine population grew by nearly a factor of a hundred in just over 5,000 years, to reach an estimated total of ~400,000 people during the Middle Bronze Age 4,000 years ago (and roughly 35 millions today, another factor of hundred).

Another cognitively important demographic datum is “brain population density” (Patterson, 1998). This can be derived from the size of agglomerations, such as villages or cities. Hunter-gatherer groups exhibit a wide range of sizes, from 50 to 200 people, but with considerable variation throughout the year. During the Upper Paleolithic of the Levant it is probable that not more than an extended hunter-gatherer family, or 20 to 30 people, lived constantly together. A first doubling of brain density is seen with the first Natufian villages, where 50 to 60 people started living year-round year after year in close and constant contact. The agglomeration size then increased by a factor of 50 over 2,000 years, reaching ~3,000 people for PPNB villages around 8,000 BP (Kuijt, 2000). This peak was followed by a steep and short-lived decline back to nearly Natufian levels, but by 7,000 BP the size of agglomerations started its relentless increase, reaching ~6,000 people by Uruk IV at the dawn of History, and 500,000 in Irst MBC Babylon.

Over this backdrop, let us explore how the kind of data organization advocated here could help illuminate the evolutionary path of the components of the human communication system.

The Cognitive Representation System.

- Conceptual Lexicon.

It would be possible to estimate the size of the Conceptual Lexicon if we work out how it is linked to and constrained by the World-View it reflects and sustains.

The Northern Mashriqian data base is ideal for such an endeavor. It offers us the earliest attested lexicons together with a rich archaeological illustration of the corresponding World-View. Based on epigraphic corpuses dating from 4,200 BP, the size of both the Sumerian and Akkadian lexicons can be estimated at a few thousand roots/concepts. Furthermore, since archaeologists treat the third and fourth MBC similarly, we can track the accretion of the relevant parts of the pre-historic Northern Mashriqian World-View, and de-construct its accumulation process by subtracting each of its successively emerging components.

The Extra-somatic Extension comprises artifacts tied in a rather direct way with concepts/words and/or words naming objects in the natural world. Even the manufacturing processes of the artifacts could be broken down into practical operations also straightforwardly tied to a concept/word. By early historical times the size of the Extra-somatic Extension was vast, but not infinite, and could be amenable to a thorough enumeration—sheltering: palaces, temples, houses, stones, bricks, lime, plaster etc.; clothing: tanning, weaving, sewing, awl, loom, etc; etc. It would be just a matter of labor to tick off each element as it appeared chronologically and to arrange the results as an inverted historical pyramid. Because these are the categories used by archaeologists, we already know when the major steps of this pyramid appeared, with major discontinuities corresponding to the appearance of cities, of agricultural villages of the Pottery Neolithic, of ritual villages of the

Pre-Pottery Neolithic, of “Broad Spectrum” hunter-gatherers, down to the small steps that led to this last.

The symbol-loaded artifacts of Exosomatic Social Memory give us fuzzier indications, because the words that are connected to them are only loosely tied to objects, and can be connected to many concepts in relationships that too often will elude us forever. However, the overall architecture of Exosomatic Social Memory is amenable to description and ‘archaeological’ analysis, that is, to the deconstruction of its historical process of accretion. Going back in time we can tick off the progressive additions, such as libraries, schools, writing, pictographs, tokens, friezes, anthropomorphic representation, depictive art, personal decorations, etc., even less tangible aspects, such as Extra-somatically-enhanced rituals, through their reflection in art and architecture, etc., down to elaborated social rituals, including maybe initiations, required to transmit string technology, leading to nets, traps, bows etc. A working hypothesis would be that the fuzziness of the connection between symbolic artifacts and words augmented with the growth of the Exosomatic Social Memory.

In brief, we can envision developing a “comparative deconstruction” method that would take us back in time through the progressive accumulation of the Conceptual Lexicon.

- *Propositional Information.* (see below)

- *Multipropositional Discourse.*

Two examples from the artifacts of Exosomatic Social Memory will have to suffice to illustrate the potential of recovering the historical trajectory of Multipropositional Discourse.

Dating to 50,000 BP, the Qunaitra artifact is the earliest known depictive image (Marshack, 1996). Its concentric semi-circles can be related to a clause conveying Propositional Information, which will not be dealt with here because the appropriate data base would extend to Lower Paleolithic times. But they would be hard to connect to a complex story or formula of Multipropositional Discourse.

We have to wait till 10,000 BP, and the first blossoming of much more complex “pictographes,” carved or engraved stone artifacts (Stordeur, 2000, Cauvin 1997), for the first symbolic artifacts that can be unambiguously tied to Multipropositional Discourse, as the two famous “Pierres à rainures” found on the floor of an elliptical house of level II/Est of Jerf el-Ahmar (PPNA), which carry two graphic variations, one of high workmanship, depicting water and such emblematic animals as a snake, a raptor and possibly a fox. Furthermore, the presence of those two carvings in the same archaeological floor is a clear indication that they are “illustrations” of a narrative that the villagers must have cherished and perpetuated.

The Qunaitra and Jerf el-Ahmar artifacts graph only two points in an undoubtedly complex trajectory, but they are compatible with the hypothesis that Multipropositional Discourse developed through the process of social accumulation, and reached the point where a whole discourse could be directly symbolized only around the time of the Mureibetian village of Jerf el-Ahmar. By then narratives—sets of representations of the human physical, social, and mental environment “from which conclusions about the real world may be drawn” (Scalise-Sugiyama, 2001), could be used to communicate to the youth information about their world. This form of teaching greatly increased the “ratchet effect” of culture.

The settled villagers who produced these mnemonic artifacts were living under much greater and stabler population density than ever did their hunter/gatherer ancestors. This is interesting, because as a contemporary example tells us, “it is the combination of the general verbal ability perfected over a long life with the details of the early times usually known only to the old which produces a successful Ju/’hoan storyteller. It is knowledge, not secret knowledge, but a large collection of items which are public but take a long time to accumulate, which makes for good storytelling” (Biesele, cited in Scalise Sugiyama, p. 224).

The Communicative Code System.

- *Peripheral sensory-motor code. (not dealt with here)*

- *Grammatical Code.*

The general verbal abilities perfected over individual time are painstakingly drawn from sets of formulaic conventions, to the accretion of which they contribute over the life-span of the World-View. Viewing this process as determining the structural regularities of the Grammatical Code, the latest evolutive addition to the human communication system, suggests comparing the trajectory of its elaboration with that of another code similarly embedded, but one leaving visible traces as part of Exosomatic Social Memory artifacts.

The first straight line carved by a human hand, “the first and simplest frieze occurring in the history of visual arts” (Jablan, 1995), will probably remain forever elusive. So far the earliest intentional abstract motifs suggesting “arbitrary conventions unrelated to reality-based cognition” are the 77,000 years-old engraved ochres from Blombos Cave in Southern Africa (Henshilwood et al., 2001) and the 74,000 years-old engravings from Umm et-Tlel in Syria (Boëda et alii, forth.).

Henshilwood et al. argue that the transmission and sharing of the (now-unknown) meaning of the Blombos Cave engravings must have “relied on fully syntactical language.” It seems unarguable that the production of these engravings, the earliest attested examples of friezes, shared with “syntactical language” the reliance on a code of arbitrary conventions. But we should not collapse the potential for code elaboration with the actual state of elaboration of codes. A genetically under-determined potential relying on cultural accumulation for its expression would take phylogenetic time to be realized, and it would be reasonable to assign both the Blombos Cave engravings and the Grammatical Code used to transmit and share their meanings to roughly the same stage of elaboration.

Friezes are “a way to express regularity, repetition and periodicity ... motion or dynamic tendencies” (Jablan, 1995), and their expressive system embodies distinguishable elements similar to the morphology, intonation, rhythmic and sequential order of the Grammatical Code. Though this system is quite elaborate, involving the articulation of seven symmetry groups, it is simpler and more constrained than the grammatical one. Yet, in different parts of Europe, Asia and Africa, it took all the Upper Paleolithic, with a quickening around 12,000 BP and a Neolithic maturation, for “the discovery of all the basic, elementary patterns and the progressive elaboration of all symmetry groups of friezes” (Jablan, 1995).

As it took 60,000 years to bring under cognitive control the abstract code embodied in friezes, time and socio-cultural investment must also have been needed for the coding devices of the grammatical signal to be developed and harmonized—a still on-going process, as shown by the trajectories leading to Escher’s tessellations and James Joyce’s Pragmatic Semiotics.

It is arguable that the elaboration of the grammatical code must have preceded that of the friezes, but by just enough to push this last along. Such a hypothesis would additionally provide enough time-depth for the development of the diversity of coding strategies displayed by today’s languages.

* *

Landmarks in the Mist.

- *Language Taught, not Heard.*

For all of its early history, human language had been solely transmitted through a Vygotskian epigenetic social immersion process of shared attention, requiring no direct teaching. Even today in forager societies there is very little formal instruction, except when connected with “healing, spiritual consciousness, and the supernatural” (Bernhard, 1988, 99).

Bringing together the previous reflections, we can make out the progressive removal of the process of language acquisition from the hearth and the world of infancy, stretching from the first initiation ceremonies to the emergence of “language professionals,” community members specializing in and devoting their efforts to the production, maintenance and reproduction of ritualized linguistic behavior.

The Landmark characterized by the “language of professionals,” which follows those of language of “intimates” and “initiates” (Givón, 1979), could have been instrumental for Cauvin’s “Birth of Divinities” (1997). Rituals are “the foundry within which the Word is forged” (Rappaport, 1999, 21), the True Word that by defining the “Way of the People,” allows societies to navigate between Libel and Babel. The existence of formulaic ritualized linguistic social communication protocols might well have been the ingredient needed for permanent settlements to endure for the first time, and then to grow. If so, it was a necessary ingredient, keeping for a few millennia the first villagers enthralled in their newly shared symbolic world (Balter, 2001), but it was not a sufficient one, as shown by the collapse of the first villages based on a “Ritual Economy” (Kuijt, 2000).

- Language Seen, not Heard.

However, the new peak in brain population density that it made possible had set in gear a process of diversification of rituals, initiations procedures and formulaic symbolism that will lead, in less than 5,000 years, and through the accumulating use of pictographs and the subsequent emergence of tokens, picto-ideographic writing and logo-syllabic writing, to the second landmark, that of language not orally but visually processed and maintained, or “Exosomatic Human Languages.”

Written languages provide a particularly powerful realization of Exosomatic Memory, supplementing the brain with an “external memory” wherefrom information can be retrieved as necessary. The ratcheting effect of these artifacts led over a few centuries to the emerging separation of the knower and the known, allowed the seeds of knowledge-by-analysis to take roots and then be perpetuated through schools and chirographically controlled literary instances, and culminated in the modern scientific worldview and enterprise. Though we can now literally see how speech and writing are processed in different brain areas (Michael, 2001; Petersson, 2000), we have not yet theorized all the implications from the fact that “all major advances in consciousness depend on technological transformations and implementations of the word” (Ong, 1977, 42).

The landmark of the ‘Language of Professionals’ seems to have been reached within a few millennia by all human populations, as attested by the peopling of the Aleutian Island by 9,000 BP. Because in our daily lives an advance of a few generations between societies in contact can spell doom for the “laggard,” it is quite stunning to think that cultural evolution had worked nearly synchronously over some 100,000 years in all societies, and that it is only in the Holocene that contingent locally favorable geographical conditions and the unplanned generalization potential of environmental adaptation strategies allowed only a small group of World-Systems to reach the second landmark on their own.

November 6, 2002
Beirut, Lebanon

Bibliography

- Aitchison, J., 1996, *The seeds of speech. Language origin and evolution*. Cambridge University Press.
- Aurenche, O. and S. K. Kozłowski, 1999, *La Naissance du Néolithique au Proche Orient*. Errance.
- Balter, M., 2001, "Did Plaster Hold Neolithic Society Together?" *Science*, 294, 2278-2281.
- Balter, M., 2002, "What Made Humans Modern?" *Science*, 295, 1219-1225.
- Bernhard, J. G., 1988, *Primates in the Classroom. An Evolutionary Perspective on Children's Education*. The University of Massachusetts Press.
- Blinkhorn, S., 2001, "Yes, but what is it for?" *Nature*, 412, 771.
- Boëda, E. et alii, forth., « Le site paléolithique d'Umm el-Tlel (Bassin d'el-Kowm, Syrie centrale), » proceedings of the 3ICAANE.
- Bourdieu P. et J.-C. Passeron, 1970, *La reproduction. Eléments pour une théorie du système d'enseignement*. Editions de Minuit.
- Brace, C. L., 1995, "Biocultural Interaction and the Mechanisms of Mosaic Evolution in the Emergence of "Modern" Morphology," *American Anthropologist*, 97:4, 711-721.
- Brace, C. L., 2000, *Evolution in an Anthropological View*. Altamira Press.
- Brixhe, C. 1997, « Langue et Société antique, » in *Comptes-rendus de l'Académie des Inscriptions et Belles-lettres*, 391-414.
- Cauvin, J., 1997, *Naissance des divinités. Naissances de l'agriculture. La Révolution des Symboles au Néolithique*. CNRS Editions.
- Chase-Dunn, C. and T. H. Hall, 1997, *Rise and Demise. Comparing World-Systems*. Westview Press.
- Chiel, H. J. and R. D. Beer, 1997, "The brain has a body: adaptive behavior emerges from interactions of nervous system, body and environment," *Trends in NeuroScience*, 20:12, 553-7.
- Clark, A. and D. J. Chalmers, 1998, "The Extended Mind," *Analysis* 58:10-23.
- Dixon, R. M. W., 1997, *The rise and fall of languages*. Cambridge University Press.
- Donald, M., 1991, *Origins of the Human Mind: Three Stages in the Evolution of Culture and Cognition*. Harvard University Press.
- Ehret, C., 1999, "Nostratic—or proto-human?" in C. Renfrew and D. Nettle (eds.), *Nostratic: Examining a Linguistic Macrofamily*. The McDonald Institute for Archaeological Research. 93-112.
- Gamble C., 1999, *The Paleolithic Societies of Europe*. Cambridge University Press.
- Garbini, G. and O. Durand, 1994, *Introduzione alle lingue semitiche*. Paideia.
- Givón, T., 1979, *On Understanding Grammar*. Academic Press.
- Givón, T., 1998, "The Functional Approach to Grammar," in M. Tomasello (ed.), 1998, *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Lawrence Erlbaum Associates. 41-66.
- Gómez, J.-C, 1998, "Some thoughts about the evolution of LADS, with special reference to TOM and SAM," in Carruthers, P. and J. Boucher (eds.) *Language and Thought. Interdisciplinary themes*. Cambridge University Press. 76-93.
- Halliday, M. A. K. and C. M. I. M. Matthiesen, 1999, *Construing Experience Through Meaning. A Language-based Approach to Cognition*. Cassell.
- Hattiangadi, J. N., 1987, *How is Language Possible? Philosophical Reflections on the Evolution of Language and Knowledge*. La Salle.
- Henry, D. O., 1992, *From Foraging to Agriculture: The Levant at the End of the Ice Age*. University of Pennsylvania Press.

- Henshilwood, C. S. et al., 2002, "Emergence of Modern Human Behavior: Middle Stone Age Engravings from South Africa," *Science*, 295, 1278-80.
- Hodge, C. T., 1991, "Indo-European and Afroasiatic," in S. M. Lamb and E. D. Mitchell (eds.), *Sprung from some common source*. Stanford University Press. 141-165.
- Hopper, P. J., 1998, "Emergent Grammar," in M. Tomasello (ed.), 1998, *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Lawrence Erlbaum Associates. 155-175.
- Jablan, S. V., 1995, *Theory of Symmetry and Ornament*. The Mathematical Institute. Belgrade.
- Jablonka, E., M. J. Lamb and E. Avital, 1998, "'Lamarckian' mechanisms in Darwinian evolution," *Trends in Ecology and Evolution*, 13:5, 206-210.
- Klein, R. G., 2000, "Archaeology and the Evolution of Human Behavior," *Evolutionary Anthropology*, 9:1, 17-36.
- Kuijt, I., 2000, "People and Space in Early Agricultural Villages: Exploring Daily Lives, Community Size, and Architecture in the Late Pre-Pottery Neolithic," *Journal of Anthropological Archaeology*, 19, 75-102.
- Lamb, S. M., 1998, *Pathways of the Brain. The Neurocognitive Basis of Language*. John Benjamins.
- Marshack, A., 1996, "A Middle Paleolithic Symbolic Composition from the Golan Heights: The Earliest Known Depictive Image," *Current Anthropology*, 37, 357-364.
- McBrearty, S. and A. S. Brooks, 2000, "The revolution that wasn't: a new interpretation of the origin of modern human behavior," *Journal of Human Evolution*, 39:4, 453-563.
- Michael, E. B. et al, 2001, "fMRI investigation of sentence comprehension by eye and by ear: Modality fingerprints on cognitive processes," *Human Brain Mapping*, 13, 239-252.
- Miller, N., 1998, "The Macrobotanical Evidence for Vegetation in the Near East, c. 18 000/16 000 BC to 4 000 BC," *Paléorient*, 23:2, 197-207.
- Naccache, A. F. H., 1999, "A brief history of Evolution," *History & Theory*, 38:4, 10-32.
- Naccache, A. F. H., nd, "The emergence of Human Language from the Advanced Mammalian Communication System."
- Naccache, A. F. H., forth., "Accumulation and Emergence in Cultural Evolution: The Case of the Neolithic 'Revolution'," forthcoming *Proceedings of the Third International Congress on the Archaeology of the Ancient Near East*, Paris, 15-19 April 2002.
- Nowak, M. A. and D. C. Krakauer, 1999, "The evolution of language," *Proceedings of the National Academy of Science USA*, 96, 8028-8033.
- Nowak, M. A., J. B. Plotkin and V. A. A. Jansen, 2000, "The evolution of syntactic communication," *Nature*, 404, 495-498.
- Nowak, M. A. and N. L. Komarova, 2001, "Towards an evolutionary theory of language," *Trends in Cognitive Sciences*, 5:7, 288-295.
- Ong, W. J., 1977, *Interfaces of the Word: studies in the evolution of consciousness and culture*. Cornell University Press.
- Patterson, C. C., 1998, "Scientific Meaning of Meanings: Quests for Discoveries Concerning Our Cultural Ills," *Environmental Research, Section A*, 78, 177-84.
- Peterson, K. M. et al, 2000, "Language Processing Modulated by Literacy: A Network Analysis of Verbal Repetition in Literate and Illiterate Subjects," *Journal of Cognitive Neuroscience*, 12:3, 364-382.
- Rappaport, R. A., 1999, *Ritual and Religion in the Making of Humanity*. Cambridge University Press.
- Renfrew, C., Bynon, T., Ruhlen, M., Dolgopolsky, A. and Bellwood, P., 1995, "Viewpoint: Is there a Prehistory of Linguistics?" *Cambridge Archaeological Journal*, 5:2, 257-75.

- Renfrew, C. and C. Scarre (eds.), 1998, *Cognition and Material Culture: the Archaeology of Symbolic Storage*. Cambridge.
- Renfrew, C. and D. Nettle, 1999, *Nostratic: Examining a Linguistic Macrofamily*. Cambridge.
- Renfrew, C., A. McMahon and L. Trask, 2000, *Time Depth in Historical Linguistics*. two vol. Cambridge.
- Rothman, M. S. (ed), 2001, *Uruk, Mesopotamia and its Neighbors. Cross-Cultural Interaction in the Era of State Formation*. School of American Research Press.
- Salthe, S., G. van de Vijver and M. Delpos (eds.), 1998, *Evolutionary Systems: Biological and Epistemological Perspectives on Selection and Self-Organization*. Kluwer Academic Publishing.
- Scalise Sugiyama, M., 2001, "Food, foragers and folklore: the role of narrative in human subsistence," *Evolution and Human Behavior*, 22, 221-240.
- Smith, J. M. and E. Szathmáry, 1995, *The Major Transitions in Evolution*. Oxford.
- Stein, G. J., 2000, "Material Culture and Social Identity: The Evidence for a 4th Millennium BC Mesopotamian Uruk Colony at Hacinebi, Turkey," *Paléorient*, 25:1, 11-22.
- Stiner, M. C., 2001, "Thirty years on the "Broad Spectrum Revolution" and Paleolithic demography," *Proceedings of the National Academy of Sciences*, 98:13, 6993-6996.
- Stordeur, D., 2000, "Jerf el Ahmar et l'émergence du Néolithique au Proche Orient," in J. Guilaine (ed.), *Premiers paysans du monde: naissances des agricultures*. Errance. 31-60.
- Tomasello, M. (ed.), 1998, *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Lawrence Erlbaum Associates.
- Tomasello, M., 1999, *The cultural origins of human cognition*. Harvard University Press.
- Trask, L., 1996, *Historical Linguistics*. Arnold.
- Trigger, B. G., 1998, "Archaeology and Epistemology. Dialoguing across the Darwinian Chasm," *American Journal of Archaeology* 102, 1-34.