Hominid Evolution and the Dream Animal[1]

In the University lab, you're closely examining the crystallized bone fragments and chipped stone. Each is considered in its archaeological context; each is considered in the context of natural selection. The dating methods are applied with care – potassium argon, obsidian hydration, radiocarbon dating. You've studied primate ethology and human ethnology, comparative anatomy and genetics, and comparisons are made. From the bone and the stone, an archaeological record of hominid evolution is proposed.

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In the beginning there was a void and darkness, without form or life. Some 14 billion years ago, the primeval hydrogen gases super-condensed and exploded; the "Big Bang" had occurred. The expanding hydrogen cloud whirled about at enormous velocity and with the sudden cooling, the flying nanomaterials and atomic particles condensed and formed the galaxies, stars and planets. On one minute object in one of those billions of solar systems something unique was to occur, perhaps occurring elsewhere as well. Life would come forth in a very special way. From inorganic chemical matter, through natural process, amino acids arose and in turn gave rise to single-celled prokaryotes some 3.5 billion years ago. Organic cellular matter differentiated into varied species of plant and animal life and continued to evolve.

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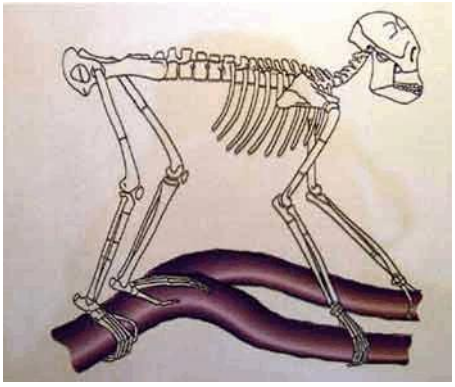


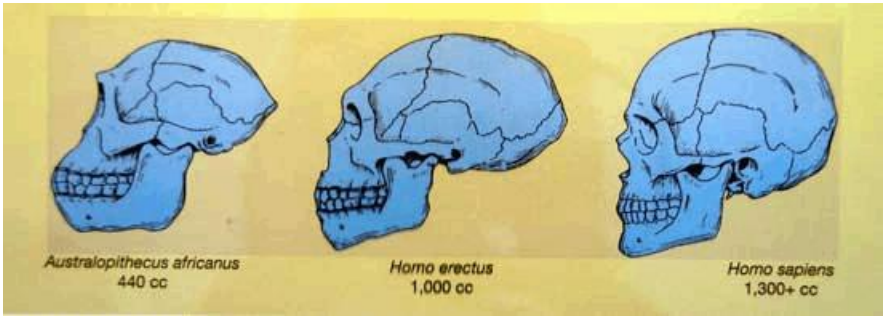
On a planet we call Earth, between 18 and 11 million years ago, a dog-sized, 30 pound primate inhabited the great forests of India and Africa. Traveling from tree limb to tree limb and using all four of its own limbs to do so, *Ramapithecus* (*Rama*, a Hindu God, and *pithecus*, Greek for apes) subsisted on the fruit it foraged from its forest habitat. Not particularly well-adapted to its niche, *Ramapithecus* was slow-moving, produced few offspring and with its small teeth and claws, was not well endowed to protect itself. It existed in the safety the trees offered, a forest of trees in an ever-changing physical environment.

Living in a tree environment had fostered among the early primates two important adaptations--the opposable thumb and stereoscopic vision. The success in swinging from branch to branch was dependent on an ability to accurately judge the distance between branches and then to be able to firmly grab hold of a branch. Hand dexterity, eye-hand coordination, and enhanced visual perception became critical attributes of the primate.

[1] While the empirical specifics of hominid evolution are constantly being updated and revised, the storyline of human evolution and the Dream Animal have remained constant as expressed in this essay.

The world for *Ramapithecus* and the other early primates was a world of praxis, of plant and animal living in interaction with the physical environment. This quadruped lived in the immediacy of its own actions and reactions to the physical events around it. Instinct, driven by natural selection, and conditioning, driven by interaction with the environment, formed the basis of its cerebral-based judgments.

This is was a world devoid of culture. For *Ramapithecus* had little capacity to create and use symbols. Without symbols, there can be no conceptualization. *Ramapithecus* had no knowledge of "self," no self awareness. It had no knowledge of "other," as a self separate from "other" creatures. It had no knowledge of "time," of its own history, destiny and mortality. *Ramapithecus* was very much a part of the natural world in which it found itself.



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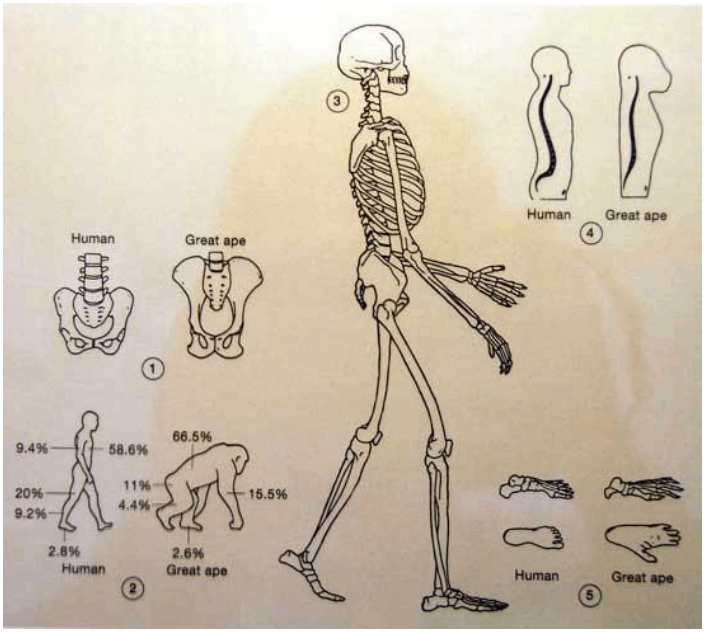
By 3 million years ago, the African forests had given way to grassland savanna. The ancestral inheritors of *Ramapithecus* found themselves in a changed environmental niche that necessitated a change in themselves if they were to survive. An adaptation of swinging through the trees no longer served the primates now roaming amongst the tall grasses. For some of those primates a unique form of adaptation was about to emerge. Those primates were known as *Australopithecus* (Latin for "South African ape") and the larger brained *Homo habilis* (Latin for "handy man") and *Homo erectus* (Latin for “to set upright”).



As a consequence of the shrinking forests, there were less food stuffs available, and primates had to forage farther from home bases. Amongst the tall grasses, visibility was limited. The saber-toothed tiger could easily approach without warning. One form of adaptation was bipedal locomotion. On two legs as opposed to four, the primate could range farther afield, see better over the tall

grasses, and, with freed hands, could carry food stuffs back to a camp. There was a selective advantage among those primates who could walk upright. The hominid had emerged.

Idle hands make for the devil's work. With freed hands, in combination with the enhanced hand dexterity and eye-hand coordination that had evolved while swinging among the trees, hands could now create tools. Attempting to butcher an animal was tough going with small teeth suited for chewing, not cutting. Crude as they were, the sharp edges of stone tools allowed access to a new food source, one rich in protein and one condensed into a small, portable package. Less time was spent foraging about for food and could now be spent in other pursuits. Meat, scavenged from the kill of another animal, would now supplement plant foods. While remaining predominantly a plant eater, the size of the meat-eating primates nevertheless increased. They now stood tall at four foot and weighed up to eighty pounds.

But to fashion a stone tool, the tool must first be imagined. As crude as the tool may have been, the conceptualization of it was not. A tremendous adaptive advantage existed for those primates with an increased brain capacity. It enabled them to envision an image of a tool within a stone, to bring forth that image through the coordination of their fingers and thus release the tool from the stone, and then to communicate this entire body of "how to" knowledge to their offspring. Cranium capacity increased from 440 cubic centimeters in *Australopithecus africanus* to 800 cc in *Homo habilis*, which compares to a modern chimpanzee at 300 cc and modern *Homo sapiens* between 1300 and 1500 cc. The world of symbolic meaning had been entered. Tools of all kinds, shelter, clothing and fire were now imagined into being. And with these images came rudimentary systems of self-expression and communication. Fire soon replaced fur, and symbols gradually replaced genes as this primate's primary form of adaptation to its environment.

The erect posture had morphological repercussions for the throat of the primate. Vocal cords, tongue and larynx were stimulated, and a greater range of sounds could now be produced vocally. Speech was possible. A much more precise form of communication resulted, and more information could be exchanged. The transmission and learning of symbols was greatly enhanced.

With erect bipedal locomotion, the pelvic structure of the primate became more massive, supporting the internal organs that now gravitated toward the lower stomach instead of from the spine. For the female pelvis, this meant that the birth canal became smaller. And together with the increased size of the cranium, young had to be born earlier, physically premature as a result. The young primate was not born autonomous, but was very dependent on others for physical survival and, most importantly, for the acquisition of an ever-expanding body of symbolic knowledge. A mother-child bonding grew. Mothers nurtured with breast and defended from beast, and taught with symbols the skills needed for survival. The seeds of social cooperation and the family were firmly planted.

In turn, with mothers spending more time with their young and less at food gathering, and with mothers less able to ward off the saber-toothed tigers with infants in arm, the mother-child bond was vulnerable. To the mother-child family was joined the male. He

could help protect, and he could help secure food. The family unit was enlarged, and a male/female gender division of labor emerged. Male roles oscillated around the hunt for game animals and the protection from those animals that would hunt them, while female roles tended toward gathering plant foods and care of the young and the aged. The value of social cooperation was further enhanced.

With the tendency toward gender role specification also came a physical dimorphism. Among the males there was a marked increase in height and weight over females. Gross musculature became greater, hearts stronger and blood cells per unit volume of blood increased. More blood was lost in the hunt and in the defense from a hunt. And with sexual dimorphism, for every 100 females that are conceived, there are 120 males, though only 105 survive to birth. More males to replenish a higher mortality rate? This sexual dimorphism is unique, not exhibited by other primates.

Any view of the noble males coming to the rescue of the females and their offspring must be tempered by an understanding of the rewards of that association. Other changes were occurring in the hominid primate. There was a suppression of the estrus cycle, and females became continuously sexually active. No other primate is so oriented. The size, both in relative and absolute terms, of the male penis became larger than any other primate, including the gorilla. With the loss of body hair and the softening of skin of the female, sexual tactility became important, as did increased foreplay, again unique among primates. These are virtually the only primates to engage in face-to-face sexual intercourse. Visual sexual stimulation becomes important. An increased recreational dimension is added to a procreation function. The male-female bond was thus strengthened because of the gratification each received from the other.

Taken altogether, the economic and survival values along with the sexual pleasures set the stage for the development of the most elaborate expression of sexual union among any animal, i.e., human courting and marriage rituals and kinship rules. For the individual of the species, there was thus an increasing sense of incompleteness and a need for the companionship only another could provide.

In addition to the cooperative male-female bonding, a significant adaptive consequence of the increased sexual activity was an increased frequency of births. And as mothers now tended to have several infants to care for simultaneously, the association of a mother-child-father into a cooperative family unit was further enhanced. The populations grew and began spreading over the varied physical terrains of the planet.

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For a rather timid primate, survival in the physical world depended upon being removed from that world and on creating a world of its own fabrication, an artificial environment that would mediate the forces of the natural world. It was a wondrous garment of symbolic meanings that clothed this primate, bringing forth the world of culture. Symbols replaced genes, and fire replaced fur. Beginning with *Australopithecus* and *Homo habilis*, there emerged what the noted anthropologist, philosopher and naturalist Loren Eiseley has called the "Dream Animal" (in *The Immense Journey* 1957).

While the human species is fully anchored in the natural world, sharing its biological predispositions with the other animal species, what distinguishes the Dream Animal from the other species of this planet is the degree to which it relies on the ability to dream – to use symbolic communications and create culture. If symbols are seen as the fiber and thread, then *culture* is the fabric that clothes the Dream Animal. The cultural world of the Dream Animal, the only animal to have created an all-pervasive conceptual world, entails social, ideological, and psychological domains.

The social is the domain of technology, economics, politics, family, and aesthetic and religious organizations--the organizing of people's activities. Within this domain are the various modes of societal adaptation to their environments, e.g., gatherer-hunter, horticultural, agricultural, industrial; modes that have allowed the Dream Animal to inhabit virtually every environmental niche on this planet. It is the only animal capable of doing so. Out of these ecological adaptations has emerged the knowledge of technologies and sciences. From this domain dominion over the world would be sought, ever increasing the layers of the cultural garment, ever increasing levels of technological power over the natural landscape.

The ideological is the cultural domain of awareness of and involvement in thought and spirit, in imagination and dreams. An animal gave birth to its own soul and at the same time gained awareness of its own mortality. Religions are brought forth to explain the great mysteries of the world and of life, and to bring further social control over the peoples. This is also the domain of the aesthetic, philosophical and spiritual search for meaning, identity, origins and destiny, for beauty, for love, for truth. Interestingly, the Dream Animal is the only animal who can tell a non-truth, who can lie. To lie is not just to deceive. Other animals can do that; a nesting prairie chicken darts as a decoy for its young when a coyote approaches. To lie is to conceptually and consciously choose to convey a non-truth to someone else. Despite the preponderance of cooperation and compassion shown toward its own kind, the Dream Animal is also the only species that can hate, have prejudice and kill its own kind in systematic ways, i.e., has wars.

Within the psychological domain are processes of communication and enculturation that contribute to the formation of concepts of self and other. The psychological is the domain from which roles are defined, self-esteem built and motivations directed.

The garments of the members of the Dream Animal family are fashioned in many different styles, colors and patterns. The design and particular weave for any given cultural fabric, any given culture and society is expressed through an *ethos*. The symbols, words and

images of culture embody the collective wisdom and understandings of any particular people, in a particular landscape, in a particular interaction with their world, an ethos. Ethos embodies the collectivity of a people and a place, enshrining the imprint of rock and spirit, of technology and animal, of knowing and feeling, of humans and Gods. Cultural variation and diversity is given form.

Ethos also conveys more universal themes and motifs involving heroes and tricksters, the quests and transformations that vitalize the Dream Animal with a character and quality. Ethos is the plot of the human narrative told through the words of cultural expressions. Ethos is culture personified; the Dream Animal is imbued with persona.

Throughout the culture of the Dream Animal are values. If symbols are the fibers, culture the fabric, and ethos the weave and design, then *values* are the elasticity of the Dream Animal's garment. Values provide the flexibility and resilience, the emotional tone and moral disposition to the fiber and design. The cultural story is infused with spark and momentum, the Dream Animal with drive. Values provide emotionally-charged, moral concepts that assist the Dream Animal in making judgments and preparing for action. The garment and the Dream Animal are brought to life.

Thus, as with the individual of the species, so the species itself had a sense of incompleteness and a need for companionship. It is the companionship that only the symbolic and the cultural would provide. In the telling of its cultural story, the Dream Animal has come into being. Without *culture*, without *ethos*, without *values* there can be no Dream Animal.

But with *culture*, *ethos,* and *values*, the Dream Animal, with its remarkable intellect, is poised to secure a brave new world. It is a world of vast technologies and sciences that would reveal the very mysteries of life and death itself, controlling the former and extending the latter. It would be the world that would be extended to the microbes and subatomic, as well as the stars and beyond. It would be the world the Dream Animal would mold and fashion to its liking.

The emergence of the symbolic process in the Dream Animal does not imply that it is the only animal capable of symbolizing. Other animals certainly can. Dolphins and chimpanzees, for instance, have a rudimentary ability to use symbols. Dolphins communicate symbolically. For the chimpanzee in its natural setting, to strip the bark from a twig and thrust the sticky twig into a termite hill, only to retrieve a food source high in protein, presupposes a symbolic ability to conceptualize the entire process prior to bringing forth the tool. What then distinguishes the Dream Animal from other animals is the degree to which the former symbolizes. Instincts derived by natural selection and behavioral conditioning resulting from interactions with the environment predominate the cerebral-based judgments of other animals, and not an ability to symbolize and fabricate an entire world of culture and story. The world of the animal is a world of signs. The world of the Dream Animal is a world of symbols, of culture, of ethos, and of values. The Dream Animal, while poised to conquer it, stands alone in a vast, inhospitable, and uncharted universe. RF 1994