

FROM PRIMITIVE WELLNESS TO CIVILIZED MADNESS: AN ETIOLOGY AND CASE-HISTORY OF COLLECTIVE DISSOCIATION

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ABSTRACT

In this essay, a set of complementary coordinates that illustrate the continuum between biological and cultural modes of evolution is proposed. These define: (i) a biological field, the playground of random evolutionary processes that determine various levels of specialization or autonomy, and (ii) a cultural field, characterized by the same processes, but which acquire teleological aspects, due to biased symbolic perception and transmission. The inherent risk of selecting for culturally-defined values as desirable goals of biological evolution is avoided by cultural heterochrony, which is functionally similar to biological neoteny. It is suggested that 'cultural evolution' outside the continuum equates 'biological devolution', and that despite an evolutionary line based on neotenous tendencies that enabled biological flexibility, we have become a species rigidly specialized to our own cultural constructs. Moreover, rapid cultural specialization led to rapid morphological and cognitive changes that have baffled paleoanthropologists to such an extent that various exotic evolutionary scenarios were proposed to explain them. An inevitable predisposition to psychological disorders accompanied these changes. However, modern hunter-gatherers of the 'immediate-return' type achieved a balanced material, mental and social stage that did not allow the realization of such side-effects. Thus, the symptoms did not manifest themselves because of modernity, but depending on how modern cognitive capacities were applied, and on how the inherent risks of cultural evolution were managed. Prehistoric people's various perceptions of themselves and of their role in the natural world left no material traces, but the information that was stored outside their brains—mostly in the form of 'exograms'—enables us to partly reconstruct their ideas. Seen from the perspective introduced in this chapter, these may be instrumental in defining the approximate period within which the ideological changes that led to the collapse of the biological-cultural continuum occurred.

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INTRODUCTION

Mainstream psychology, since its inception as a science, focused on setting the theoretical frames within which common patterns of behavior could be described, classified, and accepted as normal. Random behavioral manifestations of the mind that fell outside these frames were observed, defined and doctored by psychiatry. Extant social contexts were, and still are, the field within which both sciences operate, and treatment is meant to re-integrate the patient into the accepted, *a priori* 'normal' structure (Benjamin and Baker 2012). However, the concepts introduced by psychoanalysis to mainstream psychology revealed a dynamic and multi-layered interplay between the subconscious, conscious and society. To function within accepted social structures was thought to be possible only with the repression of subconscious 'savage' inclinations that were not adaptive within a 'civilized' context (Cramer 1991). C. G. Jung (1934), by elevating the unconscious to a collective level, was the forerunner of an approach that dared to address psychological mechanisms as group phenomena and not as individual manifestations. During World War II and in the years immediately following it, a paradigm that perceived the human condition as a collective psychological disorder became accepted. The theory of 'collective mental state' was introduced by Gustave Le Bon (1960), and understood as a psychological phenomenon supposed to be passed by contagion. Franz Borkenau (1981) went a step further by calling it 'collective madness'. Erich Fromm (1941, 1968, 1973) questioned the equation between what is 'normal' and what is socially sanctified. He emphasized the relativity of such an analysis and reached the conclusion that a sane individual in a sick society would be considered 'aberrant'. As a Neo-Freudian, he also played with the idea of compensatory activities that stem from a feeling of insufficiency. At a general level, this may have a number of meanings, but here we restrict ourselves to biological insufficiency, as understood by those who see the human species as a neotenous, unspecialized ape (Gould 1977; Ashley Montagu 1989; Charlton 2006; Bednarik 2008; Steiner 2010a). Before neoteny was accepted as a part of the human evolutionary story, many of our features were explained as biologically primitive (Haeckel 1883; Blaga 1943). Culture was simplistically understood as the compensation of such inferiorities (Adler 1917). In the last decades, many 'cultural disorders' became recognized and described (Shweder and Levine 1984; Heine 2011; Markus and Kitayama 2013). However, their etiology was understood to be within the existing social order, and the symptoms were considered to be the unavoidable price of civilization.

This chapter does not focus on the description of extant neurodegenerative disorders that manifest themselves on the individual level. These are addressed in detail elsewhere in this book and in a preceding volume (Bednarik 2013). The inventory and critique of the symptoms appear in a vast literary corpus, be it anarchistic (Perlman 1977; Zerzan 1999) or humanist (Ellul 1964; Mumford 1967; Fromm 1973; Shepard 1998) in nature, to which any addition would be superfluous. Maybe with the notable exception of John Zerzan, whose merit is that he has taken the search for the roots of present pathological manifestations to a region where psychology, sociology, philosophy, anthropology, and archaeology converge. The elements of a theorized 'collective alienation' are identified as symbol, language, number, and art. He touches sensitive ground here, as it is precisely these categories that, according to scholars (Noble and Davidson 1996; Gilman 1996), define us as cognitively modern humans. Unfortunately, the examples offered as 'sane' alternatives, namely hunter-gatherer societies, as described by Sahllins (1972) and Woodburn (1982), are idealized to such an extent that he seems to forget the fact that the evolutionary distance from the human stock that first started to represent the world symbolically is the same for both hunter-gatherer and technological societies.

Other inquiries restrict themselves to the last ten millennia in their search for the roots of present human behavior (*e.g.* Cochran and Harpending 2009). The most widely accepted etiology is the advent of civilization following the Neolithic Revolution (Cohen 1984, 1989; Diamond 1997). Again,

this approach tends to idealize pre-agricultural economies and to forget that the opposite of ‘wild’ is not ‘civilized’, but ‘domesticated’. However, only specific hunter and gatherer groups display ‘immunity’, namely: those of the *immediate-return* type (Woodburn 1982). The behavior of delayed-return hunter-gatherer societies (*ibid.*; Kelly 1995) already contains mild symptoms of the disorder that this chapter intends to discuss. As for the origins of agriculture, a new paradigm is slowly emerging: contrary to what was previously thought, settled life seems to have originated in the obsessive preoccupation with symbolic constructs that led to collective grand-scale projects. Göbekli Tepe, a cultic site *par excellence*, is maybe the best example (Schmidt 2003). In the same vein, the pre-agricultural Natufians of the southern Levant developed strong symbolic attachments to a settled way of life made possible by a long-lasting climatic optimum (Bar-Yosef 1998) and, because of an already advanced cultural rigidity, they could not readapt to nomadic life when the climate turned unfavorable (Steiner 2010b). Agriculture is thought to have commenced as a modality to support such ‘obsessions’ (*ibid.*; Cauvin 2007; Schmidt 2003).

Unfortunately, paleoanthropology is prone to the same flaws like psychology, sociology and archaeology. Scientific objectivity is not compatible with the humanistic study of man. To avoid cultural bias, models based on logical inference were adopted. For example, the story of our evolution is built exclusively on an evidence of ‘stones and bones’. Based on very fragmentary fossil evidence, ideal types of hominin ancestors were conjured up by scientists. Whenever a new discovery was made, it was immediately ascribed to one or the other of these ideal types. The slightest deviation from the standard introduced new types, thus new species. Similarly, ideal lithic industries were defined and associated with the ideal fossils of the same time period. Or, fictive ancestors were inferred, based solely on the appearance of novel industries. Moreover, the presumption that biological evolution is based on ‘progress’ and that cultural evolution ‘progresses’ in parallel with it, with material advancement as its goal, reflects precisely our impartiality. Human groups that emphasize not the material, but let us say the social, mental and spiritual components of culture may have an utterly different interpretation of our origins. Or, a complete 2 million years inventory of all the hominin bones that have been fossilized, and of all the stones that have been chipped would offer another picture of the evolutionary story. Alas, ‘taphonomic processes’ (Bednarik 1994) make the access to an uninterrupted material record impossible. The same taphonomy, but on a mental level, restricts our search for stones and bones to locations suggested in advance by currently accepted theoretical models of evolution.

However, beside fossils and tools, beginning approximately 70 millennia ago another type of record becomes available: *paleoart* (*ibid.*). The term accommodates all those manifestations that were meant to store human experiences and adaptively useful information externally to the brain. Thus, a meaning stands behind each piece of paleoart, be it a chunk of ocher, an engraved geometrical pattern, traces of finger fluting, cupules, red dots, hand stencils, iconic animal and human figures. All these *exograms* (*ibid.* 2014) are functionally related. The initial motivation to produce ‘art’ could have been the wish to make accessible information that was consciously perceived and could be transmitted only by relying on symbol. As some of these exograms precede the scientifically agreed-upon date of the ‘symbolic revolution’ by tens of thousands of years, we argue that the capacity to symbolize was alternately applied and discontinued in our distant past.

Accessing individual conscious perceptions communally was, in our understanding, rather an empathic than a symbolic cognitive process, for most of the Middle Paleolithic. That by the Upper Paleolithic the Neanderthals were perfectly able to ‘symbolize’ becomes slowly accepted by Pleistocene research (Lieberman and Crelin 1971; Bickerton 2010; Rendu *et al.* 2013; D’Anastasio *et al.* 2013; Rodriguez-Vidal *et al.* 2014). Iain Morley (2003), in his seminal thesis about the evolutionary origins and archaeology of music, reaches the well-informed conclusion that all the criteria that define modernity were already in place with *Homo ergaster*.

Consciousness is a pre-requisite for symbolizing, thus it must have preceded it. As said above, non-symbolic modalities to access other individuals' conscious perceptions must have been extant. However, this hypothetical talent was mystified and linked to 'shamanism' (Eliade 1964; Lewis-Williams 1997). The close relationship between shamanism and psychological disorders, although documented (Devereux 1961; Silverman 1967; Weakland 1968; Noll 1983; Lex 1984), becomes actual only after the emergence of professional shamanism, which is a relatively recent phenomenon (Steiner 2010b). Anthropological observations (Dowson 1994; Deacon and Dowson 1996) point to an interesting occurrence, namely: with the /Xam, Bushmen of South Africa most individuals were once able to enter a trance-like condition and experience directly what in later times, once this faculty eroded, would become the sole prerogative of the *ritual specialist*. Communal trance is still widely practiced by the Bushmen (Dowson 1994). No 'collective madness' seems to accompany this 'democracy of trance', which is only the practice of a natural talent, lost to those who must rely on the services of a professional. The gradual erosion of this talent describes a trajectory parallel to cultural 'progress' which, in its turn, parallels the 'progress' of the collective disorder the origins of which this volume professes to explore.

In order to address the etiology of contemporary or historical symptoms, an extra-cultural and thus, a morally neutral standard must be found. This should be valid for both biological and cultural modes of evolution. However, a covert teleology may become discernible even in the case of biological evolution, but only when rational observation is introduced. Very much like in the popular understanding of the 'quantum enigma', reality seems to conform itself to the expectations of the mind observing it. Actually, evolution is random and highly probabilistic. It was by pure chance that it produced a human mind, and it was not the human mind that planned it. Consciousness, on the other hand, is not a cultural product, but the outcome of evolutionary processes. This is not to be misunderstood: it was randomness and probability that 'produced' it, and not a 'master plan'. Dialectical thought, which is deeply engrained in our culture, bears the responsibility for such a mystical perception. However, given that the cultural field is the playground of the human mind, an inner dialectic and a moral dimension become its inevitable components. These, in their turn, leave their mark on the directionality and the outcome of cultural evolution. For a better understanding, a number of dialectical concepts from Hegel to the Indian *Samkhya*-school will be introduced and discussed at a later point.

The study of biological and cultural evolution cannot ignore the contributions of the *dual inheritance theory* (DIT) (Durham 1991; Henrich and McElreath 2003; Richerson and Boyd 2005). Cumulative cultural evolution and biased cultural transmission, as proposed by DIT theoreticians, will be given the deserved attention. Moreover, DIT offers a model in which biological and cultural evolution are not perceived as parts of a linear continuum. The gradual disintegration of such a continuum is precisely what led, in our understanding, to the present manifestations of human behavior. In the same vein, the concept of *niche construction* and its role in human evolution (Odling-Smee 2003; Bickerton 2010) will be addressed and discussed in detail.

Here, a model of biological evolution and cultural accumulation is proposed, in which, at a certain stage, a collective variant of dissociation appeared in a mild, but evolutionarily adaptive form. However, this turned into a serious risk when *cultural heterochrony*, for a number of reasons, became disabled. The latter is understood as a risk-management mechanism that keeps the danger of cultural over-specialization at bay. Tentatively diagnosed as *collective dissociation*¹, it is suggested that this

¹ The term *collective dissociation* was coined by C.J. Churchill (2004), but proposed as a contemporary symptom that makes its appearance within mass society. This chapter, as already mentioned, does not focus on cultural symptoms, but on their evolutionary origin. Thus, our inquiry presents no conflict of interests with Churchill's.

condition might be the origin of the pathological manifestations that seem to accompany cultural evolution. Because dissociation is understood as a continuum, ranging from mild and non-pathological forms like daydreaming and altered states of consciousness, to de-realization and severe psychosis (Van IJzendoorn and Schuengel 1996; Snyder 1999; Dell 2006), it is ideally suited to the parallel study of the evolution of culture on one hand, and of the disorder itself on the other, along the same evolutionary line. Comparing positively perceived cultural ‘evolution’ with the progress of a pathological condition seems contradictory. This contradiction will be dwelt on and solved, together with many others that will inevitably emerge, as a result of our biased perception of the cultural process.

Dissociation is a disorder related to conscious compensatory mechanisms, and to the subconscious interplay between the *Id*, *Ego* and *Superego*, as in psychoanalysis—all these notions, and their importance to the model discussed will be detailed in the forthcoming pages, where they will be elevated to a collective level. Moreover, a degree of dissociation is necessary to ritual, which in its turn is closely related to symbolic thought, and thus, to paleoart. The connection between all the phenomena introduced in the last sentences will become evident when studied in parallel, on a continuum shared by biology, culture, and the mild form of the pathology. Eventually, only culture and advanced forms of the pathology would be discernible on the continuum, with biology lagging behind.

When describing the cultural process in isolation, in addition to the already mentioned dialectical systems, Jacques Ellul’s concept of *techniques* (1964) will be instrumental in illustrating the coping mechanisms that buffer between a slow biological evolution and rapid cultural changes. Techniques also buffer between the organic substratum of culture and its mechanistic manifestations to which life must adapt itself, and thus, they offer a parallel explanation of certain subconscious processes.

Finally, an analysis of ‘modernity’ will be undertaken, in the light of the conclusions suggested by the model. Inevitably, a series of questions will arise, which will be answered, one-by-one. Is modernity to be understood as an inevitable evolutionary outcome, or as the emerging carrier of a collective psychological disorder? What kind of external stress triggered the mutation to the pathological end of collective dissociation? Why is it that modern hunters and gatherers of the immediate-return type do not display the symptoms? What were they shunned from, and which alternative coping mechanisms did their forefathers adopt? To what extent did the nature of these strategies influence the *life-affirming* or the *life-restricting* tendencies of the cultural process? And, last but not least, why did ‘immune’ cultures not become ‘global’ but, quite the opposite, how did ‘infected’ cultures become ‘successful’?

In the forthcoming discussion, all the ideas and terms introduced above (in italics) will be set within a pair of graphic coordinates that define a biological and, respectively, a cultural field. Culturally neutral criteria will be used to analyze processes within these coordinates. The moment at which benign collective dissociation mutates to a pathological stage will be surprised, and the parallel trajectory of biological and cultural modes of evolution will be followed closely, up to the moment at which a cultural-pathological continuum splits off. We propose that approximately 40 millennia ago the predisposition to pathological collective dissociation was already extant as a latent risk. A long incubational period followed, during which natural defense mechanisms were abolished and replaced with cultural techniques. The first symptoms seem to have appeared gradually, in parallel with shifts in man’s perception of himself, at the beginning of the Mesolithic. The Neolithic would witness the full-scale outbreak of the symptoms, and by the Chalcolithic, in the author’s view, one may observe a highly contagious collective disorder that would be transmitted from one society to another. Today we are facing a cultural pandemic that endangers not only *Homo sapiens*, but the planet as a whole.

DISCUSSION

1. The Biological Field

1.1. *The Blaga Coordinates*

In 1956, the Romanian philosopher and writer Lucian Blaga was nominated for the Nobel Prize on the proposal of his compatriot and admirer, Mircea Eliade. The Communist regime of his country sent two emissaries to Sweden to protest the nomination because, like Eliade, he was considered a ‘reactionary’ thinker, and his work was blacklisted until the 1970s. Blaga dedicated a whole book to the subject of evolution, part of a trilogy that promoted historical and cultural theories. In *Anthropological Aspects* (1976 [1943]) he proposed a ‘new approach’ to the subject of evolution, by trying to incorporate and balance the theories of the day—a daring approach for the 1940s. His insights were only actualized a few decades later, when the likes of Steven Jay Gould (1977) started to consider, independently, subjects addressed, but only partly answered by Blaga. Unfortunately, Blaga did not have access to the information available today, thus the simplicity of his approach may be disappointing to contemporary scholars. However, we start by presenting the framework that he suggested, and we will use it as a frame of reference that might be helpful in understanding a number of subjects addressed in our inquiry.

The accepted evolutionary theories of the day did not seem to satisfy Blaga. He was looking for a frame in which certain particularities, like the problem of what he perceived as human ‘primitivisms’ could be explained, without recurring to the then widely accepted gradualist and linear concepts. Lamarck’s ideas on the transformation of species, Darwin’s theories on natural selection, the concept of mutations and problems related to primitivisms, specialization and organizational levels were all approached and analyzed in his quest. The result was the ‘new approach’, in which evolution was subscribed to a field in which Life became subjected to two evolutionary tendencies, namely: (i) toward specialized and optimized organisms and, (ii) toward generalized and autonomous forms.

(i) The *horizontal* evolutionary process, i.e., the strategy of specialization to the environment, mostly through natural and sexual selection: evolution may be seen as a success, and a balance that facilitates survival in a given environment is reached. The only problem is that the organisms adopting this strategy are at peril when the environment they are so highly optimized to changes. The higher the degree of specialization, the lower the ability to cope with changes. In cases of extreme specialization the slightest fluctuation in the environment can wipe out a species.

(ii) The *vertical* mode of evolution is the answer to the dangers inherent in the strategy of specialization: at the price of conserving some primitive features, a degree of autonomy is also preserved, i.e., a higher flexibility in the face of environmental changes—instead of the smooth specialization through selection, a rougher evolutionary strategy is adopted, the transformation through mutations. At first glimpse this strategy does not seem to be so successful, the organism is not so finely tuned to its environment. But when the latter undergoes changes, the flexibility granted by the vertical evolutionary strategy proves its advantage: the higher the degree of autonomy, the lower the danger of being affected by environmental instability. In cases of very pronounced autonomy, the organism is capable to survive in almost any type of natural environment, depending upon the acquired mechanisms of compensation. Opportunism is another ability that accompanies the vertical mode of evolution—changes in the environment are taken not as hardships, but as opportunities, the opening of new horizons.

Applying this concept to the divergent evolution of apes and humans, as Blaga did, the following simplified model emerges: some of our common ancestors specialized to the conditions and resources offered by specific environments. Those that followed the vertical evolutionary mode evolved into hominins, who were able to survive in various environments. The influences exercised by the

coordinates resulted in a diversification of the species which decreased once the tendencies were stabilized, with a clear vertical or horizontal evolutionary line as a result. The model perceives *Life* as struggling for its affirmation in a field influenced by forces that either capture, or liberate it. The importance of the ‘new approach’ is that it presents evolution as an unlimited diversification, with a median evolutionary vector that tries to balance the tendencies toward specialization or generalization. However, this median line must not be confused with evolution itself. Otherwise, we may fall into the trap of perceiving evolution as a constant, gradual and linear development from lower to superior forms. Moreover, this perspective would also imply irreversibility, predictability and finality. This is precisely what Blaga tried to avoid, by approximating a mechanism that in the following decades would become the theory of *punctuated equilibria* (Eldredge and Gould 1972; Gould and Eldredge 1977). The major flaw in the Blaga model is that he applied this understanding exclusively to the vertical mode of evolution. Adopting the punctuated equilibria model as valid for both coordinates, it becomes evident that there is no slowly balanced linear evolution, but only short, sudden periods of evolutionary activity (*sudden jumps*), separated by much longer intervals of stability (*stasis*), in which biological changes are practically negligible. Thus, Blaga’s ‘new approach’ becomes more viable and acquires more flexibility.

In Fig. 1 we have inserted between the Blaga coordinates a graphic approximation in which both vertical and horizontal periods of stability are followed by short-lived transitional phases, which in their turn are followed by stable periods.

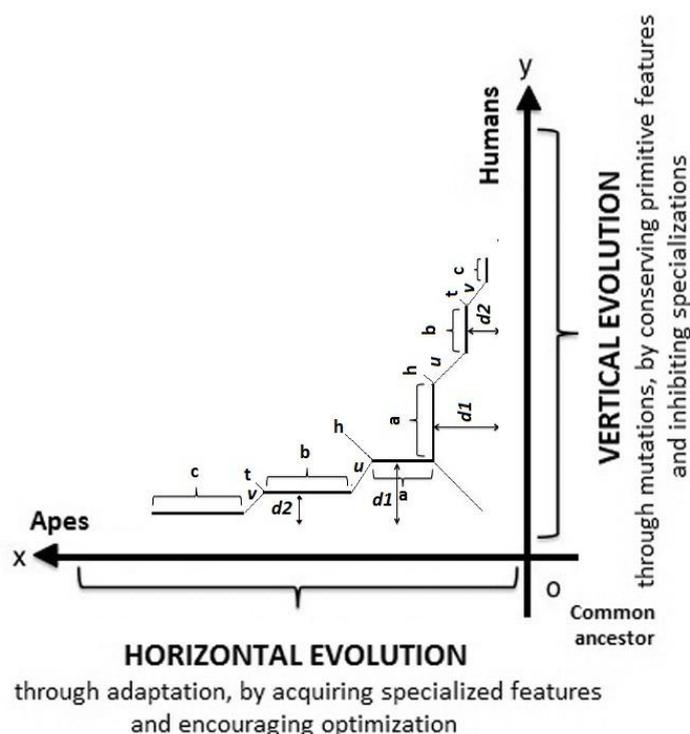


Fig. 1 The biological field.

- *Vertical evolution* (o-y) is the alternation of vertically positive stable phases (a, b, c) with horizontally-negative short-lived transitional phases (u, v). The vertical phases are the temporal distribution (stasis, duration) of a species, while the horizontal ones represent transitional forms.

The horizontally-negative stages are characterized by the permanent adoption of reductions that lead to increased flexibility and biological autonomy. The closer a species is to the vertical, the higher the chance of the species to be captured by it, and that no further horizontal tendencies would occur ($d_2 < d_1$).

- The horizontally-negative phases (u, v), represent ‘sudden jumps’ that become shorter and shorter in time, the stronger the attraction of the vertical ($v < u$). The vertically-positive phases (a, b, c) are also shorter and shorter in time ($a > b > c$). The closer a species is to the vertical axis, the weaker the influence of the horizontal.
- There can also be minimal horizontally-positive tendencies: the closer to the horizontal coordinate, the higher the possibility of their transformation from tendencies to phases, and thus new lateral evolutionary lines may start (h, t).
- *Horizontal evolution* (o-x) is the alternation of horizontally-positive stable phases (a, b, c) with vertically-negative short-lived phases (u, v). The horizontal phases are the temporal distribution (stasis, duration) of a species, while the vertical ones represent transitional forms. The vertically-negative stages are characterized by the permanent adoption of specializations that lead to increased rigidity. The closer to the horizontal a species is, the higher the chance of it being captured, and that no further vertical tendencies would occur ($d_2 < d_1$).
- The vertically-negative phases (u, v), represent ‘sudden jumps’ that become shorter and shorter in time, the stronger the attraction of the horizontal ($v < u$). The horizontally-positive phases (a, b, c) are longer and longer in time ($a < b < c$). The closer a species is to the horizontal axis, the weaker the influence of the vertical.
- There may also be minimal vertically-positive tendencies, the closer to the vertical coordinate, the higher the possibility of their transformation from tendencies to phases, thus new lateral evolutionary lines may start (h, t).

In summary, the temporal continuity of a species specialized on the horizontal will be longer and longer, the more optimized to its environment it is. Over-specialization makes them so rigid that they cannot respond to environmental challenges, thus the danger of extinction becomes more and more imminent. On the other hand, species that stay generalized on the vertical will last less and less in time, and their high degree of autonomy confers them more and more flexibility in dealing with new natural conditions. Evolution seems to work slower on the horizontal and faster on the vertical.

1.2. Biological Heterochrony

By observing and comparing attentively the morphological description of the hominin fossil record, even the layman notices that what is called human evolution is rather a process of reductions. This is precisely what intrigued Blaga. He theorized that the vertical mode of evolution retains primitive features in order to preserve evolutionary flexibility. He went on comparing the *Homo* and *Australopithecus* fossil records, and in the case of the latter he observed the opposite tendencies: the australopithecines underwent a series of specializations to the environment by acquiring more robust and specialized features.

Although Raymond Dart already used the term ‘pedomorphic’ in his description of Kalahari Bushmen in 1930 (Spencer 1997), the process that is known and accepted today as ‘neoteny’ was not very well understood in Blaga’s days, except maybe in its rudimentary and recapitulatory perception, *sensu* Haeckel (1883). As Richard Grossinger (2000: 42) wrote,

... the intuition that advanced human development was pedomorphic rather than recapitulatory was disturbing to many Eurocentric nineteenth century anthropologists. If juvenilization was the characteristic for advanced status, then it was clear that the Mongoloid races were more deeply fetalized in most respects and thus capable of the greatest development.

What Blaga called ‘primitivisms’ were precisely those fetal characteristics of juvenile apes that became stabilized features in humans. Neoteny itself is only one of the six possibilities of ‘heterochrony’, or the change in timing of developmental events: acceleration (faster) vs. neoteny (slower); hypermorphosis (further) vs. progenesis (not as far); predisplacement (begins earlier) vs. postdisplacement (begins later) (Bogin 1999).

Understanding neoteny in this larger context, Thiessen (1997) argues that *Homo sapiens* is more neotenized than *Homo erectus*, and *Homo erectus* more than *Australopithecus*. In the same vein, bonobos are more neotenized than chimpanzees (*ibid.*). Ashley Montagu (1989) suggests that juvenile pithecanthropine and australopithecine skulls would have had a closer resemblance to those of modern humans than to those of the adult forms of their own species. Humans, in their turn, have more neotenized skulls than *Australopithecus*.

Steven Jay Gould, in *Ontogeny and Phylogeny* (1977: 82), quotes lists of these primitive-juvenile features that were compiled in earlier times, and adds his own comments:

... to support the argument that we evolved by retaining juvenile features of our ancestors, Bolk provided lists of similarities between adult humans and juvenile apes, arguing that our essential somatic properties, i.e., those which distinguish the human body form from that of other primates, have all one feature in common—they are fetal conditions that have become permanent. What is a stage in the ontogeny of other primates has become a terminal stage in man.

Bolk’s list: our ‘flat-faced’ orthognathy / reduction or lack of body hair / loss of pigmentation in skin, eyes and hair / the shape of the external ear / the epicanthic fold / high relative brain weight / the central position of the *foramen magnum* / persistence of the cranial sutures to an advanced age / the structure of the hand and foot / the form of the pelvis / the *labia majora* of women / the ventrally directed position of the sexual canal in women / certain variations of the tooth row and cranial sutures / absence of brow ridges and cranial crests / thinness of skull bones / position of orbits under cranial cavity / brachycephaly / small teeth and late eruption of teeth / no rotation of the big toe / prolonged period of infantile dependency and of growth / long life span.

Evolution occurs when ontogeny is altered in one of two ways: when new characters are introduced at any stage of development with varying effects upon subsequent stages, or when characters already present undergo changes in developmental timing. Together, these two processes exhaust the formal content of phyletic change; the second process is heterochrony. If change in developmental timing is important in evolution, then this second process must be very common.

Ashley Montagu (1989) theorized that part of the differences seen in the morphology of modern types of man can be attributed to different rates of ‘neotenous mutations’ in their early populations. Thus, the Mongoloid skull is the most neotenized human skull. The European skull is less neotenized than the Mongoloid and African, with the Australian Aboriginal skull less neotenized than the European, and the Neanderthal skull even less neotenized than that of the Australian Aboriginal. Observing the Khoisan, he described the following neotenous traits relative to Caucasoids: large brain / light skin pigment / less hairy / round-headed / bulging forehead / small cranial sinuses / flat roof of the nose / small face / small mastoid processes / wide eye separation / median eye fold / short stature. In addition, McKinney and Mc Namara (1991) suggest that African and Asian Pygmy populations also display highly neotenous features. However, as Hulse (1962) noticed, neoteny is not the only dimension of heterochrony that plays a role in human evolution. He brings up the example of Australian Aboriginals, who have retained similar skeletal characteristics to those which most people possessed in earlier times (gerontomorphic characteristics, as opposed to the pedomorphic traits that the Bushmen display).

1.3. Parallel (N- and G-) Processes

Neotenus traits are not restricted to morphology. A number of related or parallel processes that have behavioral and cognitive implications must also be mentioned. This will be done by grouping these processes into two categories: natural neotenus tendencies (N-processes), and pseudo-neotenus manifestations with biological roots that would become active only in a cultural context (G-processes). Some of these apparently neotenus phenomena may be both N and G; that is they may act differently in a biological context or in a cultural milieu.

- N1: *Biological neoteny*, as it was described above.
- N2: *Psychological neoteny*. Bruce Charlton, a Newcastle University psychology professor, argues (2006) that what looks like immaturity—or in his terms, the retention of youthful attitudes and behaviors into later adulthood—is actually a valuable developmental characteristic, which he calls ‘psychological neoteny’. Highly educated people and eminent scientists demonstrate more neotenus psychological traits. So do natural people and children. In fact, the ability of an adult human to learn is considered a neotenus trait (Young 1957). Biological neotenus in humans had as a side-effect psychologically neotenus traits: curiosity, playfulness, affection, sociality and an innate desire to cooperate.
- N3/G1: *Cranial base shortening*. The vaulting of the braincase, bipedalism, recession of the jaws, etc. are discernible trends in human evolution. The result is a kind of fetal primate, sharing over 90% of his genes with the other primates, though physically so different. Following the changes in the angle and length of the sphenoid bone leads to surprising conclusions. The cranium has a rather elastic and fluid dynamic: the rotation and shortening of the *os sphenoidale* generates new proportions that automatically attract new adaptive patterns and behavior (Lieberman *et al.* 2002).

D. E. Lieberman argues that the crania of anatomically modern humans from the Late Pleistocene and Holocene differ from those of archaic humans, including Neanderthals and *H. erectus*, by only a few features. These include a globular braincase, a vertical forehead, a diminutive brow-ridge, a canine fossa and a pronounced chin. Humans are also unique among mammals in lacking facial projection. He continues to argue that many of these unique human features stem partly from a single, ontogenetically early reduction in the length of the sphenoid, the central bone of the cranial base from which the face grows forward. Sphenoid reduction, through its effects on facial projection and cranial shape, may account for the surprisingly rapid evolution of modern human cranial form. According to Lieberman, this suggests that Neanderthals and other archaic *Homo* should be excluded from the *H. sapiens* line (*ibid.*). In our opinion however, the almost sudden development of the *H. sapiens sapiens* cranial form would be much better explained with the theory of ‘cultural gracilization’ (Bednarik 2008; Cochran and Harpending 2009), which will be introduced in the next paragraphs.

The sudden adoption of symbolic communication and the reliance on its efficiency might have accelerated the process. When cultural selection for verbally-efficient individuals in a cultural context that is based precisely on such a faculty is added, a feedback mechanism may evolve that leads to an acceleration of the sphenoid shortening, which in its turn increases the complexity of the cultural milieu.

From pro-simians to monkeys, apes and humans, there is a tendency toward the shortening and rotation of the sphenoid bone, which results in a progressively enlarged cranium, shorter jaws, stereoscopic vision, etc. *Ardipithecus ramidus* already displays this tendency to a shortened cranial base (Kimbel *et al.* 2014). With successive hominins, the sphenoid bone rotates and shortens even more (*ibid.*), the brain increases its complexity, and the juvenile neotenus appearance that is its immediate morphological implication reaches its peak with *Homo sapiens*. Because the same process can be noticed during the ontogeny (the sphenoid bone reaches its angle in the 7th to 8th week of embryonic development, just before the fetal stage) it seems plausible that the rotation is a genetically ‘prescribed’ tendency. Even human fossil taxonomy seems to be consequent with specific

stages in the rotation of the sphenoid bone (*ibid.*). Heterochrony seems to be at play here, enabling us to realize a plethora of evolutionary possibilities, prior to reaching the ‘mature’ anthropoid look, which would as well encase and limit the evolution of the brain. The shortening and rotation of the *os sphenoidale* is an ongoing process—it is a worldwide phenomenon, with no specific geographical locus. Future shortening and rotations may open still unpredictable uses of the brain.

Cranial base shortening is open to various interpretations. It can be understood as a kind of ‘intelligent design’ for a pre-defined result, given that the process is apparently genetically prescribed. It may be also interpreted as a general mammalian tendency that would result in a ‘crown of creation’ that would render all ‘preparatory forms’ superfluous. These are precisely the conclusions that should be avoided. However, such interpretations are inevitable, as it will be shown in the section that analyses the ‘dialectical bias’.

The morphological results of cranial base shortening must not be confused with the pedomorphic appearance caused by neoteny. The latter is only a specific manifestation of biological heterochrony which may just as well result in a more robust gerontomorphic appearance. Gracilized features are coupled with the culturally-accelerated shortening of the sphenoid bone, while juvenile features are a result of biological neoteny. Thus, cranial base shortening may acquire a cultural extension, in which case it becomes a G-process.

▪ **G2: Feminized androtypes.** Helmuth Nyborg (1994) suggests that ‘feminized’, slower maturing, ‘neotenus androtypes’ will differ from ‘masculinized’, faster maturing ‘androtypes’ by having bigger brains, more fragile skulls, wider hips, narrower shoulders, less physical strength, live in cities (as opposed to living in the countryside) and by receiving higher performance scores on ability tests. Nyborg concludes that some ecological situations would favor the survival and reproduction of the ‘masculinized’, faster maturing ‘androtypes’ due to their sheer ‘brutal force’ while other ecological situations would favor the survival and reproduction of the ‘feminized’, slower maturing ‘androtypes’ due to their ‘subtle tactics’. This is precisely what we call ‘gracilization’. Only, as it will become clear later, it is not in a natural, but only in a cultural environment that the tendency toward ‘feminized androtypes’ occurs.

▪ **G3: Cultural gracilization (self-domestication).** Culture seems to have had accelerated human evolution, with effects that started to be felt approximately 40 millennia ago and culminated in the period following the introduction of agriculture, ten millennia ago (Cochran and Harpending 2009). Changes are not restricted to morphology—mostly tendencies toward gracilization—but cognitive and behavioral adaptations occurred, too. Reduced physical endurance, enhanced long-term planning and increased docility are the main changes that characterize the past millennia, and go on today. ‘Self-domestication’ would be a fitting description and indeed, the process is described as such by some authors (*ibid.*; Bednarik 2008; Steiner 2010a).

To fully grasp the importance of the processes enumerated above, one must consider their combined effects. Biological and psychological neoteny offer morphological and cognitive flexibility. Cranial base shortening amplifies cognitive capacities and becomes of crucial importance in a symbolic interpretation of reality. Feminized and culturally gracilized androtypes become objects of cultural selection, thus all these tendencies become deeply entrenched and an increasingly strengthened feedback mechanism emerges.

Within the Blaga coordinates, the N-processes dominate: the higher the level of autonomy, the faster the increase in the cranial volume. Stable values characterize the *Australopithecus* line, where the increase is only approximately 125 cc for 1.7 million years. As for the *Homo* line, in the same time interval there was a 660 cc increase, and a doubling of the cranial volume. However, when tendencies toward gracilization become dominant in cultural contexts, the effects of the N-processes—as it will soon become clear—would be reversed.

1.4. Natural Compensation Mechanisms

In order to simplify things, let us plainly assume that biological insufficiencies—understood either as primitive or as neotenus features—are compensated by culture (Adler 1917). Hunter-gatherer, agricultural and industrial societies alike live in a cultural environment. Myths, philosophy, organized religion and science try to explain the phenomenal world by making it accessible to our most developed sense organ: the brain. As our brain evolved so did the world described by it.

Technology played an important role in this process—the understanding of the components we are trying to act upon with the help of tools or machines leads inevitably to a symbolic structuring of reality and to its understanding based on our experiences, classifications and interpretations. This does not necessarily reflect reality, but the result is a nicely organized world that can be easily accessed, described and transmitted. In its turn, such a conceptualized reality determines behavior patterns that are helpful to our physical, and to its own fictive survival. Social organization is also part of the scheme: the collectively-standardized perception of reality is easily learned and transmitted in a collectively-constructed cultural environment. The N-processes introduced in the previous paragraph made cultural reactions to environmental factors a natural choice.

The main components of culture are generally defined as *material*, *social*, *mental*, and *spiritual*. Material culture means tools, shelter, clothing—artificial extensions of everything the environment didn't endow us with. Social culture means collectively created ideals, and behavior patterns that conform to them, and enable us to co-operate and act efficiently in procuring and sharing basic necessities. Mental culture is very complex: it starts with the observation, classification and representation of natural laws, their symbolic organization in the form of myths and the creation of moral values that are rationalized by myths. A collectively-defined understanding of our place and role in the mythical environment adds a moral extension to mental culture. Eventually, myth and pre-symbolic mental faculties would be banished to a 'spiritual' category, and science would become the dominant mental component of culture.

If culture is perceived as compensation, we may define the material, mental, social and spiritual components of culture as compensatory categories. However, the equation between culture and compensation may be misleading. May we describe contemporary industrial culture as compensation? There are still hunter-gatherer and small-scale agricultural societies around, doing very well without the developed technology, mass-society and scientific myths of the industrial way of life, provided they are left alone. Apparently, these cultures were compensatory enough to achieve a balance between the natural and the cultural environments, and between the aforementioned components of culture. The industrial-technological development of the last centuries does not necessarily define us as fully-fledged humans. On the contrary, there is evidence that we are led into an existential condition that is not meant to serve our survival, but working against it. The destruction of the environment, social alienation, the syndrome-like condition that its origins we set out to understand here, the utter dependence on technology and the narrowing of individual potentials for the good of a mechanistic mass-society are only a few aspects of the problem. These symptoms cannot be accepted as side-effects of natural compensation mechanisms, and we will return to them in the section that addresses the origins and consequences of 'over-compensation'.

Within the Bлага coordinates pre-historical industries and hominin species may be followed in parallel, and correlated with the basic postulates of the punctuated equilibria theory (Eldredge and Gould 1972). Technocomplexes become more stable and last longer in time, the closer a hominin species is to the horizontal. Hominins placed higher on the vertical coordinate develop technologies at a faster rate, and the duration of the industries becomes markedly shorter.

The Oldowan of the Lower Paleolithic, 2 to approximately 1 million years ago (mya) was a stable industry that lasted for approximately 1 million years (my). The Acheulean, with its Lower and Upper stages, still of the Lower Paleolithic, spanned over a period of c. 800 thousand years (ka),

between 1 to 0.2 mya. The Mousterian lasted for some 70 ka, it was the technocomplex of the Middle Paleolithic, and it spanned roughly the period between 200 to 40–30 ka ago. Taken together, all the Upper Paleolithic cultures lasted for a brief 25 ka. The European Mesolithic, again undifferentiated, did not take longer than a few ka.

The Neolithic was very short when compared to the preceding stages—it commenced approximately 10 ka ago in the Levant, slightly later in other areas, and it lasted for some 6 ka, followed by the Chalcolithic – 1 ka, which was itself followed by the Early, Middle and Late Bronze Age, 1 ka together, and the Iron Age, 600 years. However, the Neolithic and the cultures following it do not belong to the biological field, and they are only mentioned here to illustrate the amazing rate at which cultural changes occur. What becomes evident from this brief inventory is that the duration of industries and cultures decreases in time—they are stable for markedly shorter periods, and they accompany a certain evolutionary stage (stasis) and the transition (sudden jump) to another.

In Africa, other technocomplexes developed, but generally, the same tendency may be observed: from Sangoan to Wilton, cultural stasis becomes shorter and shorter.

As noticed, we mention ‘technocomplexes’ and ‘industries’ before the Upper Paleolithic and ‘cultures’ since then. The thin red line that separates the two is not so clear, especially during the Middle Paleolithic, when the funerary traditions of the Mousterian appear as the first signs of spiritual compensation. Local and sporadic manifestations of ‘paleoart’ (Bednarik 1994; 2003a) are another characteristic of the period. However, the faculty to symbolize, albeit not expressed through modalities that leave traces or are recognized by us as such was present for at least 1.6 million years, as it was reasonably suggested by Morley (2003) and others (Lieberman and Crelin 1971; Bickerton 2010).

From 1 million to 800 thousand, to 70 thousand, to 25 thousand ... at the dawn of history, the life span of cultures is expressed in only thousands, then in hundreds of years, and in modern and contemporary times in decades or years. Today we are overwhelmed by the pace of cultural change, and many of our problems come from trying, but not always succeeding to adapt to the self-imposed rhythm.

The stages and dates above are simplified, there is no linear development, cultural stages run many times in parallel, local variations are also known and the transition between technological phases, although always rapid, happened at different times in different areas.

Some of the australopithecines dealt with environmental changes differently, by specializations that led to other forms of *Australopithecus*, increasingly specialized and robust branches that would eventually fall into the trap of over-specialization and have vanished together with the environmental conditions to which they were so finely tuned. Another branch of the same ancestral stock adopted different tactics, by either preserving primitive features, or acquiring them through neotenus processes—they would become different species. With moderate material compensation it was possible to maintain the achieved stages of autonomy, and making dangerous specializations became unnecessary.

The question arises whether biological reductions occur as a result of superior tools, or if superior tools are produced as a compensation for biological reductions? Transitions are reductions of features that may lead to more flexibility, and not the result of superior technology that allows reductions to occur. Generally, novel toolkits appear when higher degrees of autonomy—derived from reductions—ask for compensations that can counter lower degrees of specialization. Apparently, the higher the achieved level of autonomy, the more pronounced the compensatory activity that would result. But, higher degrees of autonomy are not achieved because of superior technology—the ability for material compensation is a result of biological evolution, but not its goal. Technology would only become the goal of cultural accumulation.

2. The Biological – Cultural Transition

2.1. The Biological – Cultural ‘Sudden Jump’

By comparing ‘stones and bones’, we have reached the conclusion that in the biological field defined by the o-x / o-y coordinates, cultural changes always lag behind morphological evolution. Transitional forms (sudden jumps) use the technocomplexes of the previous stasis, with new industries developed only when new forms become stabilized as a distinct genus. Or, to put it simplistically, old bones use old stones (*H. erectus* paired with the Acheulean), transitional bones keep the old stones (*H. heidelbergensis* still paired with the Acheulean), new bones use new stones (*H. neanderthalensis* paired with the Mousterian). The rule is observed up to a point, at which culture takes the lead, and biology starts lagging behind. This is the threshold of modernity, the Upper Paleolithic revolution. The suddenness of this transition and the empirical evidence that for the last 40 millennia culture evolves at a speed that biology cannot catch up with led to the assumption that in Europe, where the transition was studied in depth, the aboriginal population was displaced by newcomers who brought with them, or improvised on the spot, a superior culture. The Mousterian culture of the Neanderthals, according to the ‘rule’, should have also been the culture of transitional forms leading to anatomically modern humans (AMH), and when finally *Homo sapiens sapiens* appeared in the fossil record, he was supposed to develop the Aurignacian. However, the technological differences between the Mousterian and Aurignacian were disproportionate. And, there were no transitional forms to be unearthed, except the so-called ‘Neanderthaloids’ who were not confined to a clear-cut period. Paired with the misconception that the Neanderthals were brutish cavemen, the ‘Big Bang’ in our cognitive evolution could not be attributed to such a backward species. As we have seen in the first section, N-processes like physical and psychological neoteny (Ashley Montagu 1989; Charlton 2006), paired with cranial base shortening (Lieberman *et al.* 2002) must have been at a very advanced stage of morphological expression by the Upper Paleolithic. Changes in behavior are an immediate result of such processes. A loss of aggressiveness and creativity granted by psychological neoteny must have been parts of the ‘Neanderthal nature’. Burial practices may be attributed with certainty to the Neanderthals (d’Errico *et al.* 2003; Rendu *et al.* 2013; D’Anastasio *et al.* 2013). It was also suggested (Lieberman and Crelin 1971; Morley 2003) that the Neanderthals were in full possession of linguistic and musical faculties. Some (Bednarik 2007; Rodriguez-Vidal *et al.* 2014) went as far as to propose that these supposedly brutish hominins were also perfectly able to engrave abstract symbols and to leave their handprints on cave walls. Moreover, when Aurignacian-looking artifacts—previously thought to belong to AMH—were found in association with Neanderthal remains, the compromise reached was to declare the Châtelperronian a copied industry. However, some finds that clearly developed from the region’s final Mousterian, and also showed Aurignacian characteristics were discovered all over Europe (Malez 1959; Svoboda 1993; Kuhn and Stiner 2001).

Thus, 40 thousand years ago, a cognitively modern indigenous population, perfectly capable to accomplish the Upper Paleolithic revolution was already present in Europe. There is no need to conjure up an African *H. sapiens sapiens* (Protsch 1975; Stringer and Andrews 1988; Mellars and Stringer 1989) who was apparently not sapiens enough not to try his luck in the already populated tundras and dry steppes of Ice Age Europe, and for some mysterious reason, preferred these to his almost empty tropical homelands. The relatively mild interstadial of that period could have made a ‘colonization’ of Europe possible, but the stable conditions that characterized Africa at the same time (Henn *et al.* 2008) did not ask for it. Besides, the human population of the period was estimated to be only a few tens of thousands strong (*ibid.*; Gibbons 2010), a number that could have been easily accommodated in Africa. No doubt, small groups of Africans reached the southern shores of Europe. Seafaring was not a novelty by then (Bednarik 2003b). The crania of AMH from the Holocene and Upper Pleistocene epochs differ from those of the Neanderthals by only a few features, as noted

above. Paired with psychological neoteny, *sensu* Charlton (2006) and the respite given by the interstadial, the possibility of a cultural ‘sudden jump’ that was accomplished by the indigenous Europeans does not seem to be too far-fetched. Once the capacities granted by symbolic modernity became fully applied, G-processes could have easily become dominant in a strong cultural context that began to rely massively on the use of language and symbolic thought. Thus, an accelerated sphenoid shortening (*sensu* Lieberman *et al.* 2002) and gracilization (*sensu* Nyborg 1994; Bednarik 2008; Cochran and Harpending 2009) could have led to the relatively rapid appearance of less robust, but culturally more sophisticated populations. The entrenchment of symbolic thought and the absolute reliance on it favored the permanent retention of a cranial morphology that supported it and could develop it even further, at a markedly increased rate. Moreover, cultural selection encouraged further gracilization. Thus, no clear-cut transitional period could be identified: the combined effects of the N- and G- processes led to a novel cranial and anatomical morphology in a very short time. Thus, the Neanderthals to AMH transition must not be understood as a typical genus-to-genus biological transition, but a culturally-determined morphological change of the same genus. This phenomenon coincides with the moment at which culture took the lead and left biological evolution lagging behind.

To understand the genetic differences between the Neanderthals and contemporary *sapiens*, we must lift out the cultural process from the biological field. Once culture takes the lead, with biology trying to catch up, but with the gap between them widening, genetics start abiding to different rules. Cultural selection does not work for the achievement of biological fitness, but for culturally-defined fitness, and may even lead to results that are ‘aberrant’ from a strictly biological point of view. Ideals are symbolic categories, like words and pictures—we acquire them through cultural transmission, and not through biological heredity. Cochran and Harpending (2009) described in detail the genetic changes that occurred in the last 10,000 years. As gene-culture co-evolution theoreticians, they believe that cultural activities affect the evolutionary process by modifying selection pressures. In other words, cultural change has the capacity to co-direct its population’s genetic evolution. However, these authors concentrated on only a quarter of the period in which our evolution is defined by cultural criteria. In our opinion, the initial changes that occurred during the Upper Paleolithic, *i.e.*, the parallel cultural and morphological ‘sudden jumps’ that were followed by accelerated cultural accumulations and biological reductions left a much deeper mark on our species than those caused by agriculture, and they resulted in a more pronounced genetic impact. However swiftly the G-processes work, ‘Neanderthaloid’ individuals were still around for a long time, with one of them unearthed from Bronze Age strata (*ibid.*). A genetic comparison between these ‘throwbacks’ and late Neanderthals should be undertaken in order to settle the African Eve debate (Pennisi 1999). Not that we dismiss African Eve, we only expose her real age, which is a not too flattering 1.8 million years, give or take.

Sphenoid shortening (Lieberman *et al.* 2002; Kimbel *et al.* 2014) is understood as a world-wide phenomenon, with no specific geographical locus. *Homo ergaster* in Africa and *H. erectus* in Eurasia were no exceptions. *H. rhodesiensis* and *H. heidelbergensis* were also subjected to this phenomenon that can be traced back to *Ardipithecus ramidus* (Kimbel *et al.* 2014). Such a tendency would result in similar morphologies, all over the Old World. Psychological neoteny (Charlton 2006) endowed all these hominins with traits like curiosity, playfulness, affection, sociality and an innate desire to cooperate (*ibid.*). The ongoing cranial base shortening, in addition to morphological changes like a globular braincase and a vertical forehead, also had cognitive implications, namely: a predisposition to symbolic thought. The hand stencils blown on iconic 2-dimensional animal depictions in El Castillo (Spain) and the same pattern repeated at the same time (*c.* 37 ka ago) at Maros, Sulawesi (Indonesia), or the iconic representations from the Apollo Cave (Namibia, *c.* 35 ka ago) imply that the same steps were taken by our relatives, simultaneously, in different parts of the World, *i.e.*, a cultural approaches based on the faculties granted by the N-processes. The Australian paleoart evidence

(Bednarik 2010) would also fit such a scenario. Once symbolic culture became entrenched, G-processes adapted archaic forms to a symbolically perceived reality and rapid morphological changes followed, like in the Neanderthal – AMH example from Europe.

This could have given culture an impetus that biology could not follow without resorting to even more gracilization. The sudden reliance on language in order to share and transmit cultural, thus extra-biological and novel phenomena must have had further implications on the shortening of the sphenoid, all over the World. The place that neotenization played in the biological field was substituted by another phenomenon, but not a biological one. Thus, ‘gracilization’ enters the scene only since cultural processes started to dictate the pace, with biology trying to catch up with them.

Moreover, the similarity between the accentuated neotenous features of the Khoisan descendants of archaic forms in Africa (Ashley Montagu 1989), or the very similar features displayed by the east Asian descendants of *erectus / heidelbergensis* populations—which impressed Raymond Dart to such an extent (Spencer 1997) that he proposed an Asian immigration to Africa—could be understood as parallel phenomena. Neanderthal populations in the Levant and Europe, very much like Denisovans in some parts of Asia were only more rugged descendants of Eve, people with whom, for one reason or another, heterochrony worked differently and resulted in the retention of skeletal characteristics similar to those which most people possessed in earlier times. The ‘gerontomorphic’ characteristics of Australian Aboriginals (Hulse 1962), as opposed to the ‘pedomorphic’ traits displayed by the Bushmen (Ashley Montagu 1989) would be a fitting example. It is not too far-fetched to imagine that certain horizontal gerontomorphic tendencies (accelerating heterochrony) became evolutionarily adaptive, given the climatic conditions prevalent in Neanderthal and Denisova habitats.

On the other hand, African *ergaster* and *rhodesiensis* descendants could have spread into southern Asia (Reich 2011; Thangaraj 2003). In this case, it must have been a slow advance into lands with similar climate and resources, but far from being a ‘colonization’ of these regions. Isolated pockets of their descendants are still found in the Andamans, Philippines, Thailand and Indonesia (*ibid.*). Denisova descendants of *erectus / heidelbergensis* could have had a westward migration, parallel to that undertaken to the south, to uninhabited Australia. On the northern shores of the Indian Ocean they might have met their African relatives, thus genetic exchanges between the parallel populations might have taken place. Australoid features are still common in southern India, Ceylon and Oman. Migrations that occurred within environmentally similar places must not be confused with replacement. The technical shortcomings and the biased interpretation of the mtDNA and Y-chromosome support invoked by the advocates of the replacement hypothesis are excellently described in another chapter of this book and in a preceding volume (Bednarik 2013).

2.2. Over-Compensation

Already in the early days of psychoanalysis, the importance of compensatory activities was recognized. A. Adler, in his *Study of Organic Inferiority* (1917), described the mechanism of compensation, on the individual level: with or without deficiencies, there is always an inferiority complex we are carrying with us, from birth. This triggers in the individual a series of psychological processes that allow him to develop his personality by compensating for the limiting inferiorities. Compensation is generating activities meant to reach a goal and guiding fictions imposed on the subconscious. In order to realize these, the function of the insufficient organ is not required. The final scope of this fictive compensation is to create an environment in which the inferiorities are not felt. It is a reaction against the environment where the inferiorities would have a limiting action. Dreams and imaginary symbolic creations must be explained, according to Adler, with the mechanism of compensation—they are satisfying survival means, by offering the individual a fictive, but nonetheless normal alternative.

A few years later, C. G. Jung (1934) came forth with the theory of the collective unconscious. By elevating the individual compensatory mechanisms described by Adler to Jung’s collective level, we

may have a formula that describes the reactions that took place in the human collective unconscious and the strategies used in dealing with collective biological inferiorities. However, collective Adlerian compensation mechanisms cannot explain the original impetus known as the symbolic revolution. As it will soon become clear, subconscious and unconscious categories appear only within already well-established and permanent cultural contexts, as they are a by-product of culture. Once these conditions are fulfilled, Adler's compensatory mechanisms and Jung's collective unconscious would become integral parts and important driving forces of the cultural process.

Niche construction theory on the other hand may describe more accurately the origins of an incipient cultural niche that would only be refined by the later application of subconscious mechanisms. Niche construction is the process in which an organism alters its own (or other species') environment, often but not always in a manner that increases its chances of survival. Changes that organisms bring about in their worlds that are of no evolutionary or ecological consequence are not examples of niche construction (Odling-Smee 2003). In our case, the G-processes that start acting in earnest within a symbolically-defined artificial cultural environment result in obvious evolutionary consequences, as discussed above. As for the ecological consequences, these are evident and they represent one of the major problems that we are facing today.

Humans can modify their selective environments through cultural activity, thus feeding back to affect selection. Cultural processes add a 'second knowledge inheritance system' to the evolutionary process through which socially-learned information is acquired, stored, and transmitted between individuals both within and between generations (*ibid.*).

The addition of language to the human culture resulted in an increased mental adaptation to its possibilities. This allowed for a human reconstruction of the environment to be a learned process, unlike with nonhuman species, whose adaptive process is instinctual. This resulted in the acceleration of environmental, behavioral, and genetic modifications. As Derek Bickerton argues (2010), humans can construct their niches without having to wait on interminable rounds of feedback between genes and behavior. This approach is not different from that suggested by gene-culture co-evolution scenarios, also known as *dual inheritance theory* (DIT). The theory calls for a more integrated relationship between genetic evolution and cultural processes than standard evolutionary concepts. Cultural activities are believed to affect the evolutionary process by modifying selection pressures. In other words, cultural change has the capacity to co-direct its population's genetic evolution. Culturally transmitted mating preferences are a cornerstone of this theory (Odling-Smee 2003; Bednarik 2008; Cochran and Harpending 2009). However, a temporal continuity and consolidation of the niche and of the biased transmission mechanisms within it are necessary pre-requisites of such culturally-defined mating preferences. The ever-increasing speed at which humans are able to construct niches modifies the selection pressures and either genetic evolution or further niche construction can result (Odling-Smee 2009). The fact that a large number of cultural processes are learned rather than genetically encoded into the individual makes human culture an incredibly powerful method of niche construction.

The importance of language and of biased cultural transmission enabled by it hint to the parallel development of symbolic thought and niche construction. However, the talents granted by N-processes, especially planning faculties and a preoccupation with future events need the introduction of time, upon which language is molded. Symbolic thought cannot be effective without time and language. Controlled symbol manipulation is the immediate result, and the next step is the creation of a cultural niche in which, *sensu* Adler, activities meant to reach a goal and collectively agreed-upon guiding fictions become reality. The climatic stress of the last glacial acted upon human populations who were cognitively well-equipped to take refuge in a fictive cultural reality that was built with symbols cemented together with a powerful mix of time and language. Niche construction was the right strategy, at the right time, a natural response to environmental stress by using biologically-developed capacities. However, when the environmental factors that determined the

adoption of such a strategy ceased to present a menace, the accumulated cultural layers, together with already established mating preferences and culturally-acquired and cultivated cognitive biases did not allow the demolition of the niche. Moreover, the effects of cumulative gracilization attracted an absolute dependence on the niche. Instead of slowly demolishing the construct, human capacities were invested in consolidating it. A collective detachment from reality was the immediate consequence.

Because in the early stages the world outside the niche was still too real to dissociate from it and the technological sophistication still too weak to alter it fundamentally, a parallel and fictive niche was constructed, to which all the hostile and uncontrollable elements of reality were banished, and the ever-present menace of which was ritually-controlled. Only at this point did subconscious and unconscious categories make their appearance, and the cultural niche became further consolidated by the Adlerian compensation mechanisms introduced above.

However, cultural niches do vary: they are different in texture, from culture to culture. They may be generalized to specialized, depending upon which cultural component was favored in their construction—material, social, mental, or spiritual. A generalized cultural niche retains a high degree of flexibility and it is less detached from the environment. Cultural layers are not accumulated at speed, and the niche is a dimension that exists within reality, fully integrated with it and not outside it. Specialized niches rely heavily on one or two cultural components, on the detriment of the others. These niches are usually more rigid and are absolutely dissociated from their ecological environments, upon which they rely in a parasitic way. The accumulated cultural layers form a cognitive barrier that makes the perception of reality biased.

A good example for a specialized cultural niche would be Western civilization. In civilized contexts the material component of culture becomes dominant and related to the idea of ‘advance’, which is perceived only when associated technological advance occurs. The mental component is also emphasized, and rational thinking becomes the only accepted way to approach reality. The social component becomes mechanistic and is subordinated to the material component. The spiritual component is subordinated to rational thinking and repressed as superstition, to the subconscious. Such configurations would be transmitted and become ‘cultural models’ that would in their turn influence mating preferences (Boyd and Richerson 1985). In such a context, strictly cultural G-processes commence exercising their impact. Nyborg’s ‘feminized androtypes’ (1994) become favored mating choices, thus a breeding based on mental and material faculties initiates a self-domestication process, *sensu* Bednarik (2008) and Cochran-Harpending (2009).

3. The Consequences of Over-Compensation

3.1. *The Sacred, the Profane and the ‘Other’*

We have already mentioned that all the components of modernity were in place long before their grand-scale manifestation during the European Upper Paleolithic. According to Morley (2003), *Homo ergaster* was already in the possession of these faculties. Others (d’Errico *et al.* 2003; Rendu *et al.* 2013; D’Anastasio *et al.* 2013) suggest that *H. sapiens neanderthalensis* made music and engraved patterns on rock faces. The 70 ka old engraved piece of ochre from Blombos and a number of Middle Paleolithic geometrical patterns and cupules (Bednarik 2003a) could be interpreted as temporal manifestations of an already extant talent, applied sporadically, to address local stresses that demanded symbolic reactions. However, the capacity was not obsessively pursued and when the causes that asked for their application were gone, the practice was discontinued. The Upper Paleolithic on the other hand, witnessed the entrenchment of symbolic thought and representations, which would not be discarded or reduced. Although there is apparently more Middle Paleolithic art in the world than Upper Paleolithic (*ibid.*), its temporal-spatial distribution and concentration is markedly uneven when the 70 ka duration of the former is compared to the 25 ka of the latter. Even

if taphonomy is considered (*ibid.* 1994), it is evident that there is a discontinuity in the application of symbolizing capacities before the Upper Paleolithic.

At this point in our inquiry we must address the subject of consciousness. Consciousness is an elusive category that cannot be described scientifically. It is difficult to imagine consciousness that is not related to language. Symbols are useless if their meaning cannot be transmitted. Did the Blombos caveman use verbal communication to make the meaning of his scratches accessible to others? The patterns could have served just as well as a plan that was meant to be copied to a surface by using the same chunk of ochre, at a later stage. It is difficult to imagine planning without a well-developed concept of time. Time and language are the ingredients of the cement that holds the symbols of a cultural niche together. But, being in the possession of the ingredients does not necessarily mean that the niche had to be constructed at any price. Such an attitude would become crystallized only tens of millennia later, and it is still a fundamental characteristic of contemporary cultural contexts.

Consciousness is often mistaken for ‘theory of mind’ (ToM), which is attributing a mental state similar to one’s own to another. ToM exists in numerous species, thus it is not a pre-requisite of modernity, except to the extent that there can be no wish to communicate, to transmit or share information and perceptions without taking for granted that the recipient possesses a ToM. Did our ancestors stay quiet for tens of millennia, despite their ability to speak and plan ahead? Signed languages, vocalizations, singing, and other alternatives were proposed to have immediately preceded speech (Lieberman and Crelin 1971; Corballis 2002, 2004). But vertical evolution granted humans access to the information of a world, and it seems very improbable that this could be shared by relying on vocalizing, or evolved forms of vocalizing alone. Language may be the best technique to transmit information within a symbolically-constructed reality, but again, such a reality is only a restricted cultural environment. We suggest that language as we know it emerged in parallel with niche construction. There could have been local and sporadic linguistic ‘lapses’, but only the realities of a well-structured and durable cultural niche did entrench the exclusive reliance on language.

The existence of an alternative non-vocalized form of communication is publicly advocated by many non-scientists, and privately by scientists who would not take kindly to being referred to here. However, the existence of a non-symbolic but conscious perception and transmission modality known as ‘cognitive empathy’, which is the capacity to understand another’s perspective or mental state (Bellet and Maloney 1991; Preston and de Wall 2002; Gerace *et al.* 2013) is widely accepted, although not too clearly separated from ToM and ‘emotional empathy’. The markedly conscious character of cognitive empathy and its potential to perceive another’s future-oriented intentions (*ibid.*) do however define it as a separate category.

Ned Block (1995) made a distinction between two types of consciousness. He calls the first type *phenomenal* ‘(P)-consciousness’, which consists of raw experience and perception. Sensations, emotions, and feelings are P-conscious, with our bodies and responses at the center. These experiences have no influence on behavior, they are individual and non-symbolic. The second type is *access* ‘(A)-consciousness’, in other words the mechanism that makes information in our minds accessible for verbal report and reasoning. It relies on symbol, thus it is communally accessible, at least by those who have an agreed-upon understanding of the meaning of the symbols employed. A-consciousness also influences behavior. Block goes on arguing that the introspection and remembering of perceptions gained from P-consciousness transforms them to A-conscious categories (*ibid.*). This is correct, but only in a cultural context. We all tend to translate to ourselves raw perceptions and experiences, as we need language to comprehend them or compare them to previous experiences or cultural models. But, given a pre-linguistic modernity and a human condition not yet restricted to a cultural niche, how did A-consciousness function?

One could theorize that cognitive empathy belongs to Jung’s ‘collective unconscious’ (1934), but as we have already concluded, unconscious and subconscious categories become part of the human psyche only after a cultural niche is well-established and conformist biases become an integral part of

the niche. Jung himself places the collective unconscious in such a context. However, he also considers it an archaic and pre-symbolic dimension, thus we suggest that before the emergence of a cultural niche an *empathic* ‘collective A-consciousness’ may be safely proposed as the forerunner of what would later become the ‘collective unconscious’. In the same vein, one could go on theorizing that symbolically-accessed consciousness belongs to Jung’s ‘collective conscious’, or ‘consensus reality’ (*ibid.*), which is understood as an exclusively cultural and symbolic dimension that became crystallized only after the emergence of the cultural niche and may be called *symbolic* ‘collective A-consciousness’.

However, the two categories cannot exist in parallel. There is either ‘empathic collective A-consciousness’ before the emergence of the symbolic cultural niche, or ‘collective unconscious’ and ‘collective conscious’ after the niche becomes established.

Thus, the conscious mental state of another may be accessed either symbolically (through language), or empathically (without symbolic distortion). We can only speculate about the nature of empathic access or the perception of reality without symbolical interference.

Deacon and Dowson (1996) mention an account of Dorothea Bleek according to which the now extinct /Xam Bushmen had the memory of a lost tradition, namely that once the majority of people could enter a trance-like condition at will, without the services of a ritual specialist and gain access to communal ‘vibes’. To stay with the Bushmen, in the last episode of David Attenborough’s BBC documentary *The Life of Mammals* (2002) a ‘persistence hunt’ is followed, in which the hunters enter the mind of the chased kudu and are thus able to anticipate its thoughts and movements. Here, a ToM is clearly attributed to an animal and empathically accessed by the hunters.

The use of the word ‘empathic’ in this chapter does not suggest any occult or supernatural means of cognition. It should be simply understood as a non-symbolic access to mental states and the information they contain. We may thus theorize the existence of a ‘lost dimension’ in which the raw information of individual P-consciousness could have been accessed through ‘empathic collective A-consciousness’, and in which reality was perceived very differently from its symbolic interpretation. Such an instant and non-sequenced reality could have been perceived as being rather associative than causal in its character, and rather fractal (*sensu* Mandelbrot 1977) than Euclidean in texture. This is reminiscent of how the perceptions of the ‘savage mind’ were described in anthropological and ethnographical works of the 19th century. The cognitive capacities of natural people were considered to be ‘childish’, with cause and effect randomly sequenced in a world of probabilities that was also able to accommodate contradictions that were not recognized and ‘corrected’, and in which the spiritual side was not a stranger to reality (Low 2004). Such an understanding of reality is only superficially corrupted by accumulated cultural layers, which make the ‘civilized mind’ to excel precisely in the qualities that the ‘savage mind’ seems to lack.

Within the confines of the cultural niche ‘empathic A-consciousness’ was traded for the more efficient ‘symbolic A-consciousness’. Only novel cultural phenomena must be shared on a symbolic level—this could explain why the faculties that define modernity were not applied at once, but only at the time when culture took the lead over biology, approximately 40 millennia ago. The symbolic ‘revolution’ of the Upper Paleolithic was an absolute reliance on symbol, a specialization to symbol, and symbolic proneness granted by neotenus and other processes started to be culturally selected-for. In the cultural niche it was more than individual experiences and perceptions that had to be accessed, thus the reliance on ‘symbolic A-consciousness’ became an imperative.

Let us call the collective memory of the dimension in which cognitive empathy perceived reality in a fundamentally different way from its symbolically-conditioned perception in the cultural niche *‘the Sacred’*. The instant and rich (phenomenal) texture of reality experienced without symbolic distortion may be called *‘reality-as-such’*.

In the same spirit, let us call the ‘consensus reality’ of the dimension in which symbolically-conditioned cognition perceives reality in a fundamentally different way from its empathic

perception before the existence of a cultural niche *'the Profane'*. The sequenced and sketchy (verbally accessible) texture of reality experienced without cognitive empathy may be called *'reality-as-symbol'*.

Although the Sacred and the Profane became separated, the fluidity between the two dimensions was still not definitively severed, and in cultures like those mentioned above (Marshall 1969; Deacon and Dowson 1996; Low 2004) there is still some fluidity between the two. However, cumulative cultural evolution in the case of over-compensated cultures led to a dependence on the niche. Continued gracilization (*sensu* Nyborg 1994) resulted in incipient self-domestication (*sensu* Bednarik 2008), and the cultural niche became the only known aspect of reality. Biased perception and transmission further entrenched the Profane and demonized the Sacred. Thus, the gap between the two dimensions became unbridgeable. The memory of the Sacred and its 'irrational' perception of 'reality-as-such', together with 'incorrect' behavioral manifestations and values that did not ascribe to the ideology of the Profane would be banished to another artificially-constructed niche, namely *'the Other'*. Whatever could not be symbolically sequenced, learnt and transmitted was also relegated to this hazy dimension that was by now not fully grasped, and was thus de-realized.

We can refer to 'collective empathic A-consciousness' as Jung's 'collective unconscious' only since the Sacred, the Profane, and the 'Other' became distinct dimensions. 'Collective symbolic A-consciousness' in this context becomes Jung's 'collective conscious' or 'consensus reality'.

The essence of the Sacred, as described above, is very different from Eliade's understanding of the term (1957). However, there is a functional similarity between them, which will be understood when an analysis of the frustrations derived from its inaccessibility will be undertaken, in another section of the chapter. Our 'Sacred' does not differ from 'objective reality', that is, how reality behaves when we turn our backs to it. When observed and subjected to our cognitive mechanisms based on mental over-compensation, or to our instruments, which are the result of material over-compensation, reality behaves as if it had a wish to conform to our expectations.

3.2. *Dialectical Bias*

Let us focus on a specific manifestation of over-compensation, namely that of the mental component of culture. Our main interest in doing so is to understand how the objective reality once perceived by 'collective empathic A-consciousness' became distorted within the confines of the cultural niche, because of rational and dialectical biases that became the exclusive methods of transmission and perception.

As we have seen, the building blocks of a cultural niche are held together by time and language. The concept of time, or rather its perception, is of crucial importance here. Dialectical thought transforms the aimless and cyclic time of the Sacred into a spiral that ascends toward a value-attached finality that is an ideal of the cultural niche. Dialectical perception may accommodate opposites but, eventually, a non-compromising linear time would evolve and processes that are independent of the inner logic of the niche would be subjected to the symbolic concepts of finality, progress and ascent.

Because we have already mentioned the biased perception of evolutionary processes, in which a sense of finality and the existence of a linear time that is necessary to its accomplishment are automatically presumed, we will try to illustrate how deeply engrained and inescapable such a perception is. For example, within a temporal framework—as dialectical thought implies—matter is expected to diversify and reach successive, ever-higher levels of organization. Through subsequent structural stages—amorphous, crystalline, molecular, neural—the general tendency is to 'liberate' and bring to prominence the latter, which is *a priori* presumed to be qualitatively superior, only because of its later manifestation in time. The neural aspect is considered to be inherent in matter, it is there from the very beginning, but it cannot reach its autonomy without becoming different from the other aspects of matter. Linearly advancing time is a pre-requisite for the accomplishment of this process. Thus, a clear-cut sequence in which present configurations are perceived to be the final stage of a process is defined. The process stops here, there is no mention of what will happen in the future.

This is an example of causal thinking. But, in associative modes of perception, crystals, molecules and neurons are contemporaneous possibilities of organization inherent in amorphous matter. They do not contradict or exclude each other as long as they are only phenomenally-perceived, but not yet symbolically-described and sequenced according to the rules prescribed by a rational bias. From biology to physics, a temporal and causal sequencing of phenomena takes place in the human mind. Thus, a ‘behavior’ is attributed to objective processes, which in its turn ‘prescribes’ their linear advance toward an expected and culturally-defined finality. The result of such a causal process is perceived as ‘superior’ to anything that preceded it in time. On an existential level, it is usually man who carries the responsibility of such tendencies. In the specific case of evolution, it is man’s position on the evolutionary line that prescribes the ‘behavior’ of evolution itself.

Such dialectical diversification and progress—not necessarily of matter, but of any abstract category—is a theme on which many great philosophical systems were built. Hegel (1974 [1812]), the ‘father of dialectics’, saw an abstract ‘thesis’ that is transformed into its opposite, the ‘antithesis’, with diversification taking place in the next step, which is the ‘synthesis’. The process of diversification, *i.e.*, the realization of all the inherent potentials, is important for the ‘thesis’, in order to become defined, described and reported to something ‘else’. Defining something by making it clear ‘what it is not’ gives the object properties and cognitive qualities. The ‘thesis’ acquires autonomy only when compared to the ‘antithesis’. The ‘synthesis’, which is a collection of describable and autonomous qualities, and of realized potentials, leads eventually the way back to the ‘thesis’, which becomes qualitatively superior through this process of self-defining. The circle repeats itself, and it becomes a never-ending spiral that realizes in time all the potentials of the ‘thesis’, and thus it ‘liberates’ its highest possible characteristics. These potentials were from the very start inherent in the ‘thesis’, but not yet defined.

Fichte’s system (1962 [1810]) is not so different: the ‘non-I’ is the antithesis of the ‘I’ and its role is to define the ‘I’ by introducing adjectives that show what the ‘I’ is not. This leads to self-knowledge, which helps in the process of the liberation of the ‘I’ from the tyranny of the ‘non-I’—‘the Other’. The ‘I’ and its qualities were always there, but they only become clearly-defined by comparison.

The same dialectical processes characterize the Indian *Samkhya* philosophy (Sinha 2007). Nature is the antithesis of the Spirit, and their union results in a non-manifested Nature, which is the absolute unity of Space, Time, Matter and Spirit. A disturbance in the inner balance of non-manifested Nature triggers diversification, thus the manifested Nature, *i.e.*, the apparent separation of the above-mentioned components takes place. Only their autonomy makes them perceptible to the senses, which define them as Space, Time, Matter and Spirit. The latter gets isolated: it can be recognized and defined in comparison to the others, and the self-knowledge acquired this way leads to the ultimate goal of this dialectic spiral, which is the liberation of the Spirit. The liberated Spirit, though present from the start, becomes conscious and reflected, thus qualitatively superior.

All these systems, besides describing the general dialectical process, also define the liberating act that leads to qualitative enhancement in time and the realization of inherent potentials. Hegel calls it ‘history’, Blaga’s term is ‘evolution’ and the *Samkhya* philosophy identifies it as ‘yoga’.

Blaga’s ‘new approach’ was included to these systems for evident reasons. There is another common denominator of all these systems, namely: man is perceived in all of them as the tool that accomplishes liberation. History and evolution as collective processes, and yoga as an individual human activity, become instrumental in the liberation of an entity called ‘Idea’ by Hegel, the ‘absolute I’ by Fichte, ‘Spirit’ by the *Samkhya* philosophy and ‘Life’ by Blaga. It is always man’s biological, historical, individual and spiritual ‘evolution’ that realizes these cosmic tendencies.

The human condition—preferably civilized, and within the cultural niche—is the inevitable outcome. Dialectically biased perception in the case of biological evolution presents us a continuous straight and ascending line, which would be followed by ‘cultural evolution’, in order to realize the inherent potentials to which biology was only a preparatory step. In fact, the line would become

refracted immediately after the ‘symbolic revolution’, when it would assume a new direction, which is not necessarily straight or ascending. However, it will ‘advance’, but only toward a culturally-defined finality. Teleology becomes a part of any evolutionary model that implies a common biological-cultural finality. The profane concept of ‘advance’, which is very meaningful in ‘cultural evolution’, becomes inevitably projected upon a process in which cultural concepts and ‘values’ do not exist at all and thus, they have no meaning and influence. The false perception of a linear and advancing biological process, continued with a cultural extension is basically wrong. Biological objectiveness, randomness, blindness and ‘playing dice’ are hard pills to swallow for the symbolic mind, which is corrupted by transmission and dialectical biases. Contrary to biological evolution, cultural (*i.e.*, mental, material, social, and spiritual) ‘advance’ is subject to intelligent design. Only that the intelligence is ours—a sick intelligence, judging by its sick manifestations, the origins of which this book professes to investigate.

4. The Cultural Field

4.1. *The Complementary Blaga Coordinates*

Human evolution, since the inception of the cultural niche, is proudly perceived as an apparent ascent, when in fact it is a broken line, a refracted continuum, depending on where it is observed from. Bearing on mind the limitations imposed by biased perception and transmission, we must consider the possibility that the objectivity of this very inquiry may be corrupted. Luckily, we can stay safely in the cultural field, since our study focuses on developments that took place since cultural changes acquired a faster rate than biological evolution. A few preliminary conditions were necessary to enable this ‘sudden jump’ into the cultural dimension:

- a position on the vertical coordinate of the biological field that granted the highest possible degree of autonomy known to hominins, and
- unpredictable environmental changes that could not be coped with on a biological level and which precipitated a cultural reaction.

The environmental instability of the last glacial affected huge geographic areas—similar upheavals have also occurred previously, but at stages when our ancestors applied the faculties granted by the N-processes only as a temporary strategy.

Considering the hypothesis that *Homo ergaster* was just as modern as *Homo sapiens* (Morley 2003), and that *H. sapiens neanderthalensis* (d’Errico *et al.* 2003) was definitely so—at least cognitively—we must ask ourselves if the potentials of our vertical evolution were actually reached and helped us enter the cultural dimension, or that our Upper Paleolithic ancestors over-reacted—having the means to do so—and have left the cultural field ‘prematurely’ (Vishnyatsky 1994)? Another question that should be asked is, why did the ‘symbolic revolution’ take another thirty millennia to come to full expression in southern and East Africa? Was it because the climatic factors mentioned above were less severe in these places (Henn *et al.* 2008), or because the original inhabitants of these regions entered the cultural field ‘naturally’, only at the moment when they were biologically mature to do so, instead of suddenly jump into it—ahead of time—like their European relatives? We hope that the conclusions of this section will answer these questions.

Starting with that distant moment 40 millennia ago when the conditions sketched above were fulfilled, our morphological and cultural changes cannot be followed within the Blaga coordinates. These were instrumental only in the approximate understanding of pre-cultural phenomena. Thus, a complementary set of coordinates that define processes within the new cultural dimension must be introduced.

A ninety degree rotation of the biological field to the right illustrates the same tendencies within the cultural field, with an o'-x' coordinate that follows cultural accumulations that would lead to rigidity and specialization, and an o'-y coordinate that follows cultural flexibility and autonomy, through reductions:

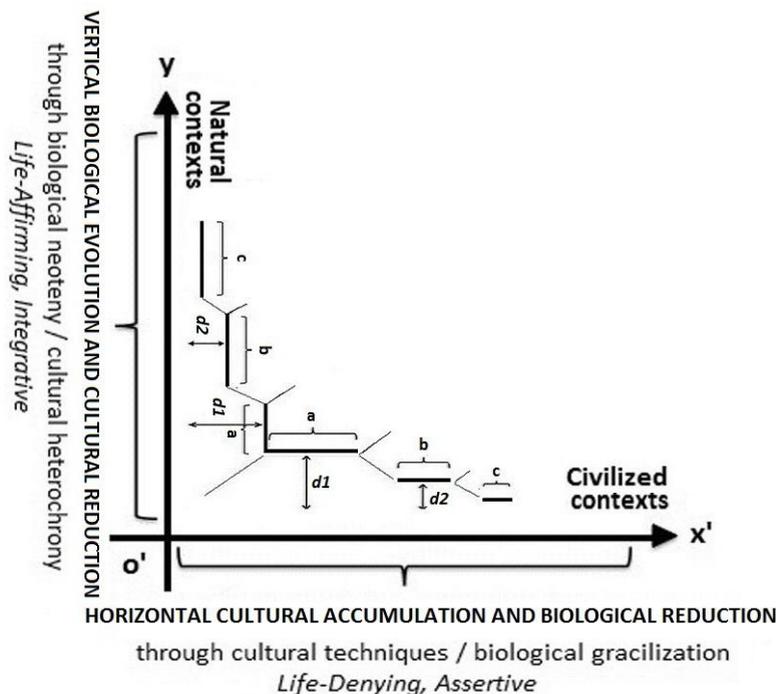


Fig. 2 The cultural field.

Our conditioned understanding would prefer to ‘correct’ the illustration and rather mirror than rotate the original, with ‘civilized’ contexts marked on the vertical, which would thus carry on the teleological implications inherent in the dialectical bias, and the ‘savage’ contexts on the horizontal. Like that, the combined biological and cultural evolutionary vector would present the falsely perceived linear continuum discussed in the previous section. However, as stressed in the same place, a refracted, and as we will see, in certain cases even a broken continuum is what has actually resulted.

The coordinates of the cultural field start from a point (o') that represents the vertical stage reached by biological evolution approximately 40 ka ago. A perpendicular line that illustrates tendencies toward specialization splits off to the right (o'-x'), and a vertical line (o'-y), which is a continuation of the biological vertical follows the tendencies toward generalization. Both coordinates run from 40 ka ago (o') to the present (x'/y). Let us sketch the nature of the cultural processes that take place in this set of coordinates:

- The *horizontal* cultural process is characterized by accumulation / specialization to culturally defined and selected-for objectives / evolved niche construction / loss of material, mental, social, and spiritual flexibility (emphasis placed on specific cultural components and the subordination of cultural components to each other) / a biological evolution lagging behind and adapting by

shortcuts to accelerated cultural accumulation (gracilization) / a cultural rift between the Sacred and the Profane.

- *Vertical* cultural evolution is in its turn characterized by reductions / the presence of a biological-cultural continuum / a balanced state between the cultural components (the retention of material, mental, social, and spiritual flexibility) / generalized niche construction (cultural niches are not built to last) / the presence of neotenus processes, thus biological flexibility still extant / an uninterrupted biological-cultural continuum / fluidity between the Sacred and the Profane.

On the horizontal, cultural manifestations last less and less in time ($a > b > c$), and there is a tendency to elaborate and accumulate technology that does not serve immediate needs. Thus, cultural change becomes increasingly accelerated, and a false sense of flexibility is perceived and attributed to it. On the vertical, cultural manifestations become more stabilized ($a < b < c$), and there is a tendency to reduce unnecessary technological elaboration. Thus, a false sense of rigidity is perceived and attributed to it.

The risk of being captured by the horizontal is always present, but at a certain stage of cultural and biological autonomy such tendencies are diminished and become almost improbable ($d1 > d2$). However, there is enough flexibility to try out and even abandon ‘superior’ cultural configurations. On the horizontal, vertical tendencies are still possible, but at a certain stage of rigidity specialization becomes irreversible ($d2 < d1$). This makes it impossible to renounce extant cultural configurations for ‘inferior’ ones, only new levels of optimization occur, at a very fast rate.

In the biological field we could still talk about ‘evolution’, but in the cultural field the use of the term becomes ambiguous. ‘Cultural evolution’ may be used as a term that describes markedly vertical cultural processes, but the term cannot be applied in the case of horizontally-oriented cultures. Thus, ‘cultural process’ and ‘cultural accumulation’ will be the terms used to address horizontal cultural manifestations.

In the following paragraphs a number of processes and phenomena that already appear, or will be added to the horizontal and to the vertical coordinates, will be introduced. At this point, we must make it clear that very few cultures can be described as ‘vertical’ or ‘horizontal’: human cultural diversity oscillates between the absolutes described by the coordinates by assuming at times vertical, and at other times horizontal tendencies. However, two cultural manifestations that are markedly vertical, respectively horizontal in their characteristics will be given the deserved attention.

4.2. *Cultural Heterochrony vs. Techniques / Biological Neoteny vs. Gracilization*

Cultural heterochrony could be at best described as the equivalent of biological heterochrony, *i.e.*, the change in the timing of developmental events. Within the inverted Blaga coordinates ‘developmental events’ mean cultural changes. These are either slowed down on the vertical (by cultural neoteny), or accelerated on the horizontal (by cultural techniques). In order to avoid confusion, from now on ‘cultural neoteny’ will be solely referred to as *cultural heterochrony*. Simply put, its function is to slow down and regulate cultural accumulation. On the biological-cultural continuum represented by the vertical coordinate, cultural heterochrony is partly biological and partly cultural in character. Its biological functions were described in the first part of the chapter, and grouped with the N-processes introduced there. Its cultural extension acts as a brake that slows down specialization tendencies, by conserving cultural ‘primitivisms’.

Cultural heterochrony may also lead to the abandonment of compensatory cultural manifestations triggered by certain stresses, but when these cease to exist, the compensatory accumulations are discarded, and a return to a more generalized and flexible stage occurs. This generalized stage may look primitive from the point of view of cultures that have entrenched temporal strategies and integrated them as fixtures in the texture of the cultural niche they live in, instead of renouncing them. In order to navigate the complex and layered texture of such a cultural niche, various

techniques become employed. These are buffering modalities between biological tendencies of reduction and cultural obsessions with accumulation. As ‘cumulative cultural evolution’ (Richerson and Boyd 2005) occurs at an increasing rate, the buffering mechanisms that adapt people to their own culture must keep pace with the speed of cultural specialization.

Cultural heterochrony is related to techniques in the sense that they both regulate the timing of developmental events. The former, as introduced above, has a common biological and cultural origin, which makes it fundamentally different from the latter, which is an exclusively cultural phenomenon. We understand techniques as Jacques Ellul did, who defined them in the introduction of *The Technological Society* (1964: xxv) as “the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity.” He also specified that in this context the term does not solely refer to machines, technology, or procedures used to attain an end. Ellul defines a number of cultural contexts that make ‘efficiency’ a necessity. From these, we single out ‘rationality’ and ‘artificiality’, as these were already introduced as values of which niche construction based on mental and material over-compensation makes full use. The rationality of technique enforces logical and technological organization through division of labor and the setting of biased standards. It also creates an artificial system which “eliminates or subordinates the natural world” (*ibid.*: 79) Cultural constructs, instead of their being subservient to humanity, demand techniques that help human beings adapt to them, and accept their tyranny.

On the horizontal coordinate of the cultural field, morphological appearances related to biological neoteny are still noticeable, but it is the G-processes that dominate and give this false impression. By relying exclusively on symbolic communication, the shortening of the sphenoid bone—the result of which was a cranial morphology that made symbolizing efficient—becomes accelerated in order to accommodate the increasing complexity of the symbolically-constructed cultural niche. Thus, ‘feminized androtypes’, *sensu* Nyborg (1994) become cultural models, *sensu* Richerson and Boyd (2005), and favored in cultural selection. This process, in its turn, results in genetic changes *sensu* Cochran and Harpending (2009) that manifest themselves as pseudo-neotenus features that may be observed with domesticates (*ibid.*; Bednarik 2008). Moreover, thousands of detrimental genetic variations (Bednarik *ibid.*) become part of the cultural package.

In conclusion, cultural heterochrony and biological neoteny may be added to the vertical coordinate in Fig. 2 and, techniques and gracilization to the horizontal coordinate. Thus, we notice that in the case of vertical cultural evolution, it is mostly the N-processes that determine the course of further evolution, aided by cultural heterochrony, which is basically an extension of an N-process. In such a scenario, a *biological--cultural continuum*, though slightly bent, is still extant. In the case of horizontal cultural accumulation, G-processes take over, and the biological--cultural continuum becomes not only strongly bent, but in markedly horizontal orientations it is definitively broken.

4.3. *Life-Affirming (LA) vs. Life-Restricting (LR) Approaches*

The biological field introduced in the first part of the chapter followed life’s trajectory between coordinates that led either to specialized or to generalized forms. By projecting a dialectically-biased understanding on this process, as discussed in a previous section, we may reach the culturally-correct impression that human freedom was the ultimate goal of evolution, and that life could realize its inherent potentials only through human evolution. Hegel takes this understanding to the cultural field by equating evolution to history and burdens man with the responsibility to accomplish his pre-destined role.

Because it is *Life* that we are talking about, let us try to understand its evolution without any artificially imposed cultural value-judgments. In a poll of emotional attitudes in various populations, Michael Maccoby (1972) separated two prevailing inclinations, namely: ‘life-loving’ and ‘death-loving’. The latter characterizes people with a deep emotional attraction to the mechanical, to all that

is not alive, to all that is man-made. Indifference toward life is common in the case of people who prefer ‘law and order’ to living structure, bureaucratic to spontaneous methods, gadgets to living beings, repetition to originality, hoarding to spending. On the other hand, people who display spontaneity, cherish life and its organic nature, detest technological addiction, and are not inclined to hoarding are described as ‘life-loving’. The inclinations mentioned define not only individuals, but are also reflected in the material and mental creations and attitudes of cultures. Does culture carry the potential of life-loving or death-loving attitudes? To an extent yes, but because we are still not analyzing the industrial society, which could be described as ‘death-loving’, Maccoby’s observations must be tempered and re-formulated in a less extreme form. Culture, *i.e.*, the sum of technology, cognitive biases, social structures, and mythical representations may be understood as either *life-affirming* (LA) or *life-restricting* (LR). For example, tools that compensate biological deficiencies and serve survival means are life-affirming. Technological over-compensation that results in ‘power-tools’ or competitive technology meant to dominate other humans is life-restricting. Material accumulation that serves ‘progress for the sake of progress’ by over-exploiting resources is life-restricting. The individual’s ‘work’ to satisfy his own or his small kinship group’s survival needs is a life-affirming activity. Selling labor to the owners of surplus-creating and resource-depleting technology in order to procure survival needs is life-restricting. Creating morals that sanctify ownership and distribution of resources, and laws that enforce adherence to such morals is life-restricting. Myths that define man’s role as complementary to the natural environment and not opposed to it are life-affirming. Religious and scientific dogmas that place us above a hostile nature in order to rule, ‘manage’ and exploit it, are life-restricting.

Life-affirming and life-restricting adaptive strategies may also be observed in the biological field. The former characterizes vertical and generalized evolution, the latter horizontal and specialized evolution. In the cultural field, the two categories are not mere natural tendencies, but well-defined approaches to life. Vertical evolution, biological or cultural, affirms life, while horizontal specialization restricts its potentials. In extreme cases of cultural accumulation in which the biological-cultural continuum is severed beyond repair, even markedly *life-denying* tendencies may become crystallized, which would be an aberrant manifestation from a biological point of view.

Incipient LR approaches were apparently adapted as strategy during the unreliable climatic conditions that prevailed at the time at which ‘modernity’ granted all the necessary means that allowed extreme reactions to extreme conditions. The long period that was dominated by such unstable conditions necessitated a stable cultural niche that became further consolidated by cultural accumulation. Tens of millennia of niche-consolidating cultural accumulation was enough to allow G-processes to become dominant and entrench themselves in parallel with the cultural niche. When favorable conditions returned at the start of the Holocene, the complexity of the artificial cultural environment could not be reduced. Cultural techniques were employed to adapt rapidly gracilizing populations to rapid cultural accumulation.

4.4. Immediate-Return (IR) vs. Delayed-Return (DR) Strategies

In contrast to the biological field, in which only objective vertical and horizontal ‘tendencies’ could be observed, in the cultural field we may add to these a conscious dimension that introduces vertical and horizontal ‘approaches’. The best possible example is offered by comparing *generalized* (LA) social and economic systems to *specialized* (LR) ones. We will restrict ourselves to hunter-gatherer societies and economies, because the differences between these and modern industrial contexts are too evident.

There has been considerable discussion about the reasons for cultural variation among contemporary hunter-gatherers (Sahlins 1972; Binford 1980; Testart 1982; Woodburn 1982; Price and Brown 1985; Kelly 1995). Most anthropologists recognize a broad distinction between hunter-gatherers with elaborate social and economic systems and those who appear technologically less

sophisticated, but socially more egalitarian. They were variously described as ‘storing’ and ‘non-storing’ (Testart 1982), ‘generalized’ and ‘specialized’ (Price and Brown 1985), ‘egalitarian’ and ‘non-egalitarian’ (Kelly 1995), to ‘immediate-return’ and ‘delayed-return’ hunter-gatherers (Woodburn 1982). Although we have introduced them as ‘specialized’ and ‘generalized’ hunters and gatherers, we prefer the *immediate return* (IR) and *delayed return* (DR) distinction, mostly because this reflects our rational and material biases: DR hunters-gatherers are automatically perceived as more ‘clever’ and ‘advanced’ than IR hunters-gatherers.

Therefore, following Woodburn (1982), we refer to hunter-gatherers with more elaborate social and economic systems as DR and those with more egalitarian social systems, but less complex technology as IR. Let us sketchily summarize and highlight the differences between the two economies (Woodburn 1982; Testart 1982; Dale *et al.* 2004):

- DR hunter-gatherers: large, less-mobile groups / ownership, incipient social stratification / social systems oriented to past, present, future / delays in return for labor invested / hoarding, storage and delayed consumption / technological investment and elaboration / resource specialization / ownership rights over valued assets / planned strategies / conformist / elaborated ritual / aggressive, warlike.
- IR hunter-gatherers: small, mobile groups / egalitarian principles / social systems oriented to present / immediate consumption / low levels of technological investment and elaboration / generalized resource exploitation / flexible strategies / no ownership rights / individualist / communal ritual / peaceful.

Moreover, intentional avoidance of formal long-term binding commitments, relational autonomy in personal affairs, and reverse dominance hierarchy are integral parts of an IR context (Dale *et al.* 2004). That is, commitments, debts, and assertiveness are discouraged. Distributed decision making and communal ritual are both part of the egalitarian character of these societies. Cultural flexibility was also researched, with the surprising conclusion that religious manifestations are far from rigid and orthodox, but very fluid and accommodating in character (Chidester *et al.* 1997). A benign view of nature is dominant, hence the trust in its providing capacities. Paradoxically, IR societies are found in harsh peripheries, like deserts and rainforests. However, they are characterized by their infinite trust in the providing capacities of such an inhospitable environment and have a philosophy of under-exploiting resources (Sahlins 1972). In contrast, DR groups live in more generous environments, but doubt nature’s providing capacities and tend to over-exploit resources (Dale *et al.* 2004).

With DR societies, nature is already perceived as the hostile and unreliable ‘Other’, and the future becomes an ever-present menace. Specialization to restricted but reliable staples and the hoarding of these is common. Social life is structured, and incipient stratification is practiced. ‘Chiefs’ become decision-makers and medicine men take care that religious manifestations follow a rigid and unaccommodating ritual course (*ibid.*).

It is interesting to notice the extent of synchronicity between the attitudes of IR societies and the tendencies that define vertical cultural evolution, and how many of the ‘values’ that define DR societies are precisely those that describe the horizontal cultural process.

Are DR hunter-gatherers a development of IR societies? We have anticipated this question at the beginning of this section, when we implied that DR groups, whose attitudes ascribe to our rational and cultural biases, would appear to be more evolved. The apparently idealized condition of the IR societies on the other hand could confer them the image of the primordial ‘noble savage’, in which case the DR hunter-gatherers would be the next stage in ‘cultural evolution’. Actually, quite the opposite seems to have happened. IR societies are an achieved state, and not a primordial one. Their

present is not our past, as many anthropological studies would like us to believe. Both IR hunter-gatherer and technological man have covered the same ‘evolutionary’ distance in the cultural field, the former by reductions, and the latter by accumulation. The ancestors of both IR hunter-gatherer and technological man entered the cultural field, and only at a later stage would vertical or horizontal adjustments occur, from a commonly-shared initial state that accumulated enough cultural ballast that could be reduced.

The Dale, Marshall and Palgrave (2004) paper we have referred to above focuses on the past distribution of DR hunter-gatherers in Africa and recognizes groups with delays in return but without hierarchy as ‘moderate delayed-return hunter-gatherers’. The authors argue that there were probably forms of DR hunter-gatherers in a number of contexts in Africa during the Holocene. The Later Stone Age East African Kanyore was studied and brought up as an example. The location of the Kanyore sites in western Kenya suggests, according to the authors, the possibility of resource specialization and corresponds with ecological theories that predict economic complexity/specialization where resources are rich, predictable, and storable (Hayden 1990). This should be understood as a temporary opportunistic strategy that makes full use of available resources. We suggest that some of these ‘moderate delayed-return hunter-gatherers’ adopted horizontal strategies of specialization and evolved into typical DR systems. Others, who would later become encapsulated in less generous environments (Woodburn 1982) reduced the dependence on storable resources and took a vertical step toward IR strategies. We tend to go all the way with Woodburn: Bushmen, Pygmies, South East Asian Negritos² live in the most inaccessible parts of formerly much larger territories that were inhabited by their ancestors (Henn *et al.* 2008). Many factors contributed to their encapsulation, but once it happened, only the development of a flexible and generalized IR type system proved to be the right cultural strategy. To give only the Khoisan as an example, their former distribution in southern and eastern Africa made them familiar with both generous and forbidding environments. Most likely, those living in plentiful areas developed moderate and even typical DR strategies. Cultural heterochrony becomes apparently weaker in resource-rich environments, and a not too extreme cultural specialization that enables access to additional resources is always possible. As long as the specializations are not final, they may always be followed by reductions. This is precisely the cultural flexibility that characterizes the vertical coordinate of the cultural field.

As for Upper Paleolithic Europe, the environment was far from providing. However, IR strategies could not be developed, and DR orientations proved to be more suitable in a climate in which the alternation of seasons asked for ‘hoarding’ and planning ahead. The capacity for symbolizing provided the means to plan ‘efficiently’, thus techniques were applied in a context in which over-compensation became essential for survival. Cultural heterochrony could not moderate such strategies, or reduce the accumulated effects of over-compensation. After tens of millennia, cultural inertia made reversal impossible, and by then the cultural niche was a solid construct.

Of course, it is easy to idealize and romanticize the IR ‘lifestyle’. Even when the depictions are accurate, they can still be difficult to believe. IR hunter-gather societies are so unlike all others that it is difficult even for anthropologists who have not personally experienced one to conceive how they can exist; it is almost impossible for non-anthropologists to do so (Dale *et al.* 2004). Therefore, it is important to keep in mind that the characteristics of IR societies described in this section are not idealized, but based on the ethnographic experiences of professional researchers.

² Studied IR hunters and gatherers: Mbuti Pygmies of Zaire (Turnbull 1965; 1966); the !Kung Bushmen of Botswana and Namibia (Marshall 1976; Lee and De Vore 1976; Wiessner 1977; Lee 1979); the Pandaram and Paliyan of South India (Morris 1975; Gardner 1980); the Batek Negritos of Malaysia (Endicott 1974, 1979) and the Hadza of Tanzania (Woodburn 1968, 1970, 1972).

4.5. Integrative vs. Assertive Attitudes

There is no written record that would allow a reconstruction of life-affirming or life-denying attitudes in the case of pre-historic people. Moreover, there are documented hunters and gatherers who display life-affirming characteristics, but cannot be classified as IR or DR. However, by trying to understand and follow the ‘assertive’ or ‘integrative’ character of various cultural phenomena, we may be able to reconstruct what archaeology cannot.

Paleoart, *sensu* Bednarik (1994), depicts not only ‘modernity’, but it also offers an understanding of how modernity was applied. Thus, categories like ‘life-affirming’ and ‘life-denying’, or ‘assertive’ and ‘integrative’ may be detected by concentrating on how people perceived themselves tens of millennia ago. We argue that ‘integrative’ and ‘assertive’ attitudes are reflected in the motifs that prevail in the rock art of a specific period, and their understanding allows us to reconstruct, albeit in an approximate manner, the nature of the accompanying ritual behavior.

At this point of our discussion a short recapitulation of a few subjects that were already addressed becomes necessary. A conscious, but pre-symbolic perception of reality must have been present at an individual level long before its confinement within symbolic barriers. This was introduced as ‘phenomenal (P-) consciousness’ (Block 1995). We have also argued that ‘reality’, in this case must have been experienced very differently from its later, symbolically-corrupted perception. However, individual perceptions and experiences could not be accessed by other individuals without resorting to a modality of transmission. But, verbal modalities and other symbolic means were still not employed. Gestures accompanied by vocalizations must have been present, but these could only be used for mundane tasks. Jung’s ‘collective unconscious’ (1934) could offer a solution by implying that at that level, symbol-free access to individual P-conscious perceptions was possible. However, as we have specified, ‘unconscious’ and ‘subconscious’ are cultural categories that would evolve much later. Hence, staying with Block (*ibid.*), we theorized the existence of an ‘empathic access (A-) consciousness’. ‘Empathic’ should not be understood as a supernatural category, but as an adjective that describes non-symbolic access to another mental state (Bellet and Maloney 1991; Preston and de Wall 2002). Apparently, for tens of millennia, our ancestors resorted to such a mode of ‘communication’. This is *integrative* in character: it does not symbolically sequence objective reality, which is perceived and experienced ‘as such’, with all the information instantly-available to those who behold it, without the causal lag introduced by its symbolic interpretation. Thus, the dimension in which ‘reality-as-such’ could be perceived in a conscious manner was called ‘the Sacred’.

The combined effects of biological and psychological neoteny (Charlton 2006) and of sphenoid shortening (Lieberman *et al.* 2002) resulted in a cranial and facial morphology that made us ready for verbal symbolization and causal perception, long before these faculties became applied (d’Errico *et al.* 2003; Bickerton 2010; D’Anastasio *et al.* 2013). Incidentally, the harsh and unstable environmental conditions of the last glaciation (Frenzel and Pécsi 1992) coincided with a stage in human evolution at which these faculties have also reached their maximum development, well beyond the mere ability for speech. As it became increasingly difficult to oscillate between biological adaptive strategies in an environment that fluctuated irregularly between cold stadials and milder interstadials, we suggest that the capacities granted by symbolic modernity were applied in earnest, and niche construction commenced as an already cultural strategy. The brief interstadial event (*ibid.*) between 43–41 thousand years ago, gave the necessary respite to ‘plan’ the cultural niche. A temporal dimension was introduced to ‘reality-as-such’, which is a pre-requisite for planning. Grammatical language entrenched the temporal dimension, and symbolically-separated frames of reality were distributed in the temporal dimension. Thus, symbols became the building blocks of the niche, and they were cemented with a powerful mix of time and language. Within the cultural niche, symbolic (A) consciousness facilitated the transmission and learning of ‘reality-as-symbol’. Symbolic reality is reduced reality, *i.e.*, the rich texture of ‘reality-as-such’ is reduced to a sketchy ‘reality-as-

symbol'. However, the advantage of this sketchy perception is that it may be easily learned and transmitted. We have called the context within which only this downgraded version of 'reality-as-such' can be perceived, 'the Profane'. Within the profane niche the inventiveness facilitated by psychological neoteny was channeled toward strategies meant to cope with the future, by applying material, mental and social 'techniques'. The relatively cold phase (*ibid.*) that commenced approximately 41 ka ago proved the strength of the cultural niche, and people started to adapt to its fictive, but reliable cultural mechanics.

A relatively mild phase (*ibid.*) followed at approximately 39 ka, but the massive cultural buildup of two thousand years of niche construction could not be reduced, not only because they proved to be successful, but also because of the side-effects of gracilization, which began to acquire all the signs of incipient self-domestication (*sensu* Bednarik 2008). Moreover, cultural heterochrony lost its bite, and it could not regulate the fast adaptation to the realities of the cultural niche. Instead, accelerating techniques (*sensu* Ellul 1964) took over, and by approximately 36 ka ago when another stadial followed (Frenzel and Pécsi 1992), cultural techniques became applied massively. The cave paintings of El Castillo, Coliboaia and Chauvet may be interpreted as the visible result of their application on a grand scale.

But, the memory of the Sacred, the nostalgia for the perception of 'reality-as-such' was still there. In order to gain access to it, techniques were resorted to, again. According to Ellul (1964), one of the first techniques were those meant to buffer between the Sacred and the Profane, and he identifies them as art and ritual.

Trance and altered states of consciousness (ASC) are well-understood phenomena (Lewis-Williams and Dowson 1988; Dowson 1994; 1998; Lewis-Williams 2002). ASC has the potential to demolish the cognitive limitations of the cultural niche, the building blocks of which are held together by time. Diluting the cement of time enables the access to 'reality- as-such', which we suggest to be understood as rather fractal (*sensu* Mandelbrot 1977) than Euclidean in texture, and which exists in an instant, non-sequenced state. These phenomenal perceptions are made accessible by resorting to symbol, very much like the experiences of an ASC-induced trance, which must also be converted to communally-understood symbols, in order to grant access to them.

Jung's archetypes (1934) could serve as a good illustration of such non-sequenced, instant and pre-symbolic phenomenal perceptions. Jung theorized that 'archetypes-as-such' are transformed to 'archetypal images' when they enter consciousness and are given a culturally-conditioned symbolical meaning. But, as we have repeatedly stressed in this chapter, such a possibility may be considered only from the moment at which the Sacred, the Profane and the 'Other' become separated dimensions, and at which this compartmented reality becomes mirrored in a similarly compartmented human psyche. Some would argue that Lewis-Williams' and Dowson's (1988) 'entoptic phenomena' could serve as another parallel example. The two have theorized—very much like Jung—that entoptic phenomena are transformed to construal images in an ASC-induced trance and are given a culturally-conditioned symbolical meaning.

In its initial stages rock art is dominated by geometrical patterns—this is understandable, because 'reality-as-such' cannot be illustrated with iconic symbols. Here we must specify that only images carved in rock survived the vicissitudes of time. But, to decide to carve patterns in rock—an expensive activity without any survival value—implies that the meaning behind the patterns was considered important enough to last in time, and to be accessed by future generations, and last but not least, that time itself was already a well-defined symbolic concept.

These were followed by red dots and hand stencils, with the latter sometimes blown on iconic 'power-animals'. The majority of the hand stencils, as it turned out, were left behind by women and children (Snow 2013). Interestingly, such hand stencils are known from all over the world, albeit from later periods. This could imply that the motivation that made their representation necessary 37 ka ago at El Castillo, Chauvet and Maros—to give only a few examples—appeared at different times, in different places. Thus, the chronological sequence of the motivation behind them is not

synchronous, which would also explain why motifs depicted at an early stage in Europe and Australia would appear only approximately ten millennia ago in southern and eastern Africa, or in the Sahara.

The hand stencil period could be related to communal healing trances and power-tapping rituals, like those still widely practiced by immediate-return hunters and gatherers (Lee 1967; Marshall 1969; Dowson 1994; Deacon and Dowson 1996; Low 2004). The location of the paintings in womb-like caves from which animal-spirits were thought to emerge in a physical form (Garfinkel and Waller 2008), and the fact that women and children left their marks on the animal images captured in two dimensions, suggest that healing could in such cases be fertility-related, as a wish to restore the once numerous herds, the distribution of which became unreliable during the fluctuating climatic conditions that prevailed 40 millennia ago.

Another motif depicted in rock art is the symbolic ‘persistence hunt’ in which, an already slightly specialized, but socially not yet privileged medicine man empathically accesses a ToM attributed to an animal and taps its energy, which is shared with the community in a healing trance. *Therianthropes* depicted in early rock art may be understood as illustrations of this practice, which was primarily a trance dance.

Healing cannot be described as ‘life-restricting’ or ‘assertive’. The contact with the Sacred was still not severed, and the ‘healing force’ was still tapped from it. There were still communally-practiced access rituals, and even individual healers who acquired ‘healing force’ more often than others did not hold special powers, and were not thought to be special. Healing was not related to prestige, but it was meant to serve the entire community. It was shared just like meat, based on egalitarian principles. The healer still participated in hunting and in every other mundane activity (Dowson 1994; Deacon and Dowson 1996). With the Bushmen, healing is not an exclusively ‘women’s business’, although in the initial stages of the practice it might have been. Music had an important role in healing trances. Only the interaction of music, singers and dancers was thought to produce ‘heat’ that was evenly distributed between the participants, and from which energy was transmitted to the healer (Witzel 2011). Singers would rather chant than use words in their songs. Even today, the San and Mbuti practice such communal rituals. When anthropologists asked about the meaning of the songs, the reply was that the songs were ‘older than words’ (*ibid.*).

Cool and semi-arid conditions returned approximately 28 ka ago (Frenzel and Pécsi 1992), which culminated in the Last Glacial Maximum (LGM) between 22 and 14 ka ago. The well-known cave art of the Magdalenian may be perceived as the renewal of the techniques that proved so successful 20 millennia before. Apparently, this was also the period when over-compensation, which was discussed in a previous section, became the dominant aspect of certain cultural niches.

Assertive attitudes commenced only together with the social prominence of medicine men. As a reaction to the already noticeable pathological side-effects of gracilization, healing practices and the medicine men performing them became more specialized and privileged. Access to the Sacred became increasingly difficult, as a result of cumulative cultural evolution. Thus, only limited access to it was possible, and only a limited distribution of the healing force tapped from the pre-symbolic dimension took place (Dowson 1994). Healing power became a commodity, and not the natural resource to which there once was communal access. However, by now the medicine-man could only gain access to the ‘Other’, the fictive ‘dark niche’ to which the Sacred and empathic consciousness were banished, together with natural inclinations that did not decline with the ‘ideology’ of the Profane. Healing became of secondary importance in such contexts, and the emphasis was placed on ritual for its own sake. There is a strong connection between ritual and obsessive-compulsive disorders: the rigid sequencing of a performance that does not make much sense, but is nonetheless guarded and transmitted because it is believed to keep the equilibrium of a present order. Such rituals are based on magic, and because by this time the ‘Other’ was already a feared dimension, its dark and destructive forces were kept at bay with the help of ‘correct’ ritual behavior. There is only one step from healing to spell-casting, and curses already belong to the medicine man’s bag.

Impressive techniques like spirit possession and ‘shamanic journeys’ became parts of the ritual performance, and consolidated the power of the ‘gifted’ ritual specialist. Moreover, power-tapping became extortive: the power-animal was symbolically ‘tamed’ and coerced to share its potency, which was meant to consolidate the authority of the sorcerer. A sorcerer mediates between separate worlds, dissociates himself from both, and exercises his awe-inspiring power over both (Oesterreich 1935; Eliade 1964; Walsh 2001; Cohen 2008). Initiation becomes necessary in order to transmit the rigid sequence of obsessive-compulsive techniques.

The rapid warming and moistening of climate all over Europe approximately 13 ka ago (Frenzel and Pécsi 1992) was probably interpreted by pre-historic man as the result of the techniques applied during the LGM. The ‘achievements’ of the LGM over-compensation were not discarded or moderated, but carried on. In an already entrenched cultural niche, dialectically separated from ‘what it is not’, and with the ‘Other’ slowly taking shape as the mystified version of the Sacred, the unconscious becomes an autonomous category. Split personalities appear in such a split reality, with one foot anchored in the ‘Other’ and the other in the Profane. Only in this context can we imply a link between schizophrenia and ritual, but not before it (Devereux 1961; Noll 1983; Lex 1984).

The generalized use of the bow and arrow was introduced at the time of the Paleolithic-Mesolithic transition, and humans were for the first time depicted in rock art, in scenes in which they dominated over animals, well before domestication (Otte 2009). The power-animals of the Paleolithic descended from cave walls and became harmless decorative objects. The image became separated from its potency, thus the demarcation between the natural world and human society became definitively entrenched. The transition to the Mesolithic corresponded to a radical change in man’s perception of himself. The Upper Paleolithic was still characterized by all-powerful natural laws acting on human destiny. The Mesolithic, in contrast, was a period of ‘assertive’ control of natural laws, and attempted to render man the master of his destiny (*ibid.*). Technology and economy also assumed assertive characteristics, in parallel with ritual. Efficiency became an engrained value, and techniques kept the level of efficiency high. Tools of power and control were designed, and the hunt became almost ‘industrial’ in character. Thus, ever-higher levels of assertiveness were applied, up to the point at which the already strongly-bent biological-cultural continuum was one step before being broken.

5. Comparative Approaches, Strategies and Attitudes

In this section we attempt to isolate the initial hotbed of the pathology that we set out to identify. For this, a comparative approach to various types of societies and economies becomes necessary, in light of the conclusions reached in the previous sections. For a start, two often idealized hunter-gatherer societies are compared, followed by their comparison to a non-specific model of societies living in civilized contexts. We must already specify that the ‘values’ attributed to hunter-gatherer cultures are those that were crystallized during their autonomous evolution in the cultural field. Unfortunately, the approaches, strategies, and attitudes presented are contaminated today, and symptoms like alienation and de-realization became discernible even in the case of the societies studied here. A brief characterization of cultural components is the first step in the comparison, followed by an attempt to place these cultures between the coordinates of the cultural process.

5.1. Kalahari San Culture: Parts of Nature

- Material – low levels of technological investment and elaboration / immediate consumption
- Social – small, mobile groups/egalitarian principles /social systems oriented to present / intentional avoidance of formal long-term binding commitments / relational autonomy / flexible strategies
- Mental – elaborate, but flexible oral transmission traditions / associative / evolved symbolizing faculties
- Spiritual – fluid religious and ritual practices / lack in standardization

Conclusions: balance between all the cultural components; no over-compensation of any of these; no subordination of cultural components to each other. Typical IR strategies; LA approaches; integrative attitudes. The cultural development follows this configuration, and it is markedly vertical in orientation. Cultural heterochrony checks over-compensation, and cultural techniques are not widely applied, except for immediate survival needs.

The balanced state of the San, but generally of all IR hunters and gatherers was idealized in anthropological research (Sahlins 1972) and anarcho-primitivist literature (Zerzan 1999), and presented as a cultural state more desirable than civilization. The San example shows that the biological - cultural continuum could be restored (we have argued that IR strategies are not relics, but achievements of the cultural process). The Sacred is not banished, it is still accessible (Low 2004). Communal trance is still widely practiced (Marshall 1969; Dowson 1994; Deacon and Dowson 1996), and pre-symbolic conscious modes are easily accessed.

The San are indigenous people, modernity ‘surprised’ their ancestors in their present location, and no elaborate techniques were needed to buffer between man and environment. The land was known to human consciousness, and consolidated pre-symbolic perceptions of it did not raise the need to name it or, ‘create’ it. Thus, the Sacred is very present in Bushman consciousness. Ritual is fluid, no orthodox correctness must be observed (Chidester *et al.* 1997). The cultural niche accommodates natural realities, which are integral parts of it. The San perceive themselves as parts of nature.

5.2. Central Australian Aboriginal Cultures: Guardians of Nature

- Material – low levels of technological investment and elaboration / immediate consumption
- Social – small mobile groups / egalitarian principles / social systems oriented to present / elaborate kinship systems / formal long-term binding commitments / relational commitment / elaborate initiation and punishment mechanisms
- Mental – elaborate oral transmission traditions / associative / evolved symbolizing faculties
- Spiritual – rigid religious and ritual practices / elaborate standardization

Conclusions: disturbed balance between the cultural components; social and spiritual over-compensation; subordination of cultural components to each other (mental and material to spiritual). Still integrative, partly IR strategies, but not on the social and spiritual plane; generally LA approaches. The cultural process follows this configuration: a median line that is not characterized by cultural accumulation, but not by reduction, either. Although an over-compensation of the spiritual and social components is present, cultural heterochrony did not lose its bite. However, certain restrictions occur, mostly in the social context. Although rigidly specialized, and even optimized in some aspects (Taçon 1989; Glowczewski 2007; Piotrowski 2011), no pathological manifestations can be discerned, with the exception of mild ritual-related compulsive-obsessive disorders. The cultural--biological continuum is extant, even in a markedly symbolic context. The Sacred is not banished, but is still accessible, albeit with the help of symbolically-devised techniques.

Upon entering Australia, the ancestors of the Aboriginals were cognitively modern, *i.e.*, in full possession of symbolizing capacities. Seafaring would not have been possible without what is thought of as modernity (Bednarik 2003b). The land was reflected in human consciousness for the first time. The uniqueness of the Australian landscape enabled its phenomenal perception, which preceded its symbolical interpretation. Unlike the ancestors of the first Americans, who have encountered landscapes that did not differ from what they knew, ‘reality-as-such’ could be first experienced, and only after that converted to ‘reality-as-symbol’. It was an almost instant process, based on first experience, and not on cumulative symbolic transmission. Thus, the Sacred is very real in Aboriginal

culture. Language and time ‘created’ it—it was named, and [Dream]time provided the frame in which creation-events were sequenced. Dreamtime, although linear in appearance, was given a cyclic dimension and periodically re-iterated through standardized ritual. The cultural niche, albeit a symbolic construct, is based exclusively on natural realities, which are its integral parts. The landscape became a complex exogram (*sensu* Bednarik 2003a), full of meanings, but not exclusively spiritual—information related to the availability of resources, and mental pictures related to the origin of the landscape were also contained in this exogram (Berndt and Berndt 1989). Dreamtime, very much like dialectics, implies directionality toward present realities and defines man’s role as essential in their maintenance. The Aboriginal perceives his role in nature as a responsibility: the perfect stage reached during Dreamtime must be preserved and periodically refreshed with proper ritual behavior. Thus, he sees himself as a guardian of nature.

Social networking played an important role in surviving the changes brought by the Ice Age. However, the rigidity of this almost optimized culture made it vulnerable. Although it could cope very well with natural changes (desertification during the Ice Age and rising sea levels following it), these events were culturally incorporated, and they form a ‘geomythical’ sequel of Dreamtime (Hamacher and Norris 2014). Only cultural changes disrupted it: the arrival of the Europeans and of the cultural ‘values’ they imported.

We have introduced the San and Aboriginal examples mostly because, as said, these are the two most idealized hunter-gatherer societies. The morphological differences between the San and the Australian Aboriginals should also be considered before grouping them together in an idealized category. Khoisan populations, restricted today to southern Africa, display highly ‘pedomorphic’ (juvenile, neotenuous) features, while the Aboriginal population of Australia is characterized by a ‘gerontomorphic’ (mature, robust) appearance (Hulse 1962). With the San, neotenuous processes are still active, due to their vertical orientation in the cultural field. The Aboriginals on the other hand, because of the stability of their culture, were shunned from the extreme gracilization that characterizes populations living in rapidly-changing cultural environments. Given the median line followed in the cultural field, N- and G-processes apparently neutralize each other. Thus, present morphological and cultural differences have a long history that goes back for tens of millennia.

IR hunters-gatherers (*sensu* Woodburn 1982) are apparently the only societies that can be placed in the proximity of the vertical coordinate. The majority of hunter-gatherer cultures, albeit more integrative and life-affirming than civilized contexts, tend to be clustered in the lower triangle of the cultural field, i.e., between the median line proposed for the Aboriginal example, and the horizontal coordinate of the cultural field. Life-restricting approaches and assertive attitudes may already be observed in the case of DR hunters-gatherers, whose cultures tend to be characterized by accumulation. Pastoralist and farming communities are already highly specialized and may be placed in the proximity of the horizontal coordinate. In the case of these latter societies, the biological-cultural continuum is strongly bent, but not yet broken. The absolute collapse of the continuum occurred only in isolated cases. Eventually, the exception would become the rule. Today, it is almost impossible to recognize such a continuum, even with IR hunters and gatherers, who were practically exterminated. Not only physically, but culturally, too: the survivors were ‘civilized’ by force.

5.3. Civilized Societies: Masters of Nature

- Material – extremely high levels of technological investment and elaboration / future-oriented / efficient
- Social – mass society / totalitarian principles / regimentation / social systems oriented to the future / diluted kinship systems / legally-regulated long-term binding commitments / complex relational commitment / powerful legal system / social inequity / moral deficiency

- Mental – culturally biased and elaborate / rational and mechanistic / elaborate and institutionalized cultural transmission mechanisms / over-developed symbolizing faculties / suppression and repression mechanisms / psychotic manifestations
- Spiritual – rigid / institutionalized / standardized religious practices

Conclusions: disturbed balance between the cultural components; poignant material and mental over-compensation; subordination of cultural components to each other (the spiritual and the social are both subordinated to the material and the mental); assertive attitudes; ‘life-denying’ approaches. The cultural process follows this configuration, and it is markedly horizontal in orientation. Cultural techniques are heavily employed, and cultural heterochrony is turned off. Gracilization processes are accelerated.

The origins of this example can be traced back to the Eurasian Upper Paleolithic ‘modernity’. Over-compensation was demanded by hostile and unreliable conditions, the natural world had to be separated from the human dimension and ‘tamed’. Symbol was heavily relied on and the cultural niche was built to last, and consciously dissociated from its natural base. The not too generous environment was forced to yield its scarce resources, these had to be stored with an eye to the future, and man started to perceive himself as the master of nature and the manager of its resources. Efficiency was also in demand, just as much as power-tools and big-scale, assertive hunt. The loss of the Sacred occurred as an effect of the absolute, but necessary reliance on cultural strategies that could cope with environmental restrictions. Cultural inertia made the reduction of the accumulated assertive attitudes impossible. The Sacred and the Profane became dissociated, with the former suppressed to the ‘Other’. This implied the de-realization of the world outside the cultural niche. Unconscious categories started to take root in the human psyche, granted by suppression mechanisms. Cultural heterochrony became entirely supplanted by cultural techniques. Biological heterochrony was deregulated and could surface only in cultural contexts (cultural selection for gracile, pseudo-neotenus features). Later, by the time when dialectical bias and rational thought would be already firmly rooted values, mechanistic characteristics would be attributed to the organic. Organic manifestations that could not be rationally and mechanistically understood and interpreted were slowly suppressed to the ‘Other’, which would become the all-accommodating ‘collective unconscious’.

5.4. Summary: Primitive Wellness vs. Civilized Madness

How come that ‘sane’ human societies, as illustrated in the first examples, did not become dominant? Or, that ‘aberrant’ societies, as discussed in the third example, took over the world? Especially, since we know that by around 70 ka ago Khoisan groups formed the majority of the World’s human population (Schuster *et al.* 2014). Even if the genetic evidence on which this information is based is just as biased as that brought up by the advocates of ‘African Eve’, we cannot ignore that the territory once inhabited by Khoisan populations extended from the Cape of Good Hope to the Horn of Africa (*ibid.*, Henn *et al.* 2008). But, as already discussed, ethnicity cannot be equated with culture, and given the variety of ecosystems in such a vast area, it is plausible to presume that some of these early Khoisan populations practiced DR, and even pastoralist economies, with various degrees of life-affirming / life-restricting approaches, and integrative / assertive attitudes. This geographical continuum became eventually disrupted, and groups with more assertive cultural attitudes took over. Only encapsulated (Woodburn 1982) IR hunter-gatherers like the Sandawe and Hadza in eastern Africa were left behind. The rest of the original population was easily assimilated, especially if they already had DR or pastoralist economies, and only Khoisan genes survived, like in the Ethiopian Highlands (Semino *et al.* 2001). The specific characteristics of ‘civilization’ that allowed the dissemination of its values to every corner of the inhabited world and to leave its marks even in the uninhabited corners will be addressed later in this inquiry.

In this section, we have attempted a brief and far from exhaustive comparison of the ‘savage’ and the ‘civilized’. Even such a superficial comparison suffices to make it clear that the origins of the pathology that we are trying to isolate must not be sought in natural contexts. Despite the presence of compulsive-obsessive disorders associated with ritual, or incipient dissociative disorders resulted from the banishment of the Sacred to the ‘Other’ we cannot define these societies as ‘sick’. Superstitions, aggressiveness, taboos, and whatever we like to associate with the ‘savage mind’ are parts of cultural diversity, and nothing more than that. Life-restricting approaches and assertive attitudes are only secondary aspects of many cultures, but they become dominant only within civilized contexts. Only in the case of the cultures in which the material and mental components become over-compensated do life-restricting approaches assume a ‘life-denying’ character. This, in our understanding, cannot occur in any context where an organic biological-cultural continuum, however bent and close to the breaking point, still exists. Cultural heterochrony is still exercising its regulating function, even in contexts in which techniques dominate. The risk is there, but it is still managed. The Sacred becomes banished in the majority of such cultures, but not suppressed. When the mechanistic aspect of a specific cultural niche is projected upon the biological dimension to the extent that its perception becomes so highly biased that even organic reality is perceived to ‘behave’ according to mechanistic principles—as in the popular understanding of the ‘quantum enigma’—we may observe a biological - cultural continuum that is broken beyond repair. Techniques are employed to buffer between the organic character of man and the mechanistic aspects of his material, mental and social life. Moreover, when organic inclinations tend to come to the surface, despite well-established repression mechanisms, these are interpreted as pathological manifestations of subconscious categories. Such processes take place in a frame that we often and mistakenly understand as ‘cultural evolution’.

6. Cultural Dialectics

6.1. *Compensatory vs. Defense Mechanisms*

Conscious compensatory mechanisms came to their full expression in the creation of cultural environments that proved to be more stable than the unreliable conditions that characterized the last glacial. Especially in Eurasia, where the unpredictable oscillations between cold stadials and milder interstadials demanded the massive application of the faculties granted by modernity, which were expressed only locally and sporadically during the Middle Paleolithic. However, the climatic stress did not have a worldwide distribution. For example, southern Africa and South-East Asia enjoyed relatively stable conditions during the glacial (Henn *et al.* 2008). The paintings of the Apollo Cave (Namibia, 35 ka) and the Maros rock shelter (Sulawesi, 37 ka) make it clear that the inhabitants of these areas were just as ‘modern’ as the European painters of El Castillo, Coliboaia, and Chauvet (37 ka). Niche construction was not a typically European phenomenon. But, as we have already stressed, cultural niches may be either generalized, or specialized. The former, very much like generalized cultures, are characterized by reductions, which confer flexibility, while the latter tend to accumulate, and thus they become rigid. In the European example, cultural accumulation lasted for tens of millennia and the cultural niche became the only known reality, for reasons that were already discussed in detail.

Following the conclusions of the previous section, we will focus on the isolation of the origins of contemporary pathological manifestations within the specific context of the European Upper Paleolithic.

Within a well-established cultural niche, the compartmented perception of reality becomes deeply-engrained. Initially, a separation between the Sacred and the Profane occurs, but it would still take a long period of cultural accumulation until the separation would become irreversible. Eventually, the access to the Sacred would become impossible, and various techniques would be employed to regain

access to it. Art and magic were proposed to be the techniques of buffering between the profane reality and the memory of the Sacred (Ellul 1964). However, these techniques mystified the Sacred to such an extent that at a certain stage only professional mediation between the two dimensions became possible, and the Sacred became a very hazy concept, namely: everything that the Profane was not. This in its turn de-realized the Sacred and transformed it to a convenient place to which all the ‘incorrect’ manifestations of behavior that were not tolerated by the ‘ideology’ of the Profane could be banished. Beside elements related to behavior, those aspects of reality that could not be symbolically sequenced, perceived and transmitted were also mystified and relegated to this already undefined dimension, which gradually became ‘the Other’. Conscious compensatory mechanisms slowly mutated to unconscious defense mechanisms. Defense mechanisms became necessary in order to counter the threat presented by the uncontrollable ‘Other’ and by the ‘unacceptable’ impulses of individuals in an already irreversible cultural setting.

Only from this moment may we talk about a *subconscious* on the individual level, and an *unconscious* on the collective plane. Jung’s ‘collective unconscious’ (1934) could define very well this new dimension, and his ‘collective conscious’, or ‘consensus reality’ could be used as an alternative term for the Profane. Moreover, Adlerian compensatory activities (1917) could be considered as a model in the understanding of the unconscious aspects of cultural over-compensation. Hence, a well-adapted individual in a civilized context will apply various defense mechanisms as psychological techniques brought into play by the subconscious to manipulate, deny, or distort reality, in order to defend against feelings of anxiety and culturally ‘unacceptable’ impulses. Beside compulsive-obsessions and dissociative manifestations, which will soon be given the deserved attention, two other techniques are of special interest to us at this point, namely *repression*, which is the burial of thoughts from one’s awareness, and *rationalization*, which is the justification of one’s behavior as ‘sane’. Defense mechanisms are deeply rooted in the human psyche, and they become permanently fixed due to the massive reliance on transmission biases, which acquire a dialectics of their own.

6.2. Mystification, Suppression and Repression

DIT theoreticians Boyd and Richerson (1985) defined a number of possible transmission biases. These occur when certain cultural variants—configurations of cultural components in our case—are favored over others during the process of cultural transmission. Of importance here are the so-called ‘context biases’. There are two major categories of context biases: (1) model-based biases and, (2) frequency-dependent biases (*ibid.*). Model-based biases result when an individual is biased to choose a particular ‘cultural model’ to imitate. Frequency-dependent biases are a result of individuals preferring to choose particular cultural configurations based on their perceived frequency in the population. The most common frequency-dependent bias is the ‘conformity bias’. This is a result of individuals attempting to copy the ‘correct’ cultural attitudes prevalent in the population. Another possible frequency dependent bias is the ‘rarity bias.’ The rarity bias results when individuals preferentially choose cultural variants that are less common in the population. The rarity bias is also sometimes called a ‘nonconformist’ bias (Henrich and McElreath 2003). We would like to stress the importance of the frequency-based biases. The classical structural model of *Id*, *Ego*, *Superego* is well-known in psychoanalysis, and we offer it as an illustration that surprises the dynamic character of the transmission biases.

The *Id* is defined as the sum of subconscious individual potentials. These are unfortunately only unrealized potentials, because of the censorship of the *Ego*, which should be understood as the commanding and controlling aspect of all psychical activities. The *Ego* must fulfill extremely complex functions, which are necessary for the proper functioning of the psyche in a given cultural context, to which it must adapt. The *Id* is dominated by the principle of pleasure, *i.e.*, immediate satisfaction, while the *Ego* is characterized by the principle of social reality, and it censors immediate pleasure and delays it, by setting it as a reward to be enjoyed later, when deserved with socially-acceptable behavior. The *Ego* allows only for a conscious, conditioned and delayed sense of pleasure. The

tendencies of the *Id*, which do not serve survival in an environment chosen by the *Ego*, or endanger it, are censored. The *Ego* does not bow to the *Id*'s principle of immediate pleasure, there is an ever-present conflict between the two, the result of which is 'civilized behavior' which in its turn facilitates survival in the social environment and conditions pleasure.

At a higher level, the *Superego* is the adaptive goal of the *Ego*, the set of values to which the latter tends to conform. This category does not belong to the individual psyche, but to the social, collective one. The *Superego*, in the case of an adaptive move of the *Ego*, becomes the culturally selected-for set of 'right' and 'sane' values. The *Superego* emits the signals to which the *Ego* responds, albeit opposed by the *Id* which attempts to realize its culturally unconditioned potentials. These are seen as 'immoral' and 'aberrant' by the *Ego*, as they do not conform to the 'right' and 'sane' signals of the *Superego*. The tendencies of the *Id* are repressed by the censorship of the *Ego* and only the inclinations that do not contradict the values set by the *Superego* are allowed to come to the surface, as a delayed compensation of the frustration resulted from not fully living out the potentials that could have been realized. Transmission biases play an important role in the definition of what is 'correct behavior', and serve as the censorship standards of the *Ego*.

In initial civilized contexts, the mechanisms addressed by psychoanalysis and DIT occurred as a *mystification* of the Sacred and its equation with everything that could not be symbolically approached, comprehended, and transmitted. These categories were initially banished to a 'dark niche', the 'Other'. Cumulative cultural evolution led to the parallel accumulation of 'aberrant' side-effects that could not be symbolically interpreted and integrated. This led eventually to the crystallization of the censorship mechanisms discussed above. The contents of the 'Other' became increasingly enlarged, and the 'dark niche' became a vaguely defined category that could not be consciously accommodated by 'consensus reality'. In immediate-return societies, as seen in the previous sections, there is no need for such mechanisms. More 'advanced', but still not 'civilized' societies simply banished everything that could not be accommodated by their still not too complex cultural niches, including the memory of pre-symbolic perceptions of 'reality-as-such' to the 'Other'. However, banishment must not be confused with *suppression* or *repression*. These would appear, together with censorship mechanisms, only within 'civilized' contexts.

It would take tens of millennia to develop a thickly-layered and complex cultural environment with a life of its own, in which exclusively cultural components would determine its inner logic. The cultural niche is fluid, and it changes its values at an amazingly fast pace. It is precisely this acceleration that biology cannot keep up with, and various techniques become employed to buffer between the markedly different biologically-conditioned and culturally-imposed rhythms.

Curiously, the role played by paleoart in archaic contexts, which we suggested to be understood as the conversion of 'reality-as-such' to 'reality-as-symbol', and which also served as a guide for ritually-correct behavior, is continued in present contexts by 'art'. We are still haunted by the loss of the Sacred and searching for deeper meanings, and we expect to find them in art. We are inclined to identify art as the only modality left to gain a glimpse into the Sacred. Likewise, the artist is driven by the wish to access and represent the Sacred. Unfortunately, art is subservient to style, which in its turn is subject to frequency-based conformist or non-conformist biases, as suggested in DIT (Henrich and McElreath 2003). Thus, the creative act cannot ignore the censorship of the *Ego*, and becomes itself a powerful value-generating technique in cultural dialectics, no matter how pure its underlying motivations may be.

Here we must mention again the defense mechanisms addressed in the previous section, especially 'repression', or the burial of thoughts from one's awareness. Repression must be understood within its right context, which is defense, but on an individual, and conformist level. Suppressed categories belong to the collective unconscious, while repressed inclinations are associated with the subconscious. The Sacred was suppressed to the collective unconscious, while tendencies to

‘incorrect’ behavior are repressed to the individual subconscious. However, both may resurface as symbols in the conscious mind, on an individual, or on a collective level. Symbols that re-emerge from the collective unconscious were called ‘archetypes’ by Jung (1934). These were related to in the section in which we discussed their relationship to rock art. In the context discussed here, it is the resurfacing of repressed categories that we analyze and associate with art. These categories are dominated by the principle of pleasure and in their demand for immediate satisfaction they try to re-establish themselves and gain acceptance. The symbolic aspect under which they resurface is often and mistakenly perceived as a revelation and a glimpse into the Sacred. The latter, in this case, is simplistically understood as a dimension that would accommodate and approve such principles, thus the opposite of the Profane, which demands their repression. Hence, a fictive world in which repressed ‘taboos’ are rationalized would be the outcome of the creative act.

In other words, the *Id*, at its contact with the *Ego*, becomes either active (creative) or passive (selective). The *Ego* censors the ‘correctness’ of the creative impulses and of the selective inclinations in an existing context of the *Superego*. Hence, selection is the test of creation, the act that confers it a culturally-defined ‘value’. An increase in the complexity of the *Superego* is the result, but without endangering its prevalent values. As a compromise brokered by the *Ego*, the new creation would not replace the whole set of culturally-accumulated values, but only build on them and enlarge their contents. Moreover, the new creation would also bear the (stylistic) imprint of the values which it tried to replace. Such a thickly-layered cultural niche acquires a degree of stability that allows it to relax its censorship mechanisms and tolerate the re-emergence of an increased number of formerly repressed inclinations. Thus, ‘taboos’ that were perceived as a threat hundreds of years before become ‘acceptable’ at the moment at which the niche is solid enough to accommodate them. A false sense of ‘advance’ accompanies the process, which becomes ‘cultural evolution’. However, such a thickly-layered artificial reality effectively blocks any perception of reality that is external to it. Tens of millennia of cumulative cultural evolution relax censorship and repression mechanisms to such an extent that even pathological inclinations slowly re-emerge and become ‘normal’ components of the ‘open-minded’ cultural landscape.

The creation-selection feedback loop that contributes to the growth and stability of the cultural niche feeds—in a perverse way—on the nostalgia for the Sacred, which motivates both creation and selection.

7. Collective Dissociation: Etiology, Spread and Mutations

7.1. Traumatic Triggers and First Manifestations

The application and stabilization of symbolic modernity introduced ‘history’. Following this logic, the ‘pre-symbolic age’ that was characterized by a modern and conscious, albeit a rather phenomenal perception of ‘reality-as-such’—which we called the Sacred—is pre-history. All of us—‘savage’ and ‘civilized’ alike—live in symbolically-constructed cultural niches, and thus in the historical dimension. However, as stressed before, these niches may be generalized or specialized, depending on the balance between their cultural components. The impact of cultural niches on the environment and the populations living in their reality differentiates them further into assertive or integrative, and life-affirming or life-restricting. Specialized niches in which unconscious categories are already present, and in which defense mechanisms police their ‘ideology’ appear only following the de-realization of the Sacred and the creation of the ‘Other’, the hazy dimension to which a demonized Sacred, together with all the ‘incorrect’ impulses of the human psyche are banished.

A compartmented reality attracts a compartmented psyche. Fear of the ‘Other’ and the wish to control its menace result in specialized ritual behavior, which is the assertive variant of a formerly integrative ritual based on communal access to a Sacred that was not perceived as a menace, but only as a parallel dimension.

The origins of contemporary syndrome-like behavior may be detected for the first time in such a context. Indeed, specialized ritual is already displaying signs of *compulsive-obsessive disorders*, and also contains a latent form of *dissociative fugue*. *De-realization* was already mentioned as the phenomenon that accompanied the banishment of the pre-symbolic mode of perception to the ‘Other’. The loss of the Sacred and the introduction of linear time left a deep *trauma* on the human psyche. The *obsession* with the future (afterlife) and past (origins) are not determining psychological aspects in the case of societies oriented toward the present, of which IR hunters and gatherers are the best example. The dominion of historical time severed the contact with life, which manifests itself in the present. Hence, these ‘sane’ societies maintained their life-affirming attitudes, and were shunned from the *nostalgia* for the pre-symbolic age and the ‘terror of history’. The abandonment of pre-symbolic perception and the full acceptance of linear historical time is one of the reasons for modern man’s *anxieties* (Eliade 1957). Man desires to escape the linear succession of events which, in Eliade’s view, is empty of any sacred contents. The cognitive barriers imposed by the exclusively symbolic perception of reality added *frustration* to the trauma. The *repression* of impulses that are not tolerated by the censorship mechanisms of the cultural niche, or the individual living in it, only added to the frustrations. The inevitable appearance of the pathological side-effects of self-domestication (Cochran and Harpending 1998; Steiner 2010a) only strengthened unconscious defense mechanisms and emphasized *rationalization*, which is the almost pathological justification of the ‘correctness’ of the Adlerian fictive reality. *Separation anxieties* evolved as self-domesticates unconsciously perceived their condition and felt abandoned without a ‘master’. *Manic-depressive* oscillations between two poles of self-perception—‘man his own master’, and man at the mercy of the ‘Other’—were another side-effect. The yearning for a father figure and for authority resulted in the parallel strengthening of conformist biases, while the ‘man his own master’ attitude was paralleled by non-conformist inclinations (Boyd and Richerson 1985; Henrich and McElreath 2003) and incipient *Oedipus complexes*. The forced *organic – mechanical continuum*, which is the result of material and mental over-compensation, becomes another major source of frustrations.

All the components of a pathological predisposition seem to be already established at the start of history. As seen, this is not necessarily an effect of cultural evolution—only a specific mode of cultural specialization precipitated their manifestation.

7.2. Collective Dissociation

Interestingly, most of the symptoms emphasized above (in italics) converge in, and are mentioned in the same breath with a syndrome called *dissociation*. In psychology, the term dissociation describes a wide array of experiences from mild to severe detachment from reality and the immediate surroundings. In severe cases, dissociation may mutate to *psychosis*, and the absolute loss of reality (Dell 2006).

Dissociation is commonly displayed on a continuum (Dell and O’Neil 2009). In mild cases, it can be regarded as a coping mechanism or defense mechanism in seeking to master, minimize or tolerate stress (Snyder 1999). At the non-pathological end of the continuum, the syndrome may manifest itself as *daydreaming*, or an *altered state of consciousness* (Lynn and Rhue 1994). More pathological aspects include *depersonalization* (the perception of the self as unreal) and *de-realization* (when the world itself becomes unreal). Forgetting identity or assuming a new identity is known as *dissociative fugue*, and the fragmentation of identity or self into separate streams of consciousness is described as *dissociative identity disorder* (Coons 1999).

Let us attempt an understanding of dissociation on a collective level. The sensation of detachment that leads to de-realization can be described as the perception of an immaterial entity that separates a person from the outside world, such as a pane of glass, or a veil. Indeed, the accumulated cultural layers mentioned in this chapter act as a deforming prism that becomes increasingly opaque due to biased perception and transmission. The world seen through the prism lacks vividness and emotional coloring. The degree of familiarity one used to have with ‘reality-as-such’ is blocked from recall, and

only its deformed aspect may be experienced. Profane cultural filters that act as cognitive barriers suppress ‘reality-as-such’ to another dimension, and mechanisms of censorship repress the ‘unacceptable’ yearning for the Sacred, which would emerge only under a de-realized and symbolic guise, as a compromise tolerated by the ‘ideology’ of the cultural niche. Depersonalization also occurs in the cultural niche, and it may be explained with the conformist inclination to ‘fit’ in a context that is perceived as ‘correct’. Repression in this case trims natural inclinations and a person dissociates from those ‘unacceptable’ sides of the self that do not conform to an ‘ideal’ defined by model-based biases. Such a depersonalized individual would become a ‘success’ and favored as a mating choice.

The creation of the autonomous cultural niche commenced as a *conscious coping mechanism* and was enabled by evolutionarily developed capacities, in order to overcome and master environmental stress. Once the niche became permanent, due to cultural inertia, *subconscious defense mechanisms* guarded it and cumulatively enriched its texture, as discussed in the previous section. The inevitable de-realization of the Sacred and of any reality external to the cultural niche was a further dissociative step in our cultural specialization. The cultural being assumed a new, but depersonalized identity, conditioned by the ‘ideology’ of the niche and by the biased transmission of ‘correct’ behavioral models. The fragmentation of the self into a multi-layered entity that mirrors the artificially-compartmented reality set the individual on the irreversible continuum followed by the pathology.

Dissociative disorders are thought to be the results of traumas preceded by stress (Abugel and Simeon 2006). The unstable climatic conditions prevalent at the time when human compensatory capacities were at their maximal stage of development may be considered as the stress that triggered the choice of niche construction as a compensatory mechanism. The de-realization of the world not covered by symbolic cognition, and the nostalgia for the pre-symbolic perception of reality may be understood as the trauma that introduced dissociation as an effective defense mechanism. Moreover, the hypothesis that traumatic experience may affect the assessment of the more distant past by altering the experience of the past and resulting in dissociation from the past (Stern 2012) may be responsible for the biased perception of evolution and other natural phenomena as linear processes with inherent finalities, *i.e.*, the projection of the values of the cultural niche on non-cultural realities. This may explain the entrenchment of the dialectical bias and its application in the understanding of phenomena that are independent of cultural interpretations. Such biased perceptions and interpretations result in the de-realization of these phenomena, and their reduction to the sketchy and symbolic level of an already dissociated profane reality.

C. G. Jung (1991[1939]) theorized that dissociation is a natural necessity of consciousness to operate in one faculty unhampered by the demands of its opposite. Thus, on its collective level, dissociation becomes the means to control the unmanageable ‘Other’ and give a rationalized justification to the ‘correctness’ of the Profane.

Dissociation was also related to schizophrenia (Stern 2012), which together with altered states of consciousness—also a dissociative phenomenon, albeit on the mild end of the spectrum—were often brought together under the umbrella of ‘shamanism’ (Noll 1983; Lex 1984). However, it must be stressed that the word ‘shaman’, which is culturally specific, is often generalized and used to explain unrelated cultural manifestations. Although the capacity to experience ASC is a psychobiological faculty of the species and thus universal, the utilization of ASC is culture-specific, and thus variable. But, a split reality inevitably results in a split personality. Ritual specialists, who are expected to mediate between the Profane and the ‘Other’ may indeed display schizophrenic symptoms. Psychoactive substances are widely used in specialized ritual and can often induce a state of temporary dissociation. This may be ‘counter-dissociation’ in integrative ritual, with the goal to reduce the accumulated cultural ballast that distorts the perception of ‘reality-as-such’, and to alter symbolic consciousness, which is the main obstacle for a phenomenal perception. On the other hand, in the case of specialized ritual, a self-induced dissociation is necessary in order to be able to mediate

between the already dissociated aspects of reality, or to perform the impressive ‘spirit possession’, ‘shamanic death’ and ‘shamanic journey’ performances (Oesterreich 1935; Cohen 2008).

Dissociation in community samples is most commonly measured by the Dissociative Experiences Scale (DES). This considers symptoms such as depersonalization, de-realization and assuming new identity to be the core features of dissociative disorders (Van IJzendoorn and Schuengel 1996). The DES also stresses that dissociation evolves on a continuum, from mild to severe. Cultural accumulation and collective dissociation run apparently in parallel. We could follow their common advance on a hypothetical graph inserted between the coordinates of the cultural field (Fig. 2). In this case, ‘life-affirming’ should be marked on the vertical o’-y coordinate, and ‘life-denying’ on the horizontal o’-x’.

7.3. Is Collective Dissociation an Evolutionary Risk?

The generalized (vertical) mode of biological evolution stresses the role played by neotenus processes in human evolution. Neoteny must not be understood as a process that manifests itself exclusively in morphology. Its cognitive implications are equally far-reaching. On one hand, life escapes the attraction of the horizontal, which would restrict its potentials, but the price of this autonomy is high. The pedomorphic ape that is the result of such an evolution is extremely vulnerable. But, on the other hand, the means to compensate for such an unspecialized morphology is offered by neoteny itself: the juvenile cranial morphology allowed the development of traits like curiosity, inventiveness, and sociability (Ashley Montagu 1989). Psychological neoteny (Charlton 2006) and cranial base shortening (Lieberman *et al.* 2002; Kimbel *et al.* 2014) may be seen as ‘aid packages’ that could be used as means for further compensatory activities. The former is characterized by its inherent potential for learning, while the latter has as a side-effect the development of a cranial morphology that would eventually enable a highly developed capacity for symbolizing. The symbolic interpretation of reality granted by cranial base shortening was easily learned with the help of the faculties granted by psychological neoteny. Moreover, symbolizing proved to be an efficient technique to transmit what was learnt. Especially when niche construction commenced as a coping mechanism meant to overcome and master environmental stress. Niches, as already stressed, may also display generalized and specialized tendencies, according to the emphasis placed on specific cultural components. In specialized niches humans started to specialize to their own culture. This could happen because of ‘efficient’ techniques that displaced cultural heterochrony. Thus, cultural accumulation became accelerated instead of being slowed down, and biology could not follow the pace. Neoteny was displaced by gracilization, which may be understood as a shortcut taken by the former in order to bridge the gap. Moreover, cultural selection favored and accelerated gracilization, because its morphological effects manifested themselves in cranial changes that in their turn increased the capacities for symbolization. All the other morphological manifestations of gracilization, together with its psychological side-effects became ‘normal’ components of the cultural landscape of an Adlerian fictive reality that could not only accommodate, but also rationalize them. Moreover, the reality of the cultural niche became the only reality, utterly dissociated from its organic base. Therefore, dissociation is an evolutionary risk. But, it was not meant to happen, as indicated by the example of immediate-return hunter and gatherer societies brought up in this chapter. Apparently, the appearance of the pathological stages of the disorder was facilitated by the over-compensation of specific cultural components, namely: the material and the mental. Although present, the disorder stayed confined to its non-pathological manifestations in most human cultures. However, in the case of some extremely aggressive and life-restricting cultures, certain pathological aspects become discernible, but these are local manifestations that affect only these populations and their immediate neighbors.

7.4. *The Spread of Collective Dissociation*

The Eurasian example is repeatedly brought up in discussions that board the subject of symbolic modernity, especially the Franco-Cantabrian cave art corpus. This is understandable, as the region was thoroughly researched, and because the scholars involved in the research were biased toward a Eurocentric interpretation of the origins of civilization. We may be accused of a similarly biased approach. We have referred to it extensively because our inquiry focuses on the cumulative acquisition and establishment of assertive attitudes, and because the European evidence conforms *par excellence* to these phenomena. However, Europe was far from being ‘civilized’, but the assertive and life-denying attitudes of what would be known as ‘civilization’ became already well-established there at the time when history was still not documented in written records. Without the contributions of the Levantine Neolithic, the Eurasian model could have remained an isolated ‘barbarian’ state, without its present global ramifications. What we refer to as ‘civilized contexts’ in this chapter must be understood as the combined and fully-matured manifestation of European, east Asian and Levantine assertive mentalities.

As Marcel Otte (2009) noticed, by the Paleolithic–Mesolithic transition man has already developed the attitudes that made him ‘ready’ for the Neolithic. Domestication played an important role in the emergence of such attitudes. The process commenced with the *domestication of symbols*, which enabled the construction of the cultural niche that would become our reality. This was followed by the *domestication of spirits*, which accompanied the emergence of specialized ritual. The unintentional self-domestication of man was a long process that accompanied the cultural process, but would not be accomplished until relatively recent times. All these phenomena were boarded and discussed in detail. In the next few paragraphs we will briefly approach the subsequent stages of domestication, but only to the extent in which they are relevant to the subject of this final section, namely: the spread of the attitudes mentioned above and the pathological manifestations that accompanied them.

As for the origins of agriculture, a new paradigm is slowly emerging: contrary to what was previously thought, settled life seems to have originated in the obsessive preoccupation with symbolic constructs that led to collective grand-scale projects. Göbekli Tepe is maybe the best example (Schmidt 2003). In the same vein, the pre-agricultural Natufians developed strong symbolic attachments to a settled way of life made possible by a long-lasting climatic optimum (Bar-Yosef 1998) and, because of an already advanced cultural rigidity, they could not readapt to a foraging life when the climate turned unfavorable (Steiner 2010b). Agriculture is thought to have commenced as a modality to support such ‘obsessions’ (Cauvin 2007).

Göbekli Tepe may be the world’s first man-made holy place, and thus it deserves a closer scrutiny. Radiocarbon dating and stone tool comparisons indicate that the site is approximately 11,000 years old. The great stone circles were erected before metalworking, before pottery, before the domestication of animals, even before most signs of agriculture. Archaeologists once hypothesized that agriculture gave early people the time and food surpluses that they needed to build monuments and develop a rich symbolic vocabulary. But Göbekli Tepe raises the alternative possibility that the need to feed large groups who gathered to build or worship at the huge structure spurred the first steps toward agriculture. Schmidt (*ibid.*) is convinced that the circles were designed to be open to the sky, like Stonehenge. He also implies that the site has served as an observatory, with its main focus being the measurement of sidereal time. Hunter-gatherers from across the region presumably gathered there periodically and pooled their resources, in order to build the monuments that were apparently designed to serve an astronomy-related ritual purpose. Associating the site with the measurement of sidereal time makes a lot of sense, especially in a period that immediately preceded agriculture, which would make full-use of, and rely on calendric time.

An almost obsessive preoccupation with time seems to have accompanied us since the early days of cognitive modernity. Eliade’s (1957) ‘terror of linear time’, the importance of time in the cementing of the symbolic structure of the cultural niche, the pivotal role played by time in the establishment of

the dialectical bias are only a few examples brought up in this chapter. We suggest that the symbolic *domestication of time* preceded that of the plants.

The region of Göbekli Tepe is also home to a number of domestication ‘firsts’, including wheat, which was documented at only 20 miles away, at Nevalı Çori about 500 years after the monuments were built (Schmidt 2003; Bar-Yosef 1998). Thus, there is a continuity with the next stage in domestication, namely: the *domestication of plants*. As in the case of many other strategies meant to give temporary answers to temporary environmental challenges, due to the cumulative character of the cultural process, and because of cultural inertia, these became entrenched, instead of being reduced.

Settled life and the social implications of the specialization to readily-available cereals turned agriculture into a catch. Domestication is a reciprocal process, with implications affecting both the domesticated and the domesticator: not only that the respective plants cannot survive without human involvement, but also that humans become utterly dependent on the domesticated plants. Inevitably, side-effects on the morphological and genetic level occurred, which are well-described in Cochran and Harpending’s *10,000 Year Explosion* (2009). Various pathologies developed in parallel with the specialization to an agricultural diet and to a settled life (Cohen 1984, 1989).

However, we are more interested in the understanding of the assertive attitudes that are the by-product of domestication, than the process itself. The material, mental and social components of a culture based on domestication impregnate it with assertive ‘values’. Materially, agriculture creates a surplus. Mentally, it entrenches detachment and a position of power. Socially, it stabilizes sedentary life and asks for its organization. However, small-scale incipient agriculture was still an economy based on natural elements and concepts and its impact was low and local. Unfortunately, it could not stay like that given its reliance on, and hunger for, cultivable land, and the value attached to land. Thus, it became ‘expansionist’ in character. Jared Diamond’s *Guns, Germs, and Steel* (1997) proposes the ‘geographical axis’ argument, in which the latitudinal expansion of agriculture, and of the mentalities carried by it, is excellently presented. Paul Shepard’s *Coming Home to the Pleistocene* (1998) adds a humanistic touch to the issue, and his analysis of the next phase of the story, which is the *domestication of animals*, surprises the shift in mentality that accompanied the emergence of nomadic pastoralism. He describes in detail the new vertical hierarchy that became established at that time: the despised earth that supports the herd, man who shepherds the animals and the sky-god who shepherds man. The implications of such a stratified reality are still with us: man, as an unintentionally self-domesticated cultural being yearning for a master, finally submits to the sky-god, who becomes his shepherd. Pastoralism also added a longitudinal dimension to the spread of the assertive attitudes that characterize domestication.

The next phase is the *domestication of metals*. The metallurgist’s manipulation and technological understanding of matter confer him status and power, especially with pastoral nomads, for whom, in many cases, they act as ritual specialists (McNutt 1994; Steiner 2010b). Metals started to be ‘bred’, very much like plants and animals, and practical qualities, like low melting point, color and hardness were favored and selected for, by ‘mating’ different ‘breeds’ of metal: copper, arsenic, zinc, and tin alloys were developed and put to different uses. The emergence of ‘rank-societies’ (Levy 1995) in the southern Levant during the Chalcolithic was the application of pastoral and metallurgist detachment at a social level. The next step in domestication was thus accomplished, namely: the irreversible *domestication of man*. Agricultural communities started to be run and organized like herds and their sole purpose was to provide the labor needed to create the surplus, which was meant to increase the wealth and prestige of the newly emerged ‘chiefs’, and to finance their wars. This was the ‘Chalcolithic revolution’—by the end of the period symbols, spirits, time, plants, animals, metals, and people were all domesticated, and ‘civilization’ took off. Its values were carried to the four corners of the known world, together with the highly ‘contagious’ collective dissociation disorder that would be transmitted from one society to another.

SUMMARY AND CONCLUSIONS

The underlying motivation of this chapter was to understand current expressions of human behavior as having their roots in the evolutionary history of man. The markedly syndrome-like manifestations of contemporary human behavior were the starting point of the chapter, but not its subject. The inquiry attempted to shed a light on the etiology of collective dissociation, which was suggested to be the disorder responsible for a large number of symptoms that apparently define the human condition.

Therefore, human evolution was approached first, in order to surprise and isolate particularities that made our biological evolution ‘special’, when compared to that of the apes, or our australopithecine cousins. The apparently simplistic model of evolution taking place in a field influenced by tendencies toward either generalization or specialization (Blaga 1976 [1943]) served as the starting point of the inquiry. The field is defined by a horizontal coordinate that represents tendencies toward specialization, and a vertical coordinate that represents the generalized tendencies (Fig. 1). Following Blaga, specialization was understood as the acquisition of features that optimize an organism to its environment, while generalization was presented as the reduction of specialized features, in order to grant evolutionary flexibility and confer a degree of autonomy from the environment.

Although the reductions that occur on the vertical axis were interpreted in a rudimentary and recapitulatory way (*sensu* Haeckel 1883), Blaga predicted some of the postulates of the *punctuated equilibria theory* (Eldredge and Gould 1972; Gould and Eldredge 1977), hence his understanding of what he called ‘primitivisms’ could be actualized and interpreted as ‘neotenus’ characteristics (Gould 1977).

Therefore, the generalized (vertical) mode of evolution stresses the role played by neotenus processes in human development. Neoteny must not be understood as a process that manifests itself exclusively in morphology. Its cognitive implications are equally far-reaching. On one hand, life escapes the attraction of the horizontal, which would restrict its potentials, but the price of this autonomy is high. The pedomorphic ape that is the result of such an evolution is extremely vulnerable. But, on the other hand, the means to compensate for such an unspecialized morphology is offered by neoteny itself: the juvenile cranial morphology allowed the development of traits like curiosity, inventiveness and sociability (Ashley Montagu 1989). Psychological neoteny (Charlton 2006), mostly because of its inherent potential for learning, created the receptive cultural context within which biased transmission mechanisms could operate efficiently. Symbolizing proved to be an efficient technique to transmit what was learnt. Thus, a feedback loop became established, the further development of which was taken under scrutiny.

At the risk of repeating a truism, the inquiry continued with the assumption that culture became the natural compensation mechanism for the biological inferiorities that were the inevitable result of vertical evolution (*sensu* Adler 1917). Following the data provided by paleoanthropology, we kept on arguing that biological evolution always advanced faster than cultural compensation, which caught up with the former only after new reductions became established. Periods of stasis appear to have lasted for a markedly shorter time than the phases preceding them.

Up to a point, from when cultural compensation mechanisms started to evolve faster than morphological changes. Thus, from that point on, the rules became reversed: biological evolution would lag behind cultural change, and reductions would occur as specializations to cultural realities. We suggested that this was the crucial moment when our evolution entered a cultural dimension.

Such a phenomenon seems to have occurred approximately forty millennia ago, in the Upper Paleolithic. Our inquiry focused on the well-documented European scene of evolution, but without

implying that the biological-cultural transition was restricted to Europe or that it occurred simultaneously all over the inhabited world.

In our model, all these phenomena concur to define the moment at which the cultural process became faster than biological evolution. The rapid development of symbolic thought and language commenced creating cultural contexts in which these capacities would be highly prized and selected-for. In other words, the more a cultural context relies on symbolic communication, the more developed the morphological support for such a mode of communication. Thus, the cultural transition between the Mousterian and Aurignacian could be correlated with the ‘sudden jump’ from the biological to the cultural dimension.

The big difference between the two is that the tendencies toward generalization, which characterized biological evolution, became tendencies toward specialization in the cultural field: humans started to specialize to their own culture. This could not be interpreted as a horizontal tendency in the biological field, thus our frame of reference was rotated by ninety degrees to the right (Fig. 2). This, to the disappointment of those readers who would have preferred to mirror it horizontally, with our evolution still placed on the vertical. This wishful thinking was shown to derive from what we called the ‘dialectical bias’. From biology to physics, a temporal and causal sequencing of phenomena takes place in the human mind. Thus, a ‘behavior’ is attributed to objective processes, which in its turn determines their linear advance toward an expected culturally-defined finality. The result of such a causal process is perceived as ‘superior’ to anything that preceded it in time. On an existential level, it is usually man who carries the responsibility of such tendencies. In the specific case of evolution, it is man’s position on the evolutionary line that prescribes the ‘behavior’ of evolution itself. Thus, a teleological perception of natural phenomena becomes a deeply-rooted cognitive bias. However, the apparent linear character of generalized biological evolution is refracted in the cultural dimension, in which it assumes a horizontal orientation, defined by tendencies toward specialization. We have suggested that after an initial cultural specialization—the first impetus of culture—that was apparently undertaken by the ancestors of all living humans, the cultural process stabilized itself, and began displaying again tendencies toward specialization on the horizontal coordinate of the cultural field, and tendencies toward generalization on the vertical, which is a biological—cultural continuum. Therefore, all cultures are ‘achievements’, rather than ‘evolved’ or ‘devolved’ from an ideal primordial state.

In the cultural field, new ‘rules’ seem to apply: in order to avoid the dangers of over-specialization, neoteny continues to be active, under a cultural guise that we called ‘cultural heterochrony’. This was suggested to act as a natural risk management mechanism that tries to maintain a generalized orientation. On the other hand, in specialized cultures, cultural heterochrony apparently loses its bite, and a pseudo-neotenus process, which was introduced as ‘gracilization’ (Nyborg 1994; Bednarik 2008; Cochran and Harpending 2009) replaces neoteny. Gracilization is a non-adaptive shortcut assumed by neoteny in cases of rapid cultural accumulation with which biology cannot keep pace. Moreover, on the horizontal coordinate, cultural ‘techniques’ (*sensu* Ellul 1964) assume the role played by cultural heterochrony on the vertical.

An entire section of the chapter was dedicated to the subject of over-compensation. This can assume different configurations, depending on the variable degrees of emphasis attributed to the material, mental, social, and spiritual components of a culture. Thus, horizontally-oriented ‘civilized contexts’ (in which the mental and material components display a tendency to be over-compensated), and vertically-oriented ‘natural contexts’ (in which cultural components are in a balanced state, without any of them being favored over the others) could be differentiated. In order to illustrate the tendencies toward specialization or generalization within the coordinates of the cultural field, a differentiation based on the ‘life-affirming’ or the ‘life-restricting’ approaches taken by different cultures was also proposed. This was inspired by a poll of emotional attitudes in various populations

(Maccoby 1972), in which two prevailing inclinations, namely 'life-loving' and 'death-loving' were observed. The characteristics that define the latter are a deep emotional attraction to the mechanical, to all that is not alive, to all that is man-made, and were found to be common in the case of people who prefer 'law and order' to living structure, bureaucratic to spontaneous methods, gadgets to living beings, repetition to originality, hoarding to spending. These inclinations, together with their opposites which characterize the 'life-loving' end of the spectrum seem to fit not only individuals, but cultures as well. However, in cultural contexts Maccoby's terms must be tempered, hence the suggested terminology of 'life-affirming' and 'life-restricting'.

Indeed, there are cultures that can be defined as life-affirming. Immediate-return, also known as generalized hunters and gatherers (Woodburn 1982; Price and Brown 1985) ascribe precisely to this category, and their cultural contexts were placed on the vertical coordinate of the cultural field. No signs of pathological inclinations could be detected in their behavior. On the other hand, contemporary industrial societies display all the signs of life-restricting approaches (Mumford 1967; Ellul 1964; Fromm 1968), to an extent that 'life-denying' was the term used to describe the attitudes of this specific cultural context. Moreover, it is precisely in these societies that the markedly syndrome-like manifestations of human behavior come to full expression.

In order to understand the processes that contributed to the emergence of such a cultural configuration, we had to enroll support from *niche construction theory* (Odling-Smee 2003) and *dual inheritance theory* (DIT) (Richerson and Boyd 2005; Henrich and McElreath 2007).

At this point in the chapter we felt confident to suggest a case-history of 'collective dissociation'. A compartmented reality – the consequence of niche construction - attracted a compartmented psyche. Fear of the world outside the cultural niche and the wish to control its menace resulted in specialized ritual behavior. The roots of present syndrome-like manifestations may be detected for the first time in such a context. Indeed, assertive and specialized ritual already contained a latent form of dissociative fugue, in addition to signs of compulsive-obsessive disorders. De-realization accompanied the banishment of the world that could not be symbolically grasped and causally sequenced to a parallel 'dark niche' that we called the 'Other'.

All the components of the pathology seem to be already in place at the start of written history. The chapter stresses the observation that although an evolutionary risk, collective dissociation must not necessarily be interpreted as the unavoidable effect of cultural evolution, and that only a specific mode of specialization precipitated its manifestation. Thus, 'cultural evolution' is a term that can be applied only to a very restricted number of cultures, namely to those that follow a vertical orientation, and conform to the parameters marked on the vertical coordinate of the cultural field (Fig. 2). 'Cultural process' is therefore the term that was suggested to replace the biased notion of 'evolution', and 'cultural accumulation' was proposed to describe the horizontally-oriented cultural process.

Eventually, in the case of industrial societies, collective dissociation would reach alarming proportions. One of the core features of dissociative disorders is depersonalization (Waller *et al.* 1996). Self-domestication, in such a context, becomes slowly replaced by another phenomenon, which is 'self-mechanization'.

At the end of the chapter, we have warned against the dangers that accompany the organic-to-mechanistic tendencies displayed in the contemporary configuration of the horizontal cultural process. The forced buffering techniques between man and machine depersonalize man, de-realize the world, and exalt the machine. Conformist biases and blind faith in science only entrench and rationalize this aberrant tendency. Transhumanist fantasies (Bostrom 2005) seem to already point to the possibility that our future will not tolerate organic manifestations, and that these will be perceived as 'incorrect', and suppressed to the unconscious. For a species that domesticated itself in the course of its 'evolution', the machine may appear as the ultimate authority figure, and may easily be accepted as a 'master'.

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