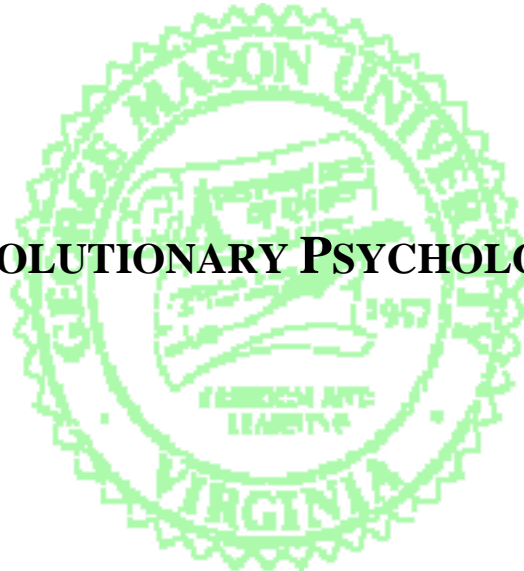


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EVOLUTIONARY PSYCHOLOGY



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ABSTRACT:

This is the entry for “Evolutionary Psychology” in the *Encyclopedia of Law and Society: American and Global Perspectives*. This entry provides a summary and overview of the science of evolutionary psychology and its implications for the study of law. Understanding how evolution has shaped human nature and individual preferences can provide insight into how to use law to direct individual behavior in pro-social directions and away from anti-social behavior. This essay provides an overview of the science of evolutionary psychology, especially as it manifests itself in human proclivities for cooperation and conflict. In contrast to the Hobbesian view of human nature that implicitly underlies the modern understanding of law, evolutionary psychology provides several models of cooperation in the absence of law. But evolutionary psychology also provides insights into the nature of social conflict and the challenges this presents for legal regulation. Finally, the article describes the research program of law and evolutionary psychology, the testable hypotheses of evolutionary psychology, and the criteria for distinguishing evolutionary explanations of human behavior from legalistic and norms-based theories.

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Evolutionary Psychology

Recent years have seen an explosion of interest in the field of evolutionary psychology and its implications for law and other social sciences. Evolutionary psychology is the application of the analytical techniques of evolutionary biology (including the concepts of natural selection and sexual selection) to the evolution of the human mind and its operation. Evolutionary biology itself provides a persuasive explanation for our biological natures. The human body evolved to meet the physical challenges confronted by humans deep in our evolutionary past, and particularly in response to the environment of preliterate hunter-gatherer societies in which humans have lived for most of their evolutionary past, millennia before the emergence of civilizations in the Fertile Crescent, much less modern industrial society. For instance, human backs, hands, metabolisms, and eyes are plainly unsuited to the pressures of modern industrial society, much of which requires individuals to sit for extended periods in front of computers.

Evolutionary psychology argues that the essential nature of the human mind and associated behavioral predispositions, such as the human body, evolved in a social and physical environment very different from today's world and evolved to address the pressing problems of our evolutionary ancestors. From this perspective, much of human physical and neural architecture evolved during the so-called Environment of Evolutionary Adaptedness, or EEA, which varies by trait, but which is often considered for major brain features to be especially salient during the Pleistocene Era (approximately 1.6 million years ago to about 10,000 years ago). During this time, our human ancestors lived in small, stable hunter-gatherer bands characterized by stable social groups, repeated interaction over

time, and relatively long life spans. Because of the extremely long periods over which evolution occurs, researchers believe that humans have largely the same biological and psychological natures as the humans who lived in these hunter-gatherer societies, creating a “mismatch” with the modern world. In the evocative phrase of Leda Cosmides and John Tooby, “our modern skulls house a stone age mind” (1997: principle 5).

Contours of the Discipline

Darwinian models of evolution proceed from the fundamental assumption that heritable traits that enable an organism to survive and reproduce more effectively than other members of the species will tend to appear in increasingly large percentages of future populations. This means that reproductively successful traits are effectively determined by one’s environment as well as by the choices of potential mating partners. It follows that measures of the “adaptiveness” of traits is relative, not absolute, because traits are adaptive only relative to given environment conditions. Thus, the mere fact that a particular heritable trait makes an individual better adapted to a particular environment implies no normative conclusion that one trait is “better” than another.

For instance, those with comparatively better immunities to various viral and bacterial infections have tended to have better success in surviving human plagues than those who lacked that resistance. Nevertheless, it would be absurd to suggest that a random adaptation that created immunity to a given infection carried any normative value with it. Those who supposed that it is possible to draw normative inferences about the results of evolution, such as the Social

Darwinists of the twentieth century, commit the naturalistic fallacy of drawing normative conclusions from factual observations.

One cannot establish whether a particular behavior is normatively good or bad simply by determining that the actor has a psychological adaptation to behave in such a manner. Certain behaviors can be good or bad only according to an external normative standard. Thus, human beings appear to be psychologically adapted to engage in trade, provide charity to nonkin, and invest in raising their children. By almost any moral code, all of these behaviors are normatively good. By contrast, although the science remains unsettled, it also may be that some humans may bear some context-specific, condition-dependent, and essentially algorithmic predispositions toward dominance, violence, and even sexual aggression.

The fact that these behaviors arise “naturally” is irrelevant to the fact that they are universally morally condemned. Finally, other predispositions, such as our tendencies to eat too many candy bars, are largely devoid of moral content. The desire to consume sugar served a useful purpose in an era where food was scarce and it was useful to have a built-in craving to encourage us to seek food high in energy content. The task of the philosopher and social scientist is to understand the degree to which humans bear various behavioral predispositions, and thereby to determine what set of institutions and incentives are necessary to restrain, modify, or channel these predilections toward prosocial behavior and away from antisocial behavior. On the other hand, this does not rule out a belief that what is normatively good for human beings in some sense must be consistent with their fundamental psychological natures.

Nor does evolutionary psychology imply biological determinism. Modern biology makes clear, rather, that one's behavior is a function of the *mutual* interaction between biological variation and environmental selection, or as the case is frequently put (if inaccurately), between nature and nurture. At the same time, evolutionary psychology rejects the commonly accepted "Standard Social Science Model," which posits that one's mind is essentially a *tabula rasa* and that one's personality, preferences, and abilities are entirely socially constructed and thus infinitely malleable.

Application to Humans

For most animals, the relevant variable for one's evolutionary fitness turns on the fitness for a given physical environment. Thus, a wolf's fitness will be a function of its ability to hunt down elk and an elk's fitness will be a function of its ability to outrun and evade wolves. For humans, however, the relevant environment primarily is *other humans*, a social environment rather than a physical environment. Because of the immensely social nature of human societies, one's fitness is not merely a function of the ability to seek prey and to avoid predation. The evolutionary environment for humans includes the body of institutions, rules, customs, and expectations of others.

Thus, a primary evolutionary challenge for humans has been to solve inherently *social* puzzles as to how to interact with others within the framework of cultural rules that structure those interactions. Rather than seeing the human mind as a generalized information-processing device, therefore, evolutionary psychologists argue that humans have evolved a set of specialized mental capacities that enable individuals to perform better on tasks that recurrently

challenged our evolutionary ancestors, such as detecting deception and maintaining reciprocity-based relationships, as opposed to novel or less-common tasks.

Evolutionary psychology predicts that certain human preferences will be “sticky” relative to others. In particular, those preferences that relate in some way to the survival and reproduction of each of our ancestors in the evolutionary past will tend to be more robust and relatively less malleable than other preferences. Evolutionarily valuable physical and psychological attributes that give one member of a species a comparative advantage in reproduction over other members include those traits that tend to increase one’s ability to acquire status and wealth, and through those, reproductive partners.

Evolutionary psychology, however, simply attempts to explain and predict the distribution of certain preferences or traits within a given population or predictable patterns of behavior within populations, and thus does not provide any confident prediction of how individuals within a given population will behave. Thus, just as the observation that men are on average stronger than women does not rule out the possibility of any particular woman being stronger than any given man, claims by evolutionary psychologists about the distribution of psychological predilections, abilities, or preferences among different populations or subpopulations do not predict the location of individuals within those populations. Similarly, men may be more aggressive than women on average, but that does not mean that any given woman may not be more aggressive than any particular man.

Usefulness for Law: Cooperation

Most relevant for law, many of the traits identified by evolutionary psychologists manifest themselves around issues of cooperation and conflict. With respect to cooperation, law implicitly has tended to assume a Hobbesian model of human interaction, assuming that the presence of law is necessary for cooperation to flourish. The insights of evolution cast doubt on this assertion. All social creatures—from ants to elephants to humans—face certain challenges in maintaining social cooperation and accomplishing collective goals such as hunting or protection from predation, and do so without any centralized state or law. Rather than selfish *individuals*, however, modern Darwinism begins its analysis with selfish *genes*, which are the basic unit of natural selection.

Evolutionary biology identifies four basic mechanisms to explain the evolution of cooperation in nature: (1) kin selection (or “inclusive fitness”), (2) cooperation for mutual advantage (or “byproduct mutualism”), (3) reciprocal altruism, and (4) group selection. In each of these situations, one individual (that is, a collection of genes) acts altruistically in bestowing a benefit upon some other individual (collection of genes) at some cost to himself. This is surprising, in that it seems to be inconsistent with the self-interest axiom. Nonetheless, each of these mechanisms potentially makes it more likely that genes inclining one toward context-specific altruism will appear in subsequent generations.

Kin selection operates on the premise that the marginal sacrifice of one individual may make that individual relatively worse off, but that the sacrifice may also make that individual’s genes better off as a result by making it more likely that genetically related individuals will survive and reproduce. The theory

of inclusive fitness predicts that natural selection will favor altruism among kin: the closer two individuals are related to one another, the lower the costs to the altruist, and the greater the benefits to the recipient. Thus, parents generally are willing to make greater sacrifices of their own interests for the benefit of their children than for others' children.

Cooperation for a given end arises when there is some goal that a group of individuals working together can best accomplish, rather than acting separately. For example, a wolf pack will cooperate for the purpose of bringing down large prey, or individuals will cooperate within a firm to produce goods using team production. Cooperation thus arises as a by-product of the need for team production to accomplish a collective goal. Such cooperation is constrained by the need to monitor and prevent shirking by those who seek to gain the benefits of cooperation without providing the effort or risk of producing the joint product.

A third form of cooperation in nature is reciprocal altruism. In reciprocal altruism, an individual provides a benefit for another in exchange for a reciprocal benefit, or the expectation of a reciprocal benefit in the future. Because the benefits are traded over time, however, at the outset, one of the individuals must provide a benefit (thereby incurring a cost) in exchange for the mere expectation of a reciprocal benefit. Robert Trivers defined reciprocal altruism as, "trading of altruistic acts in which benefit is larger than cost so that over a period of time both enjoy a net gain" (1985: 361). Frans de Waal defined three characteristics of reciprocal altruism: (1) the exchanged acts, while beneficial to the recipient, are costly to the performer; (2) there is a time lag between giving and receiving; and (3) giving is contingent on receiving. Cosmides and Tooby observed, however,

that for social exchange mechanisms to operate there does not need to be a cost to the performer, there need only be a rational benefit. Reciprocal altruism provides a fundamental underpinning of cooperation in primitive human societies, in such cooperative efforts as hunting and food-sharing. Although found in species as diverse as chimpanzees and vampire bats, reciprocal altruism is relatively rare in nature because it generally requires substantial cognitive brainpower to recognize and keep track of reciprocating and nonreciprocating individuals within a given population.

A final potential path to cooperation is group selection. Group selection models posit that under certain circumstances individuals will act altruistically even if the long-term costs of doing so exceed the long-term benefits to the individual, if the benefit to the group is sufficiently large that members of the group gain a comparative advantage over other groups in reproduction. Group selection can apply to biological or cultural group selection. Historically, scholars have rejected group selection models as implausible because they predict that selfish free riders will exploit altruists, and thus, natural selection will eliminate pure altruists from the gene pool. Thus, a theory of group selection lacks adequate “micro” foundations in individual reproductive activity to be a sustainable equilibrium theory.

In recent years, however, a new model of group selection has been advanced that builds on the tension between intergroup selection (competition between groups for comparative reproductive advantage) and intragroup selection (competition within a given group). Whether a group selection model is viable, therefore, is an empirical question rather than an *a priori* question. In particular,

certain conditions are necessary for group selection to operate. First, there should be benefit to the group from the biological trait or cultural rule, such that it increases the group's cohesion, power, and wealth. Second, there should be some mechanism for *intergroup* competition, so that "more fit" groups can displace "less fit" groups, such as conquest, imitation, or migration. Finally, there should be some mechanism for policing *intragroup* free riding, such as law or customs, which rewards productive and altruistic activity and disciplines antisocial activity. Although group selection models are possible in theory, they remain open to further proof; moreover, cultural group selection models may be more plausible than biological group selection models.

Usefulness for Law: Conflict

Evolutionary psychology also provides important models of conflict that are relevant to law. For instance, evolutionary psychologists have provided theories of homicide, rape, child abuse, sexual harassment, war, violence generally, and constitutional restraints on government. Many of these theories are controversial and raise important moral and ideological challenges to common and deeply held beliefs about human nature and the extent to which institutional design should account for these insights.

Evolutionary psychology may also aid inquiries into certain questions that otherwise appear intractable. For instance, evolutionary psychology may resolve a tension present in modern norms theory, namely the efficiency of norms that evolve in small groups versus large groups. Most of the fundamental norms that underlie successful societies are both universal and efficient. Norms against antisocial practices such as murder, incest, and theft are universal to all cultures,

societies, and legal systems, as are prosocial norms such as promise keeping, reciprocity, and good parenting.

Modern norms theory lacks a compelling explanation for the persistence of efficient norms as one moves analytically from the small group to large societies. Evolutionary psychology provides an explanation for the persistence of efficient small-group norms in large-scale society by predicting that human psychology has evolved to follow certain rules and to attach moral approbation or disapprobation to certain social behaviors, and that these beliefs will be “sticky” relative to changes in the social environment. In other words, we are “playing small-group games in a large-group world,” that is, continuing to follow the efficient norms that evolved in our hunter-gatherer past even as people increasingly live in a larger world. Other norms, by contrast, are largely conventional (such as modes of dress) and thus fall outside of the realm of evolutionary explanations.

Thus, evolutionary psychology may also provide an explanation for the inability of standard rational choice theory to explain why bankruptcy filers do not exploit maximum advantage of the bankruptcy fresh start and why filing bankruptcy is stigmatized in all known cultures. On the other hand, many of our evolved instincts also leave us unsuited for the modern world and must be suppressed to maximize economic wealth and social welfare. Norms, culture, law, and other institutions can all extend the sphere of cooperation for humans, but much cooperative behavior is in fact natural and rooted in human nature.

Testing Hypotheses

One challenge for evolutionary psychologists is testing the hypotheses that the theory produces. Because evolution takes place gradually and over extraordinarily long periods (absent unusually strong selection pressures), it is not subject to easy observation. Moreover, evolutionary psychology provides a theory of human evolution distant in our evolutionary past, well before modern science. Evolutionary psychology, however, provides several mechanisms to distinguish itself from other alternative hypotheses, such as incentives, law, norms, culture, or rationality.

One can use several techniques to establish whether a given preference may be evolutionary-based: (1) evolutionary game theory; (2) comparative evidence, such as from other animals; (3) anthropological evidence from humans; (4) universality among human societies; (5) evidence that a given psychological trait emerges in such a way that it is unlikely to be the result of any learning process, such as studies of infants or physiological responses (physical manifestations of lying, shifty eyes, or sweaty palms, for instance); and (6) “special design” by selection for a function. Where these criteria are met and one of the research techniques proves useful, they suggest that an evolutionary explanation may be present and may provide a more plausible explanation for what is observed than alternative hypotheses.

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