THE ORIGINS OF THE CAPACITY FOR CULTURE†

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Abstract. Recent work on the capacity for culture by Tooby and DeVore (1987), Parker (1987), and myself (1989) suggests that a multistage scenario is needed with special attention to sexual selection and to the self-predation hypothesis. Just as the evolutionist often examines morphology with a view to generating hypotheses about past selection pressures, it is fruitful to examine aspects of human psychology for compatibility with evolutionary scenarios. The ethnocentrism syndrome, for example, is compatible with autopredation (within species conflict and culling) approach, while alleged transcultural gender differences in sexuality would, if supported, argue for a strong role for sexual selection in the evolution of cultural capacity. **Keywords:** evolution, capacity for culture, evolutionary psychology, vertically integrated explanation, autopredation, origins of culture.

I. Introduction.

In this paper, I want to argue in favor of sin. We'll get to the nature of that sin in a bit, but it will be in the service of answering a certain question that has lurked at the back of my mind since I began graduate school: How did our species get to be so smart and so cultured?

This question got a lot of attention in the late Fifties and early Sixties, thanks to the Darwin centennial. It then seems to have largely faded from view until recently, when the advent of sociobiology put the kettle back on the fire.

The usual approach to the origins of human cultural capacity and intelligence involves building evolutionary scenarios or narratives. One takes one's knowledge of evolutionary theory, of the fossil record of human evolution, and of the behavior of other species; one mixes them together and strives to produce as coherent a picture as one can of how we got to be whatever it is that we are today. The literature is full of evolutionary scenarios. (Most of them, by the way, implicitly assume that our ancestors were very chimpanzee-like in behavior, or very baboon- like, or very wolf-like; or just like the !Kung San.)

One creates one's evolutionary scenario while trying to avoid sin. The sin in question has to do with logic. It is the sin of tautology, of circularity. Evolutionists and everybody else are taught to avoid the error of affirming the consequent, taught to avoid circular reasoning. We are not permitted to argue, for example, that the fact that we are mostly monogamous (as individuals if not societies) means that it must have been adaptive to be monogamous and therefore we are monogamous because it was adaptive. And I am not going to argue in precisely that fashion, though some of you may think that I am.

What I am really going to do is to suggest that we can learn a great deal by analyzing human psychology and then checking out our evolutionary scenarios to see if they are compatible with that psychology. We should at least be able to eliminate those evolutionary scenarios that imply a psychology that does not exist.

To take a familiar example, when Owen Lovejoy presented a scenario, in 1981, that accounted for the evolution of human monogamy -- in the face of abundant psychological and ethnographic evidence that human beings are at best facultatively monogamous -- he was, quite simply, wrong. Moreover, if he had read his Masters and Johnson he would have known about the Coolidge Effect (Symons, 1979) and realized that this bit of masculine psychology is incompatible with his emphasis on monogamy. (Everyone know what the Coolidge Effect is? In human males, the post-ejaculatory refractory period is appreciably shortened when the male is presented with a fresh female.) A little bit of circularity -- and knowledge of human psychology -- would certainly have aided Lovejoy.

II. Autopredation and Ethnocentrism

There are other examples of how a more psychological and reflective -- if not actually circular -- approach can help us understand human evolution. Take the autopredation or self- predation hypothesis. This term refers to the idea that it was predator pressure that selected for intelligence and cultural capacity, but that we ourselves were the predators. The argument is that pre-modern human groups raided and culled and even exterminated one another, and that human intelligence is the product of the resulting natural selection. Intelligence, in other

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words, is a survivor's trait, and a warrior's. The earliest reference I have to this theory is Keith (1949), but I suspect it is even older. The idea has been written about extensively by R.S. Bigelow (1969, 1973) and to a much lesser extent by R.D. Alexander (1979), among others, including myself (1989).

Autopredation is a very unpopular idea because it seems to suggest that warfare and raiding are inherent in human nature and that war must therefore be inevitable. It implies that war created us.

Let us be circular about warfare and ethnocentrism for a moment. War is intimately tied to ethnocentrism. We readily perceive our own group as superior to the outgroup; we readily accept that violence which would bring sanctions against us if directed to a fellow ingroup member is perfectly acceptable and even praiseworthy if it is directed against an outsider; we readily perceive the customs and foods and such of the outgroup as inferior to our own; and so forth. Most important, we react to external threat with increased ingroup solidarity and cooperativeness. We put our internal quarrels aside to face the common enemy.

I do not think that there is any doubt that this external-threat-breeds-ingroup-solidarity trait is part of the evolved social psychology of our species. Suggestions that it is "learned" are just silly because they don't explain why it occurs in nearly every society. And I cannot think of any set of selection pressures which could have led to the psychology underlying the ethnocentrism syndrome that would not involve some kind of raiding or culling among Pleistocene populations. Thus, I would suggest, a little bit of psychological circularity forces us to accept a very controversial theory, that of autopredation.

(Let me hasten to add that I do not believe that autopredation implies that warfare is inevitable. War is a collective phenomenon, to be understand in terms of social science processes. The psychology that makes warfare possible is indeed part of our human heritage, so that the potential for it will always be with us; but it is not difficult to envision environments in which that potential is never manifested in a collective, violent, fashion.)

III. Evolutionary Psychology

The rather psychological perspective to understanding human evolution which I am advocating is less common than it should be, and for a particular reason. For more than half a century, academic psychology gave us an approach to its subject matter that was fundamentally wrong and quite useless for evolutionists. We were taught that almost everything is "learned," that learning is a relatively simple process, and that the learning processes of one species are a perfectly good model for the learning of another. This is an old-fashioned, simple psychology not yet dead but at least terminally ill.

Because of this older perspective, much past anthropological and biological debate about human psychology has involved a spuriously global "capacity for culture" and a vague and undifferentiated "intelligence." But cultural capacity and intelligence are not unitary in nature: the terms merely represent a very loose and vague way of referring to an assortment of fairly specialized and distinct information- processing abilities. It is much more useful for evolutionists to think of human psychology as consisting of a host of special-purpose "mental organs" each of which evolved to solve a specific adaptive problem.

I am borrowing this last idea from recent developments in cognitive psychology, and from what some people have termed the "modular" or "algorithmic" approach. "Module" is just another term for specialized processor or mental organ. "Algorithmic" refers to the hypothesis that each module has its own algorithm - - its own set of procedures and rules for solving a problem, together with its own tendency to process specific domains of information. The view that the mind is composed of many functionally distinct, algorithm-using mental organs is associated particularly with my occasional collaborators, Leda Cosmides and John Tooby, among others. Cosmides and Tooby argue that human psychology consists of a host of specialized "mental organs," that is, of information-processors each of which evolved to solve a particular adaptive problem. Each of these mental organs can usefully be thought of as using a computer-like algorithm to solve a specific class of problem that would have faced us during the Pleistocene. Cosmides' best-known work involves the algorithm underlying the human capacity for social exchange -- when we should or should not be altruistic and trusting. Her empirical data are very impressive. In short, in place of the simple, global sort of psychology many of us learned back in our undergraduate days, a highly complex evolutionary psychology is emerging.

What makes this complex psychology approach so exciting for those of us interested in human evolution is that, as specific mental organs are identified, we can compare the psychologists' empirical data with our evolutionary scenarios and get hints about how to proceed -- or at least we can find out if we are entirely wrong-headed.

For example, I have already been criticizing Lovejoy. One of the assumptions he and many other evolutionists make is that we evolved on the savanna. Did we, really? Well, probably yes. The psychologist Stephen Kaplan and the ethologist Gordon Orians have long been arguing that habitat selection theory can very usefully be applied to human beings. From this perspective, our species preferences for particular kinds of landscapes and environments can reveal much about the physical setting of human evolution. Orians points out that both Japanese and European traditions of landscape architecture resemble savannas in crucial respects. For example, human beings are thirsty animals, profligate in our use of water; and we find streams and bodies of water attractive and will even create them artificially. This is unlikely to be coincidence. We not only tend to like trees, we especially

prefer those that resemble the acacia, according to Orians (writing with Judith Heerwagen). We prefer landscapes that offer the possibility of refuge, and also of food, according to Kaplan. Kaplan has a great deal of empirical data, some of it cross-cultural, confirming the validity of this approach. Landscape preferences appear to be the product of one of Cosmides' mental organs, with an algorithm that takes into account refuge, water supply, likelihood of food sources; and something I haven't mentioned, nature of the terrain in which one grew up, which of course influences preference. The psychology of landscape esthetics confirms that we are indeed savanna animals.

IV. Sexual Selection

Now, here is a whole group of evolutionary scenarios that can be tested for compatibility against what we know of human psychology. The group includes all scenarios that include a role for sexual selection. Is human sexual psychology compatible with sexual selection scenarios of human evolution? Because I (1989) and others have written rather extensively about this question, recently, here I am only going to illustrate how we go about answering it.

A number of thinkers -- I am thinking of Sue T. Parker (1989) in particular -- have argued that sexual selection was a crucial part of the process that led to modern human beings. In particular, it has been argued that the host of abilities loosely termed "cultural capacity" and "intelligence" are in large measure the result of hominid men and women choosing sexual partners with more rather than less of these traits.

If this argument is true, then it should be a cross-cultural universal that, everywhere, people have a strong preference for intelligence in their partners. Recent research by David Buss, a psychologist at the University of Michigan, has given us some confirmatory results. In 37 different societies, he found that both men and women, when asked about the qualities they would look for in a mate, rated "intelligence" very high. Interestingly, the other very high-scoring item was one not predicted by Buss: "kind and understanding." Both of these findings are consistent with evolutionary scenarios in which sexual selection is presented as part of the process that produced our high intelligence. (I might mention that this sexual selection approach is quite as controversial as the autopredation hypothesis presented earlier, and that the two approaches are mutually compatible with one another. I would also add that, if one rejects them, one would be left with empirical findings about human psychology that make no evolutionary sense at all. One would need to find alternative scenarios to produce the psychological characteristics in question, and I know of none.)

We could go on at some length about human sexuality and evolutionary scenarios. Theory predicts, for example, that when it comes to long-term relationships, human males and females should have quite similar mate preferences. However, when it comes to short-term relationships, females should be far more discriminating than are males. (Males, as a matter of fact, should be little more than opportunistic copulators.) Buss has some empirical data here, too, but unfortunately he has failed to distinguish between long and short-term relationships so his results are, for me, not too useful. He is collecting more data, however, so all we can say now is that at least the popular understanding of the psychology of sexuality is consistent with the hypothesis that there are sharp differences between men and women when it comes to short term as opposed to long-term relationships. By "popular understanding" I mean the warnings parents give to their pubescent daughters about what men are like.

V. Conclusion

I have left out the discussion of multistage scenarios. The omission gives me an opening to plug my book: if you want more, read Darwin, Sex, and Status: Biological Approaches to Mind and Culture (University of Toronto Press, 1989). For examples of the "mental organ" and evolution approach -- including the papers by Buss, Kaplan, and Orians I mentioned, here -- please see the Oxford University Press The Adapted Mind (1992).

One final plug, not for a book but for an approach. This paper has been one in a series in which I push the "vertically integrated" approach. This approach is that of the natural sciences. No one level of analysis can reduce to another but theories at different levels of organization must be mutually compatible or else one or more is wrong. Chemistry must be compatible with physics but the laws of chemistry do not, even in principle, reduce to those of physics. Nevertheless, a theory of chemistry incompatible with known physics would be wrong.

So it is -- or will be -- with the evolutionary, psychological, and social sciences. A psychology incompatible with what we understand of human evolution is simply preposterous, much as a biology that was incompatible with the laws of chemistry would be. And as I was trying to show in this paper, our evolutionary scenarios must be compatible with what we know of our psychology or else we are wrong either about the evolution or about the psychology. What I haven't discussed here, but do elsewhere, is that social science theories must be compatible with both human psychology and human evolution, or else those theories are false.

The most immediate implication of this vertically integrated perspective has to do with training. The social scientist -- and the physical anthropologist, please -- needs to understand some modern psychology. The psychologist needs to understand both evolutionary theory and the fossil record of human evolution, and also the social sciences. The physical anthropologist can get away with just knowing some psychology, but that knowledge is crucial if she or he is interested in human evolution. The "some psychology" I have in mind is, of course, that evolutionary psychology I have perhaps introduced some of you to, the complex psychology of mental organs.

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V. References

Alexander, R. D. 1979. *Darwinism and Human Affairs.* Seattle: University of Washington Press.

Barkow, Jerome H. 1989. *Darwin, Sex, and Status. Biological Approaches to Mind and Culture.* Toronto: University of Toronto Press.

Barkow, Jerome H., Leda Cosmides, and John Tooby, eds. 1992. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture.* New York: Oxford University Press. In press.

Bigelow, R. S. 1969. *The Dawn Warriors: Man's Evolution Toward Peace.* Boston, Mass.: Little, Brown.

Bigelow, R. S. 1973. The evolution of cooperation, aggression, and self-control. In *Nebraska Symposium on Motivation 1972,* J. K. Cole and D. D. Jensen, eds. Lincoln: University of Nebraska Press.

Buss, David M. 1989. Sex differences in human preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences* 12:1-49

Buss, David. 1992. Mate preference mechanisms: consequences for partner choice and intrasexual competition. In Barkow, J., L. Cosmides, and J. Tooby, eds. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture.* New York: Oxford University Press. In press.

Kaplan, Stephen. Environmental preferences in a knowledge-seeking, knowledge-using organism. In Barkow, J., L. Cosmides, and J. Tooby, eds. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture.* New York: Oxford University Press. In press.

Keith, A. 1949. *A New Theory of Human Evolution.* New York: Philosophical Library.

Lovejoy, O. 1981. The Origin of Man. *Science* 211: 341-350.

Orians, Gordon H., and Judith H. Heerwagen. 1992. Evolved Responses to Landscapes. In Barkow, J., L. Cosmides, and J. Tooby, eds. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture.* New York: Oxford University Press. In press.

Parker, S. 1987. A sexual selection model for hominid evolution. *Human Evolution* 2:235-53.

Symons, D. 1979. *The Evolution of Human Sexuality.* New York: Oxford University Press.

Tooby, John and Leda Cosmides. 1992. The psychological foundations of culture. In Barkow, J., L. Cosmides, and J. Tooby, eds. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture.* New York: Oxford University Press. In press.

Tooby, J., and I. DeVore. 1987. The reconstruction of hominid behavioral evolution through strategic modeling. *In The Evolution of Human Behavior: Primate Models,* W. G. Kinzey, ed., pp. 183-237. Albany: State University of New York Press.

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