

**THE DEEP STRUCTURE OF HUMAN NATURE:
PROBING THE PSYCHO-SOCIAL PROPENSITIES
IN BEHAVIORAL MATRICES
(WITH SPECIAL REFERENCE TO E. O. WILSON)**

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Abstract: What E. O. Wilson calls here “deep history” I have chosen to call “deep structure.” As he points out, deep history in his research is nothing less than “biological history,” and since he believes “that biology must someday serve as part of the foundation of the social sciences,” we will suggest here then that the deep structure of human nature is imbedded in human culture and *vice versa*. The genetic composition of *Homo sapiens* implies a “deep structure” within the human animal itself. In this deep structure, we will find “genetic propensities shared by enough humans to be called ‘human nature’,” according to Wilson. The deep structure of human nature is imbedded in the deep history of biological evolution which has produced human culture, a culture dependent upon both biological evolution and psycho-social evolution. These cultural propensities appear in the behavioral matrices of the human animal, as we shall see, in the tripartite interconnectedness of biology, sociology, and psychology. These propensities are explored here.

Keywords: cognitive psychology, evolutionary biology, psychogenesis, human nature, culture and the social sciences, E. O. Wilson

Edward O. Wilson, father of biodiversity and leading proponent of the interfacing of biology and the social sciences, has reminded us that “history did not begin 10,000 years ago in the villages of Anatolia and Jordan.” Rather, he explains, “it spans the two million years of life of the genus *Homo*. Deep history – by which I mean biological history – made us what we are, no less than culture” (Wilson, 1994:328). What Wilson calls here “deep history” I have chosen to call “deep structure.” As he points out, deep history in his research is nothing less than “biological history,” and since he believes “that biology must someday serve as part of the foundation of the social sciences,” we will suggest here then that the deep structure of human nature is imbedded in

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human culture and *vice versa*. The genetic composition of *Homo sapiens* implies a “deep structure” within the human animal itself. In this deep structure, we will find “genetic propensities shared by enough humans to be called ‘human nature’” according to Wilson (1994:332-333).

By probing the behavioral matrices of the human animal, Wilson has suggested that we can identify the psycho-social genetic propensities which make up human nature (Haviland, 1979). Wilson is eager to integrate the study of human culture, using the social sciences, with human behavior, using the biological sciences. “Human beings,” he insists, “inherit a propensity to acquire behavior and social structures, a propensity that is shared by enough people to be called human nature...(and)...the channels of their psychological development are ... cut more deeply by the genes in certain directions than in others” (1994:333). These human traits constitute a composite worthy of being called “human nature.” “*Homo sapiens*,” he reasons, “is after all a biological species.”

These human traits are easily identified and universally evidenced throughout the human species (Braidwood, 1967). They are ten in number, according to Wilson and colleagues, and they are (1) division of labor between sexes, (2) bonding between parents and children, (3) heightened altruism toward closest kin, (4) incest avoidance, (5) other forms of ethical behavior, (6) suspicion of strangers, (7) tribalism, (8) dominance orders within groups, (9) male dominance over all, and (10) territorial aggression over limited resources. Since cultural norms are transmitted by human behavioral interaction, what we are calling here behavioral matrices, and since human behavior is the result of neurological brain functions in which we realize that the human brain is a historical emergent phenomenon of human anatomy, then it might be argued that human behavior is the product of biological evolution (Dobzhansky, 1982). Human nature, it is being suggested, is a manifestation of a universally evidenced composite of these traits which exhibit propensities inherently present in human behavioral matrices (Larsen, Matter, & Gebo, 1991).

The ingredients of humanness, including, art, education, community, and religion, manifest themselves within the context of the physical, social, and emotional environment emergent through the evolutionary process (Wilson, 2000). This process is composed of three interrelated components - biology, sociology, and psychology. More specifically, the emergence of the human animal as an individual and as a social

being are dependent upon the evolving of a “biological capacity” for survival, the “sociological opportunity” to sustain and nurture social life, and the “psychological inclination” to both reflect upon and articulate those propensities beneficial to the community (Pope, 2000). This evolutionary process, or organic emergence, will be discussed here as a converging matrix of biogenesis, sociogenesis, and psychogenesis (Morgan, 2007).

BIOGENESIS (bipedalism / stereoscopic vision / verbal acuity / opposable digitation)

Biological capacity, sociological opportunity, and psychological inclination were all necessary for the human community, during the Paleolithic period, to emerge and thrive (Aiello & Dean, 1990). And, when we speak of capacity, we specifically refer to “biological” capacity with reference not just to brain size but also the development of bipedalism, stereoscopic vision, verbal acuity, and opposable digitations needed for the creation and use of tools (Stringer & Gamble, 1993). Without delving into the nuancing of time sequencing, that is, such valid but presently irrelevant questions as to which came first and what came later, we are fully aware that the emergence of the human community was radically dependent upon the human individual’s capacities to walk upright, to see three dimensionally, to speak with clarity, and to use the hand with skill and precision (Hublin, 1996). These biological capabilities were indispensable in the evolutionary process of human emergence and survival (Jaynes, 1978).

The “standing upright” posture constituted a monumental evolutionary advance over quadrupedal locomotion. This shifting from four legs to two, from periodic walking upright to a permanent stance is traced through hundreds of thousands of years until we reach an established bipedalism. The releasing of the arms and hands for gathering while walking was enormously important. Furthermore, the capacity to throw things with accuracy evolved and the skills developed in the making of tools could only occur when the arms and hands were freed from locomotion (Washburn & Moore, 1974). Frontal and facial interaction with other humans was facilitated by bipedalism whereas before the horizontal posture failed to inculcate eye-contact when frontally encountering another member of the social group. One of many behavioral dynamics altered by this frontal encountering brought on by bipedalism was sexual selection and intercourse which shifted from a rear to a frontal posture. This

introduced the psycho-social dimensions of mating and mate selection not available in quadrupedalism (Hublin, 1995). Speed of locomotion, not unimportant on the savannas where predators were everywhere, was greatly enhanced when we moved from walking on all fours to bipedalism. Carrying of food and needed survival items such as weapons and hunting implements, and most importantly, the capacity to run fast while holding a young one, all contributed to the further development of social life among early humans, and was all due to the evolution of standing upright and walking on two legs (Brothwell & Brothwell, 1969).

Furthermore, stereoscopic vision evolved in relationship to the developmental alterations of the skull and this occurred extremely early in the long history of hominid evolution. To see three dimensionally with two frontal eyes dates from the evolution of the simians and continued to both develop and compliment the evolution of the human animal (Mercier, 1991). Crucial for the capacity to “objectify” an item, such as tools, stereoscopic vision was a great advancement over eyes placed at the sides of the head which see landscapes, for example, as two-dimensional flat sheets, able only to detect what moves across a plain field but not items holding still or moving directly towards one, such as a stalking tiger. The structure of the early brain reflected these changes. The cortex expanded considerably, perhaps doubling and then tripling in size resulting in the reduction of the olfactory center in the brain. The diminishment of the olfactory sense is directly correlated with the increase in the visual capacity of the brain, all based on space-availability within the skull. Although a large part of the expansion involved the visual cortex at the back of the brain, other areas were affected, such as certain areas concerned with the control of finger movements -- a tiny strip of cortex on the right side of the brain, for example, controls the fingers of the left hand, a corresponding left-side strip the right hand (ApSimon, 1980). The degree of detail on the map of the cortex depends on the evolutionary status of the species, i.e., the more developed the species, the greater the refinement in digital dexterity!

If bipedalism and stereoscopic vision were crucial in human development, not enough can be said regarding the development of our verbal acuity. Speech is the biologically refining mechanism which facilitated our development into a reflective thinking being (Lieberman & Crelin, 1971). This biological capacity, i.e., the ability to articulate and manipulate a wide range of sounds with intentioned conveyance of

meaning between human individuals, was an early development contributing to our survival. The physical deficiencies of human anatomy were greatly lessened owing to our developing capacity to communicate verbally with precision and comprehension which was valuable for the great hunt as well as for domestic interaction within the family, the community, and between individuals (Madris, 1995). The development of myth through story-telling was only possible due to the development of verbal communication skills and, the more refined the verbal skills, the more elaborate the stories. And, to be sure, the more refined the communication the greater the opportunity to develop and elaborate whole systems of thought, ideas, rules, etc.

Finally, within the context of the biogenesis of the human animal generally, we must address specifically the fundamental skills of digital dexterity needed for the making of tools for survival and for the enhancement of the quality of life among early peoples (Ucko & Rosenfield, 1967). Called opposable digitation, the capacity to oppose the thumb to the fingers and to bring the finger tips into contact with the ball of the thumb, is a defining characteristic of the human hand which distinguishes the human species from all other primates, prehistoric and contemporary. The human hand is capable of two major types of grips (Cronk, Chagnon, & Irons, 2000). In the power grip, an object is held between the fingers and the palm, with the thumb reinforcing the fingers. In this position, much force can be applied. All primates are capable of the power grip.

The precision grip, however, is used when an object is held between one or more fingers with the thumb fully opposed to the fingertips. Very delicate movements can be executed in this position. Humans have developed the precision grip to a degree not found in other primates, granted chimps and other pongids do exercise a degree of precision in finger/thumb opposition such as in using a straw to extricate ants from a bed for feeding. Nevertheless, the precision of the human animal in the use of the hand through oppositional thumb/finger dexterity is unprecedented in the primate world.

We can summarize the evolution of the human hand by marking two stages in its development (Spuhler, 1959). First, the primate arboreal environment necessitated the opposable thumb for grasping branches, and this thumb appears among the prosemians and in turn makes possible manipulation among Old World monkeys but is not present among New World monkeys. Second, the ecological move to the open plains correlated with bipedalism freeing the hand from all locomotive

functions and allowing the perfection of the precision grip by some minor modifications of the thumb. The hand has contributed as much as the eye to the making of the human animal; together they gave the human animal a new perception of the environment and, with technology, a new control of it. From chipped stoneware to pottery to sewing to typing, the human animal has maximized the evolution of the hand to further the biogenesis of the human species.

The biological capacities of walking upright, seeing three dimensional objects, verbally expressing thought, and the making of tools all contributed to human survival and, even more, to the thriving of the human community against all odds (Howells, 1973).

SOCIOGENESIS (social interaction / linguistic acuity / socio-dynamic connectedness)

But, in addition to biological capacity, early humans necessarily had to evolve social interaction skills, linguistic acuity, and a sense of the dynamics of social connectedness. Brain size alone was certainly not enough, not even walking upright on two feet, not even an increased ability to manipulate the tongue and palate for verbal sophistication, or the unique capacity to finger each digit with the thumb. Beyond these biological capacities, sociological opportunity had to emerge and be utilized. Beyond biogenesis, sociogenesis was essential in the development of the human person and the human community (Wilson, 1975; 2000).

Of course, there is no evolutionary sequencing here. That is, we are not suggesting first came the biological capacity and then the social opportunity. Rather they evolved concurrently, simultaneously feeding off of each other, stimulating and provoking development towards reflectivity and consciousness. The physical body was complimented by the responding socialization skills resulting and benefiting from new biological capabilities. Interaction, language, and sociality were, of course, the fundamental ingredients in the emergence of the human community - person to person interaction, families, and clans (Freedman, 1979). All three benefited from the push towards bipedalism, stereoscopic vision, digital dexterity, and verbal acuity.

The hunt, the camp, and the person all constituted the socially interactive matrix for skill development. Food from the hunt was indispensable, and the more successful the hunt, the greater the benefit to the community and, therefore, the greater the likelihood of survival (Brace, 1977). In order to assure hunting success, social interactive

communication was crucial - visual and verbal. The increasing capacity to work together, as a unit, as a concerted corporate effort towards a single mutually beneficial goal, characterized the hunt. Men and boys collaborating, coordinating, communicating, and executing the effort is what made human survival possible. Within this matrix, the interactive skills of refined and finessed communication capabilities were enhanced by the opportunity made possible for cave dwelling, fire manipulation, and the attractiveness of collegiality. Only *homo soloensis* (Solitary Man) attempted and failed to live apart. The human experience is one of collegiality, sociality, mutuality, and cooperation. These are the traits that assured our survival (Morgan, 2006).

Though indispensable, verbal capability was not enough for we needed to evolve linguistic acuity, a capacity to continually refine and finesse our verbal and non-verbal communication skills. The subtle inflection of intonations coupled and complemented with facial, hand, and body gesticulations all contributed to facilitate the nuancing of message conveyance. The hunt was very dangerous but absolutely necessary. The loss of life was inevitable; the sustaining of life was the challenge and the better the communication, verbal and non-verbal, the greater the chances of survival. The camp that communicated the best survived, even thrived, in the face of indeterminate odds and incalculable eventualities. The social pressure for the continual refinement of language was tremendous.

But beyond social interactive skills and linguistic acuity, the capacity to identify with and relate to the social dynamic of community, a sense of corporate connectedness, was necessary and inevitable (Campbell, 1983). In the hunt, in the camp, within the bosom of the social family, every individual was a valuable member, a contributing partner in the great struggle to survive. The elderly members of the hunting band provided the repository of survival wisdom regarding food sources and preparations, medical condiments, migration histories, and animal lore. Infants and youth provided the basis for hope for tomorrow to carry on the social life of the community (Morgan, 2005). The skill to read a face, to detect the subtleties of a gesture, the necessity of judging a comment, all converged within the social matrix for survival and perpetuity. Those more skilled at reading the signs -- faces and gestures and sounds and silences of each member -- were those destined to lead, to direct, to counsel, and to confront. From within this rising cluster of socially

astute members of the community came the eventual leaders, shamans, priests, teachers, great hunters, and all patriarchs and matriarchs of the cave dwellers.

But it was the social opportunity and not just the biological capacity that made human survival possible. The opportunity of social interactive skills development occurred owing to life in the caves, with fire, and with language. The opportunities for social skills development, linguistic refinements, and a sense of the socially dynamic connectedness of each member of the community could only occur within the great caves of central and southern Europe and the Fertile Crescent. Everywhere fire and shelter were needed for survival, there the human animal thrived. For it was around the camp fires at night, after the hunt, after the meal, when the human family gathered together to affirm their connectedness, their collegial investment of mutuality in survival, that social life began to grow and thrive, to evolve and elaborate.

PSYCHOGENESIS (reflective self-awareness / reflexive cognition / psychodynamic expressiveness)

With the convergence of biological capacities and sociological opportunities for the appearance of human society, there was the inevitable need for the ingredients of psychogenesis, viz., reflective self-awareness of the individual, reflexive cognition for systematic thought and analysis, and expressiveness. Individual and social relational traits such as a sense of fear, anger, compassion, empathy, sympathy, jealousy, competition, and amorous propensities were all needed for the melding of social cohesiveness within the family, clan, and community. And, we must at another time and place explore in some detail the human inclination to speculate for this “speculative inclination” we can argue to be the most defining characteristic of the human animal (Dickson, 1990).

E. O. Wilson has shown us how the balancing matrix of human evolution consisted of biogenesis, sociogenesis, and psychogenesis (Wilson, 2000). The biological capacity, the sociological opportunity, and the psychological inclination all conspired to produce the human animal. We are not interested in fruitless attempts in identifying human characteristics which set us apart from the rest of the animal kingdom but rather to identify those specifically defining traits which make us *homo sapiens sapiens* rather than some other species of primate. That’s all. Nothing more is needed. Otherwise, we isolate and elevate those

traits of “humanness” in our quest for the Paleolithic origins of reflective consciousness (Banton, 1966). Later we will see that we are not merely *homo habilis* (tool maker) but also *homo hermeneuticus* (interpreter). We not only make things, we interpret our environment and our experiences (Dickens, 1990).

This imperative to interpret in order to understand is indicative of our rise to consciousness. By consciousness we mean “reflective self-awareness.” We feel fear, we are aware that we feel fear, and we are aware that we feel compelled to explore, identify, and explain the fear we feel. Reflective self-awareness is a defining characteristic of the human experience, what it means to be human. Though chickens experience fear, they do not write books about it or make movies about it. We do. And it is an inclination which has characterized the human animal from earliest times, from the time of the cave dwellers when members of the community felt compelled to express their experience through the medium of art (Ucko & Rosenfield, 1967). Reflexive cognition is a personal awareness that we think and that we think about thinking and that we know we think about thinking (Stringer & Andrews, 1988). Thinking about thinking is what we do, and then acting upon that thought process, that which results from this self-reflective awareness and this reflexive cognition, is the eventual outcome (Waddington, 1960).

This kind of socially validated psychodynamic expressiveness is both encouraged and validated by the community. The community looks to the leaders whom they know have thought through the agenda - the task at hand, the hunt, the migration, the occupation or abandonment of a domicile. The community is confident that the leaders have engaged in this kind of reflection, and that the resulting decision will be of benefit to them all. Likewise, when these individuals vested by the community with confidence in thinking, planning, and acting, take the initiative, they do so with the community’s support. When they react to, inculcate, or provoke fear or anger or hope, they do so with the social mandate of the community (Morgan, 2010). All such action, based on reflection, grows out of a need for and value of speculation and the inclination to speculate about the unknown, the future, the possibilities, is a defining characteristics of the human species. Those more inclined rather than less inclined to speculate, reflect, cogitate, muse, and then plan and act are destined to lead (Waddington, 1960). Herein lies the necessity for the human

community to identify those who have the aptitude to lead and then to determine to follow those so identified.

CONCLUDING COMMENT

The deep structure of human nature is imbedded in the deep history of biological evolution which has produced human culture, a culture dependent upon both biological evolution and psycho-social evolution. These cultural propensities appear in the behavioral matrices of the human animal, as we have seen, in the tripartite interconnectedness of biology, sociology, and psychology. Each behavioral matrix, i.e., biogenesis, sociogenesis, and psychogenesis, is the product of a convergence of biology and culture, of a confluence of the evolutionary DNA of the species *Homo sapiens*, and the behavioral matrix of the individual and the social group. In probing the propensities of human nature wherein the behavioral constructs of society and the individual are a convergent product of biological evolution, we see the emergence of human culture as the inevitable product of genetics and sociality, of the biological evolution of the human body and the psycho-social evolution of human culture.

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