

Developments in Primatology: Progress and Prospects
Series Editor: Louise Barrett

Robert G. Bednarik

The Human Condition

 Springer

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The Human Condition

Foreword by Dean Falk

 Springer

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ISBN 978-1-4419-9352-6 e-ISBN 978-1-4419-9353-3
DOI 10.1007/978-1-4419-9353-3
Springer New York Dordrecht Heidelberg London

Library of Congress Control Number: 2011930515

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Printed on acid-free paper

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*This book is dedicated to my teachers, the
gurda mirdanha, men of the highest degree,
in the Pilbara in northwestern Australia,
who consented gracefully to introducing this
benighted walybala to their wisdom.*

Foreword

Robert Bednarik is a renowned expert in archeology and prehistoric art whose ideas are synthetic, grounded solidly in science, and informed by a world perspective. He does not mince words when it comes to critiquing the field of Pleistocene archeology, or its diffusionist myth that modern humanity “developed in one privileged region of the world, and spread from there through a people incapable of interbreeding with any others.” As I read *The Human Condition*, I occasionally found myself chuckling, and at other times gasping and thinking, “Did he really say *that*?” Who better than Bednarik to propose an iconoclastic hypothesis about human evolution as a replacement for the model that has dominated the field for decades? That’s just what he has done in this book, which he predicts will be vigorously criticized by Anglo-American Pleistocene archeologists. I suspect that he is right. But, then, Bednarik did not write it for these specialists. Instead, he is targeting other kinds of scientists, and anyone who is fascinated with the question of how humans evolved to become what they are today.

With seven succinct chapters, *The Human Condition* is relatively short and engaging. It opens with a discussion of the history and philosophy of science that focuses on Pleistocene archeology. The author observes that this subfield has traditionally relied largely on tool types that are represented cross-culturally, rather than on more dynamic cultural customs that can shed light on the emergence of human consciousness. A persuasive case is made that archeological narratives about the early human past are probably largely false. One such narrative is the dogma that cultural change and evolution were relatively static before the advent of the Upper Paleolithic around 45,000 years ago, at which point there was a “quantum leap” or “explosion” in western and central Europe that resulted in the sudden emergence of the characteristics that distinguish modern humans—language, art, symbol systems, self-awareness, etc. A link is described between this short-range narrative and the “African Eve” model, according to which modern humans are all descended from one female *Homo sapiens* who migrated from Africa with a group of superior humans that, eventually, expanded and replaced all of the other hominin species. Thus, it was Eve’s descendants who made all that nice Upper Paleolithic art. The author argues that “the Eve supporters have led the study of hominin origins on a monumental wild-goose chase,” and that an accumulation of evidence supports the alternative multiregional model in which *Homo sapiens sapiens* evolved from more

robust forms (e.g., Neanderthal-like) as a single breeding unit across Africa, Asia, and Australia.

[Chapter 3](#) begins to amass “hard evidence” in support of a long-range gradualist hypothesis regarding the evolution of, not just human bodies, but also their minds. Forget the dogma about the sudden European Upper Paleolithic creative explosion. Much older evidence, most of which is not from Europe (“an insignificant appendage of Asia”), is reviewed in an illustrated discussion about the forms of symbolism that are embedded in paleoart. The reader is introduced to the world’s oldest manuports, coloring pigments, rock art, petroglyphs, cupules, engraved portable objects, beads, and pendants. (In subsequent chapters, an interesting case is made that much of this art suggests a striving for perfection, which had implications for the evolution of associated neurological substrates. Bednarik suggests that paleoart is the main surviving indication of a proclivity for externally storing symbolic meaning—i.e., it formed a kind of prehistoric external hard drive.) We learn that “there is in fact far more surviving “Middle Paleolithic” rock art in the world than “Upper Paleolithic,” which renders the claims that “modern” behavior patterns were introduced with the latter technological phase completely farcical.” It is not surprising to read that the world’s archeological community has a hard time accepting this evidence, and the accompanying discussion about academic power politics is gripping.

An analysis of early seafaring in [Chapter 4](#) is a highlight of the book. Stone tools discovered on the Indonesian island of Flores show that the ancestors of *Homo floresiensis* had arrived there around 1 million years ago, which suggests that seafaring may have been developed in that part of the world, perhaps in conjunction with fishing. For a variety of reasons, the multiple crossings required to get to Flores from Bali were unlikely to have been accidental, and all would have entailed departures to opposite shores that were visible from the starting points. In order to shed light on the cognition and innovations required for seafaring, Bednarik participated in a First Mariners Project that constructed eight sea-going vessels to test the required technologies and to attempt sea crossings (four of which were successful). From these experiments, he surmises that maritime colonization of islands (and eventually continents) harnessed the forces of waves, wind, currents, and buoyancy. It required social cooperation, planning ahead, a concept of time, and probably technological inventions such as cordage and knotting. Bednarik suggests that seafaring would have promoted the formation of neurological changes supporting conscious awareness, symbolism, and a grasp of cause-and-effect relationships. He also makes a persuasive argument that it could not have happened without language.

Bednarik lays the groundwork for his own paradigm in [Chapters 5](#) and [6](#) by focusing on significant physical changes that occurred in humans during the last 50,000 years. As people evolved into their modern forms everywhere, their skulls and skeletons became markedly less rugged and thick compared to those of earlier humans (e.g., Neanderthals), and their cranial capacities decreased. Some researchers (notably C. Loring Brace) associate this universal gracilization of humans with dental reduction attributed to cooking and other food-processing techniques. Although Bednarik accepts that cooking technology might have been a

contributing factor more recently, he believes it could not have caused the general decrease in skeletal robusticity that occurred during the late Pleistocene. Instead, he suggests that the decrease in physical strength and brain size that accompanied modernization were deleterious, which leads him to conclude that the usual laws of biological evolution ceased to apply to humans during the last 50,000 years. Why would this be? Bednarik's answer is that human mating preferences became shaped by cultural ideals about sexual desirability (i.e., reproduction was acted on by sexual rather than natural selection), and that this changed breeding patterns. Specifically, men began to prefer women with childlike (neotenuous) gracile features, which drove evolution much as the domestication and selective breeding of animals by humans altered their physiology and appearances. The gracilization of women was, thus, a trend that was incidentally channeled by male ideals of sexual attractiveness, while the trend for lessened robusticity in males lagged a bit, but eventually rode in on women's genetic coattails. Thus, Bednarik's maverick thesis is that "anatomically modern humans are the outcome of their own domestication."

Charles Darwin would have approved. In his 1871 book, *The Descent of Man, and Selection in Relation to Sex*, Darwin noted that a breed of animal (e.g., dogs) in which humans have selected for certain traits changes after several generations, and that two independent breeders working from the same basic stock will, over time, end up with animals that differ because each breeder will have impressed "the character of his own mind—his own taste and judgment—on his animals." Turning to humans, he observed great differences between men and women in features such as stature, muscularity, body shape, hair (beards, whiskers, moustaches), temperament, and voices, which he attributed to sexual selection (on both sexes) during human evolution. Unlike Bednarik, however, Darwin lacked access to a hominin fossil record (it hadn't yet been discovered), so focused on ethnographic variation rather than changes in hominin skeletons through time. He observed that, in humans, conventions of beauty varied markedly from culture to culture, which he attributed to the gradual accumulation in the past of different unconscious preferences that resulted in different outcomes for sexual selection in geographically-separated groups. Nonetheless, Darwin also speculated that more general secondary sex characters that appear in people, such as women being less hairy than men, evolved through sexual rather than natural selection at an extremely remote period. He also observed that the acquisition of such "a slightly injurious character" was not surprising because "we know that this is the case with the plumes of certain birds, and with the horns of certain stags." In other words, traits that would normally be eliminated by natural selection sometimes get a free ride on the coattails of sexual selection.

Bednarik goes much further in his final chapter, *Advanced human cognition: a Faustian deal*, and the result is an original and startling *tour de force*. Chapter 7 begins with a lucid review of the neuroanatomical features that distinguish human brains from those of other primates. Significantly, Bednarik points out that people are susceptible to a surprising number of neurological diseases not found in other primates (autism, schizophrenia, bipolar illness, Asperger's syndrome, etc.), and observes that these involve the most recently evolved parts of the brain. Further, "there is every possible indication that this neurological susceptibility is directly

linked to...the ever-burgeoning brain...it has given us both the genius of our greatest thinkers and artists, and the despair of 'losing our mind'." This fits with Bednarik's self-domestication hypothesis, because domestication has long been known to promote unfavorable alleles. It also fits with his suggestion that the "futile search for perfection" entailed in paleoart, seafaring ("the pre-Historic equivalent of space travel"), the emergence of language, and the external storage of symbolic information was associated with a gradual change in human behavior from largely impulsive (as apes are) to obsessive. Thus, "obsessive-compulsive disorders seem to illustrate that obsessive and neurotic behavior is the price we pay for our rapid cognitive evolution"! Needless to say, Bednarik's gradualist hypothesis is very different, not to mention less flattering, than the short-range model that views human cognition as having emerged suddenly and relatively recently in one particular group of superior hominins. Bednarik predicts that "Pleistocene archeologists will, under the guise of testing them, move heavens and earth to disprove my propositions," and, no doubt, they will. But they have their work cut out for them because the book's essence is grounded in a voluminous amount of data regarding the latest findings in paleogenetics, paleoart, world-wide archeology, evidence for seafaring, paleoneurology, psychiatry, and much more. In sum, this book is a gutsy read about a fascinating subject that leaves no prisoners, and does not have a happy ending. It is provocative, important, and deserves to have "legs."

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Preface

He who despairs of the human condition is a coward, but he who has hope for it is a fool.
(Albert Camus)

The term “human condition” generally refers to what it means to be human and why we are the way we are. It is often expressed as the human predicament: our capacity for both good and evil, our “dark side,” or the “troubled state and nature” of the human being. It can also refer to our limitations, such as our inability to go where only our imagination can take us, our futile yearning for everlasting life, or our never-ending endeavors to construct meanings where there are none. Encompassing all of the human experience, from the biologically determined events of our lives to the ways in which we react to or cope with these, the human condition can be perceived either as such a broad concept, or it can be more narrowly defined, be it in philosophical or in scientific terms. The concept was popularized by André Malraux’s 1933 novel about the failed communist uprising of 1927 in Shanghai, *La condition humaine*, and his profound observation needs to preface the present volume: “In the realm of human destiny, the depth of man’s questioning is more important than his answers.”

All recorded human societies seem to subscribe to a universally accepted set of ideals of cooperation, love and altruism, which in some cases evolved in geographical isolation and is thus indicative of their universalism—and yet there can be no doubt that all these societies are also capable of great brutality, greed, hatred, and indifference to the suffering of others. This ambivalence accounts perhaps for the subconscious sense of guilt burdening us, nourished by religion. The human condition is defined by the feelings and emotions associated with our existence, our “conscious” experience of past and future, cognizance of the passage of time, and our vexed awareness of our mortality. It has led to a plethora of metaphysical questions and doubts, concerning the purpose of our existence, or that of the universe, to what happens to us upon death.

These are issues that can be dealt with, if perhaps reluctantly, by science, which at this stage in its evolution has no great difficulty in clarifying them satisfactorily. As a society we are, however, far from satisfied by these apparently nihilistic answers. Much the same will also apply to this book: after the last chapter, readers may

experience a vague dissatisfaction with the answers it offers. These may not be what readers had hoped for; they may sound too unsophisticated, too artless in fact. Could the answers to our profound questions about our condition really be as simple as I contend on these pages? But is it not true that whenever there has been a major insoluble problem in the history of science, the answer, when finally found, has always been very simple?

In this book the human condition will be examined not as a metaphysical or ontological issue, but rather from a scientific perspective. However imperfect our comprehension of reality may be, the more we have learned to interpret the nature of ourselves in our configured reality construct, the less opinionated we have become—which is in a way encouraging. Where science differs so fundamentally from other constructs of the nature of the world is that it accepts not a single human claim of finite truth; all its interpretations are contingent formulations that may change in the future. This will be reflected in the first chapter, emphasizing the overwhelming immersion in misinformation that is also a part of the human condition, but is often overlooked. Born ignorant into a society that still has almost no understanding of the epistemology of its knowledge base, we are in no position to justifiably speculate about reality or talk of objectivity. But science has become very adept in teasing out innumerable minutiae about the nature of the world, and if these tiny snippets were correctly assembled across disciplines, they could collectively provide credible hints about how some of the major puzzles might be solved. The main disadvantage of modern science is the overspecialization it engenders, which may not be apparent at the low-level, mass-consumption academic environment, but which now creates almost unbridgeable gaps between disciplines at the high end, at the cutting edge. That inexpedience will be avoided in this volume, which will develop its theses from the perspectives of several disciplines, but especially from archeology, paleoanthropology, genetics, evolutionary theory, cognitive science, neuroscience, and clinical psychiatry.

As noted in the first sentence of this Preface *why we are the way we are* is crucial in gaining insight into the human condition. In this quest, no progress can be expected without contemplating the human past: what occurred in the development of our species and subspecies that determined an evolutionary trajectory resulting in such an unusual primate? It may not be sufficient to glibly note that it is our mindless superstition and pointless rituals that separate us from other animals; nor will simplistic references to “conscious thinking” or “self-awareness” suffice, because there is no satisfactory definition or explanation for either banality, and in the end they explain nothing. Bearing in mind that the framework required in considering our past is provided by two disciplines of questionable credentials, Pleistocene (Ice Age) archeology and paleoanthropology (the study of extinct forms of humans), provides an immediate obstacle to meaningful inquiry. Both these disciplines are subject to the vagaries of fashionable fads, erratic sectarianism, anthropocentrism, academic fakery, and deference to authority, combined with an inherently poor susceptibility to falsification. Both present poor records of previous performance, and neither should be treated as science, in the proper sense of that word.

This state of affairs leaves us with the task of distilling from the accumulated “knowledge base” generated by these academic pursuits that part which can possibly be relied upon and which is relevant to our quest. This is obviously essential before we can consider how the human condition came to be what it is. In the following chapters it will be demonstrated that some of the most influential recent fallacies concerning human origins impact greatly on the research target chosen in this book, and that without teasing out these misconstructions, any notions relating to our primary subject, the origins of the human condition, would be illusory. In essence this involves interrogation of some of the most favored hypotheses of how and when human modernity evolved, and these are found not to meet any reasonable expectations we have of scientific propositions. Their empirical basis may evaporate upon close examination, their reasoning is often self-contradictory, and the ardency of individual protagonists in defending essentially unsupported theories can be disheartening. In this context the underlying problem soon becomes apparent: without some understanding of the emergence of what has been called “modern human behavior” it is impossible to know why we are the way we are, but the veracity of the information we have about this development is severely tainted by academic dogma. If this quest simply regurgitated what mainstream Pleistocene archeology offers us, the outcome would just be more mythology about our origins. Therefore, the first major task of this book is to clarify the status of the dominant hypotheses through critical and comprehensive review of the empirical data currently available.

This results not only in a significant reassessment; it invites dramatically different interpretations and syntheses, and a renewed endeavor to correlate ideas about the human past with the findings of innovative new approaches to what being human means. Once the framework of reference is refurbished in this way, it soon becomes apparent that the pertinent models of the relevant life sciences are much more readily reconciled with it. Indeed, as Malraux was quoted above, the significance is in the depth of the questions asked. This reassessment, impossible in the context of archeological and paleoanthropological dogma, prompts a suite of entirely new questions. One of the most consequential of them is: what could have caused the inherent laws of biological evolution to be suspended for humans during the last fifty millennia or so? And yet, this question has never been asked by the mainstream. Nor has the question of why evolutionary natural selection apparently failed to select against thousands of deleterious genetic predispositions and defects, ever been asked by those concerned with the human past. Yet neuroscientists have prominently and extensively asked and debated this issue. They have been unable to arrive at any credible answers, simply because the disciplines taking care of human evolution are lagging many decades behind those dealing with the workings of our brain, and are in fact largely still struggling in the dark. Nor has there been a sustained attempt to deal with such key issues as why it should be that the etiologies of brain illnesses suggest that they involve largely the same areas of the brain that are the phylogenetically most recent; or why it should be that other extant primates are largely if not wholly free of such pathologies. These are far more consequential issues to our origins than endless polemics about favored craniometric interpretations or stone tool knapping practices.

These inequities in the state of research are so profound that neuroscientist Todd M. Preuss has referred to *Homo sapiens* as “the undiscovered primate.” A vivid demonstration of these inadequacies is provided by the greatest unsolved conundrum of evolutionary genetics: why evolutionary processes failed to select against the degenerative genetic predispositions of extant humans. The apparently quite recently developed toleration of maladaptive traits, which range from somatic features universally related to neotenization to mental disorder susceptibility alleles, and to almost countless other detrimental susceptibilities, remains supremely unexplored. Disorder susceptibility alleles have neither fixated, if adaptive, nor gone extinct, if maladaptive. Those that are rare, the single-gene Mendelian disorders, may escape selection precisely because they are rare, and the molecular bases of over 1700 of them have now been identified. However, the preservation of the mutations deriving from multiple mutant alleles at different genetic loci involved in the major deleterious etiologies has remained entirely unexplained until now.

Having been discussed at great length for a number of years, this puzzle has become the discipline’s “unresolved paradox.” The reason for this unsatisfactory state is very simply that the dominant hypotheses of recent human evolution, proclaiming replacement of all hominins by a new African species, render a solution impossible. If we account for *Homo sapiens sapiens* by either natural selection or genetic drift, as these hypotheses demand, there is simply no explanation for the neuroscientific paradox. A core purpose of the present book is to solve the paradox by replacing the old paradigm with a new one.

For the first time, a tenable and inherently plausible authentic solution is offered for the toleration of human neuropathologies by both natural selection and genetic drift. And for the first time, a credible explanation is presented for the extraordinary and sudden changes that led to “anatomically modern” people: the reduction in both brain size and somatic robusticity, as well as the loss of estrus, and many other features so crucial to appreciating what it is that made us what we are today. This book explains why the etiologies of brain illnesses suggest that the phylogenetically most recent areas of the brain are affected, which are the very same areas that underwrite our advanced cognitive abilities. It also explains the absence of neurodegenerative diseases in other primates, and why human males strongly prefer females presenting neotenus appearance and other features. And it offers clues for how, why and when dozens of mental illnesses and thousands of genetic impairments endemic to humans may have appeared. Without some appreciation of these issues such conditions have no causal context or explanation; we are merely trying to make sense of end effects at specific loci without an appreciation of how they came about. Science, however, expects some level of causal reasoning from us, and that is provided here.

In the realm of understanding the human animal, theoretical progress does indeed depend very much on the questions we ask, and there are many other questions asked in this book that were consistently eschewed by the mainstream. For instance, as the mental faculties of hominins increased with the rise to the top of the food chain, individual reliance was delegated to society and to objects, the latter ranging from tools to objects of storing symbolic information outside the brain (“exograms”). Orthodox Pleistocene archeology has shown little interest in the latter, designating

them to categories comprehensible within simplistic reality frames of reference, for example, by defining them as “art objects.” Moreover, it sustains a model linking the origins of these exograms to the advent of the purported African ancestors of our subspecies, another rather consequential bungle attributable to dogmatic intractability: the relevant empirical evidence to show the much earlier use of exograms has long been available, but was either ignored or explained away.

This book is obviously a wake-up call for some disciplines, while at the same time noting the patience shown by some others. The former have historically not taken kindly to such observations, having traditionally relied upon their inherently untestable status. Needless to say, this book is destined to be labeled “controversial” by the hegemonic disciplines it is critical of. However, the relevant hard sciences may take a different view and may be prompted into beginning to question the quality of the information and hypotheses provided by the humanistic gatekeepers of hominin history. If this should occur, a key purpose of this book would be achieved. It will not, however, bring about a paradigm shift in Pleistocene archeology; paradigm shifts do not occur in academic pursuits based on authority and internally unfalsifiable propositions.

Finally, those who believe in the exalted status of humans—that we share our image with a deity, or that as a species we have made this planet a better world—will categorically reject the key elements of this book. The biologically correct definition of our subspecies as a neotenus ape clashes significantly with their fantasies, which are simply another illustration of the human condition: we are prone to inventing grandiose self-delusions about our noble cause and character. Apparently, the truth about ourselves is so unbearable that we need to lie about it to ourselves, in the same way as we need to invent nirvanas and paradises, and beliefs of salvation. *Homo sapiens sapiens* truly is in need of some therapy.

Melbourne, Australia
August 2010

Robert G. Bednarik

Acknowledgments

Much of the original impetus for this book came from a series of eight lectures on *Cognition and symbolism in human evolution*, which I was invited to contribute to the Semiotics Institute Online, based in Toronto and run by Professor Paul Bouissac. I thank Paul for prompting me to gather my thoughts on this subject, from which eventually the concept of this book germinated. I also thank Professor Helmut Ziegert, Hamburg, for generously providing the image of the three Acheulian ostrich eggshell beads from El Greifa, Libya. Thanks are due to Professor Dean Falk, who graciously wrote the Foreword; and to Professor Ellen Dissanayake, for her valuable comments on the proofs. My gratitude is expressed to the 56 crew of my eight seafaring expeditions and to the several hundred members of construction teams involved in these replication experiments. In particular, I wish to single out the help and support of Peter Rogers, Emmanuel Littik (Om Ifé), Jacobus Zakawerus (Om Mberu), Bob Hobman, and Abdeslam El Kasmi. But most importantly, I welcome this opportunity to pay homage to my teachers who, in the 1960s, were then the oldest men of the Ngarluma, Yindjibarndi, and Njamal people of the Pilbara region of northwestern Australia; I thank them for teaching me to gauge the depths of my ignorance. I have kept my promises to them.

Melbourne, Australia
October 2010

Robert G. Bednarik

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Chapter 1

A Little Epistemology

Prolegomenon

For a species described as intelligent, we have not been very successful in determining what it is that made us the way we are. The popular explanation of how we became human reflects a kind of consensus view forming the dogma that orthodox archaeology has created over recent decades. That dogma will be examined critically in this book, together with the epistemological currents that have formed its conceptual framework. One fundamental question may be a little perplexing to many readers: why do specialists consider human origins almost exclusively in terms of the somatic and technological development of our species? Surely “humanness” is not so much determined by the shape of supraorbital tori (brow ridges) or the mode of retouching flint tools. Surely what most distinguish us from other primates—and other animals—are a suite of distinctly “human” attributes: for instance, the ability to “store” symbolic information outside our brain; or our development of symboling capacities to such sophistication that they made it possible to modify our physical environment (or niche) on an extraordinary scale; and to harness its resources and energies in the ultimate quest of all species—the conversion of a significant part of the planet’s biomass into themselves.

Bipedalism, for instance, is an adaptation widely found in the animal kingdom: all birds and many mammals manage to walk on two legs. Toolmaking is certainly not an exclusive preserve of hominins; many mammals and birds have this capability. The absence of estrus is also not unique to humans; it is shared by several other species. When it comes to communication, there is such a wide range of practices that most forms may still have to be discovered by science. From the amazingly complex messages of the octopus to the sign language capabilities especially of chimps, bonobos, and orangutans, virtually countless systems of communication are in use. The complexity of some of these may well match that of human languages and would probably exceed that of our nonverbal communication forms (e.g., body language). Indeed, the traditional separation between human and *other* animals has been gradually eroded throughout the twentieth century, most especially by the new science of ethology, to the point that separation now relies on just a very few criteria. And if we were to, for whatever reason, want to find out how we actually *became human*, our search would seem to benefit much from an initial focus on those rather

few characteristics that appear to be uniquely and quintessentially human. It is a central purpose of this book to offer the means to attempt such a quest.

Today it is so profoundly self-evident that the biological sciences would be utterly impossible without Darwin's magnificent idea that we find it hard to imagine it otherwise. And yet, in appreciating Darwin's influence we may miss the most crucial aspect of it: that the great achievement of his idea was not that it presented the inevitability of evolutionary processes, but that Darwin was able to discover this despite the confining metaphysical system he had to exist in. After all, the knowledge that humans derive from other animals, that they are closely related to other species, has been with humanity for eons. The "ethnoscience" of many pre-agrarian societies had long deduced this from their observations over tens of millennia. They had observed the similarities in skeletal details and arrangements of various organs and deduced the close affinities of all mammals. But for centuries, agricultural societies, rendered arrogant through their apparent ability to "master nature," had discounted such explanations as primitive myths.

One may well imagine the skepticism of the Australian Aborigines when missionaries focused their attention on them in the first half of the nineteenth century: their own, indigenous belief systems seemed to be so much more advanced and plausible. Then, in the second half of that same century, they learned that a great wise man in faraway England had discovered that humans descended from animals and are closely related to them. One could understand the Aborigines' frustration over the white man's misguided righteousness: what was it that prevented the Europeans from seeing the obvious, that they were conceptually backward? For these indigenous, and any other traditional societies, Darwin had merely reinvented the wheel, after religion had for millennia decreed that it needed to be square.

Apart from what are seen as cultural differences, people also differ in the way they construct relations between humans and nonhumans (cf. Descola's [2005] "analogue" versus "totemism"). Viveiros de Castro (1992) has explained that for the Amazonian Indians he has studied, human *culture* is what binds all living beings together, including other animals and plants, whereas they are divided by their different natures, i.e., their bodies. This view, in direct contradiction to the traditional European binarism of nature versus culture, appears the more advanced, not primitive. While Christians debated whether the "Indians" had souls, those same Amerindians applied principles of science when they experimented on conquistadors by drowning them, to see whether they would rot, thereby determining whether they had bodies. As Lévi-Strauss wryly observed, perhaps the Spaniards were better in the "social sciences," while the Amerindians conducted their research according to natural sciences protocol before Europeans had developed a science.

At this point, one might object along the lines that it might be a little overindulgent or careless to compare the observations of Holocene or Pleistocene ethnoscience, the scientific observers of traditional societies, with the incredible sophistication that modern science brings to the task of comprehending the world. Before considering the epistemology of this latter science, on which we will reflect repeatedly, let us just consider, for the sake of illustration, a few relevant points.

For instance, our ancestors have been observing and collecting fossil casts for an incredibly long time span, as we shall see. We know from the “myths” of indigenous peoples how they sought to account for these and many other phenomena of nature, and they did so correctly occasionally. The many stories of great floods probably originate from such observations: humans have long sought to make sense of their surroundings, and the constructs of reality they created in the process still today determine how any group perceives the world—almost as if genetically imprinted in its members. Or consider another example: we know very well that our science’s concepts of, for example, time and space remain most precarious. Some of those “traditional” explanations differ greatly from the consensus views Westernized societies have generated about these entities. But as we struggle with Heisenberg’s uncertainty principle and cannot know whether Schroedinger’s cat is dead or alive, we might benefit from being a little less certain that the ancients’ answers must have always been less enlightened than ours. Our science is very sophisticated in a technological or “analogue” (*sensu* Descola) way, but when it takes on the trappings of a substitute religion it loses its edge instantly. In fact, it ceases to be science. And when we consider the possibility that our very reality is no more than *The imagined world made real* (Plotkin 2002) an abyss seems to open up: what are we to make of Western science?

Epistemology (from the Greek *episteme*, “knowledge,” and *logos*, “theory”), or the *theory of knowledge*, is the branch of philosophy that deals with the nature and origins of knowledge. It addresses, among other things, standards or norms for justification and reasoning (including logic and probability theory), ideals of rationality, and the effects of specific philosophies (e.g., empiricism, relativism). As implied above, specific canons of rationality are thought to be historically contingent (Lewis 1929: 253; Mannheim 1929–1936: 57; Collingwood 1940: Ch. 6; Laudan 1977: 187) as well as culture-specific (Winch 1970: 97), and some Western authors have defined them as androcentric confections biasing science in favor of male ways of experiencing the world. Descriptive epistemic relativism (e.g., deductive inference, causal reasoning; Swoyer 2002) has been improved in recent decades, but remains controversial. As historically and culturally situated creatures we cannot easily, if at all, step outside our concepts, standards and beliefs to appraise their fit with some mind-independent reality of Kantian “things-in-themselves.” The trap of extreme relativism or postmodernism, already convincingly opposed by Plato (in his *Theatetus*), can also be avoided by *normative epistemic relativism*. It holds that while there are no framework-independent facts about the veracity of inference, justification, or rationality, there are facts about these variables relative to particular frameworks. Extreme relativism, on the other hand, invites solipsism: if one and the same thing can be true relative to one framework and false relative to another, true for some groups and false for others, there is no truth measure. This was countered by Plato thus: either the claim that truth is relative is true absolutely or else it is only true relative to some framework. If it is true absolutely, then at least one truth is not merely true relative to a framework, rendering the proposition apparently refuted.

A number of philosophers and social scientists (e.g., Quine 1960; Hollis 1967; Davidson 1984) have argued that we can only understand or interpret others if they largely agree with us about what is true, reasonable, justified, or the like. The academic endeavor has resulted in a variety of schools, the disciples of which are separated by “logical gaps”: “They think differently, speak a different language, live in a different world” (Polanyi 1958: 151). Or to quote Kuhn:

In a sense that I am unable to explicate further, the proponents of competing paradigms practice their trades in different worlds. . . . Practicing in different worlds, the two groups of scientists see different things when they look from the same direction (Kuhn 1970: 150).

Kuhn may have been unable to define what separates proponents of competing paradigms, but in the emerging “perspectivism” of Viveiros de Castro it may become possible to explain even the less mundane reasons (the mundane or obvious ones being individual intractability, jargon, professional isolation, *déformation professionnelle*, etc.). Indeed, these fundamental structural factors may herald one of the most severe challenges Western thought has yet been subjected to, in the way they challenge first principles and foundational assumptions. Just as the notion that the Western construct of reality must be valid because the West succeeded technologically is a falsity, the success of science is no proof that its present methodology provides ultimate explanations. Indeed, our science can be expected to look rather primitive in a thousand years, and our epistemology will appear as hopelessly naive as that of a millennium ago does today.

Be that as it may, some of the branches of the academic project have chosen to operate under a collective umbrella framework, called *science*; others have developed their own various frameworks. Science, today, favors a normative epistemic relativism over the notion of absolutism, but demands specific procedures of refutation and repeatability of experiments and strives for refutable theories cast in terms of causes. After all, quantum theory implies that determinism fails: objects need not always have determinate locations in space and time or determinate magnitudes (like a particular momentum or energy or spin). In all of this, the issue of testability of hypotheses is utterly paramount, involving two components: first, the logical property that is variously described as contingency, defeasibility, or falsifiability (which means that counterexamples to the hypothesis are logically possible); and second, the practical feasibility of observing a reproducible series of such counterexamples if they do exist. Thus, a hypothesis is testable if there is some real hope of deciding whether it is true or false of real experience. Relativism decrees that this does not render a discipline such as archaeology, which necessarily operates outside of falsifiability, in some way inferior; archaeology is simply an epistemic framework that has chosen to eschew scientific demands in favor of a different framework. Nevertheless, the bias in favor of science needs to be critically explored here before we embark on an investigation into the cognitive origins of our species.

What are the reasons for this preference for what appears to be a rather stilted scientific epistemology?

Anthropocentric Realities

Ignoring for the moment the differences between the realities perceived by different human societies, we can perceive two antithetical concepts of reality. One is of this wide range of realities as held by contemporary humans, with the perceptual and conceptual means available to them; the other relates the idea or abstraction of an “objective reality” (Kant’s “*Das Ding an sich*”), which has been speculated to exist and which would have existed and would go on existing independent of human constructs of it. The former of these concepts cannot be a reflection of the latter (although it may reflect some aspects of it), and we need to appreciate that our examination of cognition or its epistemology is severely limited by the tools available to us: we can only study this phenomenon with means (conceptual constructs) that are its own, subjectively conceived products. This bootstrap approach may hardly seem a scientific basis (and it should be understood before we proceed), yet it is no less fragile than that of most other areas of “scientific” endeavor.

All phenomena of the physical, “real” world are made up of large numbers of variables, of which humans can only detect those which their sensory faculties, intellect, and scientific instruments allow them to perceive (Bednarik 1984: 29, 1985). From these they seek to select what I have called CCDs (crucial common denominators of phenomenon categories), which are the purported basis of all cosmological taxonomies. However, their selection is not determined by objective criteria in terms of how things really are in the world, but by the anthropocentrizing dynamics of human reality-building processes: by how phenomena can be interpreted and integrated into a system of understanding based entirely on human cognitive faculties. Since the latter were derived from human evolution, which was never in terms of defining cosmic reality, but in terms of such variables as survival value or procreational success, they must be assumed to provide at best a narrow spectrum of objective reality. Consequently, scientific constructs of reality should not be expected to adequately reflect real or objective reality (Bednarik 1985).

There are, however, exceptions. A phenomenon that is created by humans themselves, specifically for the purpose of relating to a human sensory faculty, can presumably only consist of those CCDs determining its phenomenological externalizations or reifications that are readily accessible to human perception. Art is such a phenomenon: there can be no CCD in art that is entirely inaccessible to humans. Indeed, art is the only phenomenon in the real world that provides human access to all of its crucial variables. One can invert this postulate by defining art (and a scientific definition of art is indeed badly needed) as the collective phenomena in human experience which we can behold objectively.

This truism explains how hominins attained their unique neural structures of relating to the world through paleoart—one of the core issues of this book. The introduction of phenomena consisting only of humanly perceptible variables, such as the production of symbolic surface markings, rendered perceived “reality” conceptually manageable, by providing complete rather than fragmentary sets of percepts. Visual and mental taxonomizing processes and the inclusion of the new neural structures in cybernetic feedback systems became thus available for evolutionary