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SOCIOBIOLOGY AND EVOLUTIONARY PSYCHOLOGY

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AN OVERVIEW
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SOCIOBIOLOGY AND EVOLUTIONARY PSYCHOLOGY: AN OVERVIEW

Sociobiology and evolutionary psychology are related fields, both of which claim that biology is the principal determinant

in human affairs. Sociobiology was initially, and by some accounts is entirely, the study of the genetic bases of animal behavior. Sociobiologists regularly also attempt to explain human behavior. Sociobiology is, as the term suggests, the biology of animal *and* human society. Sociobiology preceded and developed into evolutionary psychology, which features mental dispositions more than genes as the evolutionary determinants. The relationship of the two disciplines is both congenial and contested.

Even more contested, by biologists, social scientists, and humanists alike, is how far either discipline succeeds. Edward O. Wilson, the founder of sociobiology, calls it a “new holism,” even, with capitals, “the Modern Synthesis” (1975, pp. 7, 4). But critics see it as genetic reductionism. Evolutionary psychologists claim that humans have what Jerome H. Barkow, Leda Cosmides, and John Tooby call an “adapted mind,” and call for a “conceptual integration” of all the diverse academic disciplines studying humans, their behaviors, minds, cultures under this biological “view of a single, universal panhuman design” (1992, pp. 4–5). Critics see this too as biological imperialism.

SOCIOBIOLOGY. Wilson opened his 1975 *Sociobiology* with auspicious claims: “Sociobiology is defined as the systematic study of the biological basis of all social behavior. It may not be too much to say that sociology and the other social sciences, as well as the humanities, are the last branches of biology waiting to be included in the Modern Synthesis” (p. 7). He concludes his massive study: “Scientists and humanists should consider together the possibility that the time has come for ethics to be removed temporarily from the hands of the philosophers and biologized” (p. 562). A quarter century later, the “temporary” is becoming more permanent. Only in a biologically based “consilience” is there any hope of “the unity of knowledge” (Wilson, 1992).

A frequent motif in the claims of both sociobiology and evolutionary psychology is that the basic thrust of all life is “selfish.” Richard Dawkins titles an influential book *The Selfish Gene*, and opens: “We are survival machines—robot vehicles blindly programmed to preserve the selfish molecules known as genes” (1989, p. v). Philosophers, especially ethicists, object that biologists are labeling genes with a word borrowed from the cultural phenomenon of morality. A less pejorative theory could avoid reading back objectional features from culture into nature, and avoid speaking as though animals and genes were ethical agents in conditions of only superficial similarity.

Sociobiologists reply that the words *selfish* and *altruistic* as they use them in genetic biology have nothing to do with motivation, only with behavior. These replies are not always convincing, because Wilson does propose to “biologize” ethics, and Dawkins does begin his *Selfish Gene* with the injunction: “Let us try to *teach* generosity and altruism, because we are born selfish” (1989, p. 3).

Critics of this selfishness at the root of sociobiology claim that there is, even in biology, more than one way of

framing this behavior. After all, biologists claim that organisms are quite interrelated, living in communities, ecosystems, with myriad coactions, cooperations, interdependencies. Genes are spread around; that is the only way they can be conserved. Organisms are selected for their capacities to leave more of their genes in the next generation, which, if it can be thought of as the survival of the “selfish,” can as easily be thought of as the survival of the “senders.” Organisms are tested for their capacities to bequeath what they know genetically to their offspring. Sociobiology needs also to be about shared identity, kinship. William D. Hamilton in a founding paper develops the idea of “inclusive fitness” (Hamilton, 1964).

Biologists could be committing what Alfred North Whitehead called the fallacy of misplaced concreteness (Whitehead, 1967, p. 51). Selecting out one feature of a situation, one forgets the degree of abstraction involved from the real world, and mistakenly portrays the whole by over-enlarging a factor of only limited relevance. An even more insistent criticism is that sociobiology fails to recognize the novel, nonbiological dimensions of human culture. Culture “denotes an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms, by means of which men communicate, perpetuate, and develop their knowledge about and attitudes toward life” (Geertz, 1973, p. 89). Although animal ethologists use the word *culture* in reference to animals with capacities for communication and imitated behaviors, culture in the sense of ideas passing from mind to mind is peculiarly human. Human language is elevated remarkably above anything known in nonhuman nature; the capacities for symbolization, abstraction, grammar, vocabulary development, teaching, literary expression, and argument are quite advanced. The determinants of animal and plant behavior are never anthropological, political, economic, technological, scientific, philosophical, ethical, or religious.

Humans have lived in cultures for perhaps a million years, reproducing across thousands of generations. There is every reason to expect that those humans will do best reproductively who do best culturally, and, vice versa, that a genotype will be selected to produce a culturally congenial phenotype. But the question remains whether this emergence of culture introduces behaviors that, however much they continue to require biology, also transcend it with a distinctive human genius.

Sociobiologists insist that biology is dominant in human culture. Wilson puts this in a bold, if somewhat loose, metaphor: “The genes hold culture on a leash. The leash is very long, but inevitably values will be constrained in accordance with their effects on the human gene pool” (1978, p. 167). This is “the general sociobiological view of human nature, namely that the most diagnostic features of human behavior evolved by natural selection and are today constrained throughout the species by particular sets of genes” (1978, p. 43). Michael Ruse agrees: “I argue that Dar-

winian factors inform and infuse the whole of human experience, most particularly our cultural dimension. . . . Human culture, meaning human thought and action, is informed and structured by biological factors. Natural selection and adaptive advantage reach through to the very core of our being" (1986, pp. 140; 147).

Earlier versions of sociobiology supposed that the genetic shaping of beliefs was rather direct and one way. In later versions, more attention is given to gene-culture coevolution. The genes are still in control, however; cultural variations are selected and persist only when the genes can use them the better to reproduce, although the detail of such innovative practices will be transmitted to the next generation culturally and nongenetically.

The genes build what is called an epigenetic mind. *Epigenesis* conveys the idea of a secondary genesis, ancillary to the primary genetic determinants, a sort of epiphenomenon. Ruse and Wilson put it this way: "Human thinking is under the influence of 'epigenetic rules,' genetically based processes of development that predispose the individual to adopt one or a few forms of behaviours as opposed to others" (1986, p. 180). Humans have innate mental dispositions, such as to avoid incest, or fear strangers.

Critics reply that human beliefs can differ radically. The ancient Scythian nomads in southern Siberia believed that when their chieftains die they should bury their concubines with them, along with their horses and other necessities for the next life; modern Americans believe in women's rights, and doubt that horses ought to be treated this way. Which of these beliefs one comes to hold depends more on one's education than on genes. If the new ideas are contagious enough culturally they can spread indefinitely through the population.

Significant cultural changes can occur within a century, even a decade. Genetic changes can only be transmitted to offspring, which disseminate slowly through a population. Entire cultures rise and fall in less than a thousand years, the minimum period of time in which biologists estimate there might be significant changes in the genetic pool of a human population. The millenarian genes cannot track the ephemeral cultural changes. Individual persons can gain new information constantly throughout a lifetime. Cultural practices get borrowed, traded, adapted; they intermingle across genetic lines. When oral cultures evolve to become literate cultures, people can transmit ideas to thousands who read books a thousand miles away or a thousand years later. This accelerates the pace of cultural information transfer by orders of magnitude over that of genetic information transfer. It is difficult to yoke horses and jet planes in coevolution and have them travel anywhere together.

Cultural options can operate without modifying the genetics. In computer imagery, the same "hardware" (biology) supports diverse programs of "software" (culture). Sociobiologists may reply that the hardware does limit what sorts

of software can run on it. Critics counter that the metaphor overlooks how the infant brain is synaptically unfinished and is to a considerable extent "wired up" during the child's education into its culture. The evolved brain allows many sets of mind: one does not have to have Plato's genes to be a Platonist, Darwin's genes to be a Darwinian, or Jesus' genes to be a Christian. The system of inheritance of ideas is independent of the system of inheritance of genes.

EVOLUTIONARY PSYCHOLOGY. *Evolutionary psychology* is a descendent of sociobiology, with more attention to mind and its cultural capacities, but retaining the underlying biological determinants. Jerome H. Barkow realizes that there is a "complex psychology" in humans, with genes and culture interacting, sometimes working together, sometimes pulling in opposite directions. Nevertheless, it remains basically correct "to speak of the genes anchoring the psychological predispositions that tend to pull our cultures back to fitness-enhancing orbits" (Barkow, 1989, p. 8).

Humans have what John Tooby and Leda Cosmides call an "adapted mind" made up of a set of "complex adaptations" that, over our evolutionary history, have promoted survival (Barkow, Cosmides, and Tooby, 1992, p. 69). These form a set of behavioral subroutines, selected for coping in culture, by which humans maximize their offspring. The mind is more like a Swiss army knife, with tools for this and that, rather than a general-purpose learning device. Humans have needed teachability, but they have also needed channeled reaction patterns. The adapted mind evolved a complex of behavior-disposition modules, each dedicated to task-specific, survival-specific functions such as obeying parents, or being suspicious of strangers, or ostracizing noncooperators. In picking mates, men are disposed to select younger women, who are likely to be fertile. Women are disposed to select men of social status, who are likely to be good providers.

Critics find that some more or less "automatic" behavior is desirable. Subroutines to which we are genetically inclined are shortcuts to survival, reliable modes of operating whether or not persons have made much rational reflection over these behaviors. Nevertheless, the mind is not overly compartmentalized, because behaviors interconnect. If women are prone to choose men of status, that requires considerable capacity to make judgments about what counts as status economically, politically, and religiously. They will have to judge which one of their suitors, who often are still relatively young, is most likely to attain status in the decades of their child rearing. Behavioral modules seem unlikely for the detail of such decisions under changing cultural conditions. Capacities to select such a mate are perhaps somewhat "instinctive," but they are unlikely to be an adaptive mechanism isolated from general intelligence and moral sensitivity.

Any such articulated behavioral modes need to be figured back into a more generalized intelligence. Those who advocate evolutionary psychology need to integrate many disciplines: evolutionary biology, cognitive science, behav-

ioral ecology, psychology, hunter-gatherer studies, social anthropology, biological anthropology, primatology, and neurobiology. These are not disciplines in which one becomes expert by behavioral mechanisms using a Swiss-army-knife mind. Educators, whether scientists or humanists, need broadly analytical and synoptic minds. Evolutionary psychologists seem to be arguing that we can and ought be able to re-adapt by critical thought these adapted minds we inherit.

In overall assessment, many conclude that humans live under what Robert Boyd and Peter J. Richerson call "a dual inheritance system" (1985). Humans have some dispositions to which they are genetically disposed, and other dispositions into which they are culturally educated. Their actual behavior is an interactive resultant. Human behaviors fall within an ellipse with two foci, one genetic and one cultural, and, depending on where one is within the ellipse, behaviors may be dominantly under the pull of genes, or culture, or various hybrids with components of both. In the "leashing" analogy, the leashing can be of culture by nature, or nature by culture, or each keeping the other leashed with various lengths of leash.

How individuals behave in fact is often determined by their learning experiences, or by social trends. Choices depend on parents, teachers, peers, advertising pressures, fads and fashions, social policies and institutions. Even in behaviors regarding biological reproduction, cultural beliefs can override any genetic dispositions to maximize offspring. L. L. Cavalli-Sforza and M. W. Feldman (1981) show that fertility has declined in Europe in the last century, and that Italian women, for example, do not maximize their offspring, differing in their beliefs and behavior from their mothers and grandmothers. The fertility rate per woman in the United States fell from 7 in 1800 to 2.1 in 1990, in a period in which resources rose at a rate matching the fall in fertility. The reasons for the changes must be cultural, not genetic.

Richard C. Lewontin, a Harvard biologist, concludes: "The genes, in making possible the development of human consciousness, have surrendered their power both to determine the individual and its environment. They have been replaced by an entirely new level of causation, that of social interaction with its own laws and its own nature" (1991, p. 123). Marshall Sahlins, an anthropologist, concludes: "Biology, while it is an absolutely necessary condition for culture, is equally and absolutely insufficient: it is completely unable to specify the cultural properties of human behavior or their variations from one human group to another" (1976, p. xi). Biology determines some outcomes but underdetermines many others.

Sociobiologists claim to give a scientific account of the "human qualities . . . insofar as they appear to be general traits of the species," the human "biogram" (Wilson, 1975, p. 548). Likewise, the evolutionary psychologists, though distancing themselves from too simplistic a genetic determination of culture, are hoping for "universal mechanisms" in

the plural behavioral routines of their "adapted mind." Explanations should be based on "the underlying level of universal evolved architecture. . . . One observes variable manifest psychologies or behaviors between individuals and across cultures and views them as the product of a common, underlying evolved psychology, operating under different circumstances" (Barkow, Cosmides, and Tooby, 1992, p. 45).

Kenneth Bock complains: "Human culture histories here emerge as fortuitous meanderings of people within bounds set by a human nature produced by organic evolution" (Bock, 1980, p. 118). Blacks were slaves in the southern United States and freed in 1863 during the Civil War. Long segregated, in the second half of the twentieth century they became quite integrated into American life, and the great-grandchildren of slaves became legislators, mayors, college presidents, and military generals. A generic theory common to all *Homo sapiens* cannot explain the struggle from slavery to freedom by applying a universal theory to variant initial cultural conditions. The allegedly universal explanation is not robust enough to tell the particular critical stories of the exodus from slavery to freedom. The critical difference lies in the historically emergent ethical conviction that slavery is wrong and freedom is right, and that blacks are, in morally relevant respects, to be given equal opportunities and responsibilities with whites.

These newfound convictions have little to do with selfish genes or instinctive adaptive mechanisms. Persons with essentially the same genetic makeup are being converted from one ethic to the other. The biological theory is not explaining this cultural development.

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